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Shadow Manager 4.2.31.0

Software for operating the Shadow Master Unit V4
(system for shadow impact monitoring and species conservation)

Manual

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1 About the manual

This manual documents the range of functions of Shadow Manager 4 (SM4), the operating software for the Shadow Master Unit V4 for our system for shadow impact monitoring and species conservation. As the software we describe here offers even more options than its predecessor, the user handbook has become significantly bigger. But don't worry, we have designed the SM4 user interface to be user friendly and intuitive to operate so that experienced users will be able to perform many tasks even without the manual.

If you are not yet familiar with SM4, please carefully read through the relevant information in this manual to ensure that the system for shadow impact monitoring and species conservation operates correctly at all times. This will ensure that your wind turbine generators are only shut down when it is necessary to satisfy residents and the authorities – *as often as necessary, as infrequently as possible*.

1.1 Structure of the manual – what is relevant for whom

This documentation serves as a guideline for the beginner, but at the same time as a reference document for experienced users.

How to use this manual:

- Information on a specific topic can be found in the **Contents**.
- Step-by-step instructions on standard tasks can be found using the **Practical section** (chapter 3).
- An explanation of all menus, parameters etc. can be found in the **Reference section** (chapter 4).
- Information on a specific term can be found using the **Index** (Appendix).
- Special SM4 terms are explained in the **glossary** 358.
- If SM4 does not operate as expected at any time, you can find helpful information in the **Troubleshooting** chapter.

1.2 Conventions

The following conventions apply in this manual:

Designation	Meaning
Bold	The names of menus, windows, buttons etc. in the body text are written in bold. Example: Open the **Places of Immission** window. **Bold** type is also used to highlight important parts within a text block.
Italics, blue	Path names are printed in blue and italics. Example: *Project > Project Settings > Ethernet settings*
	This sign indicates that a parameter/setting/function needs to be defined particularly carefully, as an error could result in serious consequences.
	This symbol refers to a practical example or a practical tip that exists for the respective topic.
	This symbol indicates helpful information.
	This symbol identifies step-by-step instructions.
Blue, underlined	Cross-references are highlighted in blue font color and underlined. Click on the cross-reference to jump to its target.
Green background	In the explanation for the parameters, you will find information on the default highlighted green, where applicable and appropriate.

1.3 Abbreviations

The following abbreviations are used in this manual:

Abbr.	Term	Information
POI	Place of immission	Building with walls and areas to be protected from shadow impact.
LS	Light sensor	• measures the sunlight's direct intensity of illumination to enable the SMU to determine whether shadow im-

Abbr.	Term	Information
		pact effects are possible at all at a given point in time • provides information on time and location to the SMU (via a GPS receiver)
SM4	Shadow Manager 4	The operating software for the system for shadow impact monitoring and species conservation described in this manual.
SMU	Shadow Master Unit	The central unit of the system for shadow impact monitoring and species conservation.
SIIU	Shadow Impact Interface Unit	Hardware component that receives analog measurement signals (e.g., wind speed) in a WTG and transmits them to the SMU via a TCP network.
SNU	Sensor Node Unit	Standalone optional hardware used to connect sensors in such a way that commands and answers can be communicated in a cyber-secure manner.
SS	Special shutdown	Shutdown conditions not involving shadow impact (e.g. for bat or bird protection).
TP	Third Party	–
WTG	Wind Turbine Generator	–
CMDR	Cyclic Multi Data Recording	A data set defined in SM4 for automatic regular recording of measured values including specifications for providing the results in .csv format.

1.4 Digital navigation aids

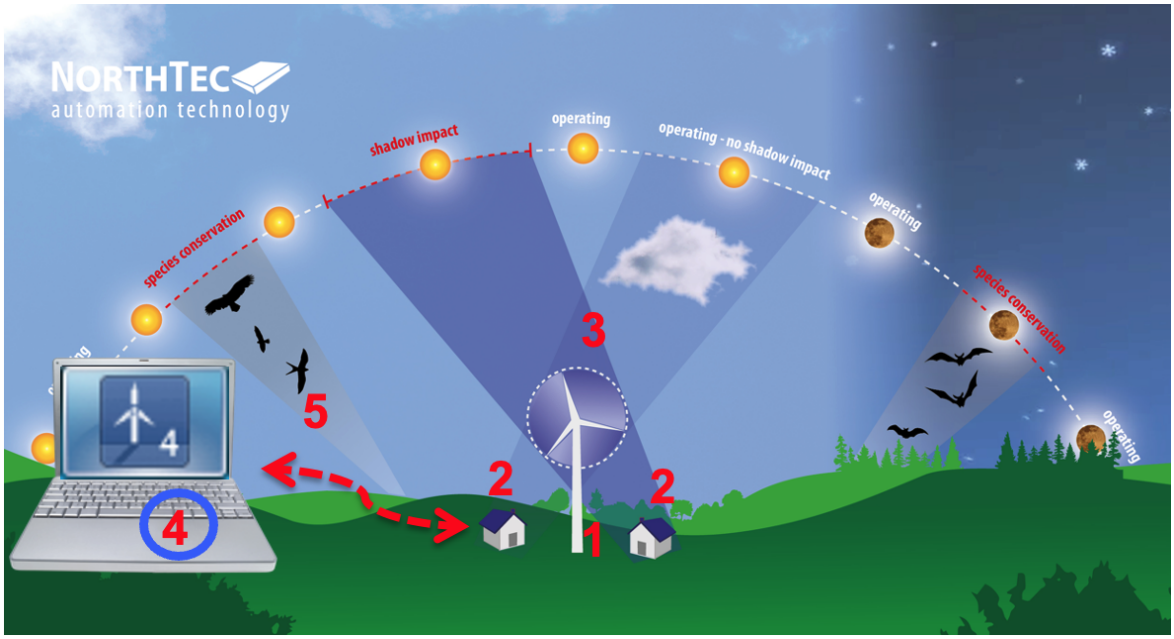
If you read this manual in digital form on a screen, in many places you can click on a cross reference to jump directly to a section with further information. Cross-references are highlighted in blue fonts and underlined. In PDF Reader, you can also display the content at the left-hand side of the window and use it to navigate.

2 Introduction

The purpose of the Shadow Manager 4 (SM4) software is to configure and monitor the Shadow Master Unit (SMU), the central component of the system for shadow impact monitoring and species conservation. Users include predominantly commissioning engineers, service personnel and technical system management employees.

User identification and a password are required to log in to an SMU. The user is set to **admin** and the password to **admin** upon delivery. A dongle is always required to make changes to the SMU settings.

Our system for shadow impact monitoring and species conservation enables you to comply with a large number of permit conditions that apply to wind turbine generators (WTG), primarily with reference to shadow impact and species conservation. The following illustration and the corresponding brief information will help you gain an initial overview of the system and, in particular, identify which element takes on which function and/or role.



1 **Shadow Master Unit (SMU)** - is located in the WTG or in the hand-over station.The SMU receives the project data via Shadow Manager 4, calculates shadow impact periods, shuts down the WTGs when required, records measurement data and alarms, sends the corresponding email notifications and records log data.

2 **Places of Immission (POI)** - Buildings with walls and areas requiring protection

3 **Light sensor** - mounted on the nacelle of a WTG, primarily measures the intensity of illumination of the sunlight.

4 **Shadow Manager 4 (SM4)** - operating software

The project data (coordinates of the WTGs and POIs, permitted shadow impact periods, shutdown conditions for species conservation and other shutdown specifications) is defined in SM4. It also reads out measurement data and logs.

5 **Ethernet connection** with encrypted data transmission - is used to transfer project data from SM4 to the SMU and measurement data as well as for retrieving the SMU logs.

The configuration of the Shadow Master Unit (SMU) can only be performed via SM4. Unlike earlier versions, operation and thus configuration can **no** longer be carried out directly on the SMU.

After you have gained an initial overview of the basic elements of the system for shadow impact monitoring and species conservation, you will find more detailed information on the overall system including its optional components in the next section.

2.1 The hardware components of the system for shadow impact monitoring and species conservation

The system consists of the Shadow Master Unit (SMU) and, depending on the application, different sensors. The required meteorological readings can be obtained via the communication interface to the wind turbine generators (WTG), on the one hand. On the other, there is also the option to connect other measurement units to the SMU, e.g., a climate sensor, laser precipitation sensor or hygro-thermo sensor. At least one light sensor must be installed when using the system for shadow monitoring.

The following table lists the functions and tasks of all core and optional hardware components of the system for shadow impact monitoring and species conservation.

Component	Function
Shadow Manager Unit (SMU for short, central component of the system for shadow impact monitoring and species conservation)	• contains all configuration data of Shadow Manager 4 (SM4) (e.g., coordinates of the WTGs and places of immission, permitted shadow impact periods, shutdown conditions for species conservation) • calculates the shadow impact periods • communicates with the connected sensors • requests the current operating data from the WTG • sends stop and start commands to the WTG • logs all the relevant events • records measurement data • calculates the potential shadow impact one day in advance Purpose: If a place of immission (POI) is already “preloaded” due to the shadow impact of another WTG that you are unable to switch yourself, you should then surmise a worst-case scenario and assume that the WTG runs continuously, and the rotor is always in a 90 °position with respect to the sun.)
Light Sensor (mounted on the nacelle of at least one WTG)	• measures the sunlight’s direct intensity of illumination to enable the SMU to determine whether shadow impact effects are possible at all at a given point in time • provides information on time and location to the SMU (via a GPS receiver)
Laser precipitation sensor	• measures the precipitation amount and optionally the outside temperature
Hygro-thermo sensor	• measures humidity and outside temperature
Climate sensor	• measures, e.g., temperature, precipitation amount, relative humidity and atmospheric pressure

Component	Function
iSpin sensor	• enables for example the monitoring and optimization of the performance of WTGs
Sensor Node Unit (SNU)	• standalone optional hardware used to connect sensors in such a way that commands and answers can be communicated in a cyber-secure manner
Signal converter unit	• enables communication between the SMU and the sensors via a network

The following section provides information on the options offered by SM4 and how this software is used to configure the SMU.

2.2 Overview of Shadow Manager 4 functions

The configuration and monitoring of the Shadow Master Unit (SMU) is performed in SM4. Unlike earlier, operation and thus configuration can **no** longer be carried out directly on the SMU.

Because SM4 not only enables you to set the project-specific data, but also offers other helpful options, a corresponding overview of its functions is provided in this section.

2.2.1 Functions relevant to a project

To ensure the system can fulfill its most important task, namely shutting down wind turbine generators because of shadow impact or for bat protection, data specific to the project must first be created in SM4 and then stored in the SMU.

Moreover, further settings you can make project-specific settings – the most important functions are listed below.

Several functions can only be used together with the dongle, which you can purchase from us.

The logged-in users must be authorized for specific right groups in order to transfer a configuration to the SMU, download logs and use the online communication with the SMU (see Shadow Manager Interface User Management window 263).

Set main elements of a shadow impact scenario

- Project data (see Project Data window 88)
- Wind Turbine Generators (see Wind Turbine Generators window 91)
- Places of Immission (see Places of Immission window 118)
- Walls and Areas of the POI to be protected (see Edit Walls and Areas sub window 130)

Amongst other things, data on the length of time permitted to be impacted by shadow (per day and year) according to the authorities is specified when defining places of immission (POI). The project is complete once the elements listed above have been correctly defined. Project data can then be transferred to configure the SMU, making it possible to adhere to requirements by carrying out the corresponding shutdown operations.

Create optional elements of a shutdown scenario

The scenario can also be extended by the following shutdown processes and shutdown elements:

- Calendar periods for WTG shutdown (see section Shutdown Calendar window 221)
- Time periods with/without monitoring (see Shadow Impact Monitoring Periods sub window 126)
- Complex special shutdowns for species conservation (see Special Shutdowns window 185)

- Power thresholds for the purpose of yield optimization (see “Combinations” under WTG Combinations sub window 100)
- Exclude individual combinations of WTGs and POIs, e.g., due to obstructions (see WTG Combinations sub window 100

Define measurement data recordings

You can configure the SMU in such a way that it logs user-defined measurement data automatically. The following options are available:

- Single Data Recordings: record individually selectable measurement data and connect/compare them. The corresponding data is output as a separate log.
- Cyclic Multi Data Recording (CMDR): have a set of readings recorded periodically and define settings for outputting the results in .csv format.

See also:

Measurement Data Logging window 225

Cyclic Multi Data Recordings window 228

Perform alarm settings

You can specify when the SMU triggers an alarm for which system/unit and whether an email notification is sent at the same time.

See also Alarm Settings window 140.

Perform hardware settings

Here you can change the defaults of the SMU and the sensors connected to it.

See also Hardware 161.

Visually check the locations of WTG and POI

You can open an overview map to visually check the locations of the WTGs and the POIs. It is also possible to export the data to Google Earth, see Overview Map window 137.

2.2.2 Online communication with the Shadow Master Unit (SMU)

In addition to the configuration of the SMU, SM4 also offers the option of calling up the live data of the sensors and WTGs connected to the SMU and performing switching tests and test alarms.

2.2.3 Log functions

The SMU generates various logs, which you can download and display in SM4 as well as filter, export, and print.

For further information, please refer to Logs menu 313.

2.2.4 Practical tools

Simulate shadow impact scenario

You can calculate the defined shadow impact scenario according to the most unfavorable conditions (worst-case) for different periods of time. This calculation is performed in SM4. See also Simulation window 338.

Check project integrity

SM4 has an integrity module installed, which can be used to test for plausibility in a project (incomplete references, missing parameters and other “errors”) prior to uploading to the SMU. See also Project Integrity window 333

Check the availability of the SMU

SM4 provides a window in which you can identify at a glance whether the SMU is ready for a connection. This prevents you from making unsuccessful attempts to connect to the SMU. See also SMU Connectivity window 347.

WTG Types

You can call up a window that lists what types of WTGs can be selected when creating wind turbine generators in the project. See also WTG Types window 352.

2.3 Notes on the working environment

The menu structure, the assignment of the mouse keys and the design of the software are based on the standard Windows interface and the corresponding operating elements.

If you are not familiar with using Windows, please get up to date with basic Windows operations (using a mouse, menu technique, changing sizes of windows etc.).

2.4 Shadow Manager 4 – Requirements and Installation

There are 2 versions of SM4:

- desktop version that is installed on a PC like a conventional program
- mobile version that is started from a USB stick.

The latest version of the Shadow Manager software can be downloaded from our website (**www.northtec.de**).

The following technical requirements must be fulfilled before using Shadow Manager 4 (SM4):

Prerequisites	Description
SMU	Shadow Master Unit 4.0 or higher
PC	• a minimum of 4 GB RAM • at least 100 MB free hard disk space • USB port for software dongle • network port/internet connection
Operating system	• SM4 runs on computers with Windows 7 or a higher Microsoft operating system • Limited functionality is also available for Windows XP, which is no longer supported.
Rights	Running the desktop version: administrator rights required Running the mobile version: no administrator rights required
Dongle	To enable the SM4 to be used to its full extent, purchase a USB hardware dongle from us, which we will then send to you.

After you have downloaded the desired version, double-click on the .exe file and follow the instructions on the screen.

2.5 General properties of the software

SM4 is implemented as an MDI (multiple document interface) application, i.e., there is a main window in which other sub windows can be opened.

The size of the sub windows can be changed, and they can be freely placed in the main window. If a sub window is closed and then opened at a later point in time, it will be displayed in the same position.

The user is thus able to create a specific arrangement of windows, which will remain in place even after restarting. Each sub window only has one visible instance at a time. If you attempt to reopen a window that is already open, it will simply display at the uppermost display level.

If an opened sub window takes up more space than is available, a scroll bar will appear. You can use it to scroll to windows that are not displayed or not fully displayed.

The following windows deviate from the MDI structure:

- information or error windows (must be acknowledged)
- windows that require input to be entered before it makes sense to work in other windows (e.g. Walls and Areas window)

If you enter an invalid value into an input field (incorrect value or incorrect input format), it will appear highlighted in red:

Press the Enter key or the Tab key to complete the current entry and jump to the next input field.

In certain windows, some buttons, e.g., **Apply** and **Add**, will not be activated until the mandatory fields of the window have been filled out correctly.

If an input window for the menu item that you selected is not displayed, one reason could be that the size of the SM4 main window has been reduced and the input window has opened outside the visible area.

Check whether a scroll bar has appeared at the right-hand side or bottom edge of the SM4 main window, which you can use to move to the visible area.

2.6 Operating the windows in SM4

You can press the Enter key or the Tab key to complete the current entry and jump to the next input field in most input windows in SM4.

Many windows and sub windows in SM4 can be differentiated based on the type of operation as follows:

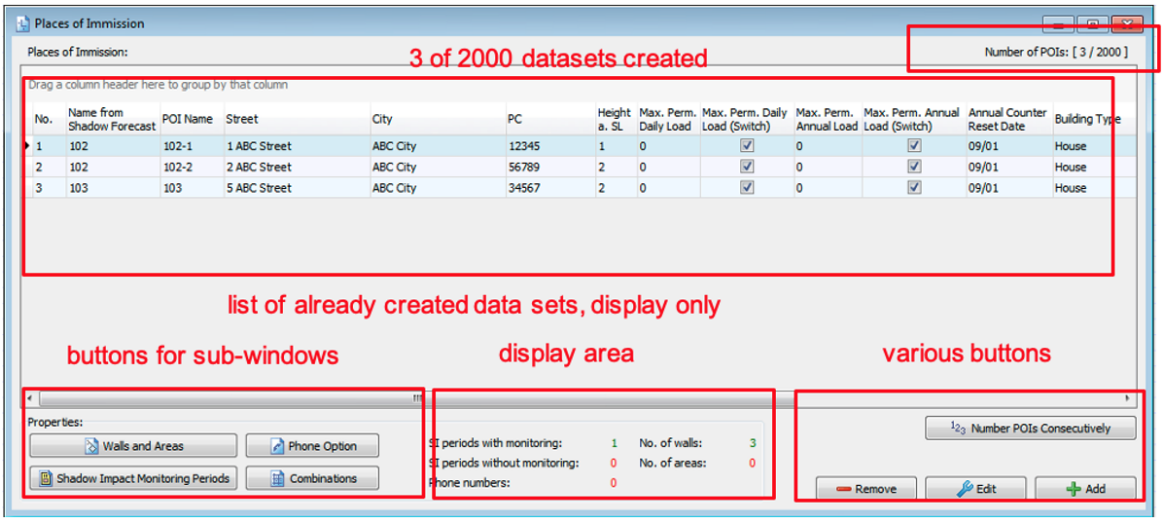
- horizontally divided windows (e.g. Wind Turbine Generators and Places of Immission)
- vertically divided windows (e.g. Special Shutdowns, Night Slice Shutdowns, Hardware Assignments, Interface Cards)
- menu tree windows (e.g. Application Settings)

The following section provides basic details on working with the different types of windows.

2.6.1 List windows

Examples of list windows in SM4:

Wind Turbine Generators, **Places of Immission** , **Logs from Local LogPool**



List window, example: **Places of Immission**

Operating notes for list windows

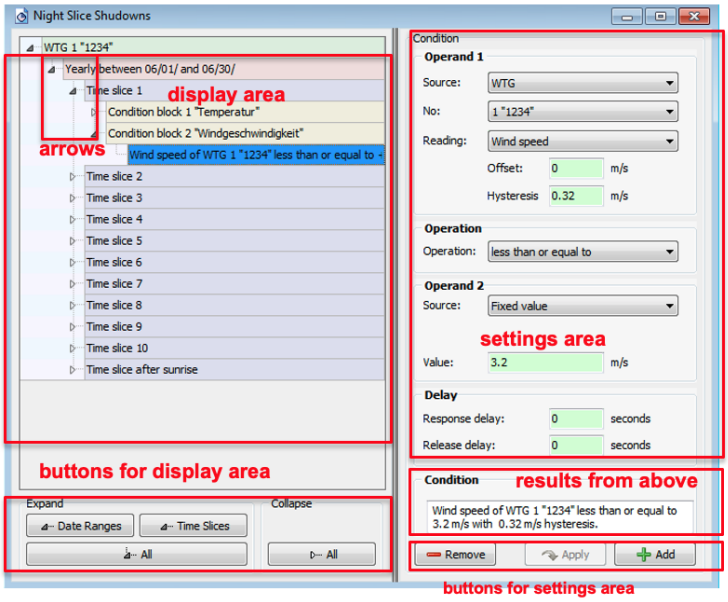
- The list area is a pure display area, no editing is possible.
- To edit a record, select it in the list by clicking on it (record will be highlighted in blue) and then click **Edit** on the right.

- If you click on one of the buttons to sub-windows, a window opens, which refers in each case to the dataset selected in the list (highlighted in blue).
- To add a record, click **Add** on the right.
- The numbers in the middle box below refer to the record selected in the list.
- Move columns: columns can be moved by drag and drop.
- Sort by columns: You can sort by a column title by clicking on it; if you click on the same column title again, the sort order will change from ascending to descending or vice versa.
  You can also sort by multiple column titles (criteria). To do this, first press and hold the Shift key and then click on the desired column titles. The sorting is then carried out in the order in which you click on the titles.

For some lists, you can copy the data from existing records so that you do not have to redefine all the data for each new object.
For more information, see the practical tip in the Wind turbines window 92.

2.6.2 Vertically divided windows

Vertically split windows in SM4 include: **Special Shutdowns, Night Slice Shutdowns, Single Data Recordings, Interface Cards, Interface Connectors, Hardware Assignments**



Vertically divided window, example **Night Slice Shutdowns**

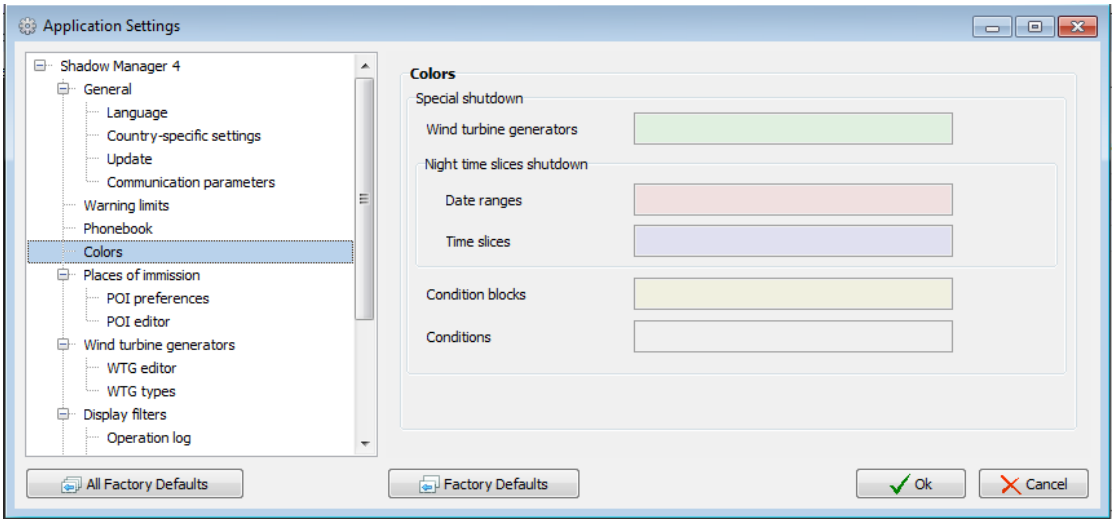
Operating instructions for vertically divided windows

- Display area: Here, already created data records can be shown/hidden. To show/hide records individually, click on the small arrows displayed directly in front of a record.
- To show/hide all records at once, corresponding buttons are available at the bottom left.
- To show/hide a single sub-level, right-click on the respective level and select **Collapse All** or **Expand**All.
- Settings area: Here you make the settings for the data set that you have previously selected in the left area.
- If no data set is displayed on the left, you must first add a data set on the right by selecting a WEA at the top and then clicking on Add at the bottom.
- If no record appears in the right pane, you probably did not select a record or an editable record on the left. Select a dataset on the left - you may need to click on the small arrow in front of the dataset to get to an editable dataset. Make sure that the record you want to edit is highlighted in blue on the left side of the window.
- Logical links can be created in windows such as **Special Shutdowns**, **Bat Shutdowns**, and **Individual Records**. If there are several conditions within a condition block, then these are linked by AND, i.e. only if all conditions are fulfilled, the switch-off takes place. If there are several condition blocks, then these blocks are linked by OR, i.e. even if the conditions of one block are fulfilled, the shutdown takes place.

2.6.3 Menu tree windows

Menu tree windows in SM4:

Application Settings, **Project Settings**



Menu tree windows, example **Application Settings**

Operating instructions for menu tree windows

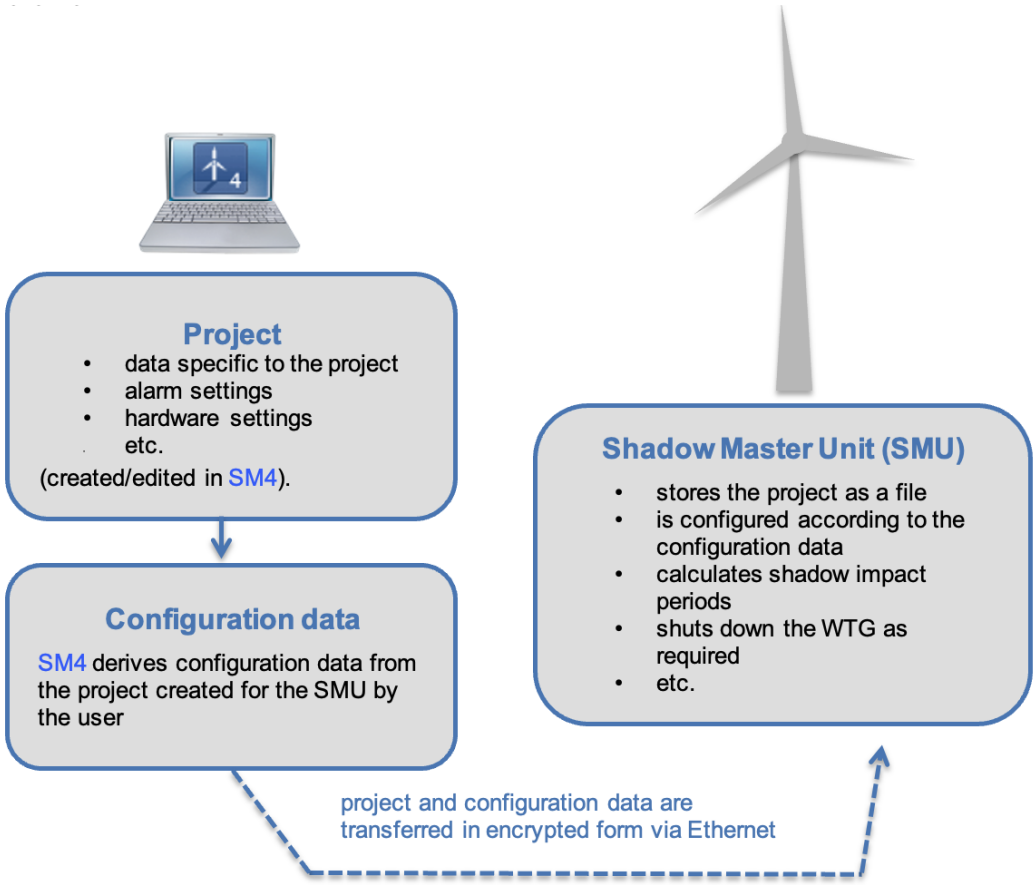
- A menu tree is located at the left-hand side. Click on + and - to expand or collapse it.
- The settings area selected on the left can be edited in the right half of the window.
- The **Application Settings** window must be closed by clicking on **OK** or **Cancel** before another process can be carried out.

2.7 Sequence of a configuration session in SM4

It is important to understand in general how SM4 is used to configure the Shadow Master Unit (SMU). For this reason, this chapter is intended for you to familiarize yourself with a configuration session and to explain what takes place in the background.

To ensure the system for shadow impact monitoring and species conservation is able to fulfill its most important task, namely shutting down wind turbine generators because of shadow impact or bat protection etc., it is necessary that data specific to the project is first created in SM4.

To do so, a project is created or an existing one is opened in SM4. This project contains all data and settings relevant to a specific wind park or its SMU and the connected sensors. If a project is complete and inherently consistent, SM4 can derive the configuration data for the SMU. The project and the configuration data are then encrypted and transferred to the SMU. Once it is there, the SMU stores the project as a file and is then configured according to the configuration data. Only then is it possible for it to fulfill its main task: shutting down and (restarting) WTGs according to the specifications of the authorities and other factors (e.g., yield optimization). This sequence is exemplified in the following overview.



The sequence of a configuration session in SM4 can be divided into three steps:

Step 1: Create/open a project 25

2.7.1 Configuration step 1: Create/open project

In most cases, you will use Shadow Manager 4 (SM4) to perform changes to an existing configuration of a Shadow Master Unit (SMU). To do so, you should open the project stored in the SMU and not, if applicable, the project saved locally on the computer. This will prevent possible conflicts between different project versions. Only if you are absolutely certain that an up-to-date project file is stored on your computer, and that it corresponds to the configuration of the SMU, can you forgo opening the SMU project.

You therefore have 3 options for Step 1.

- **Create a new project**: Open the **File** menu, select **New Project** and follow the instructions on the screen.

OR

- **Open a locally saved project**: Open the **File** menu, select **Open Project (Local)** and select the project that you want to edit.

OR

- **Open a project from the SMU**: Click on **File**, select **Open Project (SMU)** and follow the instructions on the screen.
  NOTE: This option is only available if you are connected to the SMU!

2.7.2 Configuration step 2: Edit project

In this step, you define or edit all data and settings that are relevant to the respective wind park or its SMU and the connected sensors based on the information in the Practical section 27 and Reference part 51 od these instructions.

NOTE

You should document every change you perform to a configuration in the Project Data window (*Project > Project Data*) under **Log book**, to ensure you and other people are able to track changes at all times (see Project Data window 88).

2.7.3 Configuration step 3: Configure SMU

After you have completely created the project or performed all changes, select the **Configuration** menu item from the **Project** menu. The **Check Configuration** window will now open, where you can first test whether the configurations derived from the project fulfill all the requirements. Only when this is the case can you initiate the actual transfer of the configuration to the SMU (see section Check Configuration window 154).

NOTE

Step 3 can only be performed if there is a **connection to the respective SMU**, the user **has been authorized to configure the SMU** and a **dongle** is present.

! Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

- Where possible, download an already existing project from the SMU prior to editing it. This will ensure that you work with the version that corresponds to the current configuration of the SMU.
- Document every change that you perform on a project in the Log book in the **Project Data** window.

3 Practical part

This chapter contains basic step-by-step instructions, which even SM4beginners can use to operate the software.

Based on examples, we describe typical operating sequences that you can use as a basis for your own projects. If more complex setting steps are required or are optional, we will make reference to the corresponding section in this manual where you can find more detailed information.

If **SM4** does not operate as expected, consider whether the reason for this could be the application settings (*File > Application Settings*) or the project settings (*Project > Project Settings*).

Example

You enter the value “3.0” for the “Hub distance” in the **Add/Edit WTG** window but SM4 does not accept the value (the field remains highlighted in red). You may have set a “,” (comma instead of a point) in the Application Settings as the **Decimal separator** in the **Country-Specific Settings**.

If an input window for the menu item that you selected is not displayed, one reason could be that the size of the SM4 main window has been reduced and the input window has opened outside the visible area.

Check whether a scroll bar has appeared at the right-hand side or bottom edge of the SM4 main window, which you can use to move to the visible area.

We will now describe the steps that you need to perform before and after changing a project in SM4.

Preparation: Load current configuration

If you do not want to create a new project but would like to make changes to the current configuration of the SMU, first open the current project from the SMU as follows:

- Click on  or select *File > Connect*.
- Enter **Parameters**, **User** and **Password** and click on **Connect**. For more information, see Connect 54.
- Select *File > Open Project (SMU)* and open the current project.

OR (only if you are absolutely certain that an up-to-date project file is stored on your computer, and that it is 100 % identical to the current configuration of the SMU)

- Click on  or select *File > Open Project*.
- Select the current configuration file (.smp4).

Post-processing: Send Configuration

So that the SMU can work with the new configuration, the data must be transferred as follows.

- Select *Project > Configuration*. The **Check Configuration** window will open.
- Now click on **Test Config.** in the **Configuration** window.
- If a green checkmark is now displayed in front of all 6 test points, you can click on **Send Config.** (Otherwise, you will need to conclude any pending tasks, see Check Configuration window 154).
- The configuration you changed will now be sent to the SMU. Wait until the procedure is concluded.

3.1 Example 1: Set up new WTG with new POI

An existing project (sample project) that already contains five wind turbine generators (numbers 1-5) and seven places of immission (numbers 1-7) is expanded by a WTG. Within the range of that WTG, there is a POI which has not yet been defined.

You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of chapter 3 27.

3.1.1 Define new wind turbine (WTG)

- Click on  or select *Project > Wind Turbine Generators*.
- In the **Wind Turbine Generators** window a) click on **Add WTG** at the bottom right OR b) select the dataset of an already defined WTG as a template from the list at the top of the window and select **Edit WTG** OR c) double-click on a WTG to be used as a template.
- If you used option b) or c) in the previous step, the **WTG number** field will now be highlighted in orange. Enter the next free number here (in this example, this would be the No. 6) and then enter an identifier that does not yet exist into the **WTG identifier** field. All fields should then again be highlighted in green.
- Enter or change the parameters for the new WTG in the **Add/Edit WTG** window. See **Add/Edit WTG window** 93 for an explanation of the individual parameters.
- Click on **Add** to save the dataset of the new WTG.

> If entries in the window should **NOT** be applied, close the window with  and confirm the question whether you want to discard the changes.

3.1.2 Define new immission point (POI)

- Click on  or select *Project > Places of Immission*.
- In the **Places of Immission** window, a) click on **Add** at the bottom right OR b) select the dataset of an already defined POI as a template from the list at the top of the window and select **Edit** OR c) double-click on a POI to be used as a template.
- If you used option b) or c) in the previous step, the **No. of place of immission** field will now be highlighted in orange. Enter the next free number here (in this example, this would be the

No. 8) and then enter a name that does not yet exist in this configuration in the **Name of place of immission** field. All fields should then again be highlighted in green.

- Enter the parameters of the new POI in the **Add/Edit Place of Immission** window. For an explanation of the individual parameters see Add/Edit Place of Immission sub window 122.
- Click on **Add** to save the dataset of the new POI.

3.1.3 Define patio

- Ensure that the newly added POI is selected in the Places of Immission window. Click on Walls and Areas at the bottom left to open the like-named window. Click on + in the input area at the bottom left and enter the coordinates of the corner points of the area to be protected. The value under Length will be automatically determined and serve as a control. See also Edit Walls and Areas sub window 130.
- Click on **Apply** to save the new area.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

If the field **Length** to a wall or area in meters (last field of the line) is highlighted in yellow (instead of green), the entered values are not plausible or the maximum length of a wall or side of an area according to the warning limit (*File > Application Settings > Warning limits*) has been exceeded. Check that you have entered the coordinates correctly. For further information, please refer to section Application Settings window, Warning limits 74.

3.2 Example 2: Check the position of POIs and WTGs visually

Visually check whether the locations of the POIs and WTGs are correctly defined for an existing project. You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of Chapter 3 27).

3.2.1 Open overview map

- Click on  or select *Project > Overview Map*.
- If applicable, select the option **OSM** (Open Street Map) at the top right under **Maps**.
- All hidden maps of all WTGs (**red**), all POIs (**green**) and the geographical central point of the WTGs, i.e., the project center (**orange**) will now be displayed in the map.
- You can show/hide all individual elements by setting/removing checkmarks at the top right under **Elements**.
- In the map display area, you can zoom in (turn the mouse wheel or move two fingers outwards on a touchpad) and shift the displayed section (hold down the left mouse button and move mouse).
- To move the “project center” back into the center of the display, click on **Center Project** on the bottom right.

3.2.2 Display coordinates of WTGs and POIs in Google Earth

- In the **Overview Map** window, click on **Export Google Earth** and save the export file (.kml).
- Open the exported .kml file with Google Earth.
- The WTGs and the POIs are also represented here by red squares or green dots.
- If you click on a WTG in Google Earth, a window with data relating to the respective WTG (type, meters above sea level, hub height, etc.) will be displayed.
- If you click on a POI in Google Earth, a window with data relating to the respective POI (address, building type, max. load, etc.) will be displayed.
- Using the Google Earth functions, you can also zoom in so far that you can identify, e.g., walls and areas defined for a POI.

3.3 Example 3: Changed load times & utilization times of a POI

The authorities have changed the permitted load times for a POI. In the future, moreover, new working hours and annual closures will apply to this POI that is used as a commercial property:

Old working hours	New working hours
Mon–Fri, 09:00 AM to 05:00 PM, Sat 09:00 AM–02:00 PM	Mon–THU, 09:00 AM to 06:00 PM, Fri 09:00 AM–04:00 PM, Sat closed
Annual closures: none	Annual closures: every year from 15 to 31 July

You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of chapter 3 27.

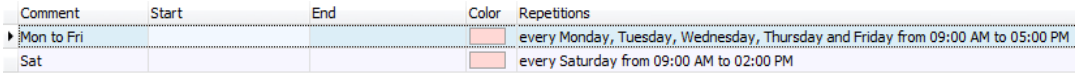
3.3.1 Change maximum load times

- Click on  or select *Project > Places of Immission.*
- Select the POI whose load times must be changed from the list of POIs in the **Places of Immission** window.
- Click on **Edit** at the bottom right.
- Enter the new value in minutes under **Maximum permissible daily load**.
- Enter the new value in minutes under **Maximum permissible annual load**.
- Click on **Apply**.

3.3.2 Change weekly recurring utilization times of the POI

- Ensure that the POI to be changed is selected (highlighted in blue) in the **Places of Immission** window.
- Click on **Shadow Impact Monitoring Periods** on the bottom left.
- All the periods of time in which the building is monitored are displayed with a red square in the calendar in the **Shadow Impact Monitoring Periods** window at the right-hand side. Select the currently defined time for Monday to Friday by clicking on the corresponding square or

select the corresponding line below right in the window. A black arrow will be displayed in front of the selected time:

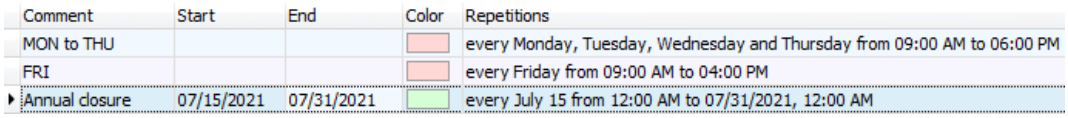


Comment	Start	End	Color	Repetitions
Mon to Fri				every Monday, Tuesday, Wednesday, Thursday and Friday from 09:00 AM to 05:00 PM
Sat				every Saturday from 09:00 AM to 02:00 PM

- Replace “Mon–Fri” with, e.g., “Mon–Thu” in the **Comment** field at the top left under **Periods**, remove the checkmark set for **Friday**, replace 05:00 PM with 06:00 PM at **End time** and click on **Apply** under **Weekly**.
- Enter, e.g., “Fri” under **Comment** in the same input area, change the **End time** from 06:00 PM to 04:00 PM, remove all the checkmarks at the weekdays, set a checkmark for **Friday** and click on the **Add** button under **Weekly**.
- Select the “old time” for Saturday, 09:00 AM–02:00 PM at the right in the calendar or in the list at the bottom right and click on the **Delete** button under **Weekly**.

3.3.3 Change periods without shadow monitoring (annual closures)

- In the **Periods** area at the top left, select the option **without shadow impact monitoring**.
- Also in the **Periods** area, enter, e.g., "Annual closure" at **Comment**.
- In the **Time range** area, enter 15.07.2017 as the **Start date** and 31.07.2017 as the **End date**.
- Check the box **Repeat annually** and then click on the **Add** button below.
  If you have defined everything correctly, the following will now be displayed at the bottom right of the **Shadow Impact Monitoring Periods** window:



Comment	Start	End	Color	Repetitions
MON to THU				every Monday, Tuesday, Wednesday and Thursday from 09:00 AM to 06:00 PM
FRI				every Friday from 09:00 AM to 04:00 PM
Annual closure	07/15/2021	07/31/2021		every July 15 from 12:00 AM to 07/31/2021, 12:00 AM

- Click on  at the top right to close the window.

> **!** Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

3.4 Example 4: Editing the combination of POI and WTG

Up to now, WTG 2 has caused shadow impact on POI 4 within an existing project. In the meantime, a high building has been erected between POI 4 and WTG 2 meaning that, with immediate effect, WTG 2 can no longer cause shadow impact on POI 4. Moreover, you have found out that POI 2, a house, will not be lived in for an indeterminate period.

To accommodate these changes, you must disable the combination of WTG 2 andPOI 4 and all combinations with POI 2 in SM4. You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of chapter 3 27).

3.4.1 Deactivate combination of WTG 2 and POI 4

- Click on  or select *Project > Wind Turbine Generators*.
- Select **WTG 2** in the list in the **Wind Turbine Generators** window and click on **Combinations** at the bottom left.
- Remove the checkmark at POI 4 in the **WTG Combinations** window.
- Click on **Apply** and then click on **Close**.

3.4.2 Deactivate all POI 2 combinations

- Click on  or select *Project > Places of Immission*.
- Select POI 2 in the list in the **Places of Immission** window and click on **Combinations** (bottom9.
- Click on **Wizard** at the bottom left in the **POI Combinations** window.
- Ensure that the option **Apply to selected POI** is selected in the **Combinations Matrix Wizard** window.
- Click on the **Deactivate Combinations** button in the **Combinations** area and then click on **Close** below.
- All checkmarks will now be removed under **Combination Active** in the **POI Combinations** window. Click on **Close**.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

3.5 Example 5: Requirements for bat protection w/ night windows

The authorities have prescribed a time slices shutdown for a WTG:

- The night is to be divided into 10 time slices for the wind speed condition.
- A further Time slice before sunset should make up 15 % of the night.
- The temperature conditions are the same for the individual months of the monitoring period.
- To prevent the system from being switched on and off repeatedly during gusty winds (high wear) due to the WTG operating around the wind speed threshold value, it is permitted, according to the requirements, that the WTG be switched off only when the wind speed condition has been fulfilled constantly for a period of 30 minutes. The system may only be switched on again, however, when the corresponding conditions have remained continuously absent for the same period. Response delay and Release delay have been added to SM4 to ensure that these requirements can be met.
- Moreover, it is known that the temperature measured by the WTG is always 1 °C below the actual temperature. This can be corrected by configuring the **Offset** parameter.

The precise shutdown conditions for the individual slices are listed in the following table.

	June	July	August	September	October
	Temperature [°C]				
	16.0	15.0	14.5	15.5	9.0
Night time	Wind speed [m/s]				
-0.15–0.0	3.2	3.8	3.7	2.9	2.7
0.0–0.1	5.0	5.3	5.3	4.7	4.6
0.1–0.2	5.5	5.7	5.7	5.2	5.1
0.2–0.3	5.2	5.4	5.5	5.0	4.8
0.3–0.4	5.2	5.3	5.4	5.0	4.6
0.4–0.5	5.1	5.2	5.3	4.9	4.5
0.5–0.6	4.8	5.0	5.0	4.6	4.2
0.6–0.7	4.8	5.0	5.0	4.6	4.2
0.7–0.8	4.4	4.7	4.6	4.1	3.8
0.8–0.9	4.2	4.6	4.6	4.1	3.8
0.9–1.0	2.5	3.2	3.1	2.5	2.1

You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of Chapter 3 27).

3.5.1 Set up time slices

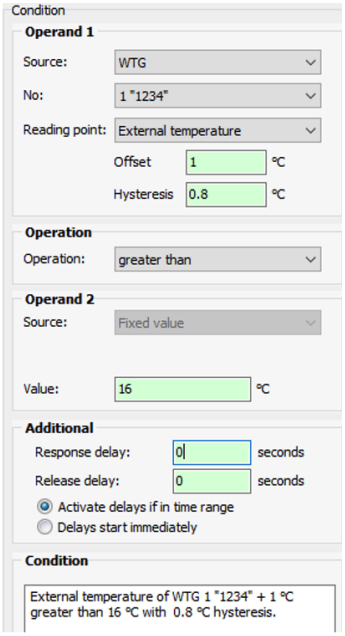
- Open the **Night Slice Shutdowns** window (*Switching & Measurement*).
- Select the respective **WTG** from the menu at the top right and click on **+ Add** below.
- Click on the small arrow in front of the selected WTG at the top left in the window.
- Click on the red highlighted **Date range** and enter 06/01 and 06/30 at the right. (If you do not define a year, the conditions will also apply to subsequent years.) Click on **Apply** at the bottom right in the window.
- Click on the small arrow in front of the date range at the top left in the window. Now click on the new Time slice 1 that appears (it will be highlighted in blue).
- Select **Time slice before sunset** in the drop-down list at the right in the window, enter the value 15 % for **Time slice length** and click on **Add** at the bottom in the window.
- Set up 10 Night time slices in the same way.

3.5.2 Rename condition blocks (optional)

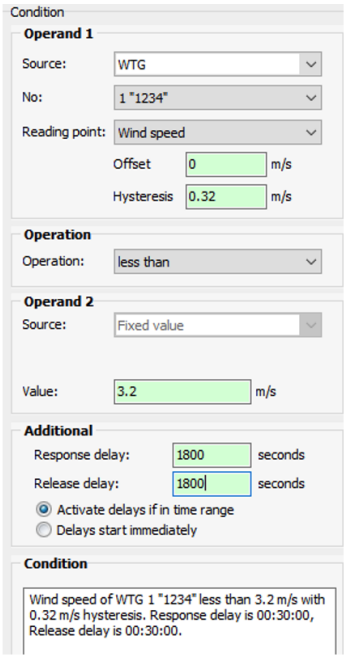
- Click on the arrow in front of **Time slice before sunset** and then on **Condition block 1**. Now enter a block name on the right and click on **Apply**.
- Repeat this procedure for Night time slice 1 to Night time slice 10.

3.5.3 Define conditions for time slice before sunset

Click on the arrow in front of **Condition block 1** and then on **<empty>**. The **Condition** input area will now appear on the right. Now define the first condition for **Condition block 1** in the **Conditions** input area as follows:



Click on **Add** at the bottom right in the window and then define the second condition for **Condition block 1** in the **Conditions** input area as follows:



Subsequently set up all other Time slices and Condition blocks according to the requirements of the authorities. For further information on the **Shutdown condition** input area, please refer to Shutdown condition input area 193.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

3.6 Example 6: Special shutdowns

WTG 4 “1234” has been approved with the following requirements:

Bat protection

Shutdown is prescribed in the **months of May to September inclusive** during the period of **one hour before sunset to one hour after sunrise** if

- the wind speed is less than 6 m/s for at least 15 minutes and
- the outside temperature is +10 °C or more for at least 20 minutes

The same minimum time periods shall apply for starting up again, i.e., if, for example, the wind speed is more than 6 m/s again, then this state must last for at least 15 minutes before the WTG is started up again.

Bird protection

The same WTG should be shut down in the months of **February to June inclusive** every day **from 7 minutes after sunrise to 257 minutes after sunrise**.

Noise protection

The authorities prescribe that WTG 1 with the identification “1234” is to be shut down during the period from 10:00 PM to 07:00 AM, if the nacelle is at an angle of between 90° and 180° and wind speed is less than 7 m/s.

You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of Chapter 3 27).

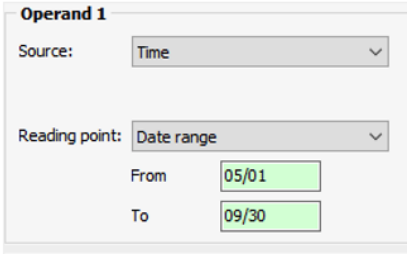
3.6.1 Define bat protection condition block

- Click on  or select *Switching & Measurement > Special Shutdowns* to open the **Special Shutdowns** window.
- At the right-hand side of the screen, select the WTG for which a special shutdown needs to be defined for from the **WTG** drop-down list.
- Click on **+ Add** at the bottom right of the screen. The selected WTG will now appear on the left-hand side of the screen.
- Click on the small arrow in front of the blue highlighted WTG on the left-hand side of the screen. **Condition block 1, special shutdown** will now be displayed underneath.

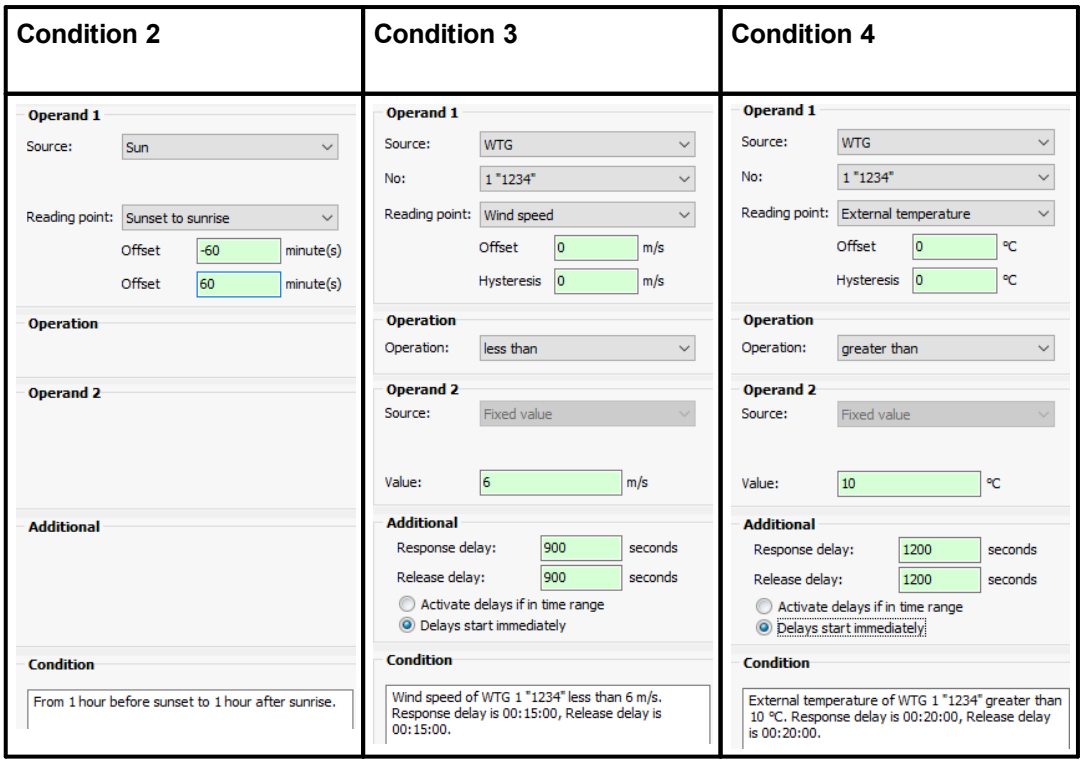
- Click on the small arrow in front of **Condition block 1, special shutdown** on the left-hand side. **<empty>** will now be displayed below, which will later be replaced by the first condition.
- Assign a name for the condition block at the right-hand side of the screen under **Block name** (e.g., bat protection May–September) and select, for example, **Bat protection** in the **Switch reason** drop-down list.

> ! The switch reason is important on three accounts:
> - When entering a condition block for bat or bird protection, the correct switch reason must be defined so that SM4 can run the applicable plausibility check 194.
> - The **Switch reason** also tells the SMU in which particular log a shutdown is to be recorded.
> - For the WTG type "via relay", additional DOs can be assigned a switch reason, see Communication Parameters input area 109.

- Click on **Apply** at the right-hand side of the screen.
- Click on **<empty>** on the left-hand side of the screen. This line will then be highlighted in blue, and the right-hand side of the screen will display the **Condition** input area.
- Now define the first condition (**from May to September**) in the **Condition** area as follows:

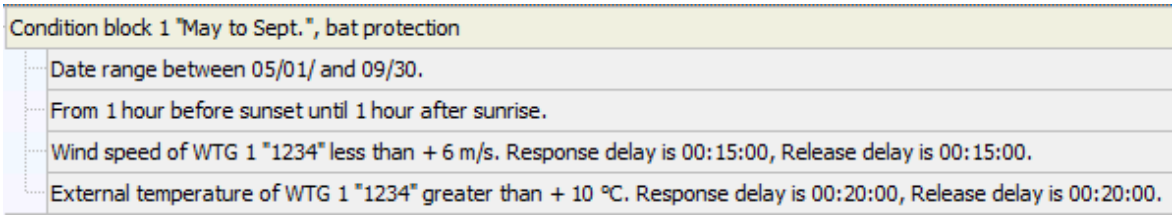


- Click on **Add** at the bottom right in the window.
- Define the remaining three conditions of the first condition block in the same way:



For more information, for example, on the **Additional** input area, which is refelcted in conditions 3 and 4, see the section on special shutdowns under Shutdown condition with Source = WTG 202.

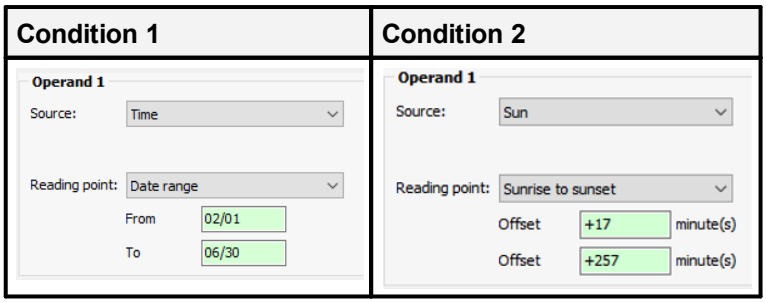
Once all conditions have been correctly defined, Condition block 1 will be displayed on the left-hand side of the window as follows:



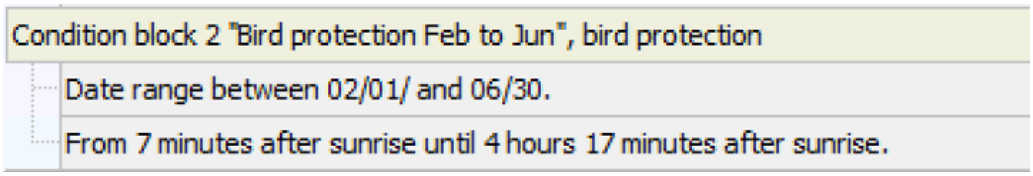
3.6.2 Define bird protection condition block

The WTG should be shut down in the months of **February to June inclusive** every day **from 7 minutes after sunrise to 257 minutes after sunrise**.

Now define condition block 2 with 2 conditions as follows:



Once all conditions have been correctly defined, Condition block 2 will be displayed on the left-hand side of the window as follows:



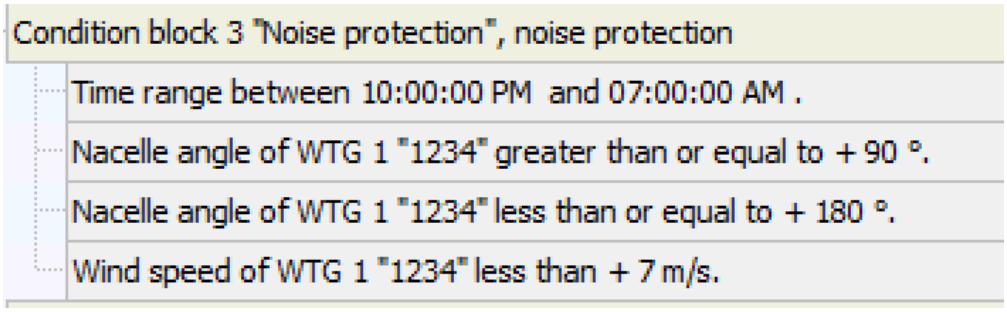
3.6.3 Define noise protection condition block

The authorities prescribe that WTG 4 with the identification 1234 should be shut down from 10:00 PM to 07:00 AM if the nacelle's angle is between 90° and 180° and the current wind speed is less than 7 m/s.

Now define Condition block 3 with 4 conditions as follows:

	Condition 1	**Condition 2**	**Condition 3**	**Condition 4**
	10:00 PM.–07:00 AM	**Nacelle. ≥ 90°**	**Nacelle. ≤ 180°**	**Wind speed < 7 m/s**
Operand 1	**Operand 1**	**Operand 1**	**Operand 1**	**Operand 1**
Source	Time	WTG	WTG	WTG
Number	-	1 "1234"	1 "1234"	1 "1234"
Reading	Time range	Nacelle angle	Nacelle angle	Wind speed
From	10:00:00 PM	-	-	-
To	07:00:00	-	-	-
Offset	-	-	-	-
Hysteresis	-	-	-	-
Operation	**Operation**	**Operation**	**Operation**	**Operation**
Operation	-	greater than or equal to	less than or equal to	less than
Operand 2	**Operand 2**	**Operand 2**	**Operand 2**	**Operand 2**
Source	-	Fixed value	Fixed value	Fixed value
Fixed value	-	90 °	180 °	7 m/s

Once all conditions have been correctly defined, Condition block 3 will be displayed on the left-hand side of the window as follows:



! Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

3.7 Example 7: Supplement a bat shutdown with condition flags

A project contains a bat shutdown with night slices for May through September. It includes shutdown conditions for wind speed and outdoor temperature. It has now been decided that the emitting WTGs need not be shut down for the rest of the night once precipitation of 0.01 mm/h intensity has been measured, even if it stops raining again in the course of the same night.

In order to take precipitation into account, you could simply add the shutdown condition "Intensity of climate sensor X less than + 0.1 mm/h" to the condition blocks in the **Night Slice Shutdowns** window. However, to ensure that once precipitation has been measured, the system will not be switched off again for the rest of the night, **regardless of precipitation**, the "Precipitation present" status must be stored until the next morning. This requires the definition of a **condition flag**, which will then be included in the night slice shutdown.

Prerequisite for the carrying out this practical example

Since we do not list each operating step individually in this practical example, the user is assumed to have basic knowledge of SM4.

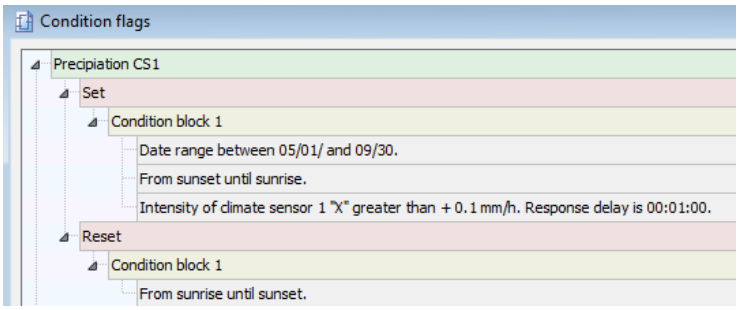
The structure and operation of the vertically divided **Condition Flags** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185.

In addition, before executing this practical example, you should have executed **Example 6** 39 and read the information in the Condition Flags window 233 section.

You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of chapter 3 27).

3.7.1 Define condition flags

- Select *Switching & Measurement> Condition Flags* and in the **Condition Flags** window, define the **Set** and **Reset** conditions to match the following screenshot:

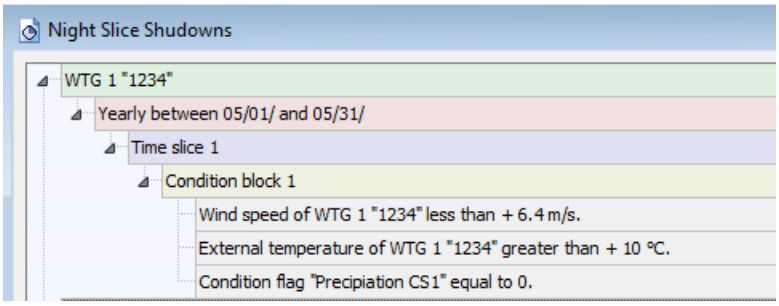


Notes on the above screenshot

- Under **Set**, you define the conditions that must apply for the flag to be set, i.e. for the result "1" to be returned.
- The **Response delay** field is designed to prevent the WTG from being switched too often.
- Since all of the defined conditions must apply, they are defined in one and the same condition block (logical AND link).
- **Reset** defines the condition that must apply for the flag to be reset, i.e. for the result "0" to be returned (during the day).

3.7.2 Include condition flags in night slice shutdown

Select *Switching & Measurement > Night Slice Shutdowns* and include the previously defined condition flags in the **Night Slice Shutdowns** window as shown in the following screenshot:



Notes on the above screenshot

- The condition block with the shutdown conditions for wind speed and external temperature was supplemented here by the condition flag defined in the previous section.
- As soon as this third shutdown condition is no longer fulfilled because climate sensor 1 measures more than 0.1 mm/h of precipitation during the night in the period from 1 May to 30 September and therefore no longer returns the result "0" but "1" instead, the emitting WTG is started up again. If it stops raining the same night, the WTG will not be shut down again, because the flag is not reset until sunrise.

Now, of course, the condition blocks for all other time slices and months must be adjusted as well. To do this, use the drag and drop functions, see section Easily duplicate special shutdowns using drag & drop 214.

For more information on condition flags, see section Condition Flags window 233.

! Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

3.8 Example 8: Regular recording of several measured values

For different WTGs of a project X, different measured values are to be recorded at certain time intervals.

1) Data from WTG 17 every 12 minutes:

- Rotor speed (RotSpd) in 1/min
- WTG Status
- Wind speed (WSpd) in m/s
- Outdoor temperature (Temp.) in °C
- Power mean 10 min. (Pwr.)
- Nacelle position (NPos)

2) Wind every 10 minutes, only during the night

- WTG 1
- …
- WTG 10

3) Temperatures every 10 minutes, between 10:00 a.m. and 10:00 p.m.

- Temperature of ISpin sensor 1
- External temperature of WTG 1
- Communication OK from WTG 10

In the output file, each measured value should appear in a separate column; the abbreviation and, if applicable, the unit should be indicated in the title row.

The above task could also be accomplished with the help of single data recordings; however, due to the scale, it is much more convenient and less time-consuming to make use of cyclic multi data recordings (CMDR).

You will find corresponding step-by-step instructions below (remember to load the current project file before you begin; please also read sections “Preparation“ and “Post-processing“ at the beginning of Chapter 3 27).

3.8.1 Define interval timers (10 and 12 minutes)

- Open the **Interval Timer** window (*Switching & Measurement > Interval Timer*).
- Enter, e.g., the following for **Name**: 10min.
- Enter or select 10 for **interval.**
- Click on Add.
- Enter, e.g., the following for **Name**: 12min
- Enter 12 for **interval.**
- Click on Add and close the window.

3.8.2 Define multiple recordings

- Open the **Cyclic Multi Log Recordings** (*Switching & Measurement > Cyclic Multi Data Recordings*).
- For **Name**, in the upper right corner, enter, e.g., the following: Data WTG 17.
- Select the “12 minutes" interval from the **Timer** dropdown list.
- In the **File name** field, enter, e.g.: WTG 17_123417.

NOTE: Observe the Windows file naming conventions and define unique names, since all .csv files are output to the same folder.

- Click on Add.
- For **Name**, in the upper right corner, enter, e.g., the following: Wind 1-10.
- Select the "10 minutes" interval from the **Timer** dropdown list.
- In the **File name** field, enter, e.g.: Wind 1-10 and click on Add.
- For **Name**, in the upper right corner, enter, e.g., the following: Temperatures.
- Select the “10 minutes" interval from the **Timer** dropdown list.
- In the **File name** field, enter, e.g.: Temperatures and click on Add.

The file names can still be changed later,
please refer to (**Export Cyclic Multi Log** window).

The next section explains how to add the reading points (what to record?) and conditions (when to record?).

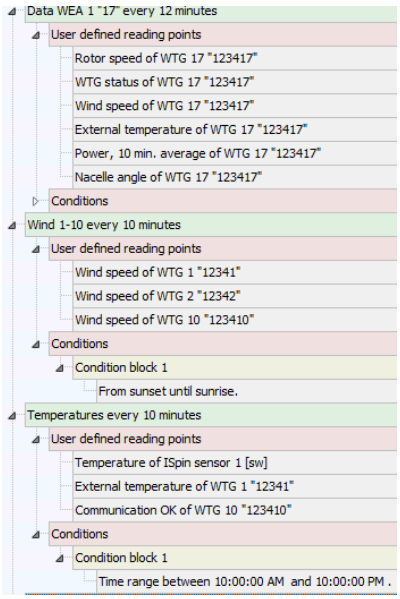
3.8.3 Add reading points and conditions

- Click on Collapse All at the bottom left of the window.
- **For** the first recording (WTG 17), click on **<empty>** under **User-defined reading points**.
- In the input area **Measurement,** select “WTG” for **Source**, 17 “123417” for **No.** and for **Reading point** select the **Rotor speed** option. Click on Add.
- Now define the reading points WTG status, Wind speed, External temperature, Average power and Nacelle position in the same way, see figure below.

- For the second recording (wind), click on **<empty>** under **User-defined reading points**.
- In the input area **Measurement,** select “WTG” for **source,** 1 “12341” for **No.** and for **Reading** select the **Wind speed** option. Click on Add.
- Repeat this procedure for WTGs 2 through 10.
- Also for the second recording (wind), click on **<empty>** under **Condition block 1.**
- In the **Log Condition** input area on the right, select **Sun** for **Source** and then **Sunset to Sunrise** for **Reading point**. Click on Add.

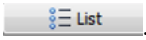
- For the third recording (temperatures), click on **<empty>** under **User-defined reading points**.
- In the **Measurement** input area, select **ISpin sensor** as the **Source** and **Temperature** as **Reading point.** Click on Add.
- Now select the option **WTG** for **Source**, option **1 "12341"** for **No.** and the **Outdoor temperature** option for **Reading point.** Click on Add.
- Now select the option **WTG** for **Source**, **10 “123410”** for **No,** and the **Communication OK** option for **Reading point**. Click on Add.
- Still in the third record (temperatures), click on **<empty>** under **Condition block 1.**
- In the **Log Condition** input area on the right, select the **Time** option for **Source** and then the **Time Range** option for **Reading Point.** Enter the value **10:00:00 AM** for **From** and the value **22:00:00 PM** for **To**. Click on Add.

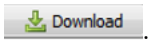
If you have made all entries as described, the left half of the window should correspond to the following screenshot.



3.8.4 Retrieve recorded data

After the project containing the CMDRs has been sent to the SMU and a certain time has elapsed, in which the SMU was allowed to record values, these can be retrieved as follows:

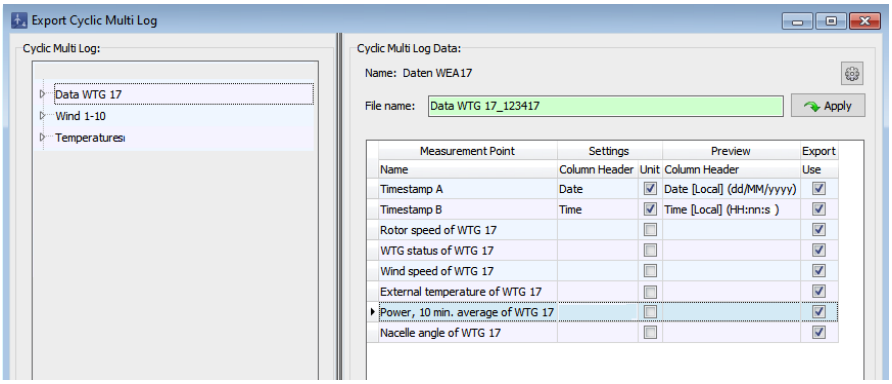
- Click on  or select *File > Connect*.
- Enter **Parameters**, **User** and **Password** and click on **Connect**. For further information see Connect 54.
- Once the **Login** LED at the bottom of the screen lights up green, select *Logs > SMU Log Files*.
- In the **Logs from the SMU** window, click on 

.
- Under **Log**, select the desired log of project X and click on 

.
- Select *Logs > Local Log Files* to open the **Logs from Local LogPool** window.
- Select Project X in the list at the top left.
- Select the desired date range on the right and click on **Export**. The **Export Cyclic Multi Log** window opens.

3.8.5 Check the data display and export the data

In the **Export Cyclic Multi Log**, click on the recording named **Data WTG 17** at the left edge of the window to display it in the right half of the window, see the following screenshot (section):



Under **Settings, Column Header** now enter the desired abbreviations for the reading points and activate the boxes under **Unit**, see the following screenshot:

Measurement Point	Settings		Preview	Export
Name	Column Header	Unit	Column Header	Use
Timestamp A	Date	☑	Date [Local] (dd/MM/yyyy)	☑
Timestamp B	Time	☑	Time [Local] (HH:nn:ss)	☑
Rotor speed of WTG 17	RotSpd	☑	RotSpd [1/min]	☑
WTG status of WTG 17	WTG Status	☑	WTG Status	☑
Wind speed of WTG 17	WSpd	☑	WSpd [m/s]	☑
External temperature of WTG 17	Temp.	☑	Temp. [°C]	☑
Power, 10 min. average of WTG 17	Pwr.	☑	Pwr. [kW]	☑
Nacelle angle of WTG 17	NPos.	☑	NPos. [°]	☑

Click on **Export**, select a destination folder, and click on **OK.**

The data is now exported to a CSV file, which you can open with, e.g., Microsoft Excel.

The entry of the column headers and the selection and deselection of the unit can also be done when creating the recordings in the **Cyclic Multi Log** window.

- While entering/changing the file name, the respective recording itself must be selected in the directory tree in the left half of the window. Otherwise, the Apply button is not available.
- If you do not enter anything under **Settings**, **Column Header**, the corresponding measured value will still be exported, but there will be no header.
- If you don't want to export a certain measured value, you can now deselect it under **Export**, **Use.**

For more information on exporting CMDRs, see section Cyclic Multi Data Recordings 228.

4 Reference part

The Shadow Manager 4 (SM4) setting windows and sub windows are arranged in menus and can be called up through them. Some windows can be directly opened by clicking on the corresponding button in the toolbar of the main window; see following figure. The function of individual symbols will be displayed if you hover the mouse cursor over them for a moment.

Symbols in the SM4 main window (with tool tip)

The following table provide you with an overview of the content of the individual menus.

Menu name	What you can do there
File 53	• Establish a connection to the SMU • Open, create, download, save project files • Print configuration log • Application settings (e.g., language, country-specific settings, warning limits, colors etc.)
Project 87	• Define project data, wind turbine generators (WTG), places of immission (POI), walls and areas, special shutdowns etc. • Visually check the location-defined WTG and the POI (Overview Map) • Perform project settings • Send project file to the SMU (Configuration)
Hardware 161	• Define and assign sensors and hardware
Switching & Measure-ment 184	• Define WTG shutdowns • Define measurement data recordings • Define various accessories, e.g., condition flags, calculations, etc.
SMU 255	• Display and acknowledge alarms • Manage users and assign right groups • Set the Phone option • Manually set the time • Update SMU software
Realtime data 273	• Display live data (sensor data, counters, etc.) from the SMU

Menu name	What you can do there
Logs 313	• Readout, display, filter, print and export logs,
Tools 332	• Simulate a shadow impact scenario • Check project integrity • Check the availability of the SMU • Display WTG types that can be selected • Reset window arrangement and screen detection
Help 354	• Display version information and check for new software version

Click on a menu item to jump directly to more information.

4.1 File Menu

The following table provides you with an overview of the **File** menu.

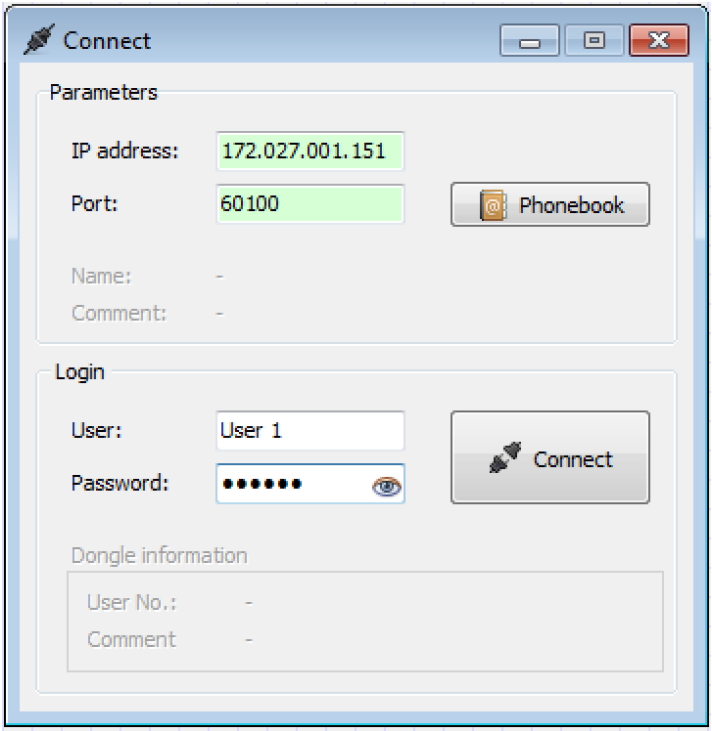
Sym-bol	Menu item	Purpose
	Connect 54	Establish an online connection to the SMU
	New Project 59	Create a new project
	Open Project (Local) 61	Open an existing project
	Open Project (SMU) 61	Open a project from the SMU (only possible if there is an online connection to the SMU)
	Save Project 62	Save Project
	Print 62	Print configuration log – you can print the configuration log to PDF or as a hard copy (in German or English)
	Import swk file 64	Import a project file that was created using Shadow Manager 1
	Application Settings 68	Define basic settings for SM4
	Close 86	Shadow Manager Exit

Click on a menu item to jump directly to more information.

4.1.1 Connect

Purpose	Establish online connection to SMU
Button	
Path	*File > Connect*
Usage type	Interactive
Reference	Project

In this window you can establish an online connection to the SMU. To do this, you must know the IP address and port of the SMU and be registered as a user.



Connect window

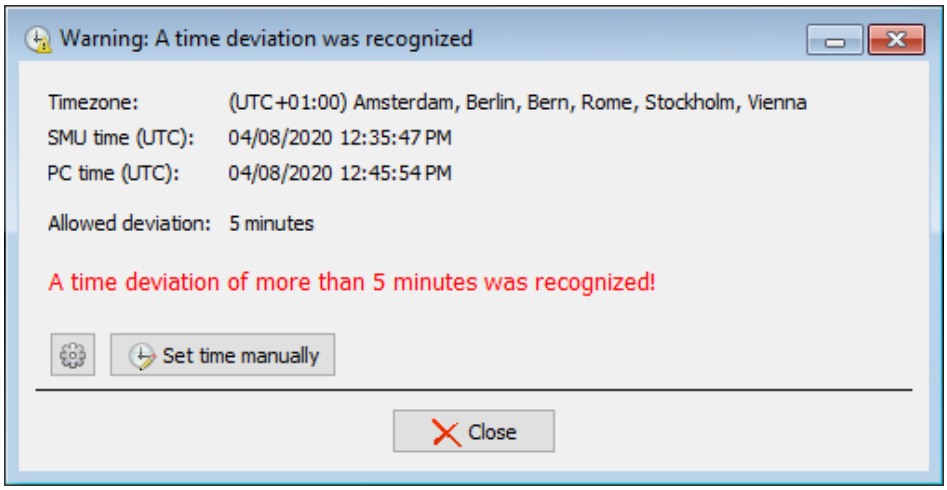
The information, options or buttons are described in the following table

Input field/area	Explanation/Function
IP address	IP address of the SMU to be communicated with
	4 numbers, separated by a period, example: 192.0.2.42
Port	Port number of the SMU you want to communicate with
	Number from 1 to 65535
Phonebook	Opens the **Phonebook** window. Here you can store the communication parameters for various projects so that they can be conveniently selected from the **Connect** window. • In the upper half of the input area the already created entries are listed. • In the lower half of the input area you can remove entries (mark the corresponding entry at the top of the list), edit (**Replace** button) or add (**Add** button; enter information under **IP Address**, **Port** etc. beforehand). • **IP address**, **Port** and **Name** are mandatory fields. • **Comment** is an optional input field.
Name	The name defined in the **Phonebook** window is displayed here.
Comment	The comment that was defined in the **Phonebook** window is displayed here, if applicable.
User	Enter your user name here. Default setting on delivery: **admin** **NOTE** Entries are case-sensitive: "Admin" is a different user than "admin".
Password	Enter your password here. Default setting on delivery: **admin** Click on the eye to show/hide the password. **NOTE** For security reasons, please change the user and the corresponding password (**admin** and **admin**) preset at delivery as soon as you put SM4 into operation (the change is made in the Shadow Manager Interface User Administration window 263 and is only possible with dongle).
Connect	Starts the connection process. This button changes depending on the connection status and user data input: 1. not connected and no user data entered = deactivated 2. not connected and user data entered = activated 3. connected = changes to **Disconnect** button
User No.	The number of the dongle used is displayed here.
Description	The name of the owner of the dongle used is displayed here.

4.1.1.1 Automatic check of the SMU time

When you connect to the SMU, the system automatically checks in the background whether the time of the SMU (UTC) is different from the time of the computer (UTC). The deviation tolerance can be defined in the *Application Settings* (*File > Settings > Warning limits > Allowed deviation*). You can set values from one minute to one year (all values in minutes).

If the deviation determined during automatic check exceeds the permitted value, the following window opens:



Warning: A time deviation was recognized

Information about the **Warning: A time deviation was recognized window**

- This window displays the current time zone of the SMU, the time of the SMU (UTC) and the time of the computer (UTC). The permitted deviation is also displayed.
- If you click on the gear symbol, you are taken directly to the **Allowed deviation** setting.
- The button **Set time manually** only appears if a dongle is connected. Clicking this button takes you directly to the Set time manually window 268.
- Checking the time can also be triggered manually (*SMU > Check Time Deviation*), see Check Time Deviation menu item 269.

4.1.1.2 Information at the bottom of the main window

In the status bar at the bottom of the SM4 main window, you will find information about the state of the connection between SM4 and the SMU (left-hand) and dongle information (right-hand).

Status LED and Dongle information

The status LEDs indicate the connection status of the data traffic between SM4 and the SMU, similar to a telephone modem.

Element	Explanation/function
Login **connected** **not connected**	This LED is lit green if a connection to the SMU via user name/password has been established successfully. The LED turns off as soon as the logout command is sent to the module (*File > Connect > **Disconnect** button)* or the corresponding **Connect timeout** (*File > Settings > Communication parameters*) has expired while waiting for a reaction from the SMU.
TX: **transmission** **no transmission**	This LED is lit, while SM4 transmits a command or data to the SMU. Since this usually takes only a short time, the LED usually just flashes. This LED is also switched on at the beginning of a connection setup and remains lit until either the connection has been established or the **Connect timeout** has been exceeded.
RX: **reception** **no reception**	If this LED is lit, this means that a readout process has been started in SM4. It remains lit until a response can be read by the module (which takes different lengths of time depending on the request).
ST (session time)	Once a connection to an SMU has been established, the remaining connection time until the connection is automatically terminated due to inactivity is displayed here. Every time you press the left mouse button or use the keyboard in SM4, the session time is reset to the value defined in the Application Settings for **Session time** (*File > Application Settings > General > Communication parameters*). If **ST: 03:36** is displayed, for example, this means that the connection will be automatically terminated in 3 hours and 36 minutes if inactivity persists. If **Session time** is set to 4 hours, clicking the left mouse button would reset the value to 4 hours, and the status bar would display **ST: 04:00**.

<table>
<tr><th>Element</th><th>Explanation/function</th></tr>
<tr><td></td><td>Three different states can be displayed for ST:
<table><tr><td>Display only</td><td>Explanation</td></tr><tr><td>--:--</td><td>SM4 is not connected to an SMU.</td></tr><tr><td>03:36</td><td>SM4 is connected and the Session time is active.</td></tr><tr><td>**:**</td><td>SM4 is connected and the Session time was paused.
Reason: For some file operations (transferring a configuration/update or requesting/reading out log files), the connection must not be disconnected. If such a file operation takes longe than the remaining session time, an inactive user is automatically logged off once the file operation is complete.</td></tr></table></td></tr>
<tr><td>Connection</td><td>From left to right, the IP address, port, and SMU location name for the current connection are displayed here.
If there is currently no connection to an SMU, the information of the last established connection is displayed here.</td></tr>
<tr><td>  </td><td>The user and number of the dongle used (if connected) are displayed at the bottom right.</td></tr>
</table>

NOTE

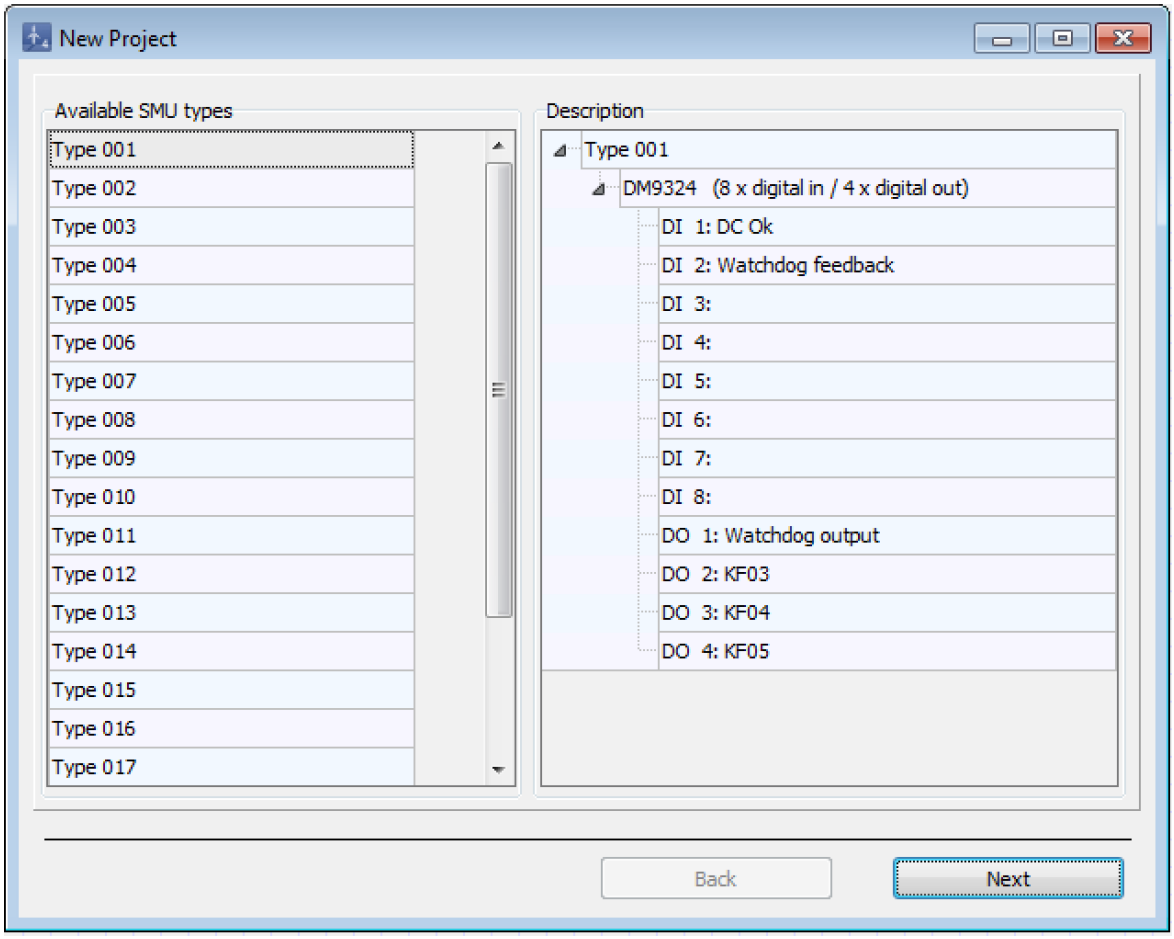
The **TX** and **RX** LEDs may also light up for the following reason:

The only way for SM4 and the SMU to reliably determine whether the connection between them still exists is based on "life signs" from their connection partner. A possible “life sign” may be traffic between the two, such as when a **Live Data** window regularly retrieves data from the SMU. However, if nothing was transmitted over a certain period, SM4 will start a mechanism that sends a ping command to the SMU at regular intervals and receives the corresponding ping response.

4.1.2 New Project

Purpose	Select the SMU type in order to automatically define a range of basic settings
Buttons	
Path	*File > New Project*
Type of use	Interactive
Reference	Project

This window allows you to start to create a new project by selecting the SMU type.

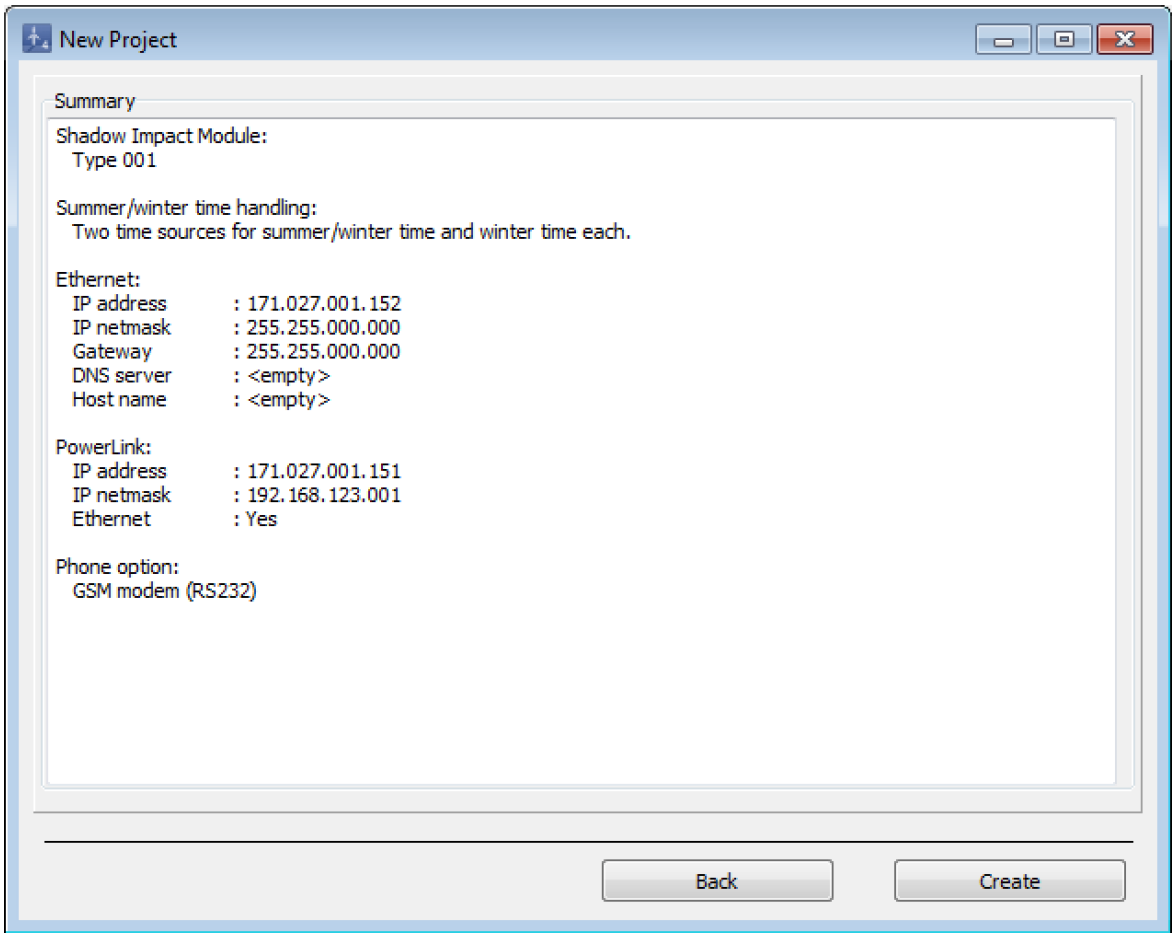


New Project window

Information on the **New Project** window

- The SMU types offered by NorthTec are displayed on the left-hand side of the window and can be selected by clicking. Selecting the wrong SMU type can cause serious malfunctions.

- The hardware components belonging to the selected type are displayed in the right half of the window.
- By clicking **Next** you will be taken, one after the other, to the following windows in which you can make further settings:
  - Project Settings window, SMU, Time settings 144
  - Project Settings window, SMU, Ethernet settings 147
  - Project Settings window, SMU, Additional hardware 153
  - Project Settings window, SMU, Shadow impact calculation 151
- The selected SMU type, Summer/winter time handling, the specified Ethernet address and PowerLink address as well as the Phone option, if applicable will then be displayed in the **New Project / Summary** window (see screenshot).
- If the information is correct, click on **Create** to generate the project.



New Project / Summary window

4.1.3 Open Project (Local)

Purpose	Select already existing project files to open them to edit or display them
Symbol	
Path	*File > Open Project*
Type of use	Interactive
Reference	Project

Follow the instructions on the screen for this menu item.

4.1.4 Open Project (SMU)

Purpose	Readout the current project file of the respective SMU to open it for editing or display purposes.
Symbol	
Path	*File > Open Project (SMU)*
Prerequisites	• Online connection to the SMU (this menu item is not active otherwise) • A project file has been loaded to the SMU
Type of use	Interactive
Reference	Project

Follow the instructions on the screen for this menu item.

4.1.5 Save Project

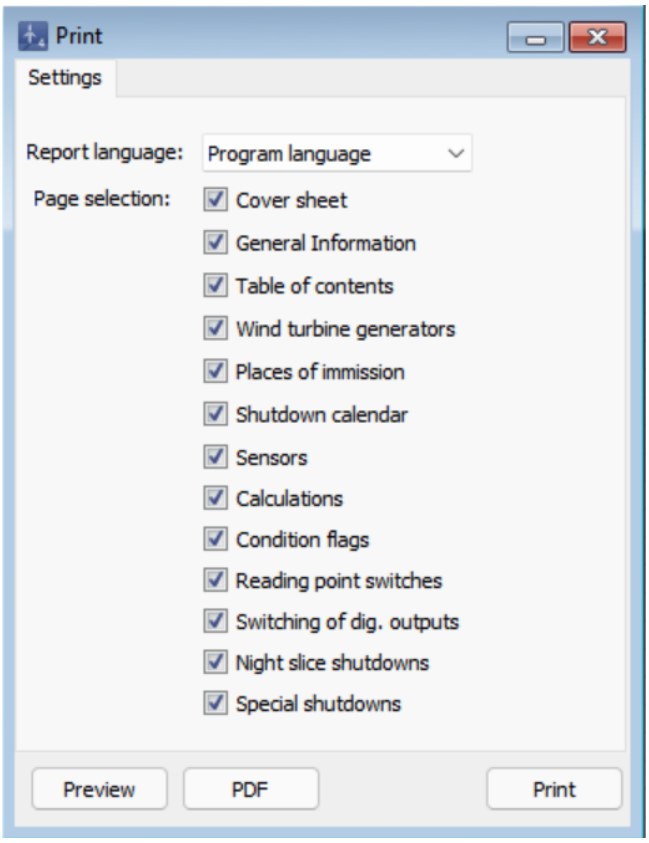
Purpose	Save a newly created or a changed project file.
Symbol	
Path	*File > Save Project*
Type of use	Interactive
Reference	Project

Follow the instructions on the screen for this menu item.

4.1.6 Print

Purpose	Print configuration log
Symbol	
Path	*File > Print*
Type of use	Interactive
Reference	Project

You can print out the configuration log in this window and specify beforehand what information the print version should contain.



Print window

The information, options or buttons are described in the following table

Element	Explanation/function
Report language	In this drop-down list, you can specify in which language the log should be output. In all cases, the **Program language** option (report language = language of the SM4user interface) can be selected. The other languages available depend on the supported languages.
Page selection	Here you can specify what information should be contained in the report.
Preview	Opens a preview window corresponding to the page selection defined above.
Print	Opens the print window with normal setting options.
PDF	Opens the **Save as** window in Windows where you can specify the desired file name and storage location.

4.1.7 Import swk file

Purpose	Import a project file that was created using Shadow Manager 1
Path	*File > Import .swk file*
Type of use	Interactive

To import a project created with Shadow Manager 1, select the path specified above, select the desired sky file, and then follow the on-screen instructions.

The import process automatically creates a new project in which the data to be imported are saved. Once created, the window for the settings of a new project opens automatically (see section New Project 59).

It is recommended to check the SWK project file for formal and content errors in Shadow Manager 1 before importing it to SM4.

The following data areas are included in the import:

- Project Data 88
- Wind Turbine Generators 91 (WTGs)
- Places of Immission 118 (POI)
- Combination Matrix 100 (from several WTGs and POIs)
- Shutdown Calendar 221

The following data areas are **not** included in the import:

- Sensors
- Special Shutdowns
- Night Slice Shutdowns

These data areas may have to be edited/completed manually after the import has been carried out.

In SM4 there are some changes to the imported data areas, which are described in the following tables:

Project Data

Name in SM1	Name in SM4	Notes
	Time zone	Must be set after import in order to display the local time correctly.
Coordinate format	Coordinate format	The implementation of the coordinate systems in SM4 differs from that in SM1. To display a map, an existing coordinate system must be selected by EPSG-No. – it must correspond to the one from the forecast or surveying.

Wind turbine generators

Name in SM1	Name in SM4	Notes
Follow-up time	Release delay	
Generator type	WTG type	Is specified by selecting a WTG type in the **WTG Types** window. Since WTG types did not exist in this form in SM1, a formal placeholder type for imported WTGs is assumed (WTG ID 4210000000, Miscellaneous), which enables buffering. This placeholder type must be newly selected and replaced by a valid WTG type. **IMPORTANT NOTE!** Before selecting a new WTG type, select **Don't use presets** under **Action following WTG type selection** (*File > Application Settings > Wind Turbine Generators > WTG editor*) to make sure the imported data will not be overwritten.
Generator type ID		This parameter does not exist in SM4 in this form; the contained information is determined by selecting the WTG type.
Switch output	Digital output for stop	There is no automatic transfer. If a WTG type was selected whose communication type is **via relay**, the WTG must be assigned a digital output under *Hardware > Hardware Assignments* (see section Hardware Assignments window 181).
Ref. sensor	Reference sensor	In SM1, the lowest number (number of the first sensor) is "0", however, in SM4 the lowest number is "1". Therefore, the number of the reference (light) sensor is automatically increased by one when importing the new data.

Name in SM1	Name in SM4	Notes
		If “all” has been selected as the reference sensor in SM1, the setting must be made manually, since the selection "all" is not available in SM4. In principle, the light sensor data are not imported automatically and must be entered manually.
Switchable		The parameter **Switchable** with the options **yes** and **no** is no longer available. This information is defined in SM4 by the WTG type.

Places of Immission

Name in SM1	Name in SM4	Notes
No. of place of immission	No. of place of immission	In SM1, the numbering of the POIs starts with "0", in SM4 with "1". When a 0 is imported, it is converted to the number 300 and a pop-up window will display the respective information.
	Name of place of immission	This unique identification is generated automatically. The identification consists of the imported **No.of plc. of immission** and the preceding letters “POI".
Weekday selection	Periods with shadow impact monitoring	You will find the equivalent of the **Weekday selection** parameter in SM4 in the **Shadow Impact Monitoring Periods** window. There you can, e.g., exclude individual weekdays from monitoring. The weekdays are imported and automatically created with a period from 12:00 AM to 11:59 PM. For more information on setting parameters in SM4, please refer to the Shadow Impact Monitoring Periods sub window 126 section.

Combinations

Name in SM1	Name in SM4	Notes
Combinations	WTG Combinations POI Combinations	The data from the **Combinations** window will be adopted in SM4, however, they are displayed somewhat differently: Whether a combination is active or not is indicated in SM4 by a checkmark in the **Combination Active** column. Since it is not possible to activate or deactivate a power threshold (Max.Power in SM1) in SM1, it is pre-set to the high value of 99999 kW, which never applies in practice. In SM4 on the other hand, the power threshold is set to 0 kW by default, as it can be activated and deactivated here. Therefore, a power threshold value of 99999 kW from previous versions is displayed in SM4 in the **Power Threshold [kW]** column with a value of 0.

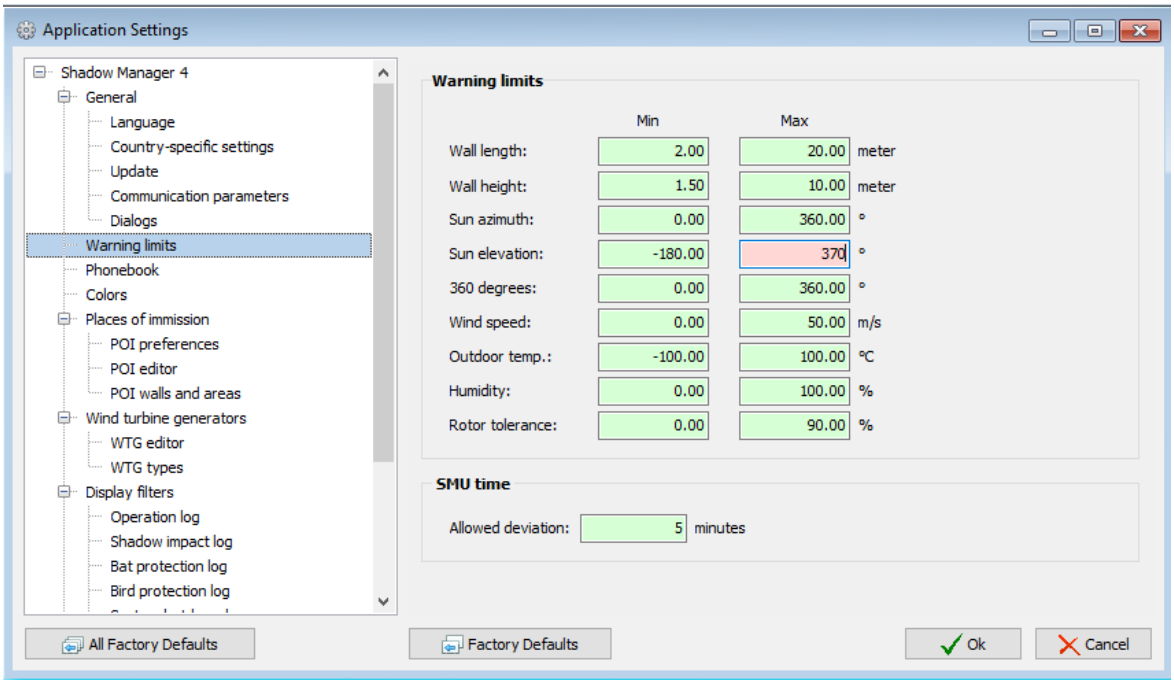
Shutdown Calendar

Name in SM1	Name in SM4	Notes
Shutdown calendars	Shutdown calendar	The **State** column from previous versions was replaced in SM4 by the **Light Sensor** column: • Entries whose state = **inactive** in the previous version will not be transferred to SM4. • Entries whose state = **active** are assigned the value **Ignore all light sensors** in SM4. • Entries whose state = **active (light sensor = 1**) are assigned the value **Evaluate WTG's light sensors** in SM4.

4.1.8 Applications Settings window

Purpose	Specify basic SM4 settings
Symbol	
Path	*File > Application Settings*
Window type	Menu tree window
Type of use	Interactive
Reference	SM4 software

You can specify basic SM4 settings in this window; for example, input formats, warning limits, display filters for logs etc.



Application Settings window, **Warning limits** (example)

Notes on the **Application Settings** window

- The setting ranges available in the **Application Settings** window can be selected in the left-hand half of the window via a menu tree and can be shown/hidden (**+** or -).
- Press the Enter key or the Tab key to complete the current entry and jump to the next input field.

- It can be changed there at any time.Fields in which an invalid value was entered (value is outside the permitted range, wrong input format) are highlighted in red:

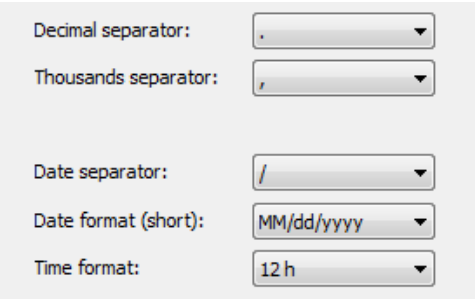
You will find an explanation of the individual parameters and setting options in the following tables.

In the explanation for the parameters, you will find information on the default highlighted in green, where applicable and appropriate.

4.1.8.1 Application Settings, General, Language

Input area	Explanation/function
Language	Select between German and English user interface.

4.1.8.2 Application Settings, General, Country-specific settings

Input area	Explanation/function
Country-specific settings	The standard settings for the decimal separator, thousands separator etc. correspond to the selected language and are not changed as a rule. In the following figure you can see the standard settings to which the parameters can be reset by clicking on the **Factory Defaults** button below:  For the date format, you can select between dd/MM/yyyy (day first) and MM/dd/yyyy. This setting also affects the entry of a date without defining a year, such as that in the **Shutdown Calendar** window, for example.

4.1.8.3 Application Settings, General, Update

Input area	Explanation/function
Update	**Check for updates at application start-up** When this option is activated, a search for an update for SM4 is automatically carried out through your internet connection when starting the application. If the search is successful, you will be asked in a dialog window whether you want to install the new version.

4.1.8.4 Application Settings, General, Communication parameters

The parameters in this input area relate to the connection that is established between SM4 and the SMU.

In the explanation for the parameters, you will find information on the factory defaults, input format, range, etc. in a green field, if applicable and appropriate.

Parameter	Explanation
Connect timeout	This timeout is used to monitor the initial setup of a connection to a SMU. If you click on **Connect** in the **Connect** window, SM4 will try to connect to the defined SMU via the network, however, it will continue do so only as long as specified under **Connect timeout**. If a connection cannot be established during this time and the number of connect retries has been "used up", the attempt will be aborted. Factory default: 4000 ms Changing this value will have the following effects: **INCREASE VALUE** • SM4 will try to connect to the SMU over a longer period. **DECREASE VALUE** • SM4 will abort the attempt to establish a connection earlier.
Connect retries	If you click on **Connect** in the **Connect** window, the number of connect retries specified here will be carried out until a connection has been established. After a command to configure the SMU has been sent in SM4, the SMU will be unavailable for some time. To cause SM4 to try to connect to a (non-responsive) SMU several times, you can increase the number of connection attempts here.

Parameter	Explanation
	However, you can also check in the Connectivity window (*Tools > SMU Connectivity*) whether the SMU is available and ready for a connection before you try to establish a connection. Factory default: 1 Changing this value will have the following effects: **INCREASE VALUE** • If a connection attempt fails, SM4 automatically carries out the number of further attempts specified here.
Time between 2 attempts	After an attempt to connect has failed, SM4 will wait as long as specified here, before a new attempt is made (provided that more than 1 attempt has been specified under **Connect retries**). Factory default: 4000 ms Changing this value will have the following effects: **INCREASE VALUE** • SM4, after an attempt to connect to the SMU has failed, will wait longer before a new attempt is started; this may reduce the number of unsuccessful attempts, however, it may take longer to re-establish a connection. **DECREASE VALUE** • After a connection attempt has failed, SM4 will start a new attempt sooner; thus, the number of unsuccessful attempts may increase, but the connection may be restored faster.
Read command timeout	This parameter is identical to the **Connect timeout** parameter in terms of its functionality, however, it applies to all other commands (all commands except for "Establish Connection", which is triggered by clicking on **Connect** in the window with the same name). This timeout monitors the time between sending a command to the SMU and receiving a response. The value must mainly depend on the commands with the longest processing times and on the transmission time of TCP packets from SM4 to the SMU and back. If SM4, after sending a command, does not receive a response for the period specified here, SM4 will assume that the connection to the SMU has been lost. Factory default: 16000 ms Changing this value will have the following effects: **INCREASE VALUE** • SM4 will wait longer, after sending a command, until it assumes that the connection to the SMU has been lost due to the absence of a response. **DECREASE VALUE** • If SM4, after sending a command, does not receive a response, it will be quicker to assume that the connection to the SMU has been lost.

Parameter	Explanation
Delay between 2 commands	This parameter determines how long SM4 waits after an answered command until a new (different) command is sent. This prevents the SMU from getting overloaded. Factory default: 100 ms Changing this value will have the following effects: **INCREASE VALUE** • After sending a command, you will have to wait longer before the next command can be executed. This way, you can avoid overloading the SMU. **DECREASE VALUE** • After sending a command, you can execute the next command sooner. However, this may overload the SMU.
Login refresh interval	The only way for SM4 and the SMU to reliably determine whether the connection between them still exists is based on "life signs" from their connection partner. A possible “life sign” may be traffic between the two, such as when a Live Data window regularly retrieves data from the SMU. However, if nothing was transmitted over a certain period of time, SM4 will start a mechanism that sends a ping command to the SMU at regular intervals and receives the corresponding ping response. This parameter is used to control as to when and how often this mechanism is activated. As long as no data commands are sent from SM4 to the SMU, the sending of ping commands is repeated regularly at the interval specified here. This is also indicated by the regular flashing of the TX and TX LEDs at the bottom left of the SM4 main screen. This prevents the SMU from assuming that it is still involved in an already interrupted connection (e.g. termination due to a malfunction in the VPN tunnel) and therefore not available for a new connection (only one connection can exist at a time). This parameter must match the parameter **Session timeout** (*Project > Project Settings > Server settings*), which controls how long the SMU will wait for a ping command: To ensure that SM4 will start sending before the SMU assumes that the connection was interrupted, the value on the SMU side (**Session timeout**) must be higher than the value on the SM4 side (**Login refresh interval**). Factory default: 3000 ms Changing this value will have the following effects: **INCREASE VALUE** • The monitoring mechanism starts later, and the ping commands are sent at longer intervals. If a connection has been lost, the SMU will take longer to get ready for new connections. **DECREASE VALUE** • The monitoring mechanism starts earlier, and the ping commands are sent at shorter intervals.

Parameter	Explanation
Command repetitions	This parameter determines how often the command is repeated.
Session time	This parameter defines the maximum connection duration in case of inactivity. It is activated as soon as a connection is established between SM4 and a SMU. Every time you press the left mouse button or use the keyboard in SM4, the **Session time** is reset to the value defined here. The status of the **Session time** is displayed in the status bar at the bottom left of the SM4 main screen at **ST**. Click here for further Information 57. Value range: 1–12 h, Factory default: 4 h **INCREASE VALUE** • If the user does not make an entry in SM4 (inactivity), it will take longer for the connection to the SMU to terminate automatically. **DECREASE VALUE** • If the user does not make an entry in SM4 (inactivity), the connection to the SMU is automatically terminated sooner.
Read file operation timeout	Commands that affect the SMU file system (e.g. delete file, request directory) trigger actions on the SMU that take some time to complete, which also means that it may take some time until a response is sent back to the SM4. Therefore, with actions like these, SM4 has to wait a relatively long time for a response. The **Read file operation timeout** parameter is used to make sure SM4 waits for a response as long as file operations usually need to be completed. The value should be based on the maximum time the SMU needs for a file operation. The transmission time of the channel is so short that it can be neglected. Factory default: 360000 ms Changing this value will have the following effects: **INCREASE VALUE** • SM4, after having sent file command, if there is no response from the SMU, will wait longer before it assumes that the connection to the SMU has been lost. **DECREASE VALUE** • If SM4, after sending a file command, if it does not receive a response, it will be quicker to assume that the connection to the SMU has been lost.
FSP timeout	File Stream Protocol; upload/download of files) there is a separate timeout as these tasks usually take longer to be completed than others. Here, too, the value should depend on how long the SMU needs to carry out the respective action. Delays due to the connection channel are very short – they can be neglected.

Parameter	Explanation
	Factory default: 120000 ms Changing this value will have the following effects: **INCREASE VALUE** • SM4, after having sent an upload/download command, when there is no answer from the SMU, will wait longer before it assumes that the connection to the SMU has been lost. **DECREASE VALUE** • SM4, after having sent an upload/download command, when there is no answer from the SMU, will be quicker to assume that the connection to the SMU has been lost.

4.1.8.5 Application Settings, General, Dialogs

Option box	Explanation/Function
Show integrity check confirmation	If the integrity check detects dependencies when deleting, e.g., a POI, these are displayed in a dialog. There you can have the dependencies cleaned up in order to finally carry out the operation, or cancel the action at the last minute without further consequences. If a check mark is set here, a dialog is displayed even if SM4 does not detect any dependencies. This will present you with the action again and give you the option to cancel it after all. **NOTE** Keep in mind that after deactivating the dialog, for example, when deleting an otherwise unused sensor, it will be removed immediately, and you will have no way to cancel the operation. Factory default: check mark set

4.1.8.6 Application Settings, Warning limits

Input area	Explanation/function
Warning limits	Warning limits are an aid to prevent inadvertent entry of incorrect values. **EXAMPLE**

Input area	Explanation/function		
	If the value “20.00 meters” is set under “Max” for “Wall length”, and a wall length of e.g., 50 meters is defined (in the **Edit Walls and Areas** window) due to having entered an incorrect coordinate, the corresponding entry will be highlighted in yellow to indicate to the user that the value needs to be re-checked. This can prevent a WTG being shut down too often or for too long due to a much too large wall area. Click on the **Factory Defaults** button to restore the standard settings.		
Parameter	**Min/Max***	**Factory defaults**	**Reference to window/ function**
Wall length	2.00/20.00 meters	2.00	Places of Immission > Walls and Areas
Wall height	1.50/10.00 meters	1.50	Places of Immission > Walls and Areas
Sun azimuth	0.00/360 °	0.00	Special and Night Slice Shutdowns
Sun elevation	-180.00/180.00 °	-180.00	see above
360 degrees	0.00/360.00 °	0.00	see above
Wind speed	0.00/50.00 m/s	0.00	see above
Outside temp.	–100.00/100.00 °C	-100.00	see above
Humidity	0.00/100.00 %	0.00	see above
Rotor tolerance	0.00/90.00 %	0.00	Project > Project Settings > Shadow impact calculation
Allowed deviation	1 min/1 year (in min)	5	Automatic check of the SMU time when establishing a connection to the SMU

*The entry format (decimal comma or decimal point) is based on the pre-settings (defaults) in the input area **Country-specific settings** (*File > Application Settings > Shadow Manager > General*) and can be changed there at any time.

4.1.8.7 Application Settings, Phone Book

Here you have the following options:

- Define entries with communication parameters for different projects in order to be able to select them easily in the **Connect** window
- Display, add, edit, remove, import or export existing entries

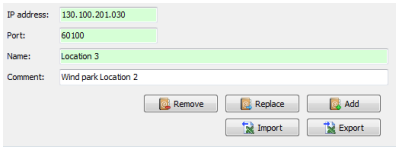
Top:

Existing entries are displayed here in list form, see the following example:

Name	IP Address	Port	Comment
Location 1	130.100.201.010	60100	Wind park Location 1
Location 2	130.100.201.020	60100	Wind park Location 2
Modem	172.027.001.135	60100	Phone option

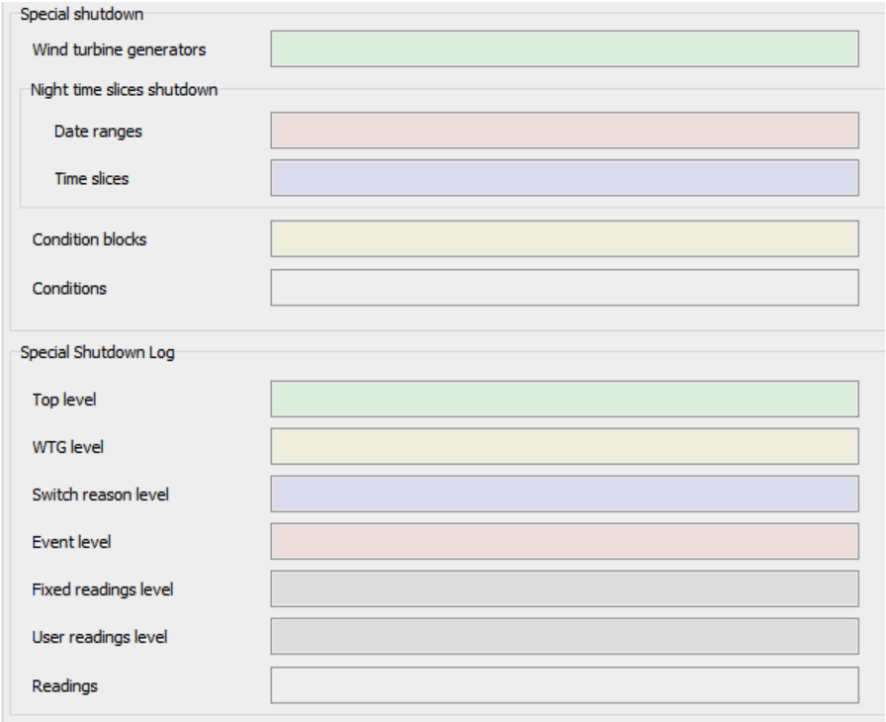
Bottom:

The following input fields and buttons (elements) are available here:



Element	Explanation
IP address	mandatory field: 4 numbers, separated by a period
Port	mandatory field: number from 1 to 65535
Name	mandatory field: Name must be **unique**.
Comment	optional input box
Remove	To remove an entry, select it in the list and click **Remove**.
Replace	To edit an entry, select it in the list, then fill in the three or respectively four input fields and click **Replace**.
Add	To add an entry, fill in the three or respectively four input fields and click **Add**.
Import	When you press **Import**, a standard dialog box opens where you can select the phone book file to be imported. Then a window opens in which all entries of the imported file are displayed. You can select individual or all entries for import. You can also specify whether existing entries should be overwritten. If you do not select the **Overwrite existing names** radio button, imported entries whose name is identical to the name of an existing entry will be ignored.
Export	If you click **Export**, a new window opens in which all current entries in the phone book are displayed. You can select individual or all entries to export them in CSV format. The data of an entry are separated by semicolons in the CSV file.

4.1.8.8 Application Settings, Colors

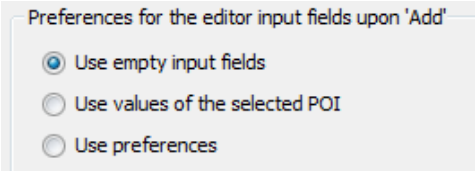
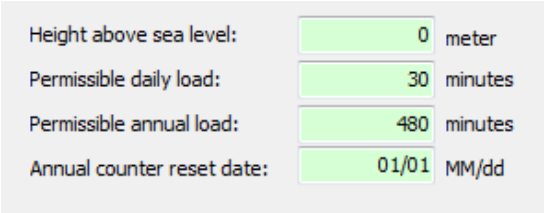
Input area	Explanation/function
Colors	Here you can change the default colors of specific elements in the **Special Shutdowns** window and **Special Shutdown Log**. If you click on the colored bar, a corresponding color palette will open, where you can choose a different color. In the following figure you can see the default colors, to which the colors can be reset by clicking on the **Factory Defaults** button below: 

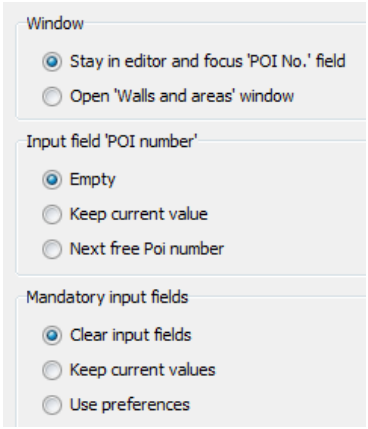
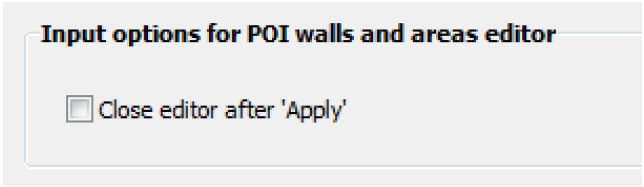
4.1.8.9 Application Settings, Places of immission

Here you can influence the behavior of the software when working in the **Places of Immission** and **Add/Edit Place of Immission** window.

NOTE:

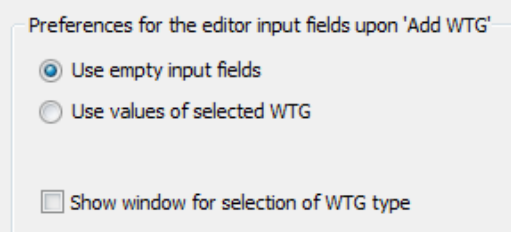
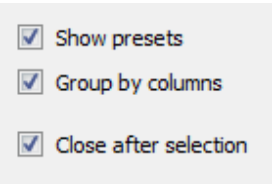
You can also access this settings area directly from the **Add/Edit Place of Immission** window (**Settings** button top right).

Input area	Explanation/function
Places of Immission	Here you can specify how you would like the **Add/Edit Place of Immission** editing window to behave; the available options have self-explanatory names. It opens when you click on **Add** in the **Places of Immission** window. Select one of the three options, which have self-explanatory names. In the following figure you can see the standard settings to which this parameter can be reset by clicking on the **Defaults** button below:  **NOTE** The **Use preferences** option relates to the **POI preferences** values set in the following input area.
POI preferences	Here you can enter the preferences for the **Add/Edit Place of Immission** window in the fields with self-explanatory names. In the following figure you can see the defaults, to which the parameters can be reset by clicking on the **Factory Defaults** button below, and the input format:  **NOTE** The entered value for the **Permissible daily load** is not permitted to be higher than the **Permissible annual load**.
POI editor	Here you can specify what happens when you click on **Add** in the **Add/Edit Place of Immission** window; the available options have self-explanatory names.

Input area	Explanation/function
	In the following figure you can see the standard settings to which the parameters can be reset by clicking on the **Factory Defaults** button below:  **NOTE** “preferences” relate to the settings area **POI preferences**.
POI walls and areas	 Here you can specify whether the **Edit Walls and Areas** window should remain open or be closed after clicking on **Apply**.

4.1.8.10 Application Settings, Wind turbine generators

Here you can influence the behavior of the software when working in the **Wind Turbine Generators** and **Add/Edit WTG** windows.

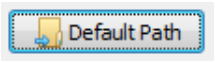
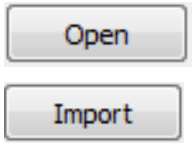
Input area	Explanation/function
Wind turbine generators	Here you can specify how you would like the **Add/Edit WTG** editing window to behave when you click on **Add WTG** in the **Wind Turbine Generators** window. Select one of the three options, which have self-explanatory names. In the following figure you can see the standard settings to which this parameter can be reset by clicking on the **Factory Defaults** button below: 
WTG editor	Here you can specify what should happen when you carry out various actions in the **Add/Edit WTG** editor window; the available options have self-explanatory names. In the following figure you can see the standard settings to which the parameters can be reset by clicking on the **Factory Defaults** button below: 
WTG Types	Here you can specify how the **WTG Types** window behaves, using options, which have self-explanatory names. In the following figure you can see the standard settings to which the parameters can be reset by clicking on the **Factory Defaults** button below: 

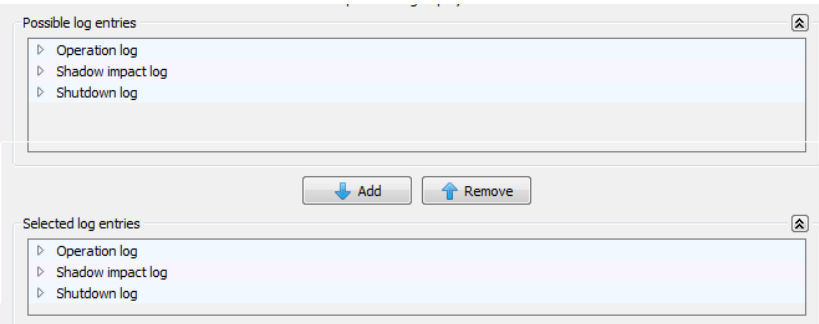
4.1.8.11 Application Settings, Display filters

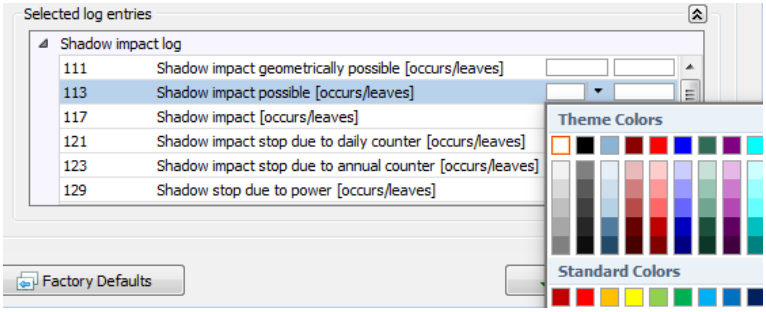
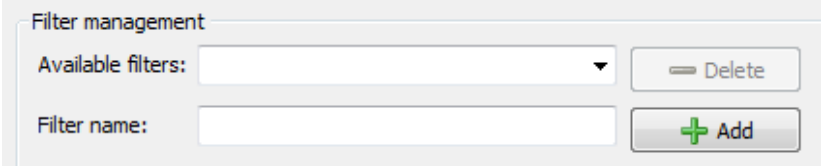
The SMU generates 4 different logs (**operating log**, **shadow impact log**, **shutdown log** (special shutdown) and **measurement data logging**). A very large volume of data can be generated depending on the selection. In order not to overload the PC when processing this data, the entries can be pre-filtered using the Display Filter.

Alongside this function, entries from various different types of logs can also be combined. Log entries from an operating log can, e.g., be presented with entries from the shadow impact log in one view.

The **measurement data logging** logs are the exception. In this case the values set by the user are recorded. No display filters can be used for this log and its entries cannot be combined with entries from other logs.

Input area	Explanation
LogPool path	The file path to the folder where you stored the .exe file for running SM4 is displayed here. As soon as you run this .exe file, the **ShadowManager4Data\LogPool** folder structure will be created in the same directory, and, once you download logs from the SMU, these will be automatically stored in the **LogPool** folder.
	You can use this button to select a different path than the one automatically created by SM4.
	You can use this button to restore the default path automatically created by SM4.
Maximum number of entries to be shown	Here you can specify the maximum number of entries that should be displayed in the log. Default value: 100000 **NOTE** If the number of entries to be displayed is too high, the system could become instable – the program could crash.
 or	This button is located twice at the right-hand side window edge. It serves to show or hide the **Export filter** and **Import filter** fields.
	Export filter If you show the **Export filter** area by clicking on , the individual log filters will be displayed with checkboxes. Set a checkmark next to the logs you would like to export and click on **Export**.
	Import filter If you show the **Import filter** area by clicking on , the **Open** button will be displayed. If you now click on it, you can select a filter file saved on your computer. The already existing filters and the “new” filter will then be displayed. Now click on **Import** to conclude the import process.

Input area	Explanation
Operation log **Shadow Impact** **Bat protection** **Bird protection** **Sector shutdown** **Noise protection** **Special shutdown**	Not all events that the system for shadow impact monitoring and species conservation records and sends are important or interesting for every log or every user. Display filters are therefore predefined here (see left column). To edit the predefined display filters, select one on the left in the tree menu. The following will then be displayed. 
Possible log entries	The entries shown here are the ones that are not yet contained in the filter selected on the left-hand side of the **Application Settings** window (click on the respective arrow to expand a list). To select an entry to display in a log, mark it here and then click on **Add**.
Selected log entries	The entries shown here are the ones that are already contained in the filter selected on the left-hand side of the **Application Settings** window (click on the respective arrow to expand a list). To remove a display filter, mark it here and then click on **Remove**.

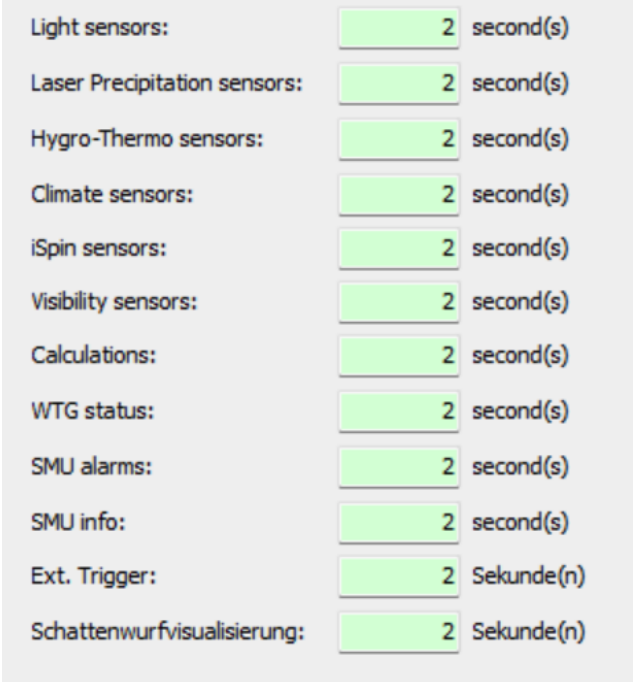
Input area	Explanation
Assign colors	You can assign colors to the entries under **Selected log entries** to make the log easier to read. To do this, expand one of the logs (click on the white arrow to the left of it) and then click on the first white field to the right of the desired entry to select the desired color from a color palette, see the following figure:  **NOTES** • The second white field is only relevant to entries with the differentiation **[occurs/leaves]**: first field = color for **occurs**, second field = color for **leaves**. • When you click on **Factory Defaults**, pre-settings will only be restored for the filters marked on the left-hand side.
User-defined filter	If you click on **User-defined filter** at the top left, an additional input area will appear at the top right:  Here you can specify a user-defined filter. To do so, enter the desired name under **Filter name** and then click on **Add**. Then select the desired entries further below in the window as described above. **NOTE** In order to use a display filter created here in the **Logs from Local LogPool** window (*Logs > Local log files*), select them in the **Choose a filter** drop-down list (at the bottom of the **Logs from Local LogPool** window).

4.1.8.12 Application Settings, Live data

Explanation/function

You specify here the intervals at which the data should be retrieved for display in the **Realtime Data** menu.

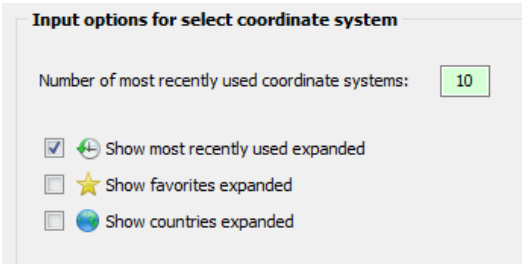
In the following figure you can see the settings to which the parameters can be reset by clicking on the **Factory Defaults** button below:



4.1.8.13 Application Settings,Select coordinate system

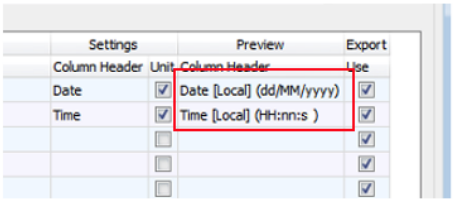
Explanation/function

Here you make defaults for the display of the **Select coordinate system** window (*Project* > *Project Data* >). In the following figure you can see the settings to which the parameters can be reset by clicking on the **Factory Defaults** button below:



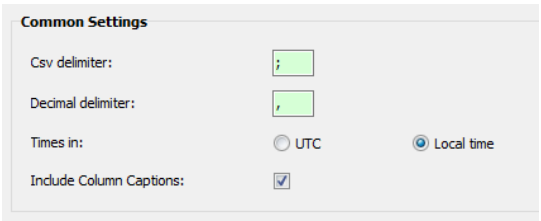
4.1.8.14 Application Settings,Csv-Export, Cycl. Multi Log

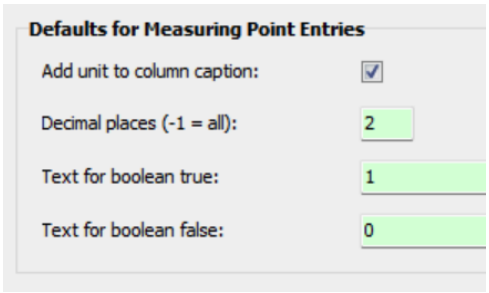
Here you can specify general settings for the .csv files to which CMDRs are exported.

Explanation/function	
CSV delimiter	Separates the columns/data of a row in the csv file.
Decimal delimiter:	Decimal separator for floating point values.
Times in	Specifies whether data with time specifications are written to the export file in local time or UCT time.  Section from Cyclic Multi Log sub window 319.
Include column captions	Switch header on/off
Add unit to column caption*	Displays the unit of the reading point (if applicable) and determines whether it is included in the title row of the export file.
Decimal places*	Number of decimal places for decimal values
Text for Boolean true/false	Individual texts for Boolean values

*These defaults for the fields of the same name in the **Cyclic Multi Log** window **only** affect those reading points that are newly added; reading points that have already been defined retain their csv settings.

In the following figure you can see the settings to which the parameters can be reset by clicking on the **Factory Defaults** button below:





In each of the input areas explained above, you can reset the settings to their **Factory Defaults** at any time by clicking on the button with the same name.

4.1.9 Close

Purpose	Close SM4
Symbol	
Path	*File > Close*
Type of use	Interactive
Reference	Project

If you select *File > Exit* or  and have changed project data beforehand without saving it, a dialog box will appear in which you will be asked whether the changes should be saved. You can answer the question with **Yes** or **No** or cancel the process with **Exit**.

NOTES

- If windows in which you have made changes that are not yet saved are still open, you will be given a confirmation prompt (dialog box) for each window that contains changes that have not been saved. Only afterwards will you be asked whether the entire project should be saved.
- If, however, none of the existing changes have been saved yet and you answer Yes to all individual confirmation prompts (Discard changes?) after Exit  , the application will close after the last of these prompts. You will not be asked whether the project should be saved as this question has already been answered individually for each of these windows.

  Example: You change data for a WTG and a POI, and DO NOT save either of them, leave both windows open and then select **Exit**. You now receive a confirmation prompt for either window, and you answer **Yes** (discard) to each. The program will then end without any other query.
- If SM4 is connected to the SMU when you exit, the connection will be terminated.

4.2 Project menu

From the settings and information that you make or enter in the **Project** menu, SM4 later derives the configuration data that are transmitted to the SMU together with the project file itself. While the project file will only be stored in the SMU, the configuration data will be used to configure the SMU functions.

The following table provides an overview of the **Project** menu.

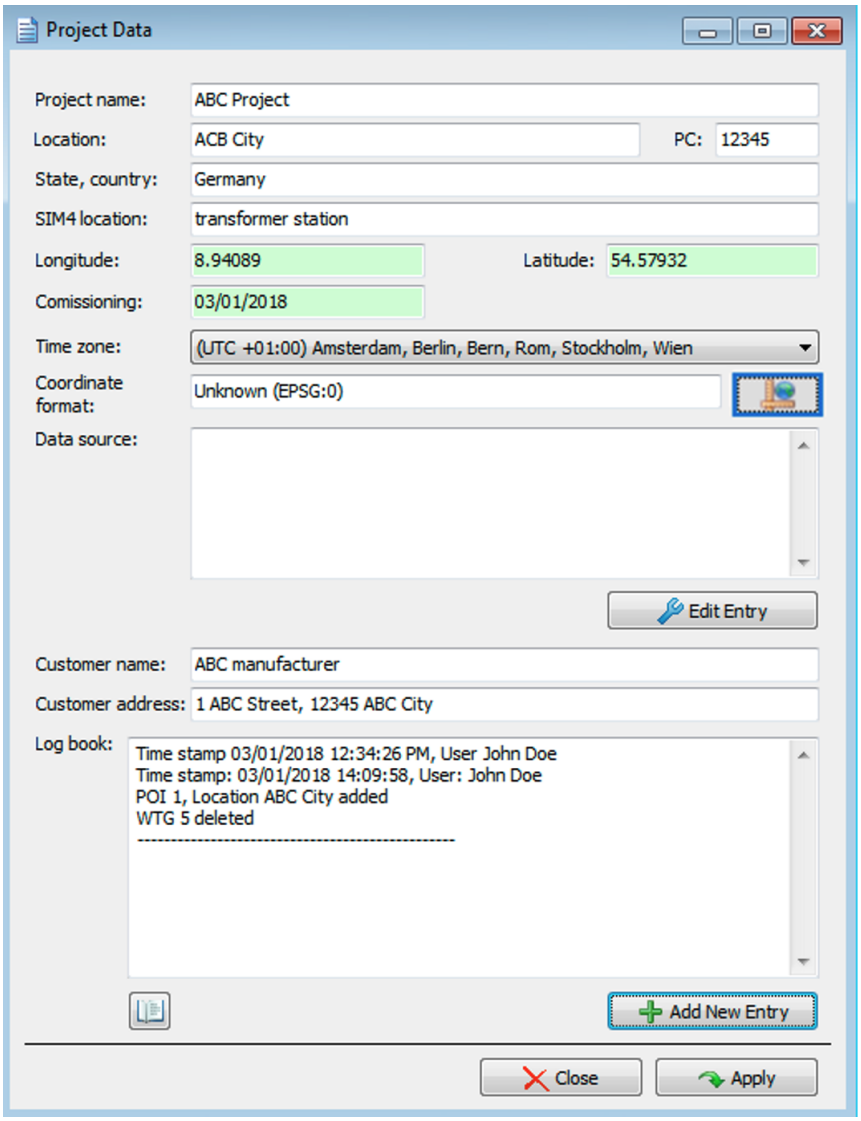
A detailed explanation of the individual settings windows can be found after the overview table.

Symbol	Menu item	Purpose
	Project Data 88	Edit and view project-specific information on location, date of commissioning, customer etc.
	Wind turbine generators 91	Edit and view the data of a WTG whose shadow impact is to be calculated.
	Places of Immission 118	Edit and view the areas/walls that could possibly be affected by shadow impact..
	Overview Map 137	Visually check the position of WTGs and POIs.
	Alarm Settings 140	Define which alarms are to be triggered for which WTGs/devices.
	Settings 143	Basic settings which apply for the entire project can be defined here.
	Configuration 154	Send a new or reviewed configuration to the SMU.

Click on a menu item to jump directly to more information.

4.2.1 Prjoject Data window

Purpose	Display and edit project-related information with regard to location, date of commissioning, customer etc.
Symbol	
Path	*Project > Project Data*
Type of use	Display + interactive
Reference	Project



Project Data window

Notes regarding the **Project Data** window

- Press the Enter key or the Tab key to complete the current entry and jump to the next input field.
- The **Apply** button will not be activated until the mandatory fields of the window have been filled out correctly.

The information, options or buttons are described in the following table

Element	Explanation/function
Project name	Enter any characters
Location	Enter any characters
PC	Postal Code, enter any characters
State, country	Enter any characters
SMU location	This entry is for information only.
Longitude	Using the entered coordinates (**Add/Edit WTG** window > **WTG position X/Y**) SM4 determines longitude and latitude, uses these values to calculate the project center (geographic center of the WTGs, see Overview Map window 137 window and displays the respective latitude/longitude here. **NOTE:** If no valid coordinate system was selected, you can also enter the longitude and latitude manually.
Latitude	see above
Date of commissioning	Date of commissioning of the SMU (MM/DD/YYYY)
Time zone	Drop-down list for selecting the time zone in which the wind park is located.
Coordinate format	If you click on  , the **Select Coordinate System** window will be opened. Here you can select the system to be used in the project from the list and then click on **OK**. Usually, the expert has decided on a coordinates system in the shadow impact forecast, which will be maintained in most cases. **NOTES** • In the search field in the upper part of the window you can find a specific system by entering free text. • By clicking on the **Info** button in the lower part of the window, you will open a website providing information on the coordinate system

Element	Explanation/function
	you have selected at the top of the window (internet connection required). • In the application settings (*File > Application Settings > Select coordinate system*) you can define defaults for the display of the **Select Coordinate System** window.
Data source 	Information for internal purposes/ authorities (optional, unlimited number of characters). To edit the entry, click on **Edit Entry**.
Customer name	Enter any characters
Customer address	Enter any characters
Log book	Please carry out the following steps whenever you change a project file: ▪ Click on **Add New Entry** and enter your name under **User**. ▪ Describe in the input field below as precisely as possible which changes you have made to the project file, so that you and others can easily understand them later. ▪ Click on **Add**. **NOTES** • If you enter a log book entry as described above, the time and author of the entry are automatically recorded under **Timestamp** and **User**. These manual entries in the log book cannot be changed afterward. • In addition to the manual log entry, the system logs changes automatically. However, this automatic log is difficult to understand - so it serves only for additional security purposes.
	Opens the **Log book** area in a separate window in order to display more information.
	If you click on **Close** without having clicked on **Apply** beforehand, a new dialog window will be opened in which you can see the parameters that have been changed. You will also be asked whether or not the changes should be discarded. If you are sure that the changes should not be applied, click on **Yes**. Otherwise click on **No** in order to apply the changes.
	This button is used to confirm the entered data.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

4.2.2 Wind Turbine Generators window

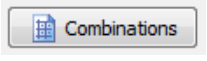
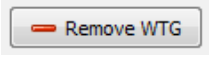
Purpose	Display/remove/edit/add wind turbine generators (WTGs)
Symbol	
Path	*Project > Wind turbine generators*
Window type	List window
Type of use	Display + buttons for sub windows
Reference	Project

This window shows **a list of the WTGs already created in the project that is currently opened. The individual parameters** for a WTG are defined in the **Add/Edit WTG** window, please refer to the next section.

Notes regarding the Wind Turbine Generators window

- Move columns: Columns can be moved by drag & drop.
- Sort by column: You can sort a column according to its heading by clicking on it. If you then click again on the same column heading, the sort sequence will change from ascending to descending or vice versa.
  You can also sort by more than one column heading (criteria). To do this, first press and hold the shift key and then click on the desired column headings. The sorting will be carried out according to the order in which you click on the column headings.
- Column filters: You can also apply filters to columns: Move the mouse cursor to the top right-hand corner of a column heading until a small filter symbol  appears. Click on the filter symbol. A list of possible entries will then be shown. Now set a checkmark next to the desired entry. Only the selected entries will be displayed afterwards.

The information, options or buttons are described in the following table

Element	Explanation/function
Number of WTGs (top right)	Indicates how many WTGs have already been created (maximum number: 100).
Wind turbine generators	List of WTGs already created. The column titles (parameters) are described in the Add/Edit WTG window 93.
	Opens a like-named window, where you can select a predefined WTG type. This avoids you having to make several entries manually.
	Opens a like-named window, see WTG Combinations sub window 100.
	Deletes the WTGs selected above.

Element	Explanation/function
	Attention: The WTGs will be deleted immediately, **no** confirmation prompt.
	Opens the **Add/Edit WTG** window, where you can edit the WTG selected above, see next section.
	Opens the **Add/Edit WTG** window, where you can add a new WTG, see next section.

Please pay attention to the Information in the following boxes.

Use the data of existing WTGs as a template

- If you want to copy the data of a WTG that has already been created, click on this WTG in the Wind Turbine Generators window to select it (dataset will be highlighted in blue).
- Then click on Edit WTG (or double-click the desired WTG dataset in the list).
- The Add/Edit WTG window will open and the WTG number input field will be highlighted in orange.
- Now enter the next free number here.
- The field will now be highlighted in green and the **Add WTG** button at the bottom of the window is now activated.

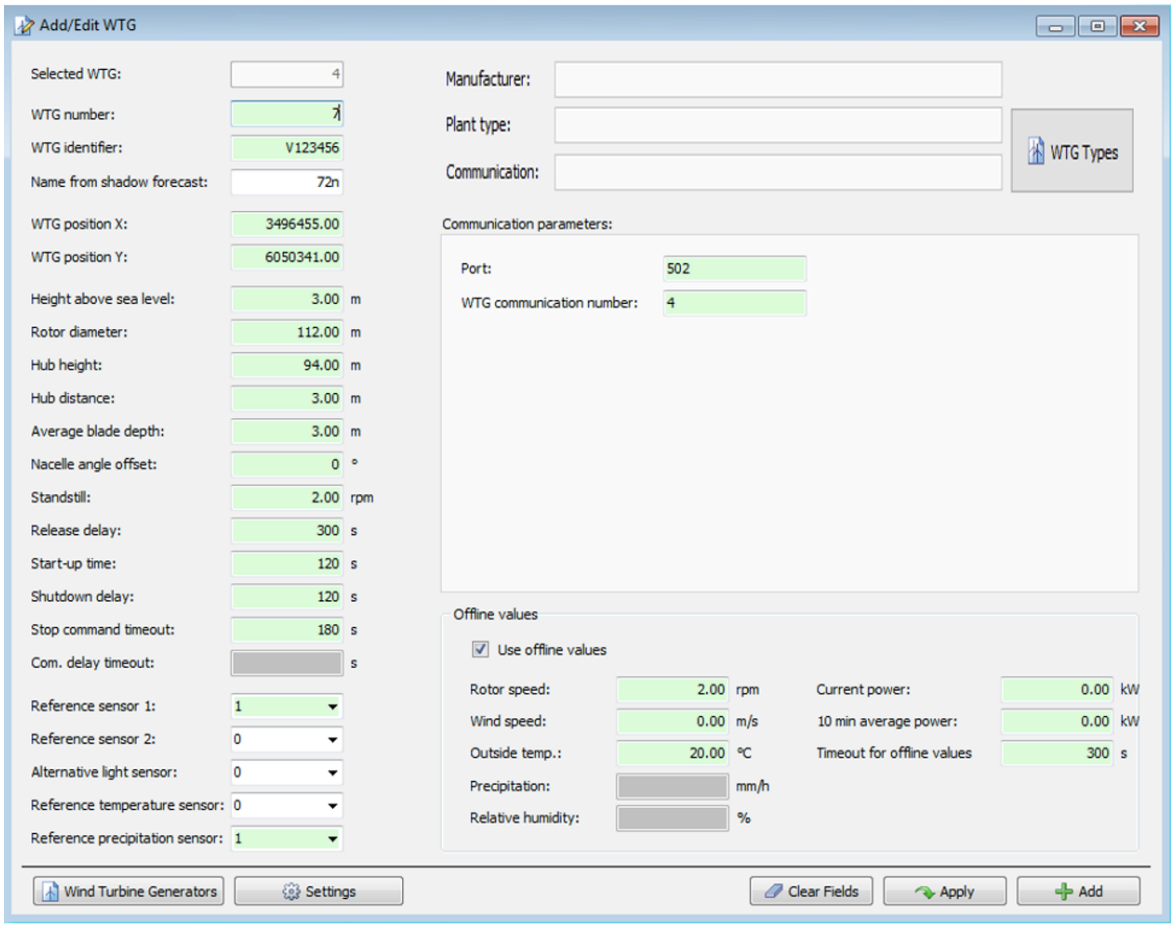
See also Practical example 1: Set up a new WTG with a new POI 29

Note that if you change the WTG type of an already defined WTG, many of its values are set to zero.

4.2.2.1 Add/Edit WTG window

Purpose	Create a wind turbine generator (WTG) in the project
Symbol	
Path	*Project > Wind Turbine Generators > Add WTG/Edit WTG*
Type of use	Interactive
Reference	WTG

You can define the individual parameters for a WTG in this window.



Wind Turbine Generators window

Notes regarding the **Add/Edit WTG** window

- Press the Enter key or the Tab key to complete the current entry and jump to the next input field.
- Input format: For input boxes where decimals are allowed the decimal separator to be used depends on the default in the input area **Country-Specific Settings** (*File > Application Settings > Shadow Manager > General.*)
- Fields in which an invalid value was entered (value is outside the permitted range, wrong input format) are highlighted in red:
- The buttons **Apply** and **Add** will not be activated until the mandatory fields of the window have been filled out correctly.

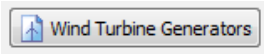
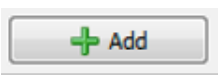
You will find a detailed description of this window in the following table.

Element	Explanation/function
Selected WTG	The WTG selected in the **Wind Turbine Generators** window (reference only)
WTG Number	Up to 100 WTGs can be defined. If you have clicked on **Add WTG** in the **Wind Turbine Generators** window, then the next free number will automatically be provided here. If you have clicked on **Edit WTG** in the **Wind Turbine Generators** window, in order to use the data of another WTG, enter the next free WTG number here, see Wind Turbine Generators window 92. **NOTE:** You can also enter/use the number of an existing WTG. The dataset of this existing WTG will then be overwritten with the “new data”. Before that, however, the Dependencies window 335 will open.
WTG Identifier	Unique ID number of the WTG as indicated on the outside of the tower (mandatory field). This number appears in the shadow impact log as WTG name.
Name shadow forecast	Name of the WTG as used in a shadow impact forecast which may have been created (reference only).
WTG position X	Coordinates of the WTG position. **NOTE:** The coordinates of all WTGs and POIs must be defined using the same metric coordinate system. 2 decimals
WTG position Y	see above

Element	Explanation/function
Height above sea level	WTG's height above sea level Input in m, value can also be negative, 2 decimals
Rotor diameter	Input in meters, 2 decimals
Hub height	**NOTE:** If the hub height is less than half the rotor diameter, you will see a warning symbol and the dataset cannot be added. Input in meters, 2 decimals
Hub distance	Distance between the hub and the center of the tower Input in meter
Avg. blade depth	Average blade depth = ½ (max. blade depth + min. blade depth at 0.9*rotor radius) see Glossary 358. Input in meter
Nacelle angle offset	Difference between the nacelle angle reported by the WTG and the actual position (orientation). Input in degrees
Standstill	If the actual rotor speed drops below the value specified here, the SMU will be considered as stopped. Input in rpm, 2 decimals
Release delay	Delay before startup of the WTG after having been shut down due to shadow impact. Serves to reduce wear by avoiding frequent start-up and shutdown processes during rapidly changing weather conditions. Input in seconds, standard setting 300 s **EXAMPLE** A WTG has been stopped due to shadow impact (the light intensity is so high that shadow impact is possible). Later, the light sensor reports that the light intensity is not sufficient to cause shadow impact. Now the WTG will be started up only after the time period specified under **Release delay** has elapsed. However, if the sun has now reached a position in which no POI will be affected by WTG shadow, the release delay will be ignored, i.e., the WTG is started up immediately.
Start-up time	Period between sending the start command to the WTG and the point in time when the rotor actually starts rotating. Input in seconds **EXAMPLE** **Start-up time** has been set to 120 s. If, according to the system's forecast, theoretical shadow impact will not be possible anymore from a specific point in time (because the sun will have reached a position at which no POI can be affected by WTG shadow), the start command will be sent x seconds (Start-up time) earlier (yield optimization).

Element	Explanation/function
Shutdown delay	Period between sending the stop command to the WTG and the point in time when the rotor stops rotating (standstill). **EXAMPLE** According to the system's forecast, theoretical shadow impact will be possible at a POI from a specific point in time (because the sun will have reached a position at which the POI can be affected by WTG shadow). The shadow impact budget for this POI has already been exploited OR 28 of 30 minutes of the budget have already been used. In this case, the stop command will already be sent x seconds (Shutdown delay) before shadow impact actually occurs to ensure that the WTG definitely stands still at this point in time and the regulatory requirements are complied with. Input in seconds
Stop command timeout	Defines the time period after which the SMU reports an alarm to the park server because a WTG fails to respond to a stop command (rotor speed does not drop below the value specified under **Standstill**). Input in seconds, default 180 s
Com. delay timeout	Used to set a break between sending two consecutive queries to two WTGs. Reason: If the break between sending queries is too short, this may cause technical problems with devices. Input in seconds, default depends on the WTG type
Reference sensor 1/2	Here you can set the light sensor to be used to evaluate the light conditions. We recommend selecting the nearest light sensor. With some nacelles it is not possible to install the light sensor in such a way that it can measure the intensity of the sunlight all day (due to shade). In this case, it may be necessary to install a second light sensor. **0** = no sensor is used, **1 to 40** = sensor x is used
Alternative light sensor	Specifies whether an alternative light sensor is available that should be used if reference sensor 1 and/or 2 have failed. **0** = no sensor is used, **1 to 40** = sensor x is used
Reference temperature sensor	Specifies which hygro-thermo sensor should be used to measure the humidity and outside temperature. **0** = no sensor is used, **1 to 5** = sensor x is used
Reference precipitation sensor	Specifies which precipitation sensor should be used to measure the precipitation amount. **0** = no sensor is used, **1 to 5** = sensor x is used
	If you want to add a new WTG, start by clicking on **WTG Types**. A window of the same name will then open in which you can select the respective WTG type in order to use standard values that are identical for every WTG of the same type as default values. When selecting the ty-

Element	Explanation/function
	pe, please pay special attention to the information under **Communication** and **Rotor diameter**. **NOTE:** Note that if you change the WTG type of an already defined WTG, many of its values are set to zero.
Manufacturer	Will be filled in automatically depending on the WTG type.
WTG type	Will be filled in automatically depending on the WTG type.
Communication	Will be filled in automatically depending on the WTG type.
Communication parameters	This input area contains different parameters depending on the selected WTG type, see Communication Parameters input area 109 section.
Offline Values	
Use offline values	Here you can define how the SMU will react if it does not receive data from the WTG anymore due to a communication error. Depending on the type of interface used to communicate with the WTG it is possible that some or all data are missing. However, with most interface types, an error means that all data are missing and that it is no longer possible to send stop and start commands or alarm messages to the WTG. If no checkmark is set here, the SMU continues to operate with the last data received until new data can be received. If a checkmark is set, the SMU will use the pre-sets for the WTG, which can be defined here, after the period set under **Timeout for pre-sets**. In this case, these values will also be reflected in the log.
Rotor speed	If the value defined here is greater than or equal to the value defined under **Standstill** and a WTG communication error occurs, the SMU will assume that the WTGs is always operating. This ensures that any shadow impact that may occur while communication is interrupted is duly reflected in the shadow impact log. Input in rpm, 2 decimals, default: 2
Wind speed	A wind speed pre-set may be relevant if this parameter is part of a special shutdown condition and the interface to the WTG enables sending stop or start commands even during a temporary communication breakdown. Input in m/s, 2 decimals
Outside temp.	An outside temperature pre-set may be relevant if the outside temperature parameter is part of a special shutdown condition and the interface to the WTG enables sending stop or start commands even during a temporary communication breakdown. input in °C, 2 decimals

Element	Explanation/function
Precipitation	A precipitation amount pre-set may be relevant if the precipitation parameter is part of a special shutdown condition and the interface to the WTG enables sending stop or start commands even during a temporary communication breakdown. Input in mm/h, 2 decimals
Relative humidity	A humidity pre-set may be relevant if the humidity parameter is part of a special shutdown condition and the interface to the WTG enables sending stop or start commands even during a temporary communication breakdown. Input in %, 2 decimals
Current power	If a power threshold was defined for a WTG (see WTG Combinations sub window 100) this value must be greater than or equal the power threshold.Otherwise, the SMU would send a stop command to the WTG as soon as shadow impact occurs. **NOTE** A current power pre-set may be relevant if this parameter is part of a special shutdown condition and the interface to the WTG enables sending stop or start commands during a temporary communication breakdown. Input in kW, 2 decimals
10 min Average power	Some WTG types report a 10 minutes average value. In this case, the average value is used instead of the current power value. Otherwise, please refer to the explanation under **Current power** above. Input in kW, 2 decimals
Timeout for offline values	Specifies how long the SMU will wait until it uses the pre-sets after a communication failure has occurred. Input in seconds., 2 decimals, default: 300 s
	Switches to the **Wind Turbine Generator** window (or opens it).
	Opens the **Input options for wind turbine generator editor** where you can define what happens when you click on **Add** or **Apply** in the **Add/Edit WTG** window; the available options are self-explanatory.
	Deletes the data from the input fields of the selected WTG.
	Confirms the entered data.
	Adds a new WTG No. Adds a new WTG No. Up to 100 WTGs can be defined.

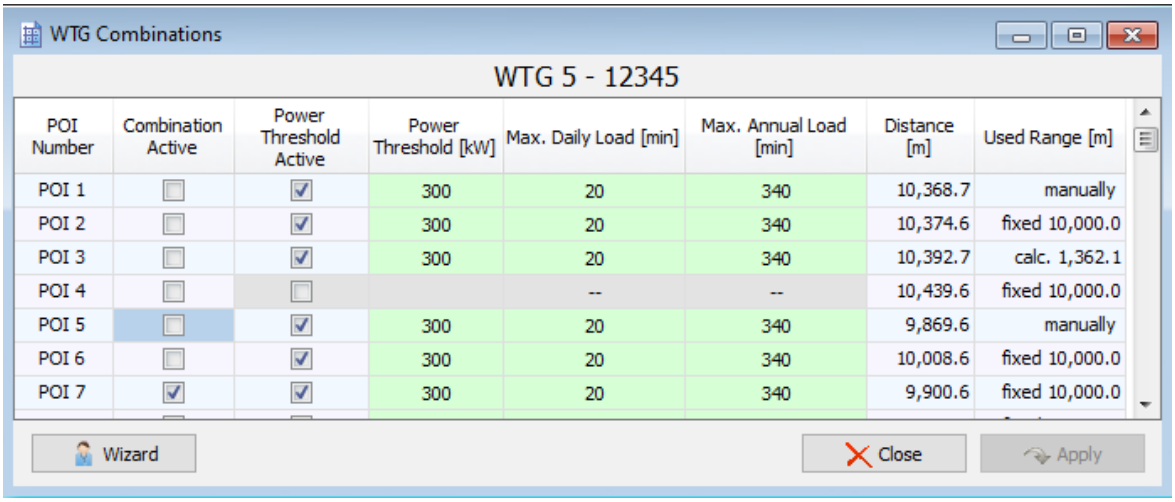
The coordinates used to define WTGs and POIs must be based on the **same metric coordinate system**.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

4.2.2.2 WTG Combinations sub window

Purpose	• Activate/deactivate combination(s) of WTG and POI manually (e.g. because a line-of-sight obstacle between WTG and POI precludes shadow impact) • Automatically activate/deactivate combination(s) of WTG and POI depending on shadow range (see Glossary 358) and distance to POI • Change/define direct relations between the WTG selected in the **Wind Turbine Generators** window and each POI for yield optimization
Path	*Project > Wind Turbine Generators > Combinations*
Type of use	Interactive + Wizard
Reference	The WTG selected in the **Wind Turbine Generators** window (reference only).

The tabular arrangement of all combinations of all WTGs and POIs of a project is called combination matrix. If you click on the **Combinations** button at the bottom of the **Wind Turbine Generators** window, the **WTG Combinations** window opens. Only the column of the combination matrix belonging to the currently selected WTG is shown here; however, the view includes sub-elements such as **Combination Active**, **Power Threshold [kW]**, etc. These can be edited directly in this window or in the **Combination Matrix Wizard** sub window (button Assistent). The entire combination matrix can be seen, for example, when configuring the simulation (*Tools > Combination*).



WTG Combinations sub window

Not all setting options are always available for every combination (fields highlighted in gray), e.g., if the daily counter limit and/or annual counter limit of a POI are not being used.

For each relationship between the WTG and a POI, conditions can be defined with regard to the following aspects.

- **Combination Active** column:
  Shadow impact possible or not (deactivate the combination if there is an obstacle between a WTG and a POI)
- **Threshold Power Active** and **Threshold Power [kW]** columns:
  Power threshold for saving shadow impact budget for more profitable times
- Columns **Max. Daily Load [min]**/ **Max. Annual Load [min]**:
  maximum daily/annual load used to save shadow impact budget for more powerful WTGs
- Columns **Distance [m]** and **Used Range [m]**
  Deactivation of combinations according to fixed or determined shadow range and distance

The information, options or buttons are described in the following table

Element	Explanation/function
POI Number	Number of the place of emission
Combination Active	After the WTGs and POIs of a project have been defined, all combinations are set to **Active** by default. This means that the SMU will assume that each WTG is able to cause shadow impact at each POI. However, if there is an obstruction between a WTG and a POI, the real shadow impact is not possible at this place of immission. Consequently, no calculation has to take place and the corresponding combination can be deactivated (remove checkmark). Default: ☑
Power Threshold Active	Here you can activate or deactivate a power threshold defined in the subsequent column. If the respective WTG is running below this power threshold **while at the same time causing shadow impact** at the respective POI, the WTG is stopped even if the limit value specified by the authorities has not yet been reached. While a WTG is running above the power threshold, the permitted periods of shadow impact will be exploited. With this method, the available shadow budget is saved for "better" (windier) times when the WTG can generate higher power. For more information, please refer to the Glossar 358 as well as Define a power threshold 106. **NOTES** • This column is not displayed if the WTG does not transmit current power values to the shadow impact system (e.g. a preload). • This parameter is automatically disabled under certain conditions, see section Automatic deactivation of the power threshold. 108 Default: ☐
Power Threshold [kW]	Here you define the power threshold in kW. This value will only be applied if **Threshold Power Active** has been activated in the previous column. **NOTES** • This column is not displayed if the WTG does not transmit current power values to the shadow impact system (e.g. a preload).

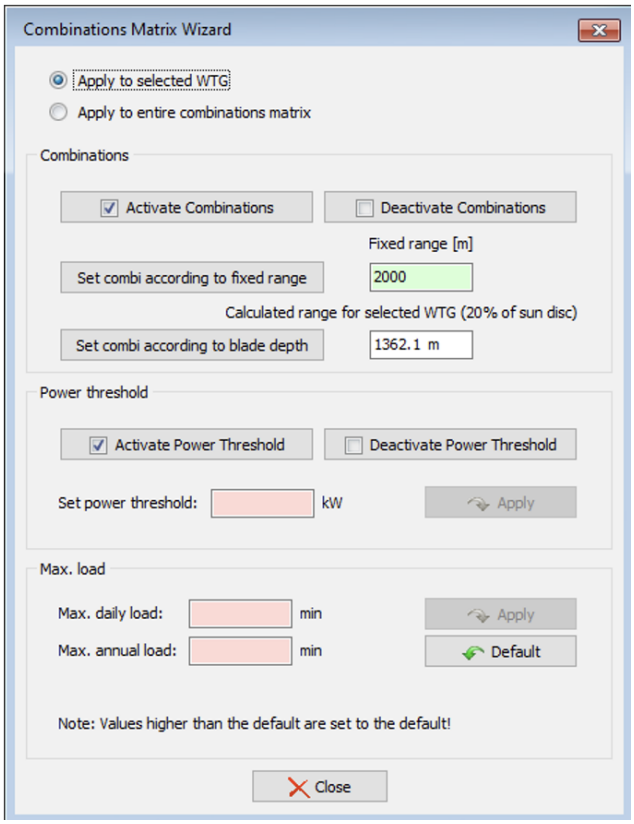
<table>
<tr><th>Element</th><th>Explanation/function</th></tr>
<tr><td></td><td>• This parameter is automatically disabled under certain conditions, see section Automatic deactivation of the power threshold. 108
Default: 0</td></tr>
<tr><td>Max. daily/ annual load [min]</td><td>Here you can reduce the value set in the Add/Edit Place of Immission window at Maximum permissible daily/annual load to, e.g. to assign a smaller portion of the shadow budget to a low rated WTG than to a high rated WTG.
These parameters are also used to save shadow budget, not for "windier" times, however, but for more powerful WTGs instead.
For further information see Max. daily/annual load 107.
NOTE
These columns are not displayed for WTGs that cannot be switched by the shadow impact system (WTG is only a preload).
Default = value in the Add/Edit Place of Immission sub window at Max. daily/annual load</td></tr>
<tr><td>Distance[m]</td><td>Displays the shortest distance (on the map) from the WTG tower center to the nearest wall or area coordinate of the POI.</td></tr>
<tr><td>Used Range [m]</td><td>Indicates whether a shadow range is used, and if so, which one. The following options are available:
<table><tr><td>---</td><td>There is no „used range“.</td></tr><tr><td>fixed x</td><td>A fixed range x was set in the wizard.</td></tr><tr><td>calc. x</td><td>After the Set combi according to blade depth button has been activated in the wizard, this number is indicated at x.</td></tr><tr><td>manually</td><td>Is displayed if inactive single combinations were set and accepted (Apply button) or active single combos were deactivated and accepted in the WTG Combinations window.</td></tr><tr><td>Default:</td><td>---</td></tr></table></td></tr>
<tr><td>  </td><td>Opens the Combinations Matrix Wizardwindow.</td></tr>
<tr><td>  </td><td>If you click on Close without having clicked on Apply beforehand, the system will ask you whether you want to apply the changes.</td></tr>
<tr><td>  </td><td>Confirms the entered data.</td></tr>
</table>

See also: Combinations Matrix Wizard sub window 103.

4.2.2.3 Combinations Matrix Wizard sub window

Purpose	• You can easily apply the settings of the **WTG Combinations** window to all combinations and then exclude individual ones as necessary. • Have combinations automatically set to active/inactive depending on distance to POI and shadow range (see Glossary 358)
Symbol	
Path	*Project > Wind Turbine Generators > Combinations > Wizard*
Type of use	Interactive
Reference	Selected WTG/entire matrix

Using the wizard, you can easily apply the setting options of the **WTG Combinations** window to all combinations and then exclude only individual ones as necessary. This procedure is particularly suitable for large wind parks to avoid having to edit each combination individually (save time). You can also use this window to configure the SMU in such a way that combinations will be activated/deactivated automatically depending on shadow range and distance.



Combinations Matrix Wizard sub window

Note regarding the **Combinations Matrix Wizard** window:

Press the Enter key or the Tab key to complete the current entry and jump to the next input field.

The information, options or buttons are described in the following table

Element	Explanation/function
Apply to selected WTG	Applies the change(s) made in this window only to the WTG selected in the **Wind Turbine Generators** window.
Apply to entire combinations matrix	Applies the change(s) made in this window to all combinations (the SMU assumes that each WTG can cause shadow impact at each POI because there are no obstructions between them).
Activate/ Deactivate Combinations	Sets the combinations of the selected POIs or respectively of the entire combinations matrix to active/inactive.
Set combi according to fixed range	To use this option, first enter the desired **Fixed range** and then click on the button. Normally, the value determined in the shadow impact report is used; in the UK, it is common to select 10 times the rotor diameter. Now the distance of the POI is automatically compared with this range, and the respective combination is set to active if the distance to the POI is smaller or equal to the range. Meter, decimals allowed
Set combi according to blade depth	If you select this option, the distance is compared with the calculated shadow range according to the German 20% criterion (face of the sun is covered to 20% by a rotor blade). The respective combination is set active if the distance is smaller or equal to the range. **NOTE** If the calculated range with 20% sun coverage is to be used, the average blade depth specified in the manufacturer data must be checked very carefully.
Activate/ Deactivate Power Threshold	Here you can activate or deactivate one or more combinations by clicking the respective button. Furthermore, you can set a new power threshold (in kW). If the power of the respective WTG drops below this value, it will be shut down (provided that the power threshold was activated).
Set power threshold	Here you can enter the desired power threshold. If a WTG is operated below this power threshold while causing shadow impact in a place of immission, the respective WTG is shut down immediately. kW, no decimals

Element	Explanation/function
Max. daily/ annual load	You can enter the maximum permissible load per day/year. minutes, no decimals
	 In order to apply the values to one WTG or to the entire combinations matrix, click on **Apply**.  If you click on **Default**, the settings defined in the **Add/Edit Place of Immission** window under **Maximum permissible daily/annual load** will be applied.

See also Practical example 4: Editing a POI and WTG combination 34

NOTES

- You can use the **Combination Matrix Wizard** to change **one** selected combination or apply a change to **all** combinations. Please make sure that the combinations whose **Threshold Power Active** parameters were automatically set to inactive are not changed by the assistant. For further information, please refer to section Automatic deactivation of the power threshold 108.
- If you plan to use the activation according to a fixed or calculated range, we recommend you open the combination wizard from the WTG menu, because the shadow range is WTG-related. For the **Set All Combinations** function, it does not matter whether you open the combinations window from the POI list or the WTG list.

In the following subsections you will find further information, examples and step-by-step instructions on the possibilities offered by the **WTG Combinations** window – they will allow you not only to meet the requirements of the authorities but also to optimize the yield of a wind park.

4.2.2.3.1 Activate/deactivate a combination

Is shadow impact possible between the WTG and the POI?

After the WTGs and POIs of a project have been defined, all combinations are set to **Active** by default. This means that the SMU will assume that each WTG is able to cause shadow impact at each POI. However, if there is an obstruction between a WTG and a POI (e.g., a stable or forest), real shadow impact is not possible at this place of immission. Consequently, no calculation must take place and the corresponding combination can be deactivated.

A combination can be activated/deactivated in two ways:

1. **Combinations** window (activate/deactivate the desired combination with the selected WTG/POI by setting/removing a checkmark)

2. Combinations Matrix Wizard 103 sub window

4.2.2.3.2 Define a power threshold

Would it make sense to define a power threshold for the WTG/POI combination?

According to the requirements of the authorities, a specific maximum number of minutes with shadow impact per day/year are acceptable for each POI. This means that the wind park has a so-called shadow impact budget for each POI. Since the wind and consequently the possible yield is different depending on the time of the day or year, it can be interesting to define a power threshold – please refer to the following example.

Shadow impact is caused at a POI; however, the budget has not been exploited; the WTG operates at a power output of 490 kW.

Consequences without power threshold

- WTG will not be shut down since the budget has not been fully exploited
- although operating at a low power output, the WTG consumes budget
- later, when the wind may be stronger, the WTG may have to be shut down immediately
- high loss in yield

☹

Consequences with 500 kW power threshold

- WTG is shut down
- budget saving
- later, when the wind may be stronger, the WTG may not have to be shut down
- yield optimization

☺

There are two ways to define and activate/deactivate the power threshold:

1. **Combinations** window

   - Set the checkmark for the desired combination in the **Power Threshold Active** column.
   - Enter the desired value in the **Power Threshold [kW]** column and click on **Apply** (no decimals possible).

2. Combinations Matrix Wizard sub window 103

4.2.2.3.3 Define a maximum daily/ annual load

Does it make sense to define a maximum daily/annual load for the combination of WTG and POI?

According to the requirements of the authorities, each POI may be exposed to shadow flicker for a certain maximum number of minutes per day/year, so the wind farm has a so-called shadow impact budget available for each POI. However, since shadow impact at an POI can often be caused by more than one WTG, but not every WTG is running at the same power in the process, it may make sense to allocate less budget to lower-power WTGs than to higher-power WTGs. For this purpose, the value set in the **Add/Edit Place of Immission** window at **Maximum permissible daily/ annual load** can be reduced for certain combinations, see the following example.

Example

WTG 1 and WTG 2 can theoretically cause shadow impact at an POI. WTG 1 achieves a rated power of 1,500 kW, while WTG 2 provides a rated power of 3,000 kW.

By reducing the maximum load per day/year on WTG 1, you allocate a larger portion of the budget to the much more powerful WTG 2, optimizing your yield.

There are 2 ways to define and activate/deactivate a maximum daily/annual load:

1. **Combinations** window

   - Specify the maximum number of minutes for the desired combination (no decimals possible) in the Max. Daily/Annual Load [min] column.
   - Click on **Apply**.

> Since, as described above, you want to reduce the amount permitted by the authorities, the value you enter here must be lower than the value you defined under **Maximum permissible daily/annual load** in the **Add/Edit Place of Immission** window.

2. **Combinations Matrix Wizard sub window** 100

4.2.2.3.4 Automatic deactivation of the power threshold

In the windows **Add/Edit Place of Immission** and **Add/Edit WTG**, conditions can be defined which, as soon as they are applied, defeat the purpose of the power threshold function. Therefore, in certain cases, the power threshold is **automatically** deactivated in the respective combination matrix.

The following table shows how these conditions affect the combination matrix:

Add/Edit Place of Immission sub window	**POI Combinations** window		**Explanation**
	Power Threshold Active	**Power Threshold [kW]**	
Only log WTG stop (day) = ☑ and **Only log WTG stop** (year) = ☑	**Not** automatically set to inactive	Value is still displayed	"Only log" refers to exceeding the daily/annual counter. **NOTE** If the power falls below the threshold, the WTG is nevertheless shut down.
Use daily limit = ☐ **Use annual limit** = ☐	Set to inactive automatically*	'--' is displayed	*Only if both parameters are deactivated.
Wind Turbine Generators window	**Power Threshold Active**	**Power Threshold [kW]**	
Communication = **Preload**	Set to inactive automatically	'--' is displayed	
Communication = **via relay** **AI – current WTG power** = ☐	Set to inactive automatically	'--' is displayed	
AI – current WTG power = ☑	**Not** automatically set to inactive	Value is still displayed	In this case, there is a power threshold by which the WTG can be shut down.

NOTE

Note that combinations whose **Power Threshold Active** parameter was automatically set to **Inactive** are not changed by the **Combination Matrix Wizard**.

4.2.2.4 Communication Parameters input area

Purpose	Define settings for the communication between the SMU and the wind turbine generators to be monitored
Path	*Project > Wind Turbine Generators > Edit/Add WTG*
Window type	Input area
Type of use	Interactive
Reference	Selected WTG

This area contains different parameters depending on the selected **WTG type** and the corresponding communication type.

For each type of WTG, you will find the respective parameters and their explanation in the following tables.

Communication = Preload	
This is not an actual communication type, but rather of setting of preload caused by a WTG of, e.g., a different wind park.	
Switch WTG by foreign system	If a checkmark is set, it is assumed that in the case of shadow impact the WTG will be switched by an external system.
Use nacelle position from WTG	Allows the value for the nacelle angle of a different WTG to be used for the shadow impact calculation.

Communication “via relay”	
Stop command via	Here you can select whether the stop command should be received by way of a digital output of the master unit or via the digital output of a light sensor. In the latter case, you must define the number of the light sensor.
DO - WTG stop signal	Digital output for sending the stop command to the WTG. This option cannot be deactivated. If the wind turbine generator to be switched stops at LOW, set a checkmark at **Output LOW active** (*Hardware > Interface Cards*).
DO - WTG error alarm contact	Digital output for reporting errors from the SMU to the WTG. If the wind turbine generator to be switched detects LOW as an error, set a checkmark at **Output LOW active** (*Hardware > Interface Cards*).
DI - WTG status	Digital input for retrieving the WTG Status. If the wind turbine generator to be switched reports operation at LOW, set a checkmark at **Input LOW active** (*Hardware > Interface Cards*). If this option is activated, the background of the input field for **Standstill** on the left side of the

Communication “via relay”	
	window changes to red (no input possible) since this parameter cannot be considered anymore.
AI - WTG nacelle angle	Analog input for retrieving the nacelle angle of the WTG to be switched.
AI - current WTG power	Analog input for retrieving the current power of the WTG to be switched.
AI - WTG rotor speed	Analog input for retrieving the rotor speed of the WTG to be switched – if this option is activated, the background of the input field **Standstill** on the left side of the window changes to green and you can define the desired value.
AI - WTG wind speed	Analog input for retrieving the wind speed measured by the WTG to be switched.
Additional DO 1 **Additional DO 2**	Some WTGs have several stop inputs, often, e.g., a separate input for stops due to bat protection. These separate inputs should be operated depending on the reason for shutdown. By setting the checkmarks in these two input areas, you specify the switch reason for which the additional digital outputs (DO1 and DO2) shall be used. Please note the following: • A switch reason selected here will subsequently no longer be sent via the DO - WTG stop signal (above). • With these two additional DOs, a maximum number of 3 DOs are available having a WTG shut down for various reasons. • The two additional DOs are only available once for each SMU, not for each of the maximum 100 WTGs. • If an additional DO is assigned one or more switch reasons, then it must be assigned to an interface card with digital outputs (*Hardware > Hardware Assignments*).

Communication “SWSE Type 01”	
With this type of communication, all 4 analog signals (nacelle angle, current power, rotor speed and wind speed) are not retrieved individually but by way of a Shadow Interface Unit (SIU), which is installed in each WTG and provides signals. These signals are retrieved by the SMU.	
IP address	Enter the IP address of the SIU.
Port	Enter the port of the SIU.
Gear ratio	Some WTGs report the gear speed instead of the rotor speed. In this case, the factor for converting the rotor speed must be entered here.

Communication “Senvion IEC 61400 Type 01”	
So far, data can only be read out via this IEC interface. It is not possible to send stop commands, for example. Therefore, the stop commands are sent via an SIU for now.	
Stop command via	Here you can choose whether the WTG will be switched via a relay of the SMU or via a relay of the Shadow Interface Unit (SIU unit with basic functions).
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched.
Domain ID	Access data for access to the IEC interface which will be communicated by the manufacturer for each project.
Password	Access data for access to the IEC interface which will be communicated by the manufacturer for each project.
IP address of SWSE unit	Enter the IP address of the SIU.
SWSE unit port	Enter the port of the SIU.

Communication “Senvion IEC 61400 Type 02”	
Via this IEC interface, an IEC61400 server is available both on the WTG side and on the SMU side. The switch signals are provided by the SMU and picked up by the client of the WTG.	
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched.
WTG identifier	Displays the name of the WTG as it is stored in the SMU-side server.
WTG password	Access data for access to the IEC interface which will be communicated by the manufacturer for each project.
Server port	Port of the SMU-side IEC server.
Server password	A password for the SMU-side IEC server can be entered here. If the string is empty, no password authentication is active.
Domain ID	Access data for access to the IEC interface which will be communicated by the manufacturer for each project.

Communication “Nordex Modbus/TCP Type 01”	
Communication takes place via a network connection: the SMU acts as the client, while the WTG act as the slave.	
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched. All WTGs use the same port.
Modbus slave address	Enter the slave address
Send collective stop command if another stop command is pending	If a checkmark is set, a collective stop command is sent in addition to the actual stop command due to e.g. shadow impact, bird protection, or bat protection, and the reason for this collective command remains open. Several stop commands are possible – however, for now, it is necessary to send a collective command.

Communication “Nordex Profinet Type 01"	
Communication takes place via an additionally plugged in Profinet interface card. The SMU is a Profinet device and the wind park server acts as a Profinet controller.	
Send collective stop command if another stop command is pending	If a checkmark is set, a collective stop command is sent in addition to the actual stop command due to e.g. shadow impact, bird protection, or bat protection, and the reason for this collective command remains open. Several stop commands are possible – however, for now, it is necessary to send a collective command.

Communication ”Vestas OPC-Server Type 01”	
Communication takes place via a network connection to the park server of the WTGs to be switched.	
IP address	Enter the IP address of the park server.
Port	Enter the port of the park server.
WTG Communication Number	This is the number of the respective WTG in the wind park. This number may be different from the “WTG number” in the shadow impact forecast.

Communication “Vestas Modbus/TCP 01”	
Communication takes place via a network connection: the WTG to be switched acts as the client while the SMU acts as the slave. Therefore, since the SMU, instead of establishing the communication, will only respond, entering an IP address is not necessary here.	
Port	Enter the port of the park server.
WTG Communication Number	This is the number of the respective WTG in the wind park. This number may be different from the “WTG number” in the shadow impact forecast.

Communication “Siemens WPS Type 01”	
Communication takes place via a network connection to the park server of the WTGs to be switched.	
IP address	Enter the IP address of the park server.
Port	Enter the port of the park server.
WTG name	Name of the WTG as used in the data telegram sent from a Siemens WTG.

Communication “Siemens OPC Type 01”	
Communication takes place via a network connection to the park server of the WTG to be switched. OPC UA is used for the communication. The SMU is the client in this case.	
WTG identifier	Displays the name of the WTG as it is stored in the server – serves the exact assignment of the data.
Log server identifier	Here you can enter the name of the log server as it is stored in the server – serves to exchange shadow impact log data.
Alarm server identifier	Here you can enter the name of the alarm server as it is stored in the server – serves for averaging faults.
Port	Enter the port of the WTG to be switched.
User authentication	User name for logging on to the server.
Password authentication	Password used to log on to the server.

Communication ”Enercon OPC-Server Type 01”	
Communication takes place via a network connection to the park server of the WTGs to be switched.	
IP address	Enter the IP address of the park server.
Port	Enter the port of the park server.
User ID for control access	Access data needed to write data to the Enercon server so that an additional identification ensures increased security, e.g. when sending stop commands.
WTG name	Name of the WGT specified by Enercon, which is transferred during the communication.
Name of OPC server temperature knot	Name of the WTG control – used to determine the correct temperatures.
Use extended stop list	This can be used to define that instead of the standard stop signals (60° and 90°) an extended list defined by Enercon is used, which, e.g., provides an individual stop number for shadow impact.
Stop shadow impact	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop calendar	Stop at 60° or 90° according to calendar. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop bat protection	Stop at 60° or 90° for bat protection. If **Use extended stop list** is active, stop due to species conservation 60° or species conversation 90° will be carried out.
Stop sector	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, stop due to shadow impact will be carried out.
Stop noise protection	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop external	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop bird protection	Stop at 60° or 90° in the case of shadow impact. If **Use extended stop list is active, stop due to species conservation 60° or species conversation 90° will be carried out.**
Measured ambient temperature	Place where the ambient temperature is to be measured: Ground level, nacelle level or use the mean value of the two.

Communication "Enercon OPC Vleemo Type 01"	
Communication takes place via a network connection to the park server of the WTGs to be switched.	
IP address	Enter the IP address of the park server.
Port	Enter the port of the park server.
WTG name	Name of the WGT specified by Enercon, which is transferred during the communication.
Use extended stop list	This can be used to define that instead of the standard stop signals (60° and 90°) an extended list defined by Enercon is used, which, e.g., provides an individual stop number for shadow impact. If the checkmark is set, the extended stop list is used.
Stop shadow impact	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop calendar	Stop at 60° or 90° according to calendar. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop bat protection	Stop at 60° or 90° for bat protection. If **Use extended stop list** is active, stop due to species conservation 60° or species conversation 90° will be carried out.
Stop sector	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, stop due to shadow impact will be carried out.
Stop noise protection	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop external	Stop at 60° or 90° in the case of shadow impact. However, if **Use extended stop list** is active, the shadow impact module will stop the WTG.
Stop bird protection	Stop at 60° or 90° in the case of shadow impact. If **Use extended stop list** is active, stop due to species conservation 60° or species conversation 90° will be carried out.

Communication “Eno Energy Modbus/TCP Type 01”	
Communication takes place via a network connection: the SMU acts as the client, while the WTG act as the slave.	
IP address	Enter the IP address of the WTG to be switched.

Communication “Eno Energy Modbus/TCP Type 01”	
Port	Enter the port of the WTG to be switched. All WTGs use the same port.
Modbus slave address	Enter the slave address

Communication “Acciona Modbus/TCP Type 01”	
Communication takes place via a network connection: the SMU acts as the client, while the WTG act as the slave.	
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched. All WTGs use the same port.
Modbus slave address	Enter the slave address

Communication “GE Modbus/TCP Type 01”	
Communication takes place via a network connection: the SMU acts as the client, while the WTG act as the slave.	
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched. All WTGs use the same port.
Modbus slave address	Enter the slave address
Wind speed as 10 min. average value	By selecting this option, you specify that the SMU determines a mean value over 10 minutes and uses it instead of the actual value reported by the WTG.

Communication “Vensys Modbus /TCP 01”	
Communication takes place via a network connection: the WTG to be switched acts as the client while the SMU acts as the slave. Therefore, since the SMU, instead of establishing the communication, will merely be addressed, entering an IP address is not necessary here.	
Port	Enter the port of the park server.
WTG communication number	This is the number of the respective WTG in the wind park. This can deviate from the "WTG number" from the shadow impact forecast.

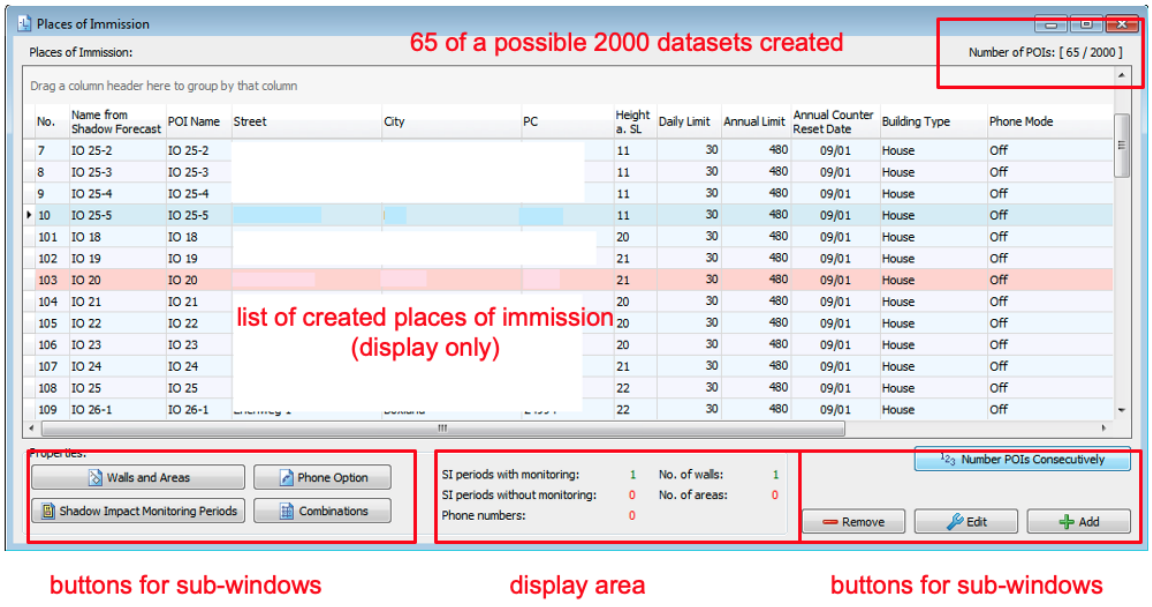
Communication “Lagerwey GE Modbus/TCP Type 01”	
Communication takes place via a network connection: the SMU acts as the client, while the WTG act as the slave.	
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched. All WTGs use the same port.
Modbus slave address	Enter the slave address
Communication „Amperax Modbus Type 01”	
Communication takes place via a network connection: the SMU acts as the client, while the WTG act as the slave.	
IP address	Enter the IP address of the WTG to be switched.
Port	Enter the port of the WTG to be switched. All WTGs use the same port.
Modbus slave address	Enter the slave address

Communication "General TCP Type 01"	
IP address	Enter the IP address of the server.
Port	Enter the port of the server.
Select names of certificates	Select whether certificate designations different from the standard are to be used.
Name of your own certificate:	Enter the name of the SMUs own certificate.
Name of your own key	Enter the name of the SMU's own key.
Name of your own configuration file	Enter the name of the SMUs own configuration file.
Name of trusted third-party certificate	Enter the name of the trusted third-party certificate.

4.2.3 Places of Immission window

Purpose	Display and edit places of immission (POIs), areas/walls, shadow impact periods, combinations, etc.
Symbol	
Path	*Project > Places of Immission*
Window type	List window
Type of use	Display + buttons to sub windows
Reference	Project

This window shows a list of the POIs already created in the project that is currently opened. The individual parameters for a POI are defined in the **Add/Edit Place of Immission** window, see next paragraph.



Places of immission window

General notes regarding the **Places of Immission** window

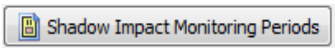
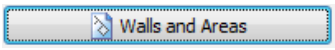
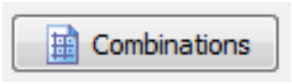
- The top part of the window shows a list of the already created POIs, the actual settings are made in the **Add/Edit Place of Immission** sub window. The information “65/2000” in the upper-right corner of the screen means that 65 of 2000 possible POIs have already been created. An explanation of the individual columns (parameters) can be found in the Add/Edit Place of Immission sub window 122 section.
- The currently selected POI is highlighted in **blue**.

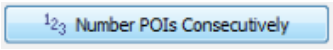
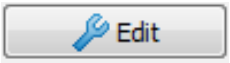
- POI 103 is highlighted in red because no walls/areas have yet been defined for this POI.
- If you double-click on a POI in the list, the **Add/Edit Place of Immission** window will be opened.
- The parameters defined in the **Add/Edit Place of Immission** window under **Maximum permissible annual load/Maximum permissible annual load** are displayed in the **Daily Limit/Annual Limit** columns. For more information on these two columns, see the end of this chapter.

Operating instructions regarding the **Places of Immission** window

- Move columns: Columns can be moved by drag & drop.
- Sort by column: You can sort a column according to its heading by clicking on it. If you then click again on the same column heading, the sort sequence will change from ascending to descending or vice versa.
  You can also sort by more than one column heading (criteria). To do this, first press and hold the shift key and then click on the desired column headings. The sorting will be carried out according to the order in which you click on the column headings.

Information and setting options in the **bottom part of the window**

Element	Explanation/function
	According to the default settings, a defined POI will be monitored 24/7 all year round. If you click on this button, you can exclude specific periods of time from monitoring, please see Shadow Impact Monitoring Periods sub window 126.
	In the **Edit Walls and Areas** window, you can edit or create walls and areas for an existing POI, see Edit Walls and Areas sub window 130.
	Used to define phone numbers from which residents can shut down WTGs that currently cause shadow impact by dialing a special phone number, see Phone Option sub window 134.
	Opens the **POI Combinations** window. This window corresponds to the WTG Combinations sub window 100 (for more information, see the respective section), however, instead of the possible combinations of one WTG with all POIs, the possible combinations of ONE specific POI with all WTGs defined in the project are concerned here. **NOTE:** To reduce the production periods of a small WTG during shadow impact in favor of a larger WTG that has a higher power output, for example, you can reduce the load periods for each combination even further here. In other words: The times during which a WTG with low rated power output is allowed to cause shadow impact should be reduced so that a WTG with a higher output can yield more revenue.

Element	Explanation/function
SI periods with monitoring	Displays the number of shadow impact periods **with** monitoring that have been defined for the POI selected in the list — no input possible. For further information, see Shadow Impact Monitoring Periods sub window 126.
SI periods without monitoring	Displays the number of shadow impact periods **without** monitoring that have been defined for the POI currently selected in the list — no input possible. For further information, see Shadow Impact Monitoring Periods sub window 126.
Phone numbers	Shows how many telephone numbers for the phone option have been defined for the POI currently selected in the list. For further information, see Phone Option sub window 134.
No. of walls	Displays the number of walls that have been defined for the POI currently selected in the list — no input possible. For further information, see Edit Walls and Areas sub window 130.
No. of areas	Displays the number of areas that have been defined for the POI currently selected in the list — no input possible. For further information,see Edit Walls and Areas sub window 130.
	If you click on this button after you have deleted one or more POIs, a consecutive numbering will be restored (the purpose of this function is simply to provide a better overview).
	Deletes the POI selected in the list. **Attention:** If you click this button, the POI will be deleted immediately, (no confirmation dialog).
	Is used to edit the POI selected in the list.
	Adds a new POI. Up to 2000 POIs are possible.

Notes regarding the "Daily Limit" / "Annual Limit" columns

The following table shows how the parameters defined in the **Add/Edit Place of Immission** window affect the display in the **Daily Limit**/**Annual Limit** columns in the **Places of Immission** window.

	Add/Edit Place of Immission window			**Places of Immission** window	
	Maximum permissible daily/annual load parameter	Parameter **Only log WTG stop**	Parameter **Use annual limit/ Use daily limit**	**Day Limit** column	**Annual Limit** column
1	--	☐	☐	--	--
2	30 / 356	☐	☑	30	356
3	30 / 356	☑	☑	(30)	(356)

NOTE: Please note that defined limit values (**Maximum permissible daily/annual load**), for which the corresponding parameter **Only log WTG stop** has been activated, are displayed in brackets in the **Places of Immission** window.

The following table shows the representation of the parameters from the above example in the configuration log and Google Earth export:

POI	Indication in the configuration log / Google Earth export **Max. permissible daily/annual load**
1	not used
2	30 min / 356 min
3	(30) min / (356) min

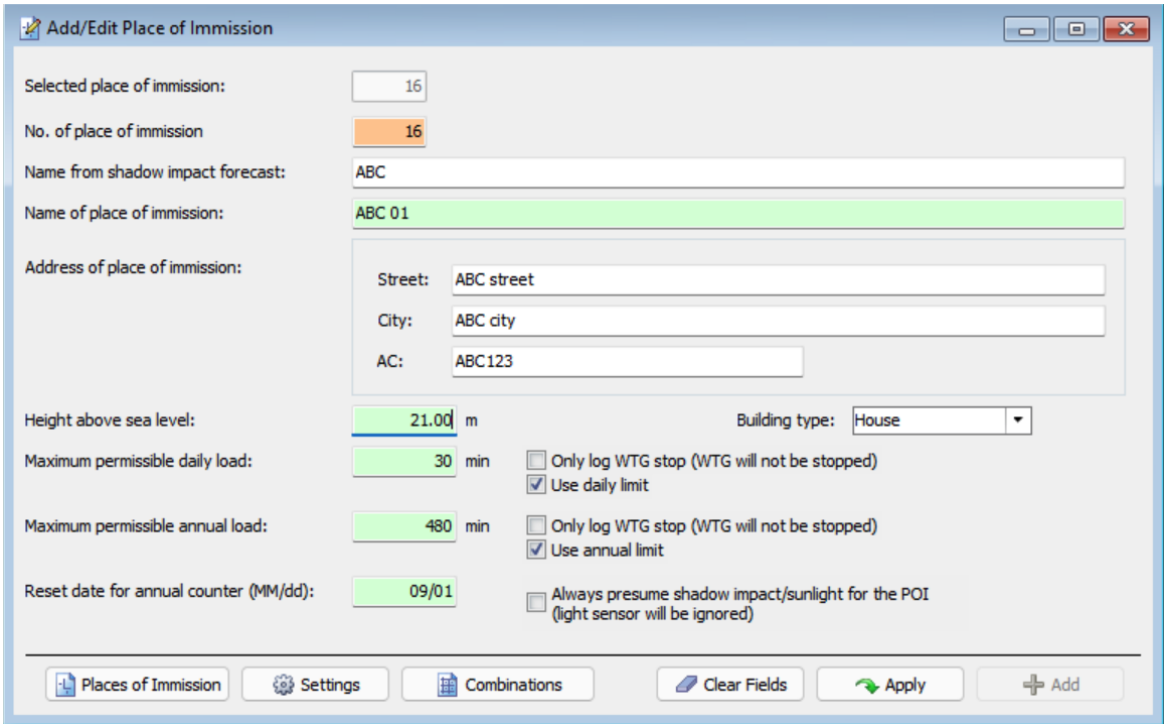
Use the data of an existing place of immission

- If you want to copy the data of a POI that has already been created, click on this POI in the **Places of Immission** window in order to selected (dataset highlighted in blue).
- Then click on **Edit** (or double-click the desired POI dataset in the list).
- The **Add/Edit Place of Immission** window will open and **No. of place of immission** will be highlighted in orange.
- Now enter the next tree number here (in the case of the above window this would be number 4). The box will now be highlighted in green and **Add** at the bottom of the window will be activated.

See also Practical example 1: Set up a new WTG with a new POI 29

4.2.3.1 Add/Edit Place of Immission sub window

Purpose	Add or edit places of immission (POI) including information, such as address, height above sea level, maximum permissible load and building type.
Symbol	
Path	*Project* > *Places of Immission* > *Edit* or *Add*
Type of use	Interactive + buttons to sub windows
Reference	POI



Add/Edit Place of Immission sub window

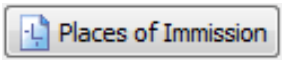
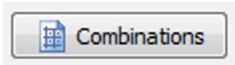
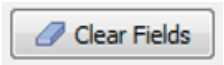
Notes regarding the Add/Edit Place of Immission window

- Press the Enter key or the Tab key to complete the current entry and jump to the next input field.
- Fields in which an invalid value was entered (value is outside the permitted range, wrong input format) are highlighted in red:
- The buttons **Apply** and **Add** will not be activated until the input fields have been filled out correctly.

The information, options or buttons are described in the following table

Element	Explanation/function
Selected place of immission	Displays the POI that was selected in the **Places of Immission** window and whose data will be used for the new POI.
No. of place of immission	Up to 2000 POIs can be defined. If you have clicked on **Add** in the **Places of Immission** window, the next free number will automatically be provided here. If you have clicked on **Edit** in the **Places of Immission** window, you can enter the next free POI number here in order to use the data of another POI, see the productivity tip in the Places of Immission window 121 section. **NOTE** You can also enter/use the number of an existing POI. The dataset of this existing WTG will then be overwritten with the “new data”. Before that, however, the Fenster Abhängigkeiten 335 will open.
Name from shadow impact forecast	Name of the POI as used in a shadow impact forecast which may have been drawn up.
Name of place of immission	This piece of information is useful when there is more than one POI with the same address. Each name can be used only once. This **unique** identification of a POI will also be shown in the log and can thus be allocated in the shadow impact forecast.
Address of place of immission	Exact address of the POI (street name, city, area code)
Height above sea level	Height above sea level of the POI **Meter**
Building type	Drop-down list that offers the following: **House, Commercial, Stable, Church, Open area, Unknown** You can also enter free text.
Maximum permissible daily load	Maximum permissible shadow impact load at the POI per day; after reaching this limit, the responsible WTG is switched off. This parameter can be activated or deactivated in the **Use daily limit** checkbox – this makes it possible, e.g., to only observe the shadow impact for a while without actually switching off. **NOTE 1:** In the **Place of Immission** window, this parameter is displayed in the **Daily Limit** column. **NOTE 2:** If you increase this value, a system message informs you that a change you make here will have no effect on the value in the **Max. Daily Load [min]** in the **Combinations** window. In other words,

Element	Explanation/function
	this parameter only defines the "maximum value", which cannot be exceeded in the **Combinations** window (error message). The redistribution of the shadow impact budget from low rated to higher rated WTGs is defined/adjusted in the Combination windows, see WTG Combinations sub window 100. **Minutes** (integers only), the value must not exceed the corresponding value for the year
Only log WTG stop	This checkbox is only available (active) if the subsequent box has been checked. In this case, if a checkmark is also set here, exceeding the daily limit only causes an entry in the log, but **no** shutdown of the responsible WTG.
Use daily limit	This checkbox is marked by default. If the checkmark is removed, this has the following effects: • no WTG will be shut down due to a daily limit having been exceeded • the previously displayed limit value is replaced by a double line, and the input field is highlighted in gray • the **Only log WTG stop** checkbox belonging to the counter is deactivated.
Maximum permissible annual load	Maximum permissible shadow impact load at the POI per year; after reaching this limit, the responsible WTG is switched off. This parameter can be activated or deactivated in the **Use annual limit** checkbox – this makes it possible, e.g., to only observe the shadow impact for a while without actually switching off. **NOTE 1** In the **Place of Immission** window, this parameter is displayed in the **Annual Limit** column. **NOTE 2** If you increase this value, a system message informs you that a change you make here will have no effect on the value in the **Max. Annual Load [min]** in the **Combinations** window. In other words, this parameter only defines the "maximum value", which cannot be exceeded in the **Combinations** window (error message). The redistribution of the shadow impact budget from low rated to higher rated WTGs is defined/adjusted in the Combination windows, see WTG Combinations sub window 100. **Minutes** (only integers)
Only log WTG stop	This checkbox is only available (active) if the subsequent box has been checked. In this case, if a checkmark is also set here, exceeding the annual limit only causes an entry in the log, but **no** shutdown of the responsible WTG.
Use daily limit	This checkbox is marked by default.

Element	Explanation/function
	If the checkmark is removed, this has the following effects: • no WTG will be shut down due to an annual limit having been exceeded • the previously displayed limit value is replaced by a double line, and the input field is highlighted in gray • the **Only log WTG stop** checkbox belonging to the counter is deactivated.
Reset date for annual counter (MM:dd)	Since the “shadow impact year” does not necessarily correspond to the calendar year, you can set another date here.
Always presume shadow impact/sunlight for the POI (light sensor will be ignored)	If you set a checkmark here, shadow impact will be logged as soon as the conditions for theoretical shadow impact are met, and the WTG responsible for the theoretical shadow impact will be shut down, no matter if the sky is cloudy or not. Otherwise, when weather conditions changes from cloudy to sunny, a WTG will not come to a stop until 1 to 2 minutes after the shutdown command is sent.
	Switches to the **Places of Immission** window (if this window is not open already, it will be opened now). Here you can specify what happens if you click on **Add** in the **Add/Edit Place of Immission** window.
	Opens the **Action following ‘Add’** input area in the **Application Settings** window where you can define what happens when you click on **Add** in the **Add/Edit Place of Immission** window; the available options are self-explanatory.
	Opens a window of the **POI Combinations** sub window.
	Clears the freely definable input fields of the current POI.
	Accepts the entered data.
	Add a new POI number. Up to 2.000 POIs are possible.

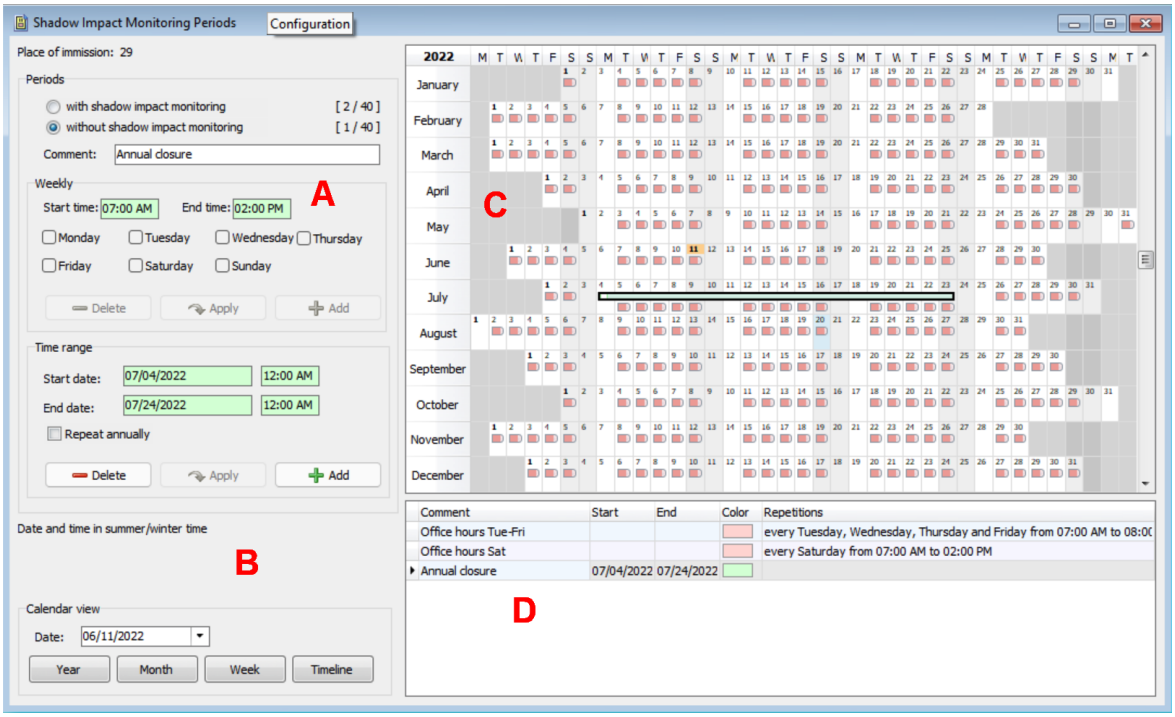
See also Practical example 1: Set up a new WTG with a new POI 29

See also Practical example 3: Changed load times & utilization times of a POI 32

4.2.3.2 Shadow Impact Monitoring Periods sub window

Purpose	Here you can define time periods in which the shadow impact at a POI is to be monitored or not monitored.
Icon	
Path	*Project > Places of Immission > Shadow Impact Monitoring Periods*
Usage type	Display + Dialog
Reference	POI

According to the default settings, all places of immission defined in SM4 will be monitored 24/7 all year round. In the **Shadow Impact Monitoring Periods** sub window, you can define up to 40 periods in which shadow impact at a place of immission will be monitored and another 40 during which shadow impact will **not** be monitored, for example, in order to reduce monitoring of commercially used POIs to the working hours or to deactivate monitoring during annual closures.



Shadow Impact Monitoring Periods window

Overview of the individual areas of the **Shadow Impact Monitoring Periods** window

A Area for defining a new dataset or edit or delete an existing dataset.

B Area for changing the time resolution of display area C

C Calendar view of existing data records (display only)

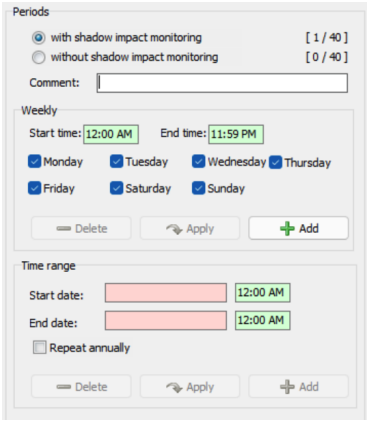
D List of existing records (display only)

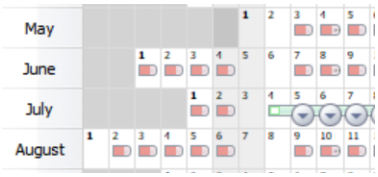
Notes on the example window **Shadow cast monitoring times**

- In the above example window, as can be seen on the bottom right, 2 weekly recurring monitoring periods are defined to ensure that the building is exposed to limited shadow impact during office hours, marked red.
- Below this you can see the **company vacations** in July, which are excluded from shadow impact monitoring, marked green. Whenever "green" periods (**without** monitoring) overlap with "red" periods (**with** monitoring), green periods are given priority.
- If you do not make any changes in the Shadow Impact Monitoring Periods times window, then only the following default dataset is created here, which ensures that monitoring takes place 24/7 all year round:

Comment	Start	End	Color	Repetitions
Standard				every Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday from 12:00 AM to 11:59 PM

An explanation of the information, options or buttons can be found in the following table

Input field/area	Explanation/ function
Place of immission	Displays the number of the place of immission point selected in the **Places of Immission** window.
[x/40]	Shows how many of 40+40 possible periods have already been defined.
	In this area you can add, edit or delete a dataset. **Add a dataset - procedure** 1. First you decide for one of two options: - **with** shadow impact monitoring - **without** shadow impact monitoring 2. Then you can enter a descriptive free text at **Comment** (e.g. commercial property, usage MO-FR). 3. If a day segment (**start time** to **end time**) is to be defined and repeated on certain or all weekdays, then make the further entries in the **Weekly** area and click on **Add** there. However, if you want to define a yearly period (**start date** to **end date**), then make the further entries in the **Time range** area and click **Add** there. A period defined here will be excluded from monitoring in the following years as well only if you activate **Repeat annually.** **NOTE RE 3.** Please note that it makes a difference whether you use the buttons in the **Weekly** area or in the **Time range** area. **Delete a record** • Select the record to be deleted in the calendar view (click on a red box of the respective period) or select it in the list at the

Input field/area	Explanation/ function
	bottom right, then click on **Delete** in the **Weekly** area or in the **Time range** area, depending on the dataset type concerned. **Modify a record** • Select the record to be changed in the calendar view (click on a red box of the respective period) or select it in the list at the bottom right. • Make the desired change and then click on **Apply** (again, under **Weekly** OR under **Time range**, depending on the dataset type). **GENERAL NOTES** • Entry formats for time and date depend on the settings under *File > Application Settings > Shadow Manager 4 > General > Country-specific settings*. • According to the default setting, monitoring takes place 24/7 all year round ("Default" data set: every Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday from 00:00 to 23:59*). • If time ranges **without** and **with** shadow impact monitoring overlap, then the time range **without** monitoring has priority.
	Defined periods are displayed in a calendar view in the top right of the window. You can change the temporal resolution (**Year**, **Month**, **Week**, **Timeline**) using the buttons at the bottom left of the window under **Calendar view**), description see below. Periods with shadow monitoring Periods without shadow monitoring
Calendar view	Here you define the view in which periods with/without shadow impact monitoring are to be displayed in the top right of the window. In the **Date** drop-down list, you can switch directly to a specific day. Use the **Year**, **Month** and **Week** buttons to call up the corresponding time frames and then scroll back and forth as you wish. If you click on **Timeline**, the current day is displayed and you can scroll one day forward and one day back at the bottom scroll bar.
List at bottom right	All currently defined datasets are listed here. In the **Color** column, periods with shadow impact monitoring are marked red, while times without shadow impact monitoring are marked green. If you wish to edit or delete a dataset, you can select it here.

*The entry format (date and time format) is based on the pre-settings (defaults) in the input area **Country-specific settings** (*File > Application Settings > Shadow Manager 4 > General*) and can be changed there at any time.

Defining periods with/without shadow impact monitoring can be useful in cases such as the following:

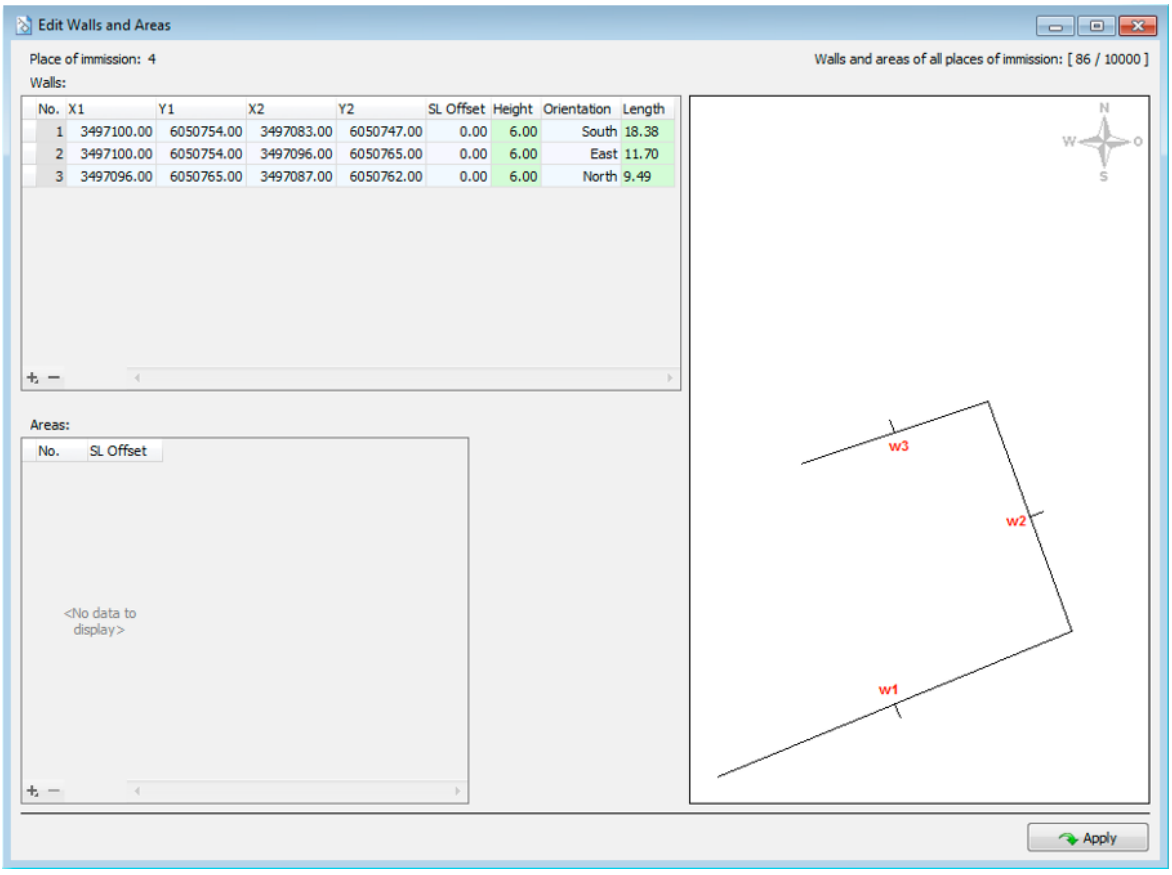
- It is not necessary to monitor a POI on Saturdays and Sundays because it is not used on these days.
  Measure: Remove the checkmarks for **Saturday** and **Sunday** of the “default” dataset under **Periods with shadow impact monitoring**.
- It is not necessary to monitor or a POI doing a specific period of the year due to annual closures.
  Measure: Add a dataset that specifies the corresponding period under **Periods without shadow impact monitoring**.

See also Practical example 3: Changed load times & utilization times of a POI 32

4.2.3.3 Edit Walls and Areas sub window

Purpose	Specify the coordinates of the walls and areas to be monitored
Symbol	
Path	*Project > Places of Immission > Edit Walls and Areas*
Type of use	Display + interactive
Reference	POI

In order to enable the SMU to monitor a defined place of immission (POI), you have to define the actual walls and/or areas of the POI that need to be protected from shadow impact. No monitoring will take place until you have defined the corresponding coordinates in the **Edit Walls and Areas** sub window.



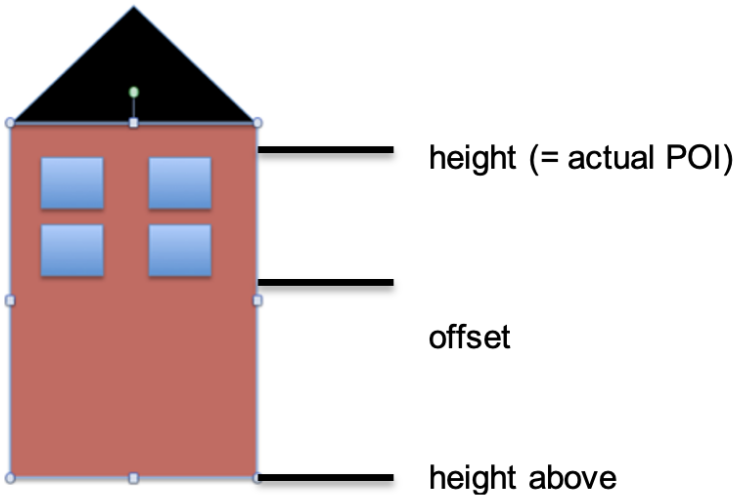
Edit Walls and Areas window

Notes regarding the **Edit Walls and Areas** window

- To add a wall or area, click on the **+** character (bottom left) in the corresponding screen area; to remove a wall or area, select the wall/area to be removed and then click on the - character (also bottom left).
- Press the enter key to confirm your input and jump to the next field.
- Input format: For input fields in which decimals are allowed, the decimal separator to be used depends on the default selected in the input area Country-specific settings (*File > Application Settings > Shadow Manager 4 > General.*). It can be changed there at any time.
- Upon confirming the last input field of a line by pressing the Enter key, you automatically add a new empty dataset.
- In the top view on the right you can visualls check your entries

You will find a detailed description of this window in the following table.

Element	Explanation/function
Place of immission	Number of the POI selected in the **Places of Immission** window (reference only).
Walls and areas of all places of immission	Indicates how many walls and areas have already been defined for all POIs and how many can be defined in total. In the exemplary window above, you can see that 86 of 10.000 possible walls and areas have been defined so far.
Walls/No.	Consecutive number of the respective wall
Walls/X1, Y1, X2, Y2	A wall is defined here by specifying 4 metric values based on the coordinate system selected in the **Project data** window (*Project > Project Data*). 2 decimals

Element	Explanation/function
Walls/ Offset NN	Enter the distance between **Meters above sea level** specified when defining the POI and the first window of the building. **EXAMPLE** The bottom edge of the lowest window in a wall is located 5 m above the ground, and from a height of 8 m above the ground, there are no more windows in this wall. In the above example you would have two enter “5 m” as **Offset**. 
	You can also enter a negative value, e.g. for buildings situated on a slope whose windows may be located below sea level. meter, 2 decimals
Wall/ Height	**Actual place of immission:** Enter the height of the wall area to be considered as POI. In the above example you would have two enter “3 m” meter, 2 decimals
Walls/ Orientation	Defines the orientation of the respective wall.
Wall/ Length	This field will be filled out automatically – here you can verify the entered coordinates are correct.
Area/No.	Consecutive number of the area
Areas/ Offset NN	Enter the distance between **Meters above sea level** as specified when defining the POI and the elevation of the respective area. Example: rooftop garden. meter, 2 decimals
Areas/X, Y (1, 2, 3 …)	The sides of an area are defined here by specifying 2 metric values based on the coordinate system selected in the **Project data** window (*Project > Project Data*). 2 decimals

Element	Explanation/function
Areas/ Length	This field will be filled out automatically – here you can verify the entered coordinates are correct.

Important notes for defining walls and areas

- The points defining area must be entered clockwise or counterclockwise; it is important not to enter them in a criss-cross manner.
- Walls and areas, you have already edited or created will only be saved and applied if you click the **Apply** button.
- The coordinates of all WTGs and POIs must be defined using the same metric coordinate system.
- You can define an unlimited number of walls and areas for each POI. However, the number of walls and areas is limited to 10,000 for each project.
- Once you have entered or edited a parameter of a wall/area, you can press Enter to jump to the next parameter (to reduce mouse operation).
- An area must have at least 3 sides (defined by points) and can have a max. number of 9 sides (i.e., 10 points); the last point connects to the first point.

Please also pay attention to the following note.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

If the field **Length** to a wall or area in meters (last field of the line) is highlighted in yellow (instead of green), the entered values are not plausible or the maximum length of a wall or side of an area according to the warning limit (*File> Application Settings > Warning Limits*) has been exceeded. Check that you have entered the coordinates correctly. For further information, please refer to section Application Settings window, Warning limits 74.

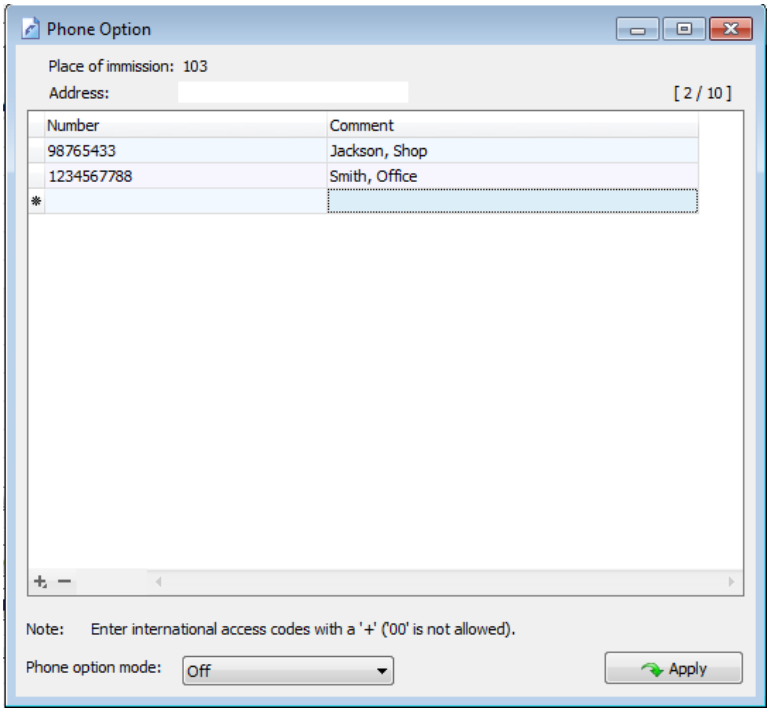
See also Practical example 1: Set up a new WTG with a new POI 29

4.2.3.4 Phone Option sub window

Purpose	Define phone numbers from which residents can shut down WTGs that currently cause shadow impact by dialing a special phone number.
Symbol	
Path	*Project > Places of Immission > Phone Option*
Window type	Divided horizontally
Type of use	Display + interactive
Reference	Project

For each place of immission, you can define up to 10 phone numbers from which residents can call to stop shadow impact at their place of immission. A connected modem will then forward the identified caller number to the SMU without answering the call.

A will immediately stop a WTG that causes shadows at this POI, even if no limit has yet been exceeded. On the following day this function is switched off again and must be reactivated by a new call if necessary. Several WTGs in the vicinity of the place of mission may be shut down immediately after a call has been made.



Phone Option window

You will find a detailed description of this window in the following table.

Element	Explanation/function
Place of immission	Displays the number of the place of immission selected in the **Places of Immission** window.
Address	Displays the number of the address selected in the **Places of Immission** window. The number of telephone numbers already added (up to 10 are possible) is displayed in square brackets on the right-hand side.
+ –	To add a phone number, click on the **+** character (bottom left); to remove a phone number, select the phone number to be removed and then click on the - character (also bottom left).
Number	Enter the phone number. **NOTE:** Enter international area codes with a “+” (00 is not allowed).
Comment	Free text field in which you may enter the name of the subscriber, for example.
Phone option mode	The following 5 options are provided here: **Off** The Phone option is switched off for this POI, none of the subscribers can prevent shadow impact via telephone. **Phone option only** A WTG that causes shadow impact will only be stopped if a subscriber has called. The entered limit values do not apply in this mode. **Phone option and counter** A WTG causing shadow impact is stopped if (a) one of the defined limit values is exceeded and/or (b) a subscriber has called. **Phone option only, light sensor will be ignored** If a subscriber calls, the WTG is switched off, provided that shadow impact is mathematically possible. Whether or not the sun actually shines is not taken into account if you select this option. **Phone option and counter, light sensor will be ignored upon call** A WTG causing shadow impact is stopped if (a) one of the defined limit values is exceeded and/or (b) a subscriber has called. Whether or not the sun actually shines is not taken into account if you select this option.

4.2.3.5 POI Combinations sub window

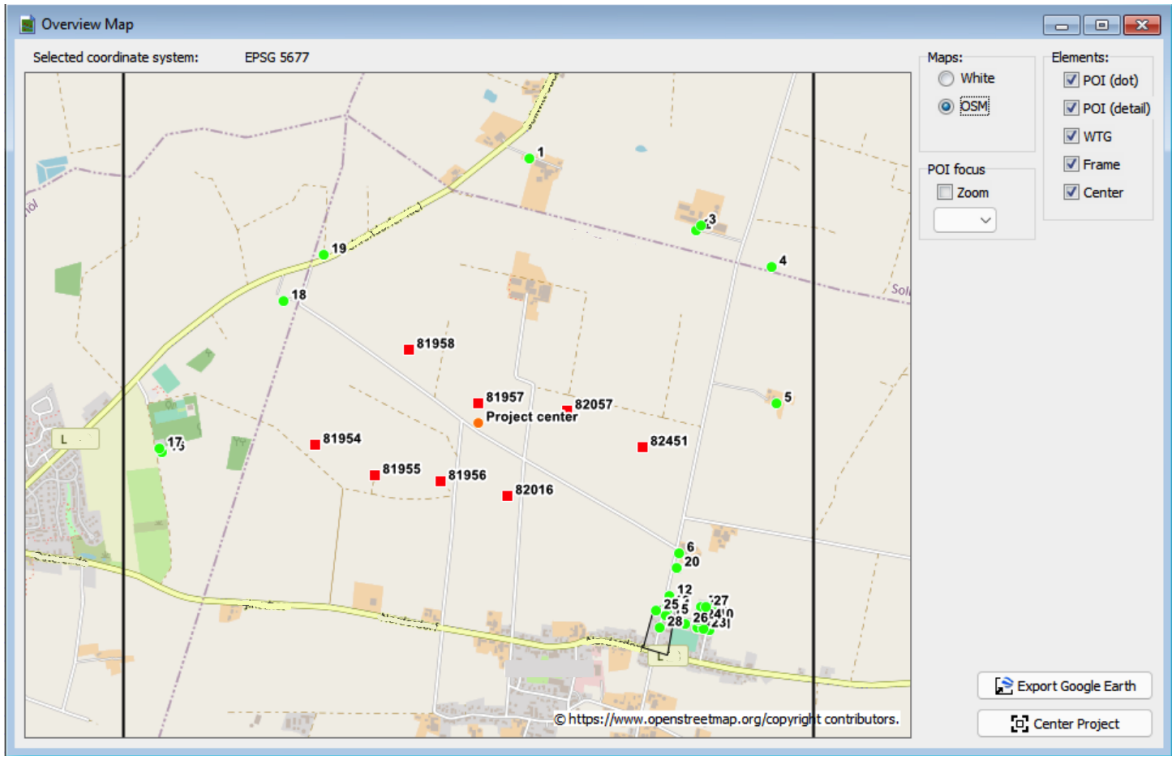
Purpose	Define/change direct relationships between the POI selected in the **Places of Immission** window and each WTG for the purpose of yield optimization
Symbol	
Path	*Project > Places of immission > Combinations*
Type of use	Interactive + Wizard
Reference	POI

Just like the **Wind Turbine Generators** window, the **Places of Immission** window also provides a **Combinations** button. When you click on this button, the **POI Combinations** window opens; the operation of this window basically corresponds to the **WTG Combinations** window except that here you are dealing with relationships from the 'viewpoint' of a place of immission instead of a WTG. Therefore, you can find more information on this window under **WTG Combinations sub window** 100.

4.2.4 Overview Map window

Purpose	Visually check whether WTGs, POIs as well as walls and areas have been defined correctly
Symbol	
Path	*Project > Overview Map*
Type of use	Display + interactive
Reference	Entire project

You can open an overview map to visually check the defined locations of WTGs, POIs as well as the defined walls and areas. It is also possible to export the data to Google Earth.



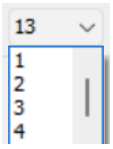
Overview map window several POIs (green dots) and WTGs (red squares)

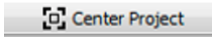
Notes regarding the Overview Map window

- Click on the map and use the mouse wheel/touchpad or press the plus (+) or minus (-) key to zoom in or out.
- To move the map, hold down the left mouse button and drag the map in the desired direction or use the arrow keys on the keyboard.

- If you zoom in strongly on the map and have selected the POI (detail) option, you can also see the defined walls and areas. The small rectangular line on walls indicates their orientation.

The information, options or buttons are described in the following table

Element	Explanation
Selected Coordinate System	Displays the coordinate system selected in the **Project Data** window for **Coordinate format**.
Cards	
White	Background is white.
OSM	Open Street Map will appear in the background. **NOTE** The computer must be connected to the internet to use the OSM.
POI focus	
Zoom 	If the **Zoom** option field has been activated, you can use the dropdown list underneath to select a POI number which will then become the center of the map.
Elements	
POI (dot)	Used to show/hide defined places of immission. Defined POIs are displayed as green dots.
POIs (detail)	Used to show/hide defined walls and areas. Defined walls and areas are displayed as black lines. The view needs to be greatly enlarged to be able to detect them. The small rectangular line on walls indicates their orientation.
WTG	Used to show/hide defined wind turbine generators. Defined WTGs are displayed as red squares.
Frame	Used to show/hide a black frame.
Center	If you click on this button, the map section is moved so that the project center is displayed in the middle of the map. The project center, i.e. the center of the WTGs according to the longitude and latitude specified in the **Project data** window, is displayed as an orange circle. It is calculated automatically.
	Exports the data as a kml file that can be opened in Google Earth. When you open the kml file with Google Earth, the WTGs and the POIs are also represented there by red squares or green dots.

Element	Explanation
	If you click on a WTG in Google Earth, a window with data relating to the respective WTG (type, meters above sea level, hub height, etc.) will be displayed. If you click on a POI in Google Earth, a window with data relating to the respective POI (address, building type, max. load, etc.) will be displayed. Using the Google Earth functions, you can also zoom in so far that you can identify e.g. the walls and areas defined for a POI.
	Moves the map view so that the center of the WTGs is displayed in the center of the window.

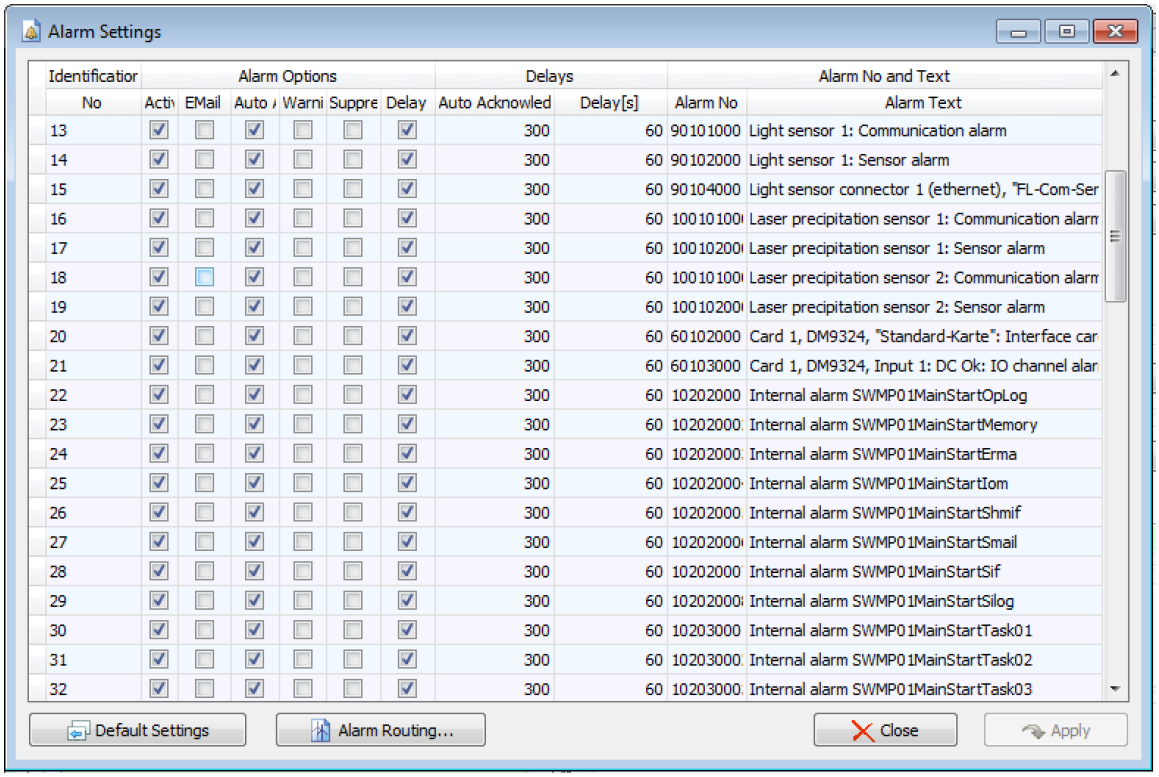
See also Practical example 2: Visually check the position of POIs and WTGs 31

4.2.5 Alarm Settings window

Purpose	Specify when alarms are initiated for what components
Symbol	
Path	*Project > Alarm Settings*
Type of use	Display + interactive
Reference	Entire project

In this window you specify the way in which alarms are initiated for which components. All possible alarms have been pre-defined: you may edit these, but you cannot add alarms.

Perform edits directly in the list of alarms (there is no editor here). After changing an alarm, click on **Apply** to apply the changes.



Alarm Settings window (section)

The information, options or buttons are described in the following table

Element	Explanation
Identification	
No.	Consecutive number for the alarm
Alarm options	
Active	All alarms are active by default. It is possible to deactivate each alarm individually by removing the checkmark in this column. **EXAMPLE** If it is known in advance that a WTG does not react to a stop command, it may be helpful to deactivate this alarm until the respective error has been remedied. **NOTE** If this option is not checked, the alarm will continue to be displayed and logged as soon as it occurs. However, **no** notification will be sent via email and it will not be transferred to the WTG.
EMail	If this option is checked, a corresponding message will be sent to the person specified in **Project Settings** (*Project > Project Settings > Email recipient settings*) for each alarm.
Auto acknowledge	If this option is checked, the respective alarm will be automatically reset after the error has been remedied.
Warning	By activating this box, you can classify a specific event that requires no immediate action as a warning (the watchdog will continue to be controlled, however, there will be no transmission to the WTG). Whether and to whom an email warning notification will be sent can be specified in the **Project Settings** (*Project > Project Settings > Email recipient settings*).
Suppress	If this option is checked, the alarm will be ignored. This means that it will not be displayed or logged, and no message will be sent to an external destination – it will be completely ignored.
Delay	The values of the two subsequent columns (Reset Autom.[s], Delay[s]) are activated/deactivated in this column, provided values have been entered there.
Delays	
Auto Acknowledge [s]	If a check mark has been placed in the **Auto Acknowledge** column, you can specify a period in seconds by which the automatic reset is delayed.
Delay[s]	If an alarm should not be triggered as soon as it occurs but only after a certain period has elapsed, you can enter the desired delay (in seconds) here.
Alarm number and text	

Element	Explanation
Alarm No	Automatically generated number that is also displayed in the log.
Alarm Text	Automatically generated text that is also displayed in the log.
Default Settings	The default settings of the **Alarm Settings** window can be found in Appendix I.
Alarm Routing...	Use this button to open the **Alarm routing to WTG** settings window for the alarm marked in the **Alarm Settings** Window. This is not relevant for all WTG types. This is only relevant for WTG types the SMU communicates with directly. In this case, you can set which alarms are to be forwarded to which WTGs. This is particularly useful if an alarm is received by the SMU that triggers an action of the WTG (e.g., stop during night time because the bat shutdown feature is active then). During this time, non-relevant alarms, such as the fault of a sensor not assigned to this WTG or errors in the communication with another WTG, should not be forwarded. Relevant WTG types: 200xx, 300xx, 400xx, 2200xx, 6200xx, 19100xx To route the selected alarm (displayed above the list of WTGs in the **Alarm routing to WTG** setting window) to all WTGs, click on **... to all WTGs** (unless all WTGs are already selected in the **Alarm routing** column). To route the selected alarm only to specific WTGs, click on **... to no WTG** and select only certain WTGs individually in the **Alarm routing** column.
Close	If you click on **Close** without having clicked on **Apply** beforehand, the system will ask you whether you want to apply the changes.
Apply	Confirms the entered/selected values.

4.2.6 Project Settings window

Purpose	Perform basic settings that apply to the entire project
Symbol	
Path	*Project > Settings*
Window type	Menu tree window
Type of use	Interactive
Reference	Project

You can perform basic settings that apply to the entire project in this window.

From the settings and information, SM4 later derives the data used to configure the SMU. It is therefore imperative that you observe the following warning notice:

Pay particular attention when entering the following information in the Project Settings window:

- Port number(Server settings 146)
- Ethernet IP address, Ethernet net mask, Gateway, DNS server (Ethernet settings 147)

If incorrect information is entered here and transmitted to the SMU, the SMU will no longer be available, and a service technician will have to determine the IP address of the SMU on site.

You will find an explanation of the individual parameters and setting options in the following tables.

In the explanation for the parameters, you will find information on the default highlighted in green, where applicable and appropriate.

4.2.6.1 Project Settings window, SMU, Time settings

Summer winter time handling, summer winter time application

Parameter	Explanation
Global switchover	explained in detail in the software
Fixed usage	explained in detail in the software

NOTE

If you change this setting, the times defined in the project are **not** automatically adjusted..

Time synchronization, Time sync settings

NTP Settings (NTP = Network Time Protocol)

In this input area, you specify whether and how the internal system time of the SMU is synchronized. If synchronization is not performed, this will result in the internal system being imprecise and quickly lead to inaccurate shutdown times. In the previous version, synchronization was only possible via a request to the light sensor (with GPS). In the current version, synchronization can also take place via a request to an NTP server.

If an NTP server is used, the SMU must be available via an internet connection and the server data must be entered. If the system is only used for species conservation, using an NTP server means that it is not necessary to install a light sensor.

Parameter	Explanation
Synchronize system time	You specify here whether the system time should be synchronized.
Use NTP	You specify here whether synchronization should take place via NTP. If NTP is used, the SMU must be available via an internet connection. If a system is only used for bat shutdowns, for example, this makes the light sensor superfluous; whereas in the previous versions, synchronization was only possible via a request to the light sensor (with GPS).
NTP server 1–10	If NTP is used, you need to enter at least one NTP server address here.
Repetitions NTP request	The SMU sends a request to the registered NTP servers, one after the other. If all requests are unsuccessful, it starts, after the **Delay until next NTP request**, again with the first NTP server, etc. After X (here set number) unsuccessful “request rounds”, the request process will be aborted, and a new attempt will only take place the next day. Default: 3

Parameter	Explanation
Delay until next NTP request	see above Default: 300 s
Error after X day(s) without synchronization	Specifies after how many days without synchronization an alarm is generated. Default: 7 days
Use time of synchronization	If a checkmark is set here, synchronization always takes place at 00:00 hours (midnight, local time)
Time of synchronization	If a checkmark is set here, synchronization only takes place at the time set here (local time). Default: 00:00:00
Use light sensor	If a checkmark is set here, synchronization always takes place via the GPS module of the light sensor.
Use climate sensor	If a checkmark is set here, synchronization always takes place via the GPS module of a climate sensor.
Use daylight savings time/ winter time	This is deactivated for countries that do not have daylight savings time.

4.2.6.2 Fenster Projekt-Einstellungen, SMU, Server-Einstellungen

Settings for the connection between SM4 and the SMU are defined here.

> ! Pay particular attention when entering the **Port No.**: If incorrect information is entered here and transmitted to the SMU, the SMU will no longer be available, and a service technician will have to find out the port number of the SMU on site.

Parameter	Explanation
Server settings	
Timeout	The only way for SM4 and the SMU to reliably determine whether the connection between them still exists is based on "life signs" from their connection partner. A possible “life sign” may be traffic between the two, such as when a Live Data window regularly retrieves data from the SMU. If the SMU receives neither a data command nor a ping command from SM4 for the period specified here, the SMU will recognize that its connection to SM4 has been lost. Now it will change its connectivity from **Busy** to **Ready for connection**. Default: 30000 ms **NOTE:** This parameter must match the **Login refresh interval** (*File> Settings> General > Communication parameters*) that controls the interval at which **SM4** sends a ping command. The value on the SMU side (**Session timeout**) must be higher than the value on the SM4 side (**Login refresh interval**) to ensure that SM4 sends before the SMU assumes that the connection has been interrupted.
Port No	You specify the port number of the SMU server here. Default: 60200 **NOTE:** The port number and the IP address need to be entered into the **Connect** window to establish a connection to the SMU.
Special Shutdown Interface	
Timeout	The special shutdown interface is used, among other things, to set the external triggers (see Glossary 358) on the SMU. If the interface receives neither a data command nor a ping command from SM4, the connection will be closed. Default: 30000 ms
Port No	Here you define the port number of the SMU behind which the functionalities of the special shutdown interface are located. Default: 60300
Interface active	Place a check mark here to activate the interface.

4.2.6.3 Project Settings window, SMU, Server settings

Settings for the connection between SM4 and the SMU are defined here. The control unit has 2 physical network connections, with only one being used as a rule.

To be able to establish an online connection to the SMU, the following settings must match that of the SMU: **Ethernet IP address**, **Ethernet net mask**, **Gateway**, **DNS server and Port number (see above).**

! Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

Input for all addresses: 4 integers from 0 to 255 separated by periods

Example: 192168044201

Parameter	Explanation
Ethernet IP address	You specify the IP address of the SMU server here. **NOTE** The port number and the IP address need to be entered into the **Connect** window to establish a connection to the SMU.
Ethernet net mask	You specify the network mask of the SMU server here.
PowerLink IP address **PowerLink net mask**	The **PowerLink IP address** and **PowerLink net mask** fields relate to the second physical network connection of the SMU. There are two options: 1. Use it to retrieve data from POI modules (analog/digital inputs and outputs) **EXAMPLE** The cabinet is located at the base of the tower, some POI modules are not installed on a DIN rail in the cabinet but, instead, installed in the nacelle. These are fitted with a network module, which can be queried via the Powerlink port. 2. Use it as a second network port In this case, the **PowerLink interface in Ethernet mode** checkmark must be checked below. This makes it possible to set up a second network with its own IP address. It is important that both networks are separate from one another physically.
Gateway	The term gateway (GW) refers to hardware and software used to connect non-compliant networks, that work with different network protocols, to each other. As a rule, the address corresponds to the IP address of the router.

Parameter	Explanation
DNS server	The Domain Name System (DNS) primarily responds to name resolution requests. As a rule, the address is identical with that of the gateway.
Host name	Freely selectable host name (of the SMU) for the own computer component that will be displayed instead of the IP address.
PowerLink interface in Ethernet mode	Set a checkmark here if the Powerlink port should be used as a second network port, see above.

4.2.6.4 Project Settings window, SMU, Email settings

The access data of an email provider must be entered here and stored in the SMU to automatically send emails (e.g., in the case of alarms and/or other warnings) through the SMU.

NOTES

- The transmission of emails only works if a provider is entered here that still supports unencrypted transmission.
- E-mails are only sent if this has been activated in the Alarm Settings window 140.

Parameter	Explanation
Server name	Provider's outgoing email server
Email user	User name as stored with the provider
Email password	Password as stored with the provider
Sender nameFreely selectable (example:	SMU_serial_number_project_name)
Domain name	e.g. gmx.de
Timeout	The SMU attempts to make contact to the email server for x seconds. Default: 30 s
Port No	Port number of the outgoing email server (as made available by the provider)
Delay after sending	The SMU summarizes several alarms and/or notifications that belong to a fault in one email. After sending such an email, the SMU waits for the number of seconds specified here before it sends the next one. What notifications should be sent is specified under **Email recipient settings**; see the next table. Default: 60 s
Use SMTPS	Specifies whether the SMTPS (Simple Mail Transfer Protocol Secure) is used to secure e-mail communication via SMTP using SSL/TLS.

4.2.6.5 Project Settings window, SMU, Email recipient settings

Error messages (alarms), Warnings, and Other emails can be automatically sent by the SMU as an email. You can define 10 recipient email addresses for this and specify whether they should be sent either **Alarms** and/or **Warnings** and/or **Other Emails**.

Parameter	Explanation
Receiver	Enter a valid email address here.
Alarms	Set a checkmark here if Alarms should be sent to the recipient address. **NOTE** E-mails are only sent if this has been activated in the Alarm Settings window 140.
Warnings	Set a checkmark here if **Warnings** should be sent to the recipient address. Warnings are a kind of alarms (seeAlarm Settings window) 140.
Other	If you set a check mark at **Other** for a recipient, this recipient will receive all e-mail messages defined in the **Other Emails** window (*Switching & Measurement > Email*) (provided that the respective conditions are met).
Subject for alarm/ warn/ other mails	If you enter $**PN** or $**SN** here, these strings will be replaced by the respective project name or serial number in the subject line of a sent e-mail.
After x minutes send email again	If you set a checkmark here, emails that were not sent successfully will be sent again after the number of minutes specified.

4.2.6.6 Project Settings window, SMU, Shadow impact calculation

You can specify the various basic settings for the shadow impact calculation here.

Parameter	Explanation
Rotor radius tolerance	If you are not sure whether the POIs of the project have been measured accurately, you can decrease/increase the WTG rotor to be on the safe side. **EXAMPLE** If this parameter is set to 5 % for an actual rotor diameter of 100 m, this will result in a calculated diameter of 105 m. Default: 0 %
Min. sun elevation	As soon as the sun sinks to the elevation set here, all shadow impact calculations will be stopped. Default: 3°
Min box to rotor angle	If the angle between the rotor and POI is zero degrees, disruptive flickering could still be perceived at the POI. This value ensures that the ellipse always has a minimum width to ensure that shutdown occurs in the case where the SMU assumes that shadow impact is not possible. Default: 5°
Add missed shadow impact periods to POIs after SMU start (assumption: worst-case scenario)	Checking this box has the following effects: If a system including the SMU has the power switched off for a specific period of time (e.g., due to a fault, deliberate shutdown etc.) and it is then started up again, the shadow impact that may have been caused by other WTGs monitored by this SMU will be recalculated and added to the budget. The calculation is carried out based on a worst-case scenario (sun shines, rotor is in a 90 °position with respect to the sun)

4.2.6.7 Project Settings window, SMU, Monitoring

You perform settings for the SMU hardware here.

Parameter	Explanation
Standard inputs and outputs	
Use "DC present"	You set a checkmark here if the SMU does **not** have a puffer module installed for the power supply. The CPU of the SMU monitors its own power supply. If there is a power cut, the system is shut down in safe mode, without saving the last events. Log entries may be lost, meaning that, for example, there is no longer a log entry regarding the power cut.
Use "DC OK"	You set a checkmark here if the SMU is provided with a puffer module (normal case). The CPU of the SMU monitors its own power supply. In the case of a power cut, the CPU can draw power from a puffer module for 2 to 3 seconds in order to complete saving processes and shut down in safe mode to ensure that no data or data structures are destroyed. Moreover, all log entries can be carried out.
Use "Watchdog output"	This option is activated if the WTG type has a watchdog (see Glossary 358).
Use "Watchdog input"	This option is activated if the watchdog function should be monitored by the SMU.
Use "Modem reset"	If you check this box, you enable the use of an additional digital output signal, see Phone Option window 260. Prerequisites for using the signal: • assignment to an output of a DO card • wiring of the DO to the reset input of the modem
Watchdog	
Monitor watchdog	It only makes sense to activate this option if the **Use "Watchdog input"** above is also activated. If this is the case, a test is performed to ensure the watchdog relay is operating for additional security.
On duration **Off duration**	Set here how often the watchdog is controlled. At a value of 10000 ms (pre-setting), the output of the control switches to high for a corresponding period and then to low for exactly the same length of time. If the change between high/low is not carried out, the voltage to the watchdog relay drops and it is apparent that the control is faulty. Default: 10000 ms

4.2.6.8 Project Settings window, SMU, Additional hardware

Select here which component should be used by the Phone option.

NOTE

The Phone option is supported from SMU version 4.2.15 and higher.

Parameter	Explanation
Use GSM modem (RS232)	Only the GSM modem can be selected at this time.
Use Profinet card	The Profinet card is only used in connection with the WTG type “Nordex Profinet Type01”.

4.2.6.9 Project Settings window SMU, Customer Interface

The SMU customer interface is a read-only interface that is used to read out the status of the SMU, the cause of shutdowns, and measured values. The interface is designed as a switchable ModBus TCP interface. The port can be set here.

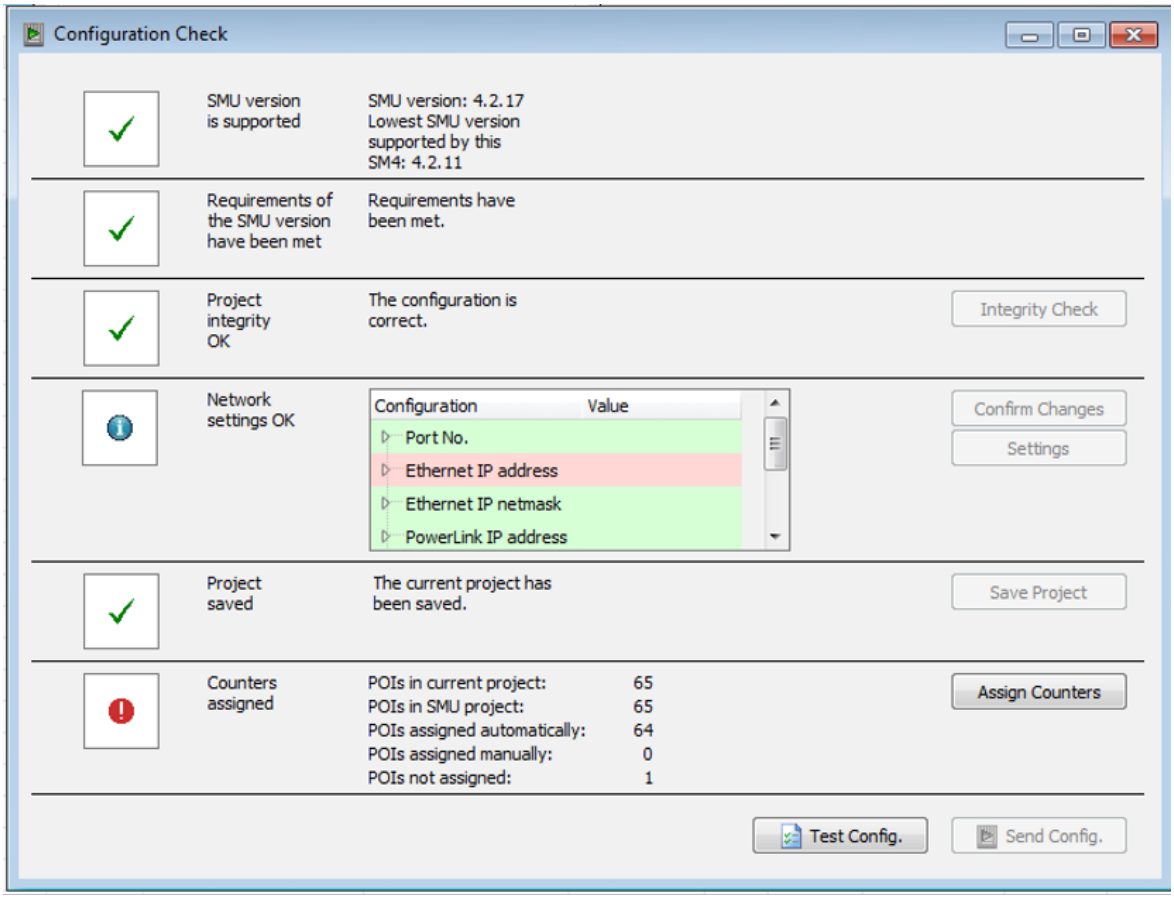
If you are interested in the customer interface, please contact NorthTec.

Parameter	Explanation
Use interface	Default: not activated
Port	Here you set the port number of the SMU server.

4.2.7 Check Configuration window

Purpose	• Check the configuration of pending tasks • Send the configuration to the SMU • Verify the configuration of the SMU
Symbol	
Path	*Project > Configuration…*
Right group	Project configuration
Prerequisites	Online connection to the SMU
Type of use	Display + interactive
Reference	Project

This window is a precursor to the actual configuration and displays a range of items that need to be fulfilled before the configuration process can be carried out. See the following example window:



Check Configuration window (after clicking on **Test Config.**)

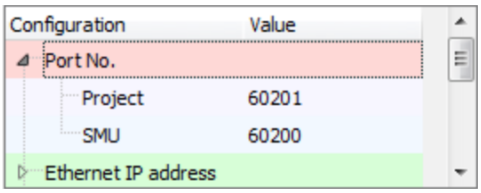
Notes regarding the exemplary **Check Configuration** window shown above

- Click on **Test Config**. to check the configuration. Only white squares will be displayed on the left before this.
- Conditions 1 to 3 and 5 are already fulfilled in the above example.
- Differing IP addresses were identified at **Network settings OK** and the new IP address has already been confirmed by clicking on the like-named button at the right.
- **Counters assigned** – here you can see that 1 of 65 POIs could not be automatically assigned by the SMU because its data must have been changed in some way (name has been changed, walls/areas changed, etc.) This status can only be remedied in the Assign Counters sub window 159.

.

The information, options or buttons are described in the following table

Element	Explanation
SMU version is supported	Checks whether the SMU version to which a connection has been made is higher than the lowest supported version.
Requirements of the SMU version have been met	There are SMU versions that do not yet support specific functions and features in the project. The Phone option, for example, or specific WTG types did not exist in older SMU versions. If these functions or features are not used in the current project, the configuration can be transferred to SMU. Otherwise the transfer will be rejected.
Project integrity OK Integrity Check	In Shadow Manager 4 (SM4), you can create a project or a project component (e.g. light sensor) even if not all the required parameters are known in order to prepare the project as far as possible. The following situations are conceivable: • creating a new project without an IP address being assigned for the SMU • adding a light sensor that is not yet connected to the hardware • defining a WTG that refers to sensors that do not yet exist However, an incomplete project may not be transferred to the SMU (configured). In order to check the project for integrity, go to *Project > Configuration…* and then click on **Test Config.** All incomplete references will be detected and clearly displayed to the user in the process. Configuration is only possible if there are no longer any unresolved items. If a green checkmark is not displayed in front of this row, click on **Integrity Check** to open the **Project Integrity** window, where you can find out why there is not yet project integrity.

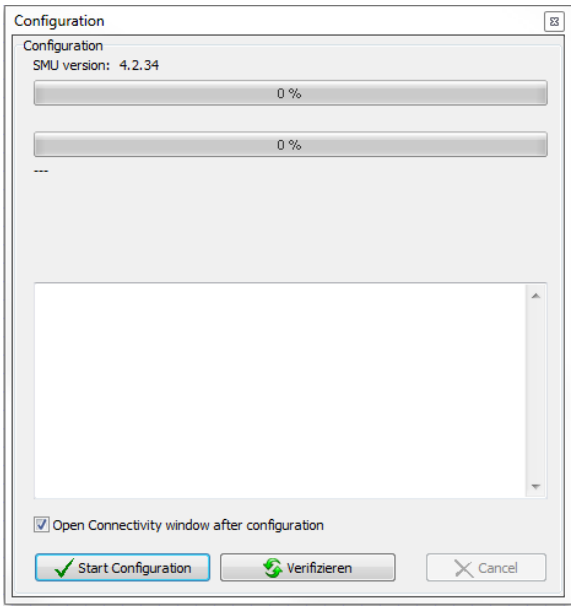
Element	Explanation
Network settings OK	The network settings required to connect to the SMU are part of the project. Prior to starting a configuration, the system ensures that the relevant network settings (**Port No**, **Ethernet IP address**, **Ethernet net mask**, **PowerLink IP address**, **PowerLink-IP netmask**, **Gateway**) match the settings of the SMU to which a connection has been established. If a dataset is expanded, the defined parameters are displayed one below the other in order to be able to compare them, see the following example:  This example shows that the port number specified in the project is not identical with that specified in the SMU. Now there are 2 possibilities: Confirm Changes or Settings, see below.
Confirm Changes	During configuration, the port number entered into the project is sent to the SMU and stored there. After the configuration, the SMU will no longer be reachable under the current port number of the current connection (60200) but will have the new port number (60111). Therefore, choose this possibility if you want to change the port number of the SMU.
Settings	The area in which you can change the Ethernet settings of the project in the Project Settings window will open. A difference between the port number of the project and the port number of the SMU can also occur, for example, because a project was copied from another user and only the shadow impact scenario was adjusted (changing the port number was simply forgotten). Here you can correct the port number of the SMU stored in the project at the last minute while you are already connected to it for configuration purposes. This possibility should therefore be selected if the port number of the project is to be changed.
Project saved Save Project	If the project from which the SMU configuration is derived is changed but has not yet been saved, this must be remedied here at the latest.
Counters assigned Assign Counters	If no green checkmark is displayed here, this status must be remedied in the **Assign Counters** sub window. Click on the corresponding button to open it. A description of the window can be found in the Assign Counter sub window 159 section.
Test Config.	Click on this button to test or retest the configuration. The results of the individual items will then be displayed on the left-hand edge of the window by green checkmarks and red exclamation marks.
Send Config.	When all items are OK, click on this button to open the **Configuration** window.

Send the configuration

As soon as a green checkmark is displayed for all 6 points in the **Check Configuration** window, the **Send Config** button is active, and you can send the configuration to the SMU as follows and then verify the process.

- Click on **Send Config.** in the **Check Configuration** window to open the Configuration window.
- Set a checkmark, if applicable, at **Open connectivity window after configuration** in the **Configuration** window.
- Click on **Start Configuration**.

The bar at the top of the **Configuration** window will display the progress of the readout of the current counter readings (if the assignment of the counter readings takes a long time, further shadow impact may have increased the counter readings). The second bar displays the progress of the configuration transfer, see following figure.



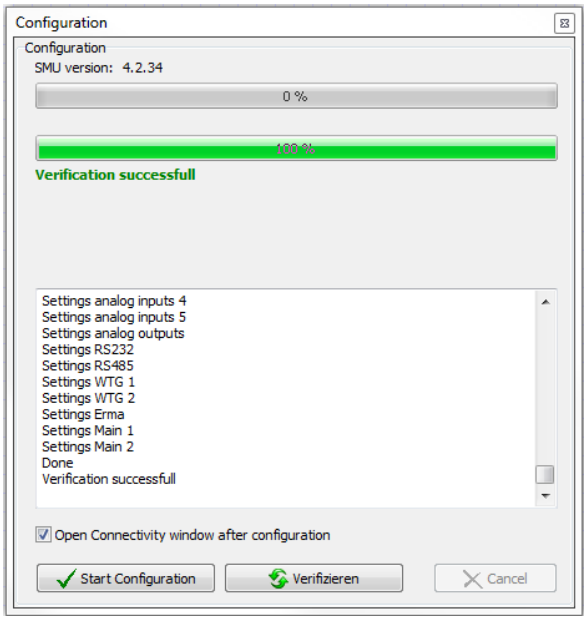
Configuration window

Verify the configuration

To make sure all data have been accepted by the SMU, you can compare the data on the SMU with the data in SM4:

- Click on **Verify** in the **Configuration** window.

If the configuration was sent successfully, this is indicated in the **Configuration** window as shown in the figure on the next page (or similar).



Configuration window (following verification)

4.2.7.1 Assign Counter sub window

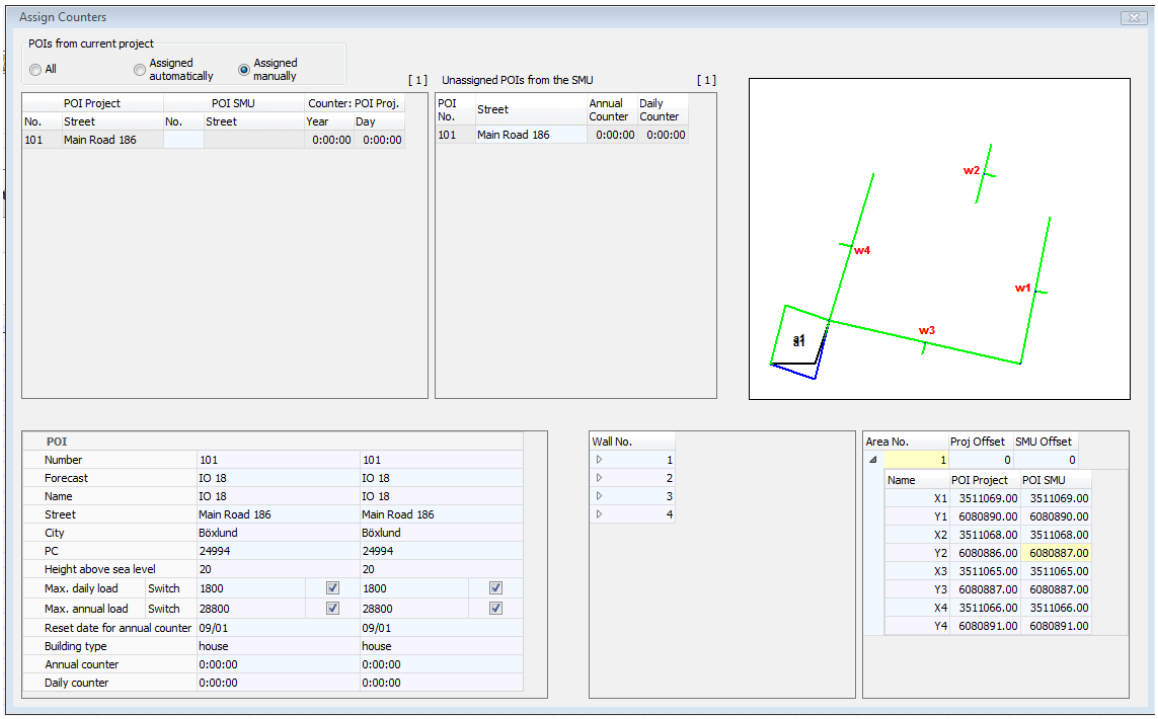
Purpose	Manually assign counters that cannot be automatically assigned
Path	*Project > Configuration > Assign Counters*
Right group	Project configuration
Prerequisites	Dongle, online connection to the SMU
Type of use	Display + interactive

In correspondence with the maximum number of configurable POIs, there are an identical number of counter registers on the SMU, which take on the role of daily and annual counters. These registers only exist on the SMU and are not a part of a dataset that belongs to a POI in the project because the content changes according to the shadow impact that occurs at the POI. The POI and the counter register are linked via the POI number – for example, the load times from POI 20 are registered in counter register 20.

If the number of a POI is changed in a project, this would mean a correspondingly different counter would be addressed. This would also mean that the previous counter readings of the POI would be lost or, respectively, would be recorded to a different counter register. Due to the renumbering of the POIs, it is important to ensure that the counter readings are correspondingly ‘moved’ so that counting continues correctly and without any loss after the configuration.

It is only possible to determine if one or several POIs have been renumbered by comparing the project to be configured with the configuration currently running on the SMU. In the process, the SMU will attempt to “recognize” the corresponding POI on the SMU based on all the parameters of a POI in the project (name, designation, and also all walls and areas). If this is successful, the content of the associated counter can be automatically copied to the new counter position.

If an area, for example, is also changed in a project in addition to the number of a POI, the POI can no longer be identified on the SMU in this way, or at least not a 100 % correctly. In this case, the user must manually determine which (changed) POI in the project corresponds to the (previous) POI on the SMU. This manual assignment thus allows counter readings to be correctly transferred. The operation of this window will be described on the following, based on examples.



Assign Counters window (example)

Legend for the **Assign Counters** window

1 Depending on which option is selected at the top left (**All**, **Assigned automatically**, etc.), the corresponding POIs of the opened project will be displayed here.

2 The POIs that could not be automatically assigned to the SMU will be displayed here. If nothing is displayed here, you can be sure that all POIs and/or counters have been correctly assigned. If you want to confirm the changes to the POI displayed here, move this POI to the POI with the same number in area **1** per drag & drop. **Note:** The drag & drop function only works here if you have selected the **Assigned manually** option above.

3 If a wall or an area has been changed for the POI selected under **1**, the changes will be represented graphically here. An area has been changed in the example above.
The **green-black** shape represents the “old” area, a square. The **green-blue** shape represents the “new” area, an irregular four-sided rectangle.

4 Comparison: The most important data of the POI selected under **1** is displayed in this table. The second column shows the data of the project currently opened in SM4, the third column the data of the project in the SMU.

5 If a wall of a POI selected under **1** is changed, the old and new offset values and coordinates are displayed here (as specified in the **Edit Walls and Areas** window). Changed coordinates are highlighted in yellow.

6 If an area of a POI selected under **1** is changed, the old and new offset values and coordinates are displayed here (as specified in the **Edit Walls and Areas** window). Changed values are highlighted in yellow.

7 If there are no coordinates displayed in **5** or **6** despite changed walls/areas, click on the small arrow to display them.

4.3 Hardware

The following table provides you with an overview of the **Hardware** menu.

Symbol	Menu item	Purpose
	Sensors and IO Signals 162	Define light sensors, hygro-thermo sensors, laser precipitation sensors and digital inputs and outputs (if deployed)
	Interface Cards 175	Define digital input properties
	Sensor Node Units 176	Define Sensor Node Units (SNU) - enhance the cyber security of wind farms
	Interface Connectors 179	Assign the individual sensors to the interface connectors
	Hardware Assignments 181	Assign required hardware to the various components

Click on a menu item to jump directly to more information.

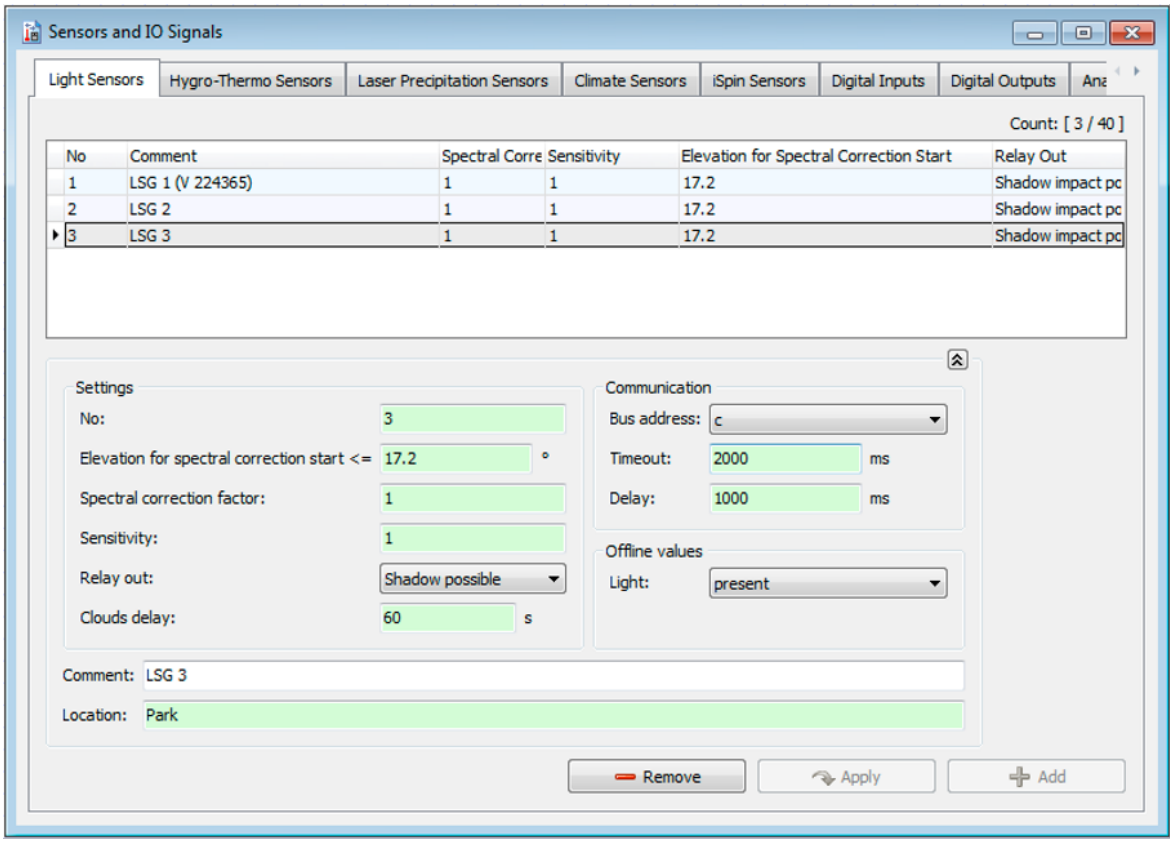
4.3.1 Sensors and IO Signals window

Purpose	Define light sensors, hygro-thermo sensors, laser precipitation sensors and digital inputs and outputs (if deployed)
Symbol	
Path	*Hardware > Sensors and IO Signals*
Window type	List window (with tabs)
Prerequisites	Can only be edited with a dongle
Type of use	Display + interactive
Reference	Project

The various sensors that can be integrated into the system for shadow impact monitoring and species conservation serve the following functions:

Sensor	Function
Light Sensor	Light Sensor This sensor measures whether or not shadow impact is possible and provides the SMU with a time signal (GPS).
Hygro-thermo sensor	This sensor measures the relative humidity and outside temperature. It is only used for species protection.
Laser precipitation sensor	This sensor measures the precipitation amount and optionally the outside temperature. It is also only used for species protection.
Climate sensor	This sensor can measure both humidity and precipitation amount, providing more flexibility when requirements change. In addition, the sensor collects climate data and provides the SMU with a time signal (GPS).
iSpin sensor	This sensor enables, for example, the monitoring and optimization of the performance of WTGs.
Visibility sensor	The main task of this sensor is to determine the visibility in the atmosphere.

The reading points of sensors can be used to formulate special and night slice shutdowns as well as for Single Data Recordings. They can also be entered as elements to be logged as events in the extended Special Shutdown Log. They report the alarms “Sensor error” and “Communication error”. If you have established an online connection to an SMU (*File > Connect*), you can display live data for each connected sensor.



Sensors and IO Signals window, displaying the **Light Sensors** tab (section)

NOTE

All fields of all tabs except for the **Comment** field the mandatory fields.

In the following sections, you will find a description of the tabs of the different sensors. In some cases, you will find helpful examples..

4.3.1.1 Light Sensors tab

The information, options or buttons are described in the following table

Parameter	Explanation
Settings	
No.	No. of the light sensor, 40 are possible
Elevation for spectral correction start	The percentage of red light in the color spectrum of sunlight increases when the sun is low. This thus also shifts the threshold level for direct intensity of illumination from when shadow impact effects can occur. Enter here from which sun elevation the spectral correction begins. Degrees (default: 17.2)
Spectral correction factor	Spectral correction can be reduced here (value less than 1) or, respectively, increased (value greater than 1) here. Value range: 0.8 to 2, default: 1
Sensitivity	The higher the set value here, the more sensitive the light sensor reacts. Value range: 0.8 to 2, default: 1
Relay out	• **Shadow possible** means that the relay output will switch as soon as the threshold limit of the light intensity (direct percentage of sunlight > 12,000 lux) is exceeded. • **Universal** means that the output can be switched to the light sensor by command (targeted control through the master unit). Default: Shadow Possible
Clouds delay	A time period is defined here that has to elapse before a change in condition from “shadow impact” to “no shadow impact” is taken into account. Hysteresis should not be set too low to ensure that the WTG does not restart too early if the weather is changeable (or in the case of small clouds). **NOTE:** When switching in the opposite direction (no shadow impact -> shadow impact) switching takes place immediately to fulfill the requirements of the authorities/residents. Input in seconds, default: 60 s
Communication	
Bus address	Address of the sensors on the RS485 bus a = master unit, remaining sensors = b, c, etc.

Parameter	Explanation
Timeout	Specifies the length of time that the master unit waits for a response from the sensor before it sends a request to the next sensor. This prevents a situation where if one sensor fails none of the other sensors are sent a request as only one sensor request can be executed at a time. Input in milliseconds, default 2000 ms
Delay	Set here how often the master should send requests. Input in milliseconds, default 250 ms
Offline Values The parameters of the **Offline values** area are used to define the values to be assumed by the SMU in cases when a sensor does not respond.	
Light	Set here the base values that the SMU should assume if the sensors do not respond. Select **available** here to prevent shadow impact periods being exceeded. If more than one light sensor is used in a wind park, it may make sense to select **not available** for one of the light sensors as it can “stand in for” the second in the case of a fault. available, not available
Comment	Enter any characters
Location	For the sake of clarity, enter the location of the light sensor (the WTG on which it is installed). Enter any characters

4.3.1.2 Registerkarte Hygro-Thermo-Sensoren

The information, options or buttons are described in the following table

Parameter	Explanation
Settings	
No.	Hygro-thermo sensor No., 5 are possible
Offline Values The parameters of the **Offline values** area are used to define the values to be assumed by the SMU in cases when a sensor does not respond.	
Temperature	Set here the base values that the SMU should assume if the sensors do not respond. Input in °C, default 20 °C
Humidity	Set here the base values that the SMU should assume if the sensors do not respond. Input area 0 to 100 %, default 0 %
Communication	
Bus address	Address of the sensors on the RS485 bus 0, 1, 2 etc.
Timeout	Specifies the length of time that the master unit waits for a response from the sensor before it sends a request to the next sensor. This prevents a situation where if one sensor fails none of the other sensors are sent a request as only one sensor request can be executed at a time. Input in milliseconds, default 2000 ms
Delay	Set here how often the master should send requests. Input in milliseconds, default 250 ms
Comment	Enter any characters
Location	For the sake of clarity, enter here the location of the hygro-thermo sensor (the WTG on which it is installed). Enter any characters

4.3.1.3 Hygro-Thermo Sensors tab

The information, options or buttons are described in the following table

Parameter	Explanation
Settings	
No.	Sequential No. of the laser precipitation sensor, 5 are possible
Threshold value	This is a general setting that can be used later when setting up special shutdowns for the “Precipitation yes/no” condition. **EXAMPLE** If the precipitation value entered here has been reached, the precipitation condition is considered to be fulfilled. Input in mm/h, default 0 mm/h
Offline Values The parameters of the **Offline values** area are used to define the values to be assumed by the SMU in cases when a sensor does not respond.	
Precipitation	Set here the base values that the SMU should assume if the sensors do not respond. available, not available
Temperature	Set here the base values that the SMU should assume if the sensors do not respond. Input in °C, default 20 °C
Communication	
Bus address	Address of the sensors on the RS485 bus 0, 1, 2 etc.
Timeout	Specifies the length of time that the master unit waits for a response from the sensor before it sends a request to the next sensor. This prevents a situation where if one sensor fails none of the other sensors are sent a request as only one sensor request can be executed at a time. Input in milliseconds, pre-setting 5000 ms
Delay	Set here how often the master should send requests. Input in milliseconds, pre-setting 900 ms
Comment	Enter any characters
Location	For the sake of clarity, enter the location of the laser precipitation sensor (the system in which it is installed). Enter any characters

4.3.1.4 Climate Sensors tab

The information, options or buttons are described in the following table

Parameter	Explanation
	Settings
No.	No. of the climate sensor, 5 are possible
Communication	
Bus address	Address of the sensors on the RS485 bus 0, 1, 2 etc.
Timeout	Specifies the length of time that the master unit waits for a response from the sensor before it sends a request to the next sensor. This prevents a situation where if one sensor fails none of the other sensors are sent a request as only one sensor request can be executed at a time. Default: 5000 ms
Delay	Set here how often the master should send requests. Default: 900 ms
Offline Values The parameters of the **Offline values** area are used to define the values to be assumed by the SMU in cases when a sensor does not respond.	
Temperature	Default: 20 °C
Rel. Humidity	Default: 0 %
Air pressure	Default: 1013.25 hPa
Dew point	Default: -10 °C
Synop 4680	Identifier for precipitation type (synoptically encoded); light drizzle, for example, has the Synop key 51. Default: 0
Precipitation	Default: Checkmark not set
Intensity	Default: 0 mm/h
Wind speed	Default: 0 m/s
Wind Direction	Default: 0 °

Parameter	Explanation
Comment	Enter any characters
Location	For the sake of clarity, enter the location of the climate sensor here (the WTG on which it is installed). Enter any characters
	Opens the **Multisensor parameters** window. There you can adjust the parameters of the sensor. A description of this window can be found in the following table.

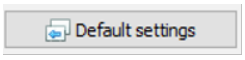
Multisensor parameters sub window

In this sub window you can adjust the parameters of the climate sensor.

! Do not change the pre-set parameters of the climate sensor unless you have fully understood the functioning of the climate sensor. In case of doubt, be sure to consult the climate sensor's manual beforehand.

Parameter	Explanation
Averaging method	The averaging procedure for wind direction and wind speed can be selected here. With the scalar averaging method (default setting), the wind direction and wind speed are averaged independently of each other. However, in the vectorial averaging method, wind direction and wind speed depend on each other. This procedure should only be selected for specific applications. Default: Scalar
Averaging time	The averaging period for all measured values is set here. The averaging period is calculated from the set value multiplied by 100 ms. Moving averages are formed. Value range: 0 to 6000, default: 600
Brightness option	The total brightness can be determined by two methods. The **Brightest sensor** option used the highest measured value of an individual sensor. The **Vectorial sum** option determines the total brightness from the measured values of the adjacent brightness sensors with the highest brightness. Default: Brightest sensor
Bus termination	Here, a 120-ohm termination resistor can be switched on or off on the RS485 bus. Default: No (without termination resistor)
Timeout error	Here you can set the period of time after which a measured value is marked as invalid if there is an error in the reading. Value range: 10 to 60 s, default: 30 s

Response delay	After the climate sensor receives a request, the response is delayed by the time set here. An increased delay of the response is useful e.g. when using interface converters. Value range: 5 … 1000 ms, default: 5 ms
Time sync	Here, you can set whether and how time and date are to be synchronized using GPS information. Instead of the complete daily synchronization of time and date, it is possible to only have the second value or the second and minute values synchronized. Default: Complete
Min. heater voltage	If the supply voltage falls below the set value, the heating no longer switches on. Only when the voltage exceeds the set value by 2 volts does the heating become active again. Value range: 5 to 48, default: 10 V
Min. heater pwr.	Here the power with which the heating starts its operation is set in %. The heat output will then be controlled automatically depending on the current wind speed and temperature. Value range: 0 to 100 %, default: 10 %
Heater	This is where the operating mode of the heating is set. Switching off the heating is not recommended. Default: On at below 5 °C
Height measurement	The station height can be determined from the GPS information. This function can be activated and set here. The station height can be extracted from the GPS information as an instantaneous value or as a 14-day average value. A determined 14-day average value can be stored permanently or determined anew after each restart of the climate sensor. Default: 14 days GPS-Ø, sets default
Station height	If the determination of the station height by the GPS information is not active, the station height can be specified here. Value range: 0 to 9000 m, default: 0 m
Measurement delay	This parameter sets the delay between two readings of the ultrasonic wind measurement. The value is calculated from the set value multiplied by 10 ms. Value range: 2 to 25, default: 2 10ms
Wind dir. correction	This parameter can be used to compensate for a misalignment of the climate sensor. If, for example, the climate sensor has not been aligned to the north (0°) but to the north-east (45°), the value 45 must be entered for correction. The input of a correction value is only necessary if the wind direction or the direction of the brightness is to be measured. If the value 1000° is set, the north correction is carried out via the compass correction. Value range: 0 to 359° /1000°, default: 1000 °
Wind speed units	Here you can set the desired unit of wind speed.

	Default: m/s
No of drops for rain	This is where the minimum number of drops is determined, which is used to detect the beginning of precipitation. Value range: 2 to 30, default: 16
Volume threshold per part	This parameter sets the threshold for the volume of a single precipitation particle. Precipitation particles with a smaller volume will be ignored. Value range: 100 to 600 µm, default: 260 µm
No of parts precip.	Here the minimum number of precipitation particles to detect precipitation is determined; only those particles are counted which are above the threshold value defined above (see **Volume threshold per partl.** above) AND which were detected within the last set period (see **Precip. time window** below). Value range: 1 to 15, default: 2
Precip. threshold	Here the threshold of the precipitation intensity for reporting precipitation is defined. If this threshold is exceeded, precipitation is reported. Value range: 1 to 200 µm/h, default: 10 µm/h
Precip. time window	Here you define the time window in which the set number of precipitation particles must be recorded before precipitation is reported. Value range: 10 to 60 s, default: 60 s
Compass correction	The magnetic compass correction adds a constant angle to the measured direction of the magnetic compass. Thus, a magnetic declination can be compensated. Value range: 0 to 359°, default: 0 °
Synop threshold	The lower precipitation intensity threshold from which a Synop key is output is defined here. Value range: 0 to 1000 µm/h, default: 0 µm/h
	Resets all parameters in this window to their default values, see above

4.3.1.5 iSpin Sensors tab

The information, options or buttons are described in the following table

Parameter	Explanation
Settings	
No.	No. of the iSpin sensor, 100 are possible
Offline Values The parameters of the **Offline values** area are used to define the values to be assumed by the SMU in cases when a sensor does not respond.	
Temperature	Input in °C, default 20 °C
Wind speed	Input in m/s, default 0 m/s
Rotor speed	Input in 1/min, default 3 1/min
Yaw angle	Angle between rotor axis and wind direction Input in °, default 0°
Communication	
IP address	In contrast to the other sensors, which are equipped with RS485 interfaces, the iSpin sensors only have an Ethernet interface. Instead of the connection via interface connectors, the IP address and port are specified directly at the iSpin sensor. 4 numbers, separated by a period, example: 192.0.2.42
Port	see above number from 1 to 65535
Bus address	Address of the sensors on the RS485 bus 0, 1, 2 etc.
Timeout	Specifies the length of time that the master unit waits for a response from the sensor before it sends a request to the next sensor. This prevents a situation where if one sensor fails none of the other sensors are sent a request as only one sensor request can be executed at a time. Input in milliseconds, default 1000 ms
Delay	Set here how often the master should send requests. Input in milliseconds, default 1000 ms
Comment	Enter any characters

Parameter	Explanation
Location	For the sake of clarity, enter here the location of the hygro-thermo sensor (the WTG on which it is installed). Enter any characters

4.3.1.6 Visibility Sensors tab

The information, options or buttons are described in the following table

Parameter	Explanation
Settings	
No.	No. of the visibility sensor, 5 are possible
Offline Values The parameters of the **Offline values** area are used to define the values to be assumed by the SMU in cases when a sensor does not respond.	
Visibility	Set here the base values that the SMU should assume if the sensors do not respond. Input in meter
Communication	
Bus address	Address of the sensors on the RS485 bus 0, 1, 2 etc.
Timeout	Specifies the length of time that the master unit waits for a response from the sensor before it sends a request to the next sensor. This prevents a situation where if one sensor fails none of the other sensors are sent a request as only one sensor request can be executed at a time. Input in milliseconds, pre-setting 5000 ms
Delay	Set here how often the master should send requests. Input in milliseconds, pre-setting 900 ms
Comment	Enter any characters
Location	For the sake of clarity, enter the location of the laser precipitation sensor (the system in which it is installed). Enter any characters

4.3.1.7 External Trigger tab

External triggers are, in simple terms, software versions of digital inputs. They were introduced in SM4 as a way of allowing users to control shutdowns or other processes externally in a convenient yet IT-safe manner (see **Glossary** 358).

Parameter	Explanation
No.	No. of the external trigger, max. 2500 are possible
Name	Enter any characters
Comment	Enter any characters

4.3.1.8 Tabs for Digital/Analog Inputs/Outputs

These tabs are not currently in use.

4.3.2 Interface Cards window

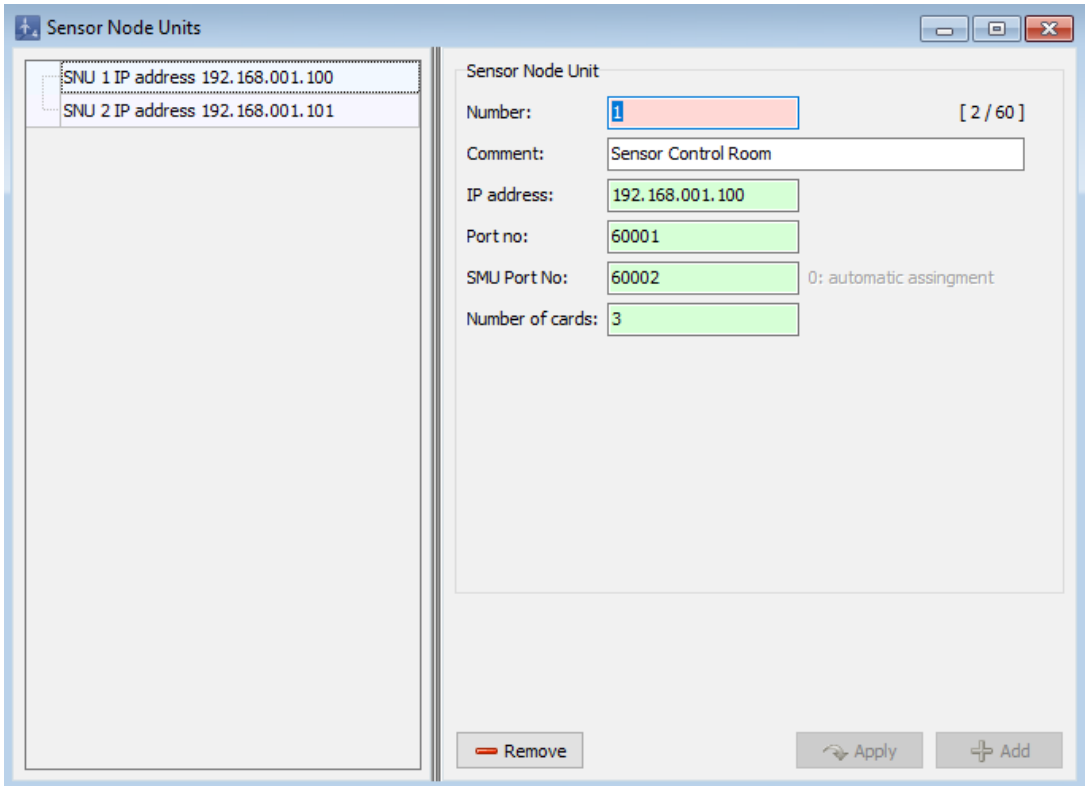
Purpose	Define digital input properties
Path	*Hardware > Interface Cards*
Window type	Divided vertically, see Vertically divided windows 21
Prerequisites	Can only be edited with a dongle
Type of use	Display + interactive
Reference	Project

Only the manufacturer is authorized to set up more interface cards and therefore this is not described here in more detail.

4.3.3 Sensor Node Unit window

Purpose	Define Sensor Node Units (SNU) - enhance the cyber security of wind farms
Path	*Hardware > Sensor Node Units*
Window type	Vertically split, see Vertically split windows 21
Requirements	Editing requires a dongle
Usage type	Display + dialog
Reference	Project

Sensor Node Units are stand-alone devices that are used to connect sensors. They can transmit the data from up to five RS485 buses via an IP network; several sensors can be connected to each bus. Communication between Sensor Node Units and an SMU is **encrypted**. Commands and responses from sensors, which are transmitted as "plain text", are tamper-proof thanks to Sensor Node Units and unreadable by unauthorized third parties or hacker attacks from the outside. This increases the cyber security of wind farms.



Fenster **Sensor Node Units**

Notes on the **Sensor Node Units** window

- For general instructions on working in vertically split windows, please refer to Vertically Split Windows 21.
- Each Sensor Node Unit can transmit data from up to 5 RS585 buses over an IP network.
- In the example window above, two of a possible 60 Sensor Node Units have been set up.

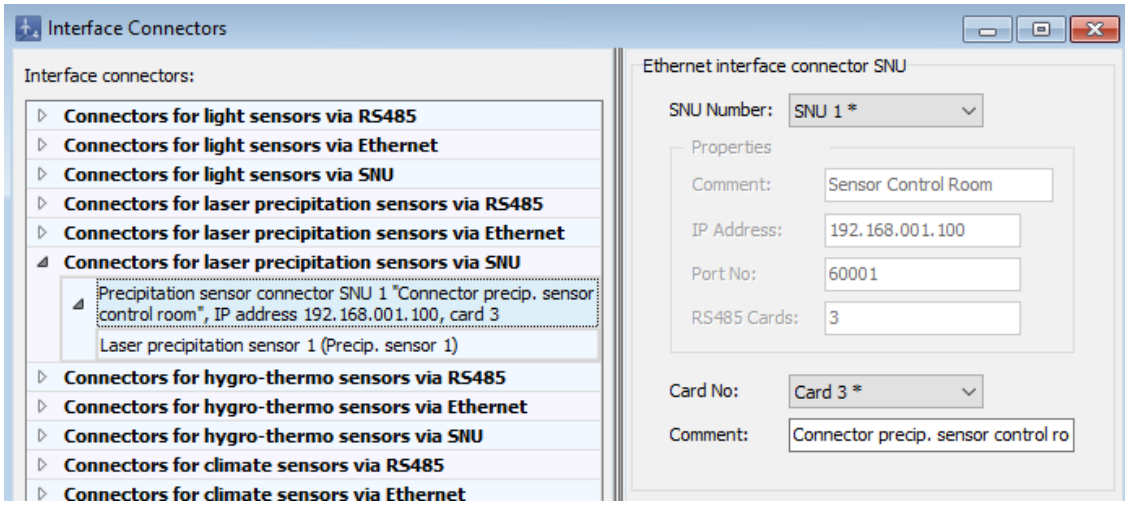
An explanation of the input fields (right half of the window) can be found in the following table

Field	Explanation/Function
Number	The number of the connection can be freely assigned in the range from 1 to 60 (only once) and is used later as a reference.
Comment	Free text input
IP address	Here you enter the value of the Sensor Node Unit that is addressed.
Port no.	Here you enter the value of the sensor node unit that is addressed.
SMU Port No	Enter the port number for responses to the SMU here.
Number of cards	Here you enter how many RS-485 cards are inserted in the respective Sensor Node Unit.

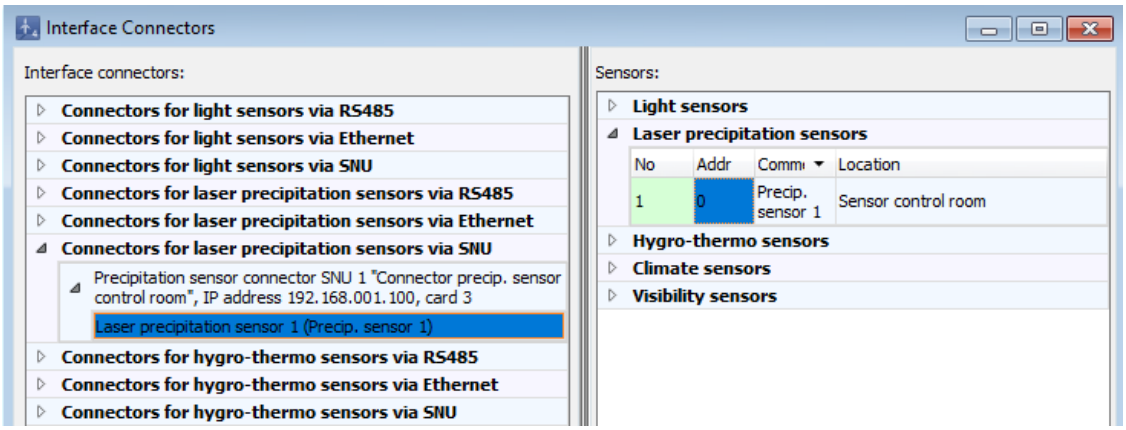
If you want to work with Sensor Node Units, perform the following tasks:

1. Set up a sensor note unit in the **Sensor Node Units** window: define the connection and the number of RS485 cards, see the table above.

2. In the **Interface Connector** window create a connector of the "via SNU" type for the desired sensor type (parameters: **SNU number** and **card No.**), see the following screenshot:



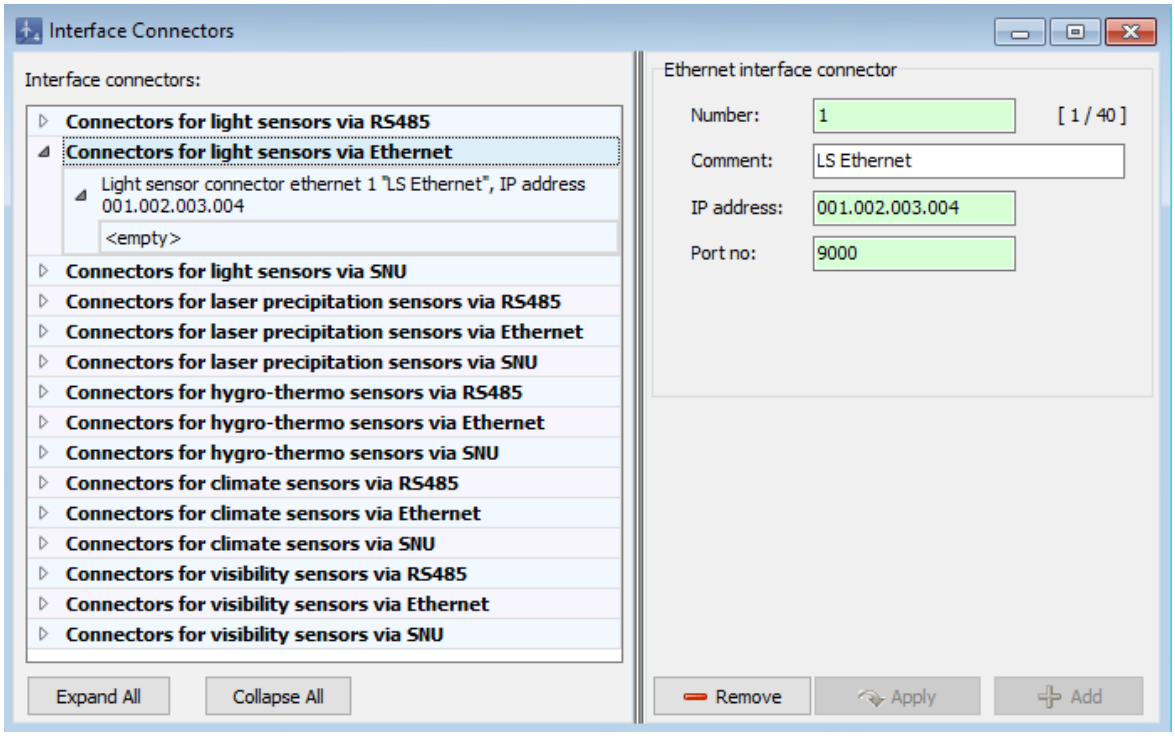
3. Add the appropriate sensors to the previously created interface connector, see also Interface connector window 179 and the following screenshot:



4.3.4 Interface Connectors window

Purpose	Assign the individual sensors to the interface connectors
Path	*Hardware > Interface Connectors*
Window type	Divided vertically, see Vertically divided windows 21
Prerequisites	Can only be edited with a dongle
Type of use	Display + interactive
Reference	Project

Here you can assign the sensors defined in the **Sensors and IO Signals** window (light sensors, hygro-thermo sensors, precipitation sensors) to the interface connectors to ensure that the SMU knows which sensors are connected.

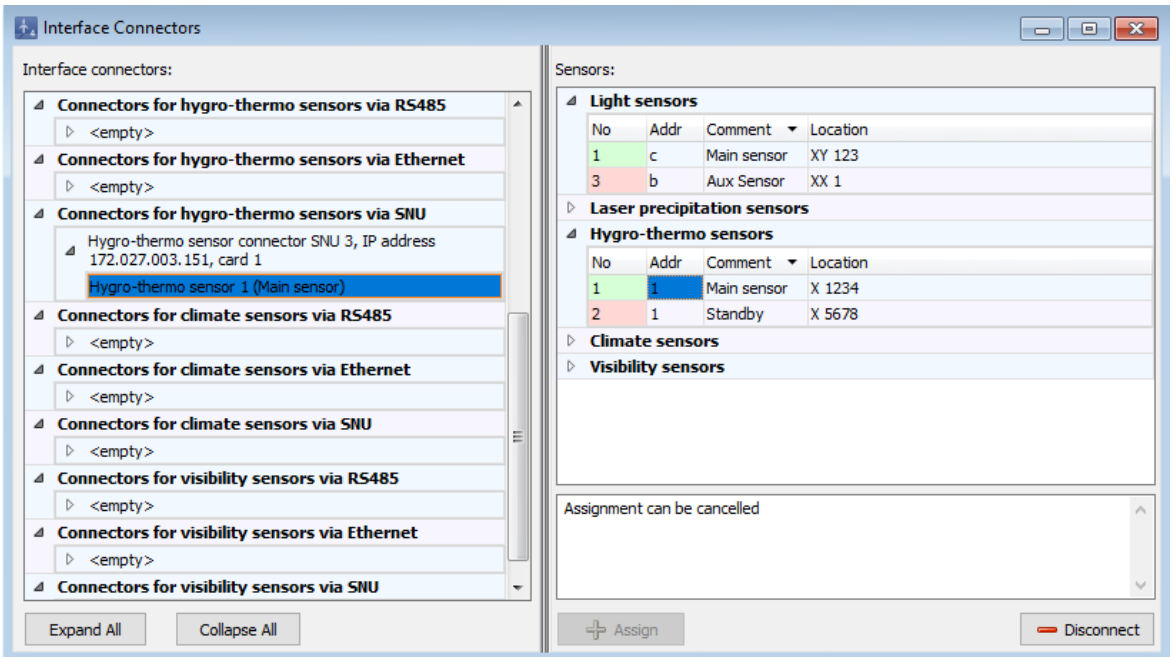


Interface Connectors window

Notes on the **Interface Connector** window

- General instructions on vertically divided windows can be found in the Vertically divided windows 21 section.
- Only the connector for light sensors via Ethernet is assigned in the above example.

- There are 5 types of connectors corresponding to the 5 types of sensors (light sensor, precipitation sensor, hygro-thermo sensor, climate sensor connectors and visibility sensors).
- Connectors for precipitation sensors can only be assigned precipitation sensors; connectors for hygro-thermo sensors can only be assigned hygro-thermo sensors, etc.
- Each sensor can only be assigned once.
- Light sensor connectors can also be assigned hygro-thermo or precipitation sensors, provided that a light sensor has already been assigned.
- If you select a sensor on the left, a list of all sensors defined in the **Sensors and IO Signals** window will appear on the right. It is possible to identify here whether a sensor is assigned (sensor No. highlighted in green) or not assigned (sensor No. highlighted in red), see the following figure:



Interface Connectors window

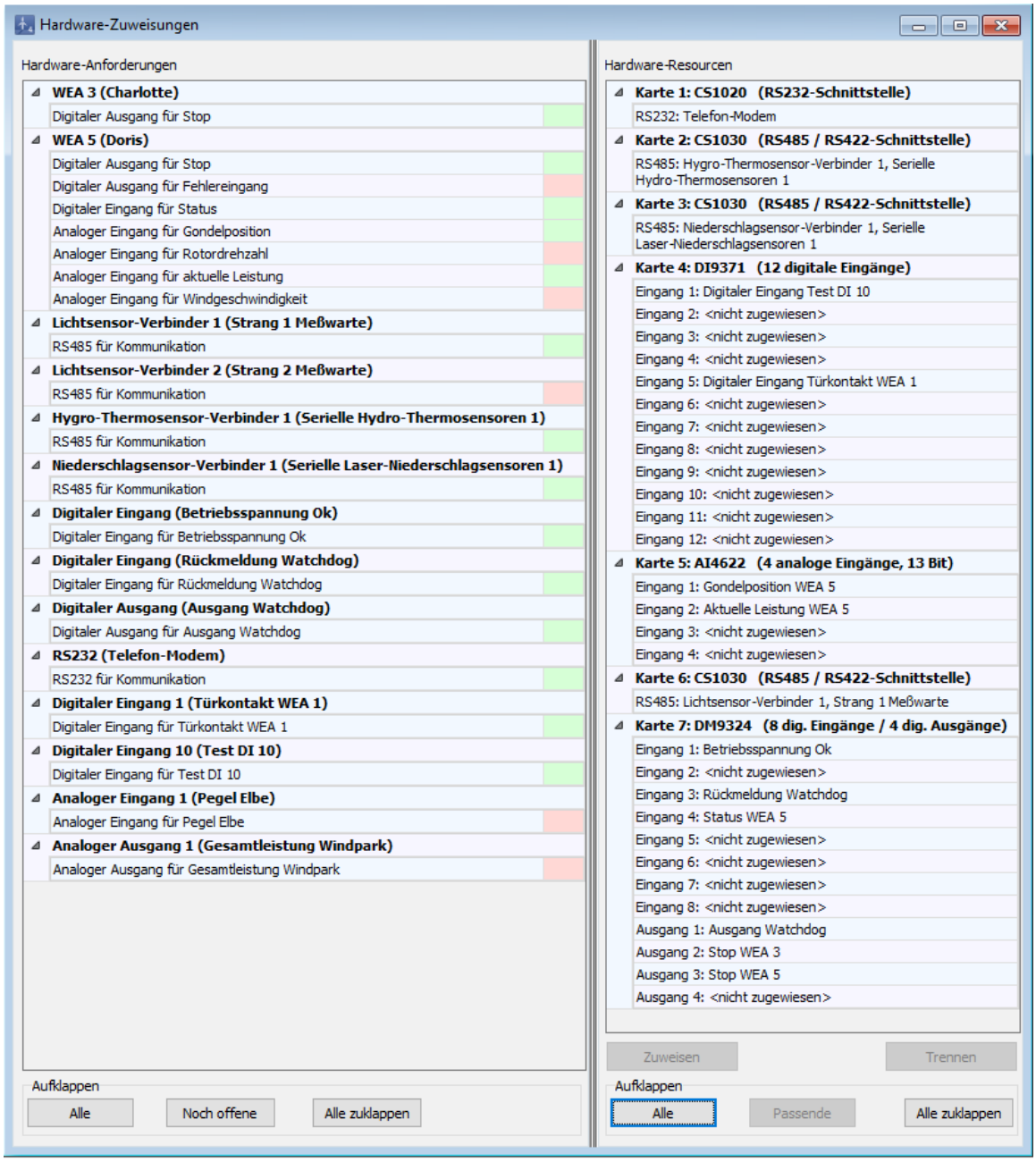
4.3.5 Hardware Assignments window

Purpose	Assign required hardware to the various components
Path	*Hardware > Hardware Assignments*
Window type	Divided vertically, see Vertically divided windows 21
Prerequisites	Can only be edited with a dongle
Type of use	Display + interactive
Reference	Project

Here you can assign, for example, connectors for sensors (defined in the **Interface Connector** window) that are queried via a RS485 bus to the respective RS485 card. Furthermore, the following can be assigned:

- connectors for sensors queried via a RS485 bus to the respective RS485 card
- watchdog inputs/outputs
- inputs/outputs for operating voltage
- inputs/outputs (digital and analog) of relay-controlled WTGs
- digital/analog inputs/outputs created by the user (**Sensors and IO Signals** window)
- GSM modem for the Phone option

See the following window for illustration.



Hardware Assignments example window

Notes on the **Hardware Assignments** window

- General instructions on working in vertically divided windows can be found in the Vertically divided windows 21 section.
- Hardware highlighted in green on the left is already assigned to an input/output.
- Hardware highlighted in red on the left has not yet been assigned to an input/output.

- If you click on **Unassigned** at the left in the window, only the hardware that is not yet assigned will be displayed.
- If you click on **Matching** at the right in the window, only the cards that are suited to be assigned will be expanded. If an analog input is selected on the left, for example, all analog input cards will be expanded on the right.
- More information on watchdogs can be found in the Glossary 358.

4.4 Switching & Measurement menu

The following table provides you with an overview of the **Switching & Measurement** menu.

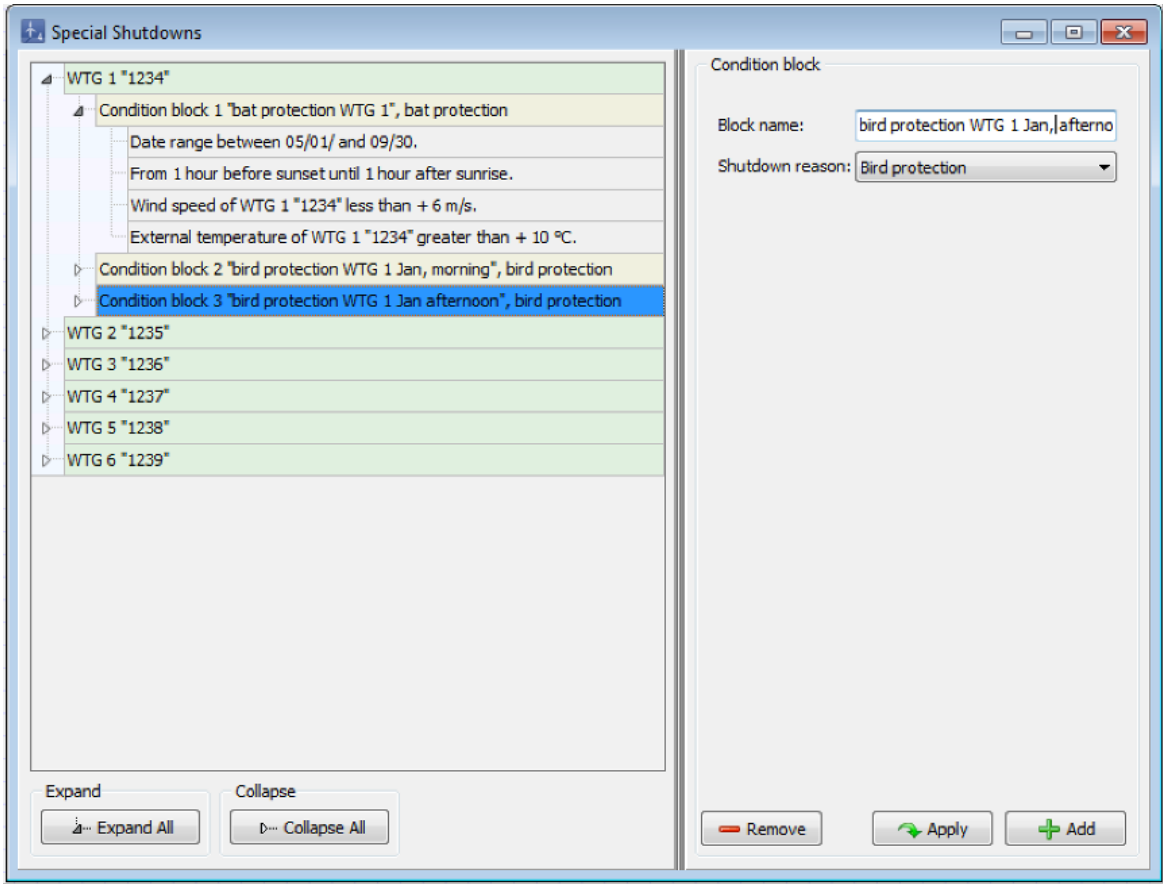
Symbol	Menu item	Purpose
Special Shutdowns		
	Special Shutdowns 185	Define shutdown conditions – used for example to fulfill official requirements regarding bat protection.
	Night Slice Shutdowns 218	Complex shutdown conditions for bat protection (divide the night into slices with different conditions).
	Shutdown Calendar 221	Calendar for scheduling fixed shutdown periods
	Digital Out Switching 224	Set conditions for switching digital outputs
Data Recording		
	Single Data Recording 225	To record individually selectable measurement data and link/compare them to one another.
	Cyclic Multi Data Recording 228	Automatically record one or more readings for one or more WTGs at regular intervals and define the output of the results as a file
	Interval Timer 232	Define intervals, e.g., for the **Cyclical Multi Data** window.
Accessories		
	Condition Flags 233	Define condition flags for special or night slice shutdowns that can be activated (set) by one set of conditions and cleared (reset) by another
	Reading Point Switches 237	Set up automatic switching between two reading points (e.g. to increase the reliability of sensors)
	Calculations 241	Define automatic calculation of certain values to use them in shutdown conditions of Special Shutdowns and Night Slice Shutdowns, Measurement Data Logging or as user-defined reading points in the Special Shutdown Log, etc.
	Events 247	Read out which reading points (measured values) are automatically logged for a special shutdown event und Add your own (user-defined) reading points
	Email 253	Define emails to be triggered by conditions

Click on a menu item to jump directly to more information.

4.4.1 Special Shutdowns window

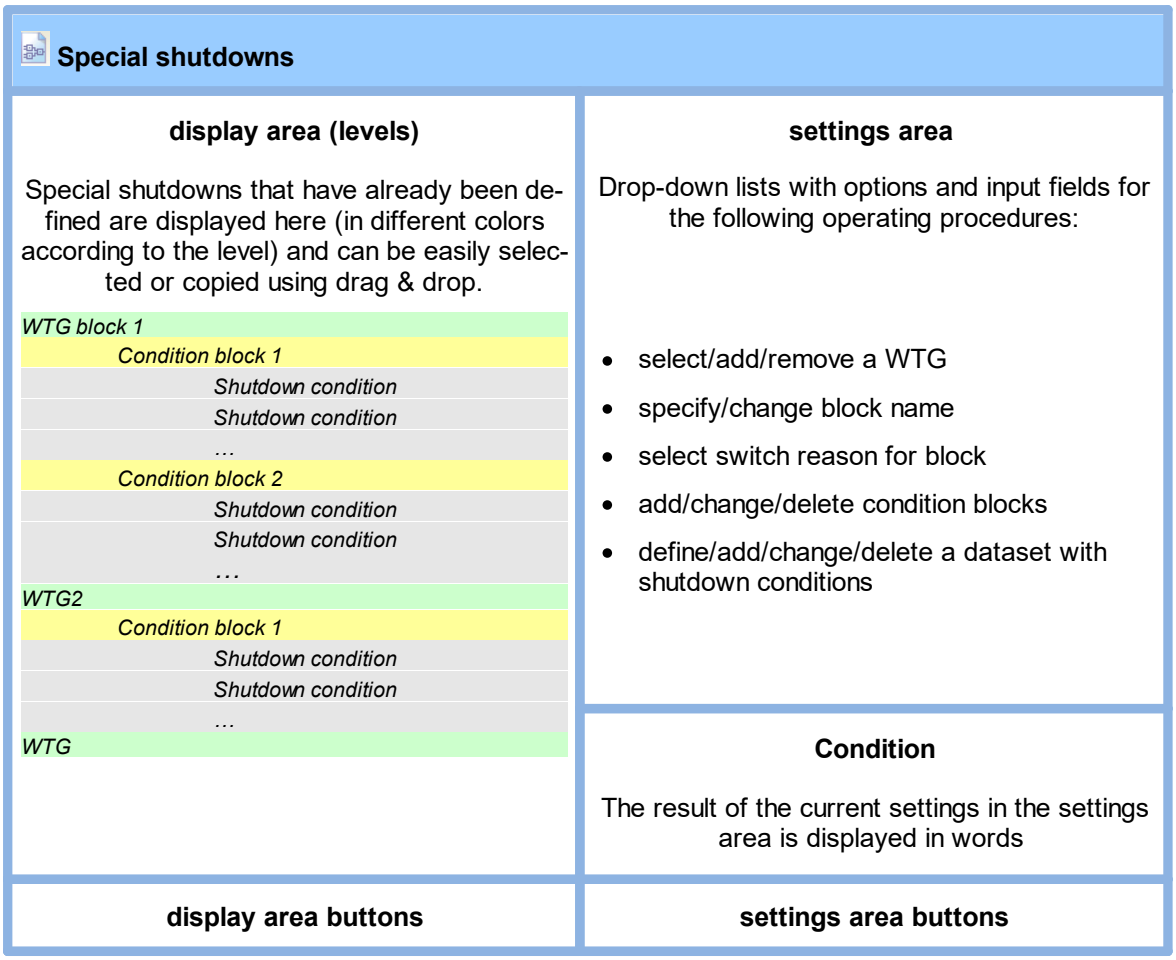
Purpose	Define shutdown conditions other than shadow impact and link them using logical operators (e.g., for the protection of bats or birds) while taking into account criteria, such as sunset/sunrise, temperature, wind speed, precipitation, and humidity
Symbol	
Path	*Switching & Measurement > Special Shutdowns*
Window type	divided vertically, see Vertically divided windows 21
Type of use	Read-only (left-hand side)/ selection/ drag & drop, dialog (right-hand inside)
Reference	Project

The **Specials Shutdowns** window provides (almost) unlimited possibilities for creating shutdown conditions other than those related to shadow impact, e.g. protection of bats protection of birds etc. Once shutdown conditions have been defined, the SMU will continuously check whether or not these are met by comparing actual values with the corresponding thresholds defined here. As soon and as long as the conditions are met, the corresponding WTG will be shut down. While it is true that the possibilities in the **Special Shutdowns** window are enormous, its operation is not as complex as it may seem at first glance – the structure, operation as well as all options available will be explained in an easily understandable manner in this chapter.



Special Shutdowns window

Since the **Special Shutdowns** window may look very differently depending on the operations carried out thus far, you will find a schematic representation of the basic window structure in the following.



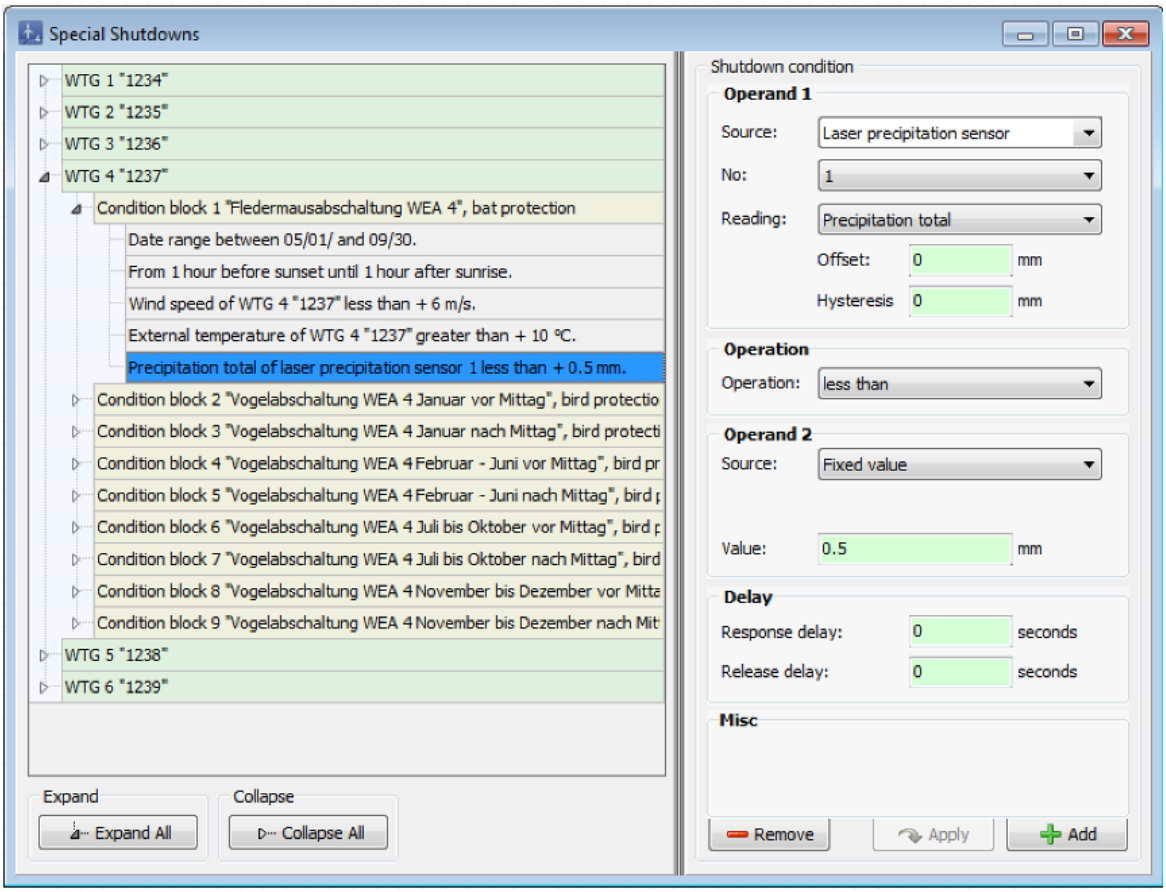
Schematic representation of the **Special Shutdowns** window

The most important elements of the **Special Shutdowns** window are explained in the following table:

Element	Explanation
WTG block	The WTG blocks shown in the display area are highlighted in green: A WTG block (e.g. WTG 1) refers to one WTG and contains at least one condition block (e.g. for protection of bats or protection of birds). And each condition block contains several shutdown conditions (e.g. referring to date, time of day, wind speed etc.).
Condition block	The condition blocks shown in the display area are highlighted in yellow: Each condition block consists of several shutdown conditions that are combined to form a shutdown scenario used to ensure, e.g. that a WTG will be shut down during a specific calendar period during a specific time of the day provided, at the same time, specific meteorological conditions are met.

Element	Explanation
	Condition blocks are linked by a logical **OR**, i.e. the corresponding WTG is shut down as soon as the conditions of **ONE** block are met.
Shutdown condition	Shutdown conditions are highlighted in light gray in the display area: A shutdown condition is a dataset that is created by selecting options from drop-down lists and entering values into input fields in the **Shutdown condition** area (right-hand side of the window). *Date range from 05/01 to 09/30.* Several shutdown conditions are combined to form a condition block, e.g.: *Date range from 05/01 to 09/30.* *From 1 hour before sunset until 1 hour after sunrise* *External temperature of WTG 6 “V1234” less than + 6 m/s* *External temperature of WTG 1 “1234" greater than + 10 °C* **The shutdown conditions within a single condition block** are linked by a logical **AND**, i.e., the corresponding WTG will be shut down only if **ALL** conditions are met.

The following figure shows the **Special Shutdowns** window with a typical shutdown scenario. You will find helpful explanations underneath.



Special Shutdowns window with an example

The window above shows the following:

- 6 WTG blocks have already been defined; only the fourth (WTG 4 "1237") is expanded.
- Condition block 1 of the fourth WTG block serves for the protection of bats and it consists of 5 shutdown conditions.
- The fifth of the 5 shutdown conditions has been selected by mouse click and is therefore highlighted in blue. Its accordingly defined parameters are displayed in the **Shutdown condition** settings area (right-hand side of the window); the result of the settings is displayed in words at the bottom right in the window in the **Conditions** field.

! If a shutdown condition is displayed in **red** or **black** bold letters in the display area of the **Special Shutdowns** or **Night shutdowns** window (left half of the window), then SM4 has detected that an input is "not plausible". Please refer to the information in the Plausibilty check 194 section.

Below you will find a list of the most important general notes regarding the **Special Shutdowns** window.

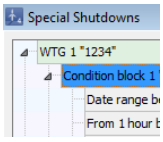
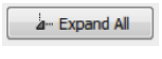
General notes regarding the Special Shutdowns window

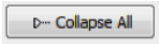
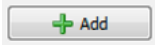
- In order to create special shutdowns, one or more condition blocks, each consisting of one or more shutdown conditions, are created for each WTG.
- Condition blocks that have already been created as well as their individual shutdown conditions are displayed on the left-hand side of the window.
- These conditions are specified on the right-hand side of the window under **Shutdown Condition**, see also Shutdown condition input area 193.
- The result of the settings of a single shutdown condition is displayed at the bottom right under **Condition**.
- The conditions within a single block are linked by a logical AND, i.e., the corresponding WTG will be shut down only if ALL conditions are met.
- Several condition blocks are linked to each other by a logical OR, i.e. the corresponding WTG is shut down as soon as the conditions of ONE block are met.
- The SMU continually checks whether or not the defined conditions are met. As soon and as long as all conditions of one condition block are met, the corresponding WTG will be shut down.

> ! If there is more than one condition within a condition block, these conditions are linked by a logical AND, i.e., the corresponding WTG will be shut down only if **ALL** conditions within a condition block are met.
>
> If several condition blocks exist, these blocks are linked by OR, meaning that shutdown will occur already if the conditions of **ONE** block are fulfilled.

Now that you are familiar with the structure and the basic function of the **Special Shutdowns** window, let's get to the details.

The buttons in the **Special Shutdowns window** are described in the following table

Element	Explanation
Left-hand side of the window 	The left-hand side of the window shows the condition blocks that have already been defined for a WTG (in this example this would be WTG 1 with ID 1234). If you click on the small **arrow** on the left-hand side of the WTG or condition block, the condition blocks will be collapsed or respectively expanded. No settings can be made in this area of the screen.
	Expands all condition blocks and conditions that have already been defined (displayed on the left-hand side of screen). You can also use the small **arrows** displayed to the left of the condition block or condition to expand the respective screen element.

	Collapses all condition blocks and conditions that have already been defined (displayed on the left-hand side of screen). You can also use the small **arrows** displayed to the left of the condition block or condition to collapse the respective screen element.
	Adds the object type that is selected on the left-hand side. **NOTE** This button is active only in the following situations: • when adding a WTG, a WTG was selected from the **WTG** drop-down list (top right) for which no special shutdown has been defined thus far • when adding a condition block, a name was entered under **Block name** (top right) that does not yet exist within the corresponding WTG • a shutdown condition that does not yet exist in the corresponding block has been defined in the settings area. If a shutdown condition has been selected, it can be added as often as required.
	Is used to change an object; the following changes are possible: • change the name of a condition block • change the parameters of a shutdown condition **NOTES** • This button will not be activated until the corresponding name/parameter has been changed. • Changes will only be applied if you confirm them by clicking on **Apply**. Otherwise, the changes will be discarded as soon as you select a different object or close the window.
	Deletes the object that is marked on the left-hand side of the screen. **NOTE** The condition blocks within a WTG are always numbered consecutively, even after a block has been removed. **EXAMPLE** If you remove the second of 3 condition blocks in total, the former “condition block 3” will become “condition block 2”.

See also Practical example 6: Special shutdowns due to bat and bird protection without night slices plus noise protection 39

4.4.1.1 Create a special shutdown – basic steps

This section describes how to set up a special shutdown if none have been defined beforehand.

- Click on  (or select *Switching & Measurement> Special Shutdowns*) to open the **Special Shutdowns** window.
- Select the WTG for which a special shutdown needs to be defined from the **WTG** drop-down list on the right-hand side of the screen (top).
- Click on **+ Add** at the bottom right of the screen. The selected WTG will now appear on the left-hand side of the screen.
- Click on the small arrow in front of the blue highlighted WTG on the left-hand side of the screen. **Condition block 1, special shutdown** will now be displayed underneath.
- Click on the small arrow in front of **Condition block 1, special shutdown** on the left-hand side. **<empty>** will now be displayed below, which will later be replaced by the first condition.
- Assign a name for the condition block on the right-hand side of the screen under **Block name** (e.g., bat protection May) and select, e.g. **Bat protection** from the **switch reason** drop-down list.

! The switch reason is important on three accounts:

- When entering a condition block for bat or bird protection, the correct switch reason must be defined so that SM4 can run the applicable plausibility check 194.
- The **Switch reason** also tells the SMU in which particular log a shutdown is to be recorded.
- For the WTG type "via relay", additional DOs can be assigned a switch reason, see Communication Parameters input area 109.

- Click on **Apply** at the bottom right of the screen.
- Click on **<empty>** on the left-hand side of the screen. This line will then be highlighted in blue, and the right-hand side of the screen will display the **Shutdown condition** input area.
- Now select e.g., **Time** from the **Source** drop-down list under **Operand 1** in order to get started with the actual shutdown condition settings. The operands, operations and input fields are explained under **Shutdown condition input area** 193.

i Drag & Drop: If you wish to define shutdown conditions for more than one WTG, you can save time and effort by copying the condition blocks of the first WTG and reuse them for the second WTG with the help of drag & drop. For more information on the drag & drop function for special shutdowns, please refer to the following section:

See also: Easily duplicate special shutdowns using drag & drop 214.

! If a shutdown condition is displayed in **red** or **black** bold letters in the display area of the **Special Shutdowns** or **Night shutdowns** window (left half of the window), then SM4 has detected that an input is "not plausible". Please refer to the information in the Plausibilty check 194 section.

4.4.1.2 Shutdown condition input area

This section describes how to define the actual shutdown conditions. The basic structure is as follows:

Operand 1

Source (e.g., WTG) drop-down list

Number drop-down list

Reading drop-down list (e.g., Outside temperature)

Offset input field(s) (optional)

Hysteresis input field (optional)

will be compared using an

Operation

Operation drop-down list

(greater than, less than, greater than or equal to, less than or equal to, equal to or not equal to)

to

Operand 2

(Fixed value)

and with many reading points, a

Delay

Response delay input box

Release delay input field

can be added to the condition.

Condition

Displays the result of the parameters defined above in words.

The basic structure of each shutdown condition is as shown in the above schematic representation with the exception of conditions for which **Time, Sun** or **External Trigger** is selected under **Source**

(see Glossary 358). Sometimes only ONE operand is available, and in some cases neither the **Number** drop-down list nor the optional parameters **Hysteresis**, **Response delay** or **Release delay** are offered. In the case of the **Date range** and **Time range** reading point, you need to fill out the input fields **From** and **To**.

The content of the **Reading** drop-down list also depends on the option selected under **Source.**

The options available in the drop-down lists have self-explanatory names. You will find typical examples of **shutdown conditions** that you can use as a basis for your own projects on the following pages.

For standard **condition blocks** with detailed parameter settings, please refer to Typical condition blocks 210.

4.4.1.3 Plausibility check

Errors can occur when entering shutdown conditions. If these remain undetected, there is a risk of serious fines due to violations of operating requirements on the one hand, and yield losses due to unnecessary shutdowns on the other. Therefore, SM4 performs plausibility checks for certain entries you make in the **Special Shutdowns** or **Night Slice Shutdowns** windows.

How is the plausibility check triggered?

The check is triggered automatically in the following cases:

- You click the **Apply** or **Add** button in the **Special Shutdowns** or **Night Slice Shutdowns** window when adding or editing certain shutdown conditions. Whether or not a check is run and what is checked in each case depends on the type of input, see table "What is checked for an input?" below.
- You change the **switching reason of** a condition block to "Bat protection" or "Bird protection" in the **Special Shutdowns** window.
- You move objects in the **Special Shutdowns** or **Night Slice Shutdowns** window using the Drag&Drop function, see also Duplicating special shutdowns conveniently using Drag&Drop 214.
- You load an existing SM4 project from a file or SMU.
- You start an integrity check(*Tools > Integrity check*), see also **Project Integrity** 333 window 333.
- You select *Project > Configuration* to configure the SMU, which automatically triggers an integrity check, see also **Check Configuration** 154 window 154.

What is checked for an input?

Some plausibility checks are only performed if bat or bird protection is selected as the switch reason for a condition block, or they only apply to the **Night Slice Shutdowns** window. Other checks

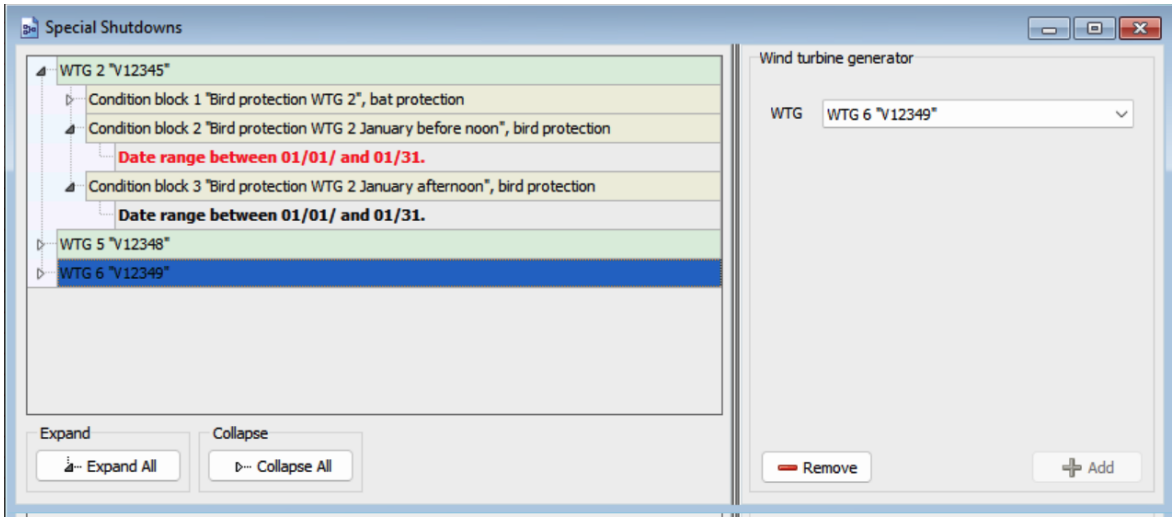
are run for every switch reason and in both the **Special Shutdowns** and the **Night Slice Shutdowns** window. You will find comprehensive information in the following table.

Element	SM4 detects "not plausible" in the following cases
Bat protection (condition block with switch reason = bat protection)	
Date range	• First date is greater than second date • Start date is before 03/01 • End date is after 11/30
Time range (source of shutdown condition = sun)	• Reading point = sunrise to sunset • Offset at sunrise is greater than 120 minutes • Offset at sunset is greater than 120 minutes and time range is not sunset to sunset
Bird protection (condition block with switching reason = bird protection)	
Date range	• First date is greater than second date • Start date is before 03/01 • End date is after 11/30
Time range (source of shutdown condition = sun)	• Reading point = sunrise to sunset • Offset at sunrise is greater than 120 minutes • Offset at sunset is greater than 120 minutes
Time slice shutdowns	
Date range	• First date is greater than second date • Start date is before 03/01 • End date is after 11/30
Time slices	• Time slice before sunset is longer than 15% of the night • Time slice after sunrise is longer than 15% of the night
Meteorological conditions (check is done for every switch reason)	
Wind speed	• Operation is greater than, equal to, equal to or unequal to • Offset is not equal to zero • Hysteresis is greater than 1 m/s • Value is greater than 7.5 m/s • Response delay or release delay is greater than 1,800 seconds

Element	SM4 detects "not plausible" in the following cases
Outdoor temperature	• Operation is less than, equal to, equal to or unequal to • Offset is not equal to zero • Hysteresis is greater than 1 °C • Value is less than 8 °C • Response delay or release delay is greater than 1,800 seconds
Precipitation amount	• Operation is greater than, greater than or equal to, equal to, or unequal to • Offset is not equal to zero • Hysteresis is greater than 1 mm • Value is greater than 10 mm/h • Response delay or release delay is greater than 1,800 seconds
Humidity	• Operation is greater than, equal to, equal to or unequal to • Offset is not equal to zero • Hysteresis is greater than 5 • Value is less than 80 • Response delay or release delay is greater than 1,800 seconds
Visibility	• Operation is less than, greater than or equal to, equal to, or not equal to • Offset is not equal to zero • Hysteresis is greater than 100 m • Value is less than 800 m • Response delay or release delay is greater than 1,800 seconds
NOTE The values for the meteorological conditions (see above) can also use a calculation as a source. In order for the correct check to be run in this case, you must select the appropriate option in the **In Shutdown Conditions treat as** drop-down list in the **Calculations** window, see Calculations window 241.	
External trigger check	
Source = External trigger	External trigger is equal to 0 (The purpose of this check is to prevent an External Trigger from being accidentally checked for its LOW state, see also Shutdown condition with Source = External Trigger 208).

How can I recognize a negative plausibility check?

Elements identified as "not plausible" are marked in red or black bold letters in the left half (display area) of the **Special Shutdowns** and **Night Slice Shutdowns** windows, see the following example:



Special Shutdowns window (section)

Notes on the above example

- Because the date range defined for Condition block 2 is not plausible (start date is before 03/01), this shutdown condition is shown in **red boldface.**
- The date range defined for condition block 3, which SM4 has also identified as "not plausible", has already been manually declared as plausible by the user (see next section) and is therefore displayed in **black boldface**.

What does a shutdown condition detected as "not plausible" mean?

Red entries prevent a configuration process, i.e. the project fails the integrity check SM4 automatically runs when the configuration is started, and it cannot be transferred to the SMU. If a shutdown condition is to be used despite being "not plausible", the user can manually "declare it as plausible" so that it no longer prevents configuration.

How do I declare a "non-compliant" shutdown condition as plausible?

If you are sure that you want to use a shutdown condition that has been identified as non-plausible, first right-click on the condition shown in **red bold,** click **Plausibility**, and check **Declared as plausible**. The confirmation of non-plausible shutdown conditions is saved when a project is saved, so it does not have to be repeated when the project is reopened.

4.4.1.4 Typical shutdown conditions

The options available in the drop-down lists in the **Shutdown condition** settings area have been named as self-explanatory as possible. However, input fields, such as **Offset**, **Hysteresis**, **Response delay**, **Release delay**, will be explained using helful examples in the following sections:

Shutdown condition with Source = Time 198

Shutdown condition with Source = Sun 199

Shutdown condition with Source = WTG 202

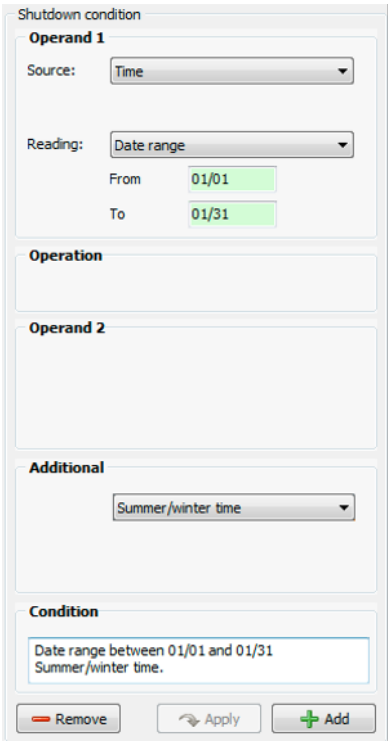
Shutdown condition with Source = POI 205

Shutdown condition with Source = GSM modem 206

Shutdown condition with Source = Calculations 207

Shutdown condition with Source = External trigger 208

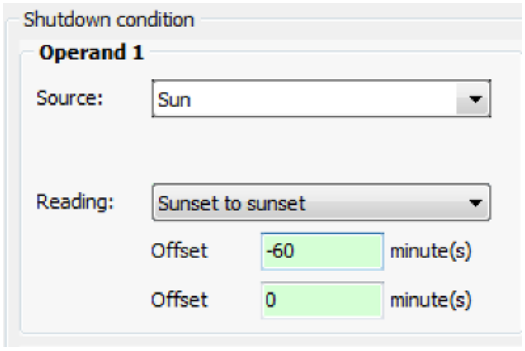
4.4.1.4.1 Shutdown condition with Source = Time

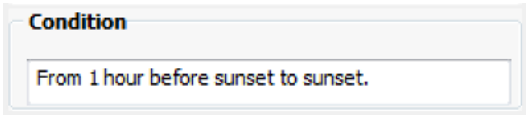


Parameter	Explanation of “Date range” reading
Source	In the **above example**, the **Time** option was selected so that the SMU will compare the current time with a time period defined below.
Reading point	In the **above example**, by selecting the **Date range** option, it was specified that the period to be compared is defined by a date range (**From**/**To**). MM/DD*
Additional	Here you can see whether winter time is used or a time with summer/winter time changeover. Whether or not a selection can be made here depends on the setting under *Project > Project Settings > Time settings > Summer winter time handling*.
Condition	Displays the result of the parameters defined above. This condition is considered to be met whenever the current date is within 01/01 and 01/31. A shutdown condition like this one will not make sense unless it is combined with other shutdown conditions defined within the same block (linked by a logical AND), for example, “Wind speed less than + 6 m/s”.

*The format stated here corresponds to the default settings in the input area **Country-Specific Settings** (*File> Application Settings > ShadowManager 4 > General*) and can be changed there at any time.

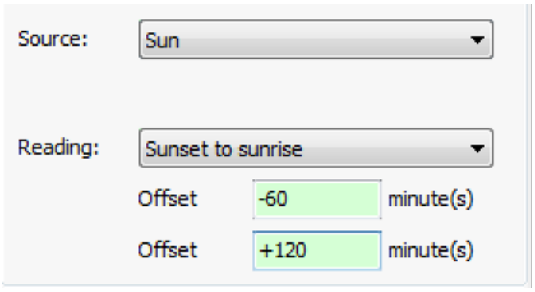
4.4.1.4.2 Shutdown condition with Source = Sun



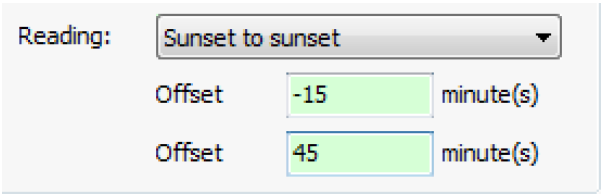
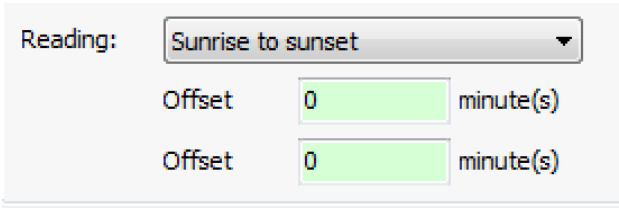


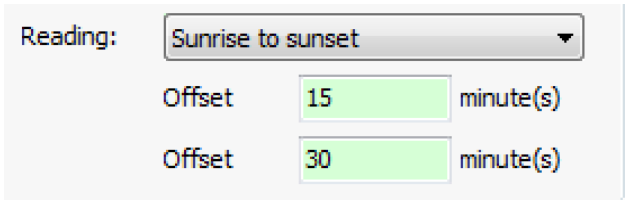
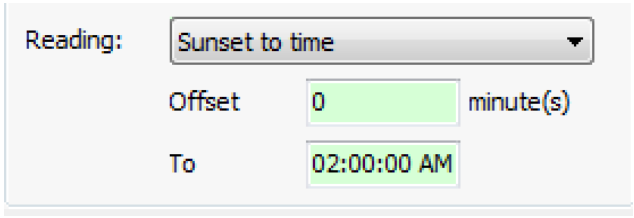
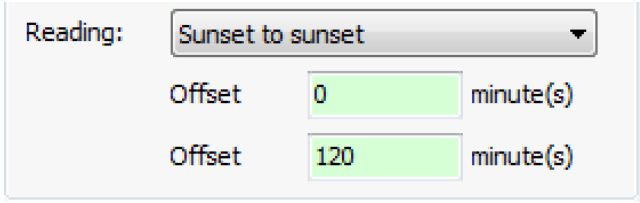
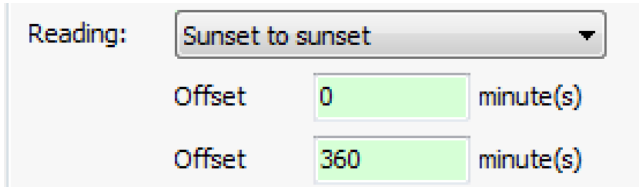
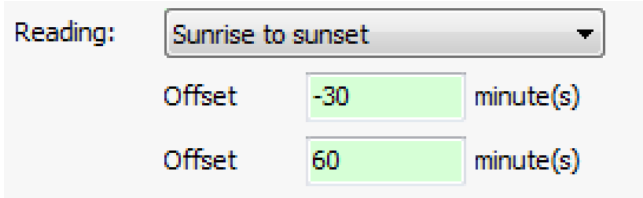
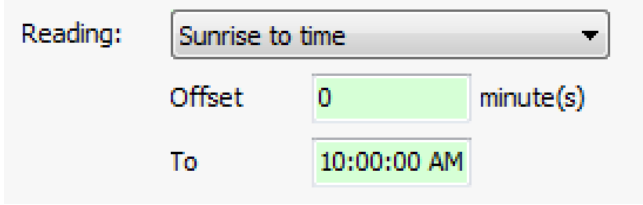
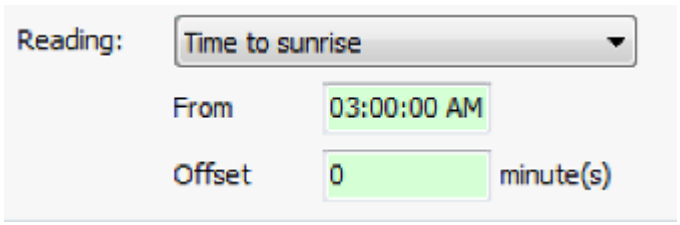
Parameter	Explanation of „Sunset to sunset“ reading
Source	**Sun** was selected **in the above example** in order to define a condition that depends on the current time of sunset or sunrise.
Reading point	**Sunset to sunset** was selected **in the above example** in order to define a condition that depends on the current time of sunset.
Offset	**In the above example**, -60 was entered in the first **Offset** field, while nothing was entered in the second **Offset** field, because the condition is to be considered to be met only until sunset.
Condition	Displays the result of the parameters defined above. This condition is considered to be met as soon as the time left until sunset is 60 minutes or less.

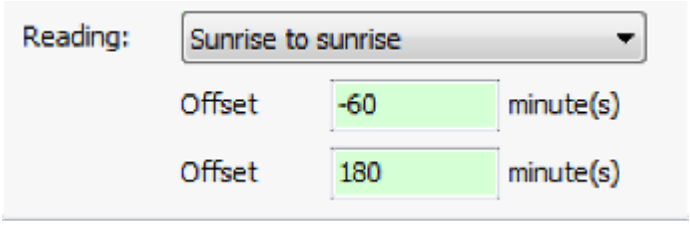
To achieve that the above condition is considered to be met not only until sunset but until 2 hours after sunrise on the next day, the shutdown condition would have to be configured as follows:



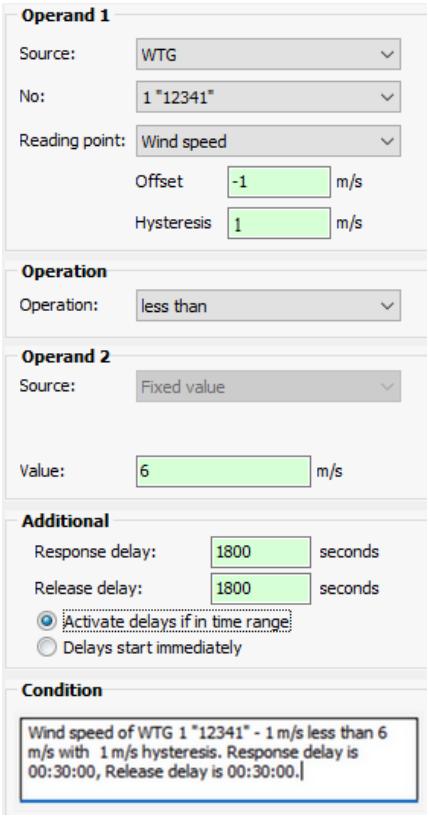
Overview of typical shutdown conditions for Source = **Sun**

Condition	Settings
From 15 minutes before sunset to 45 minutes after sunset.	
From sunrise to sunset.	

From 15 minutes after sunrise to 30 minutes after sunset.	
From sunset until 02:00:00.	
From sunset until 2 hours after sunset.	
From sunset until 6 hours after sunset.	
From 30 minutes before sunrise to 1 hour after sunset.	
From sunrise to 10:00:00.	
From 03:00:00 until sunrise.	

From 1 hour before sunrise to 3 hours after sunrise.	

4.4.1.4.3 Shutdown condition with Source = WTG



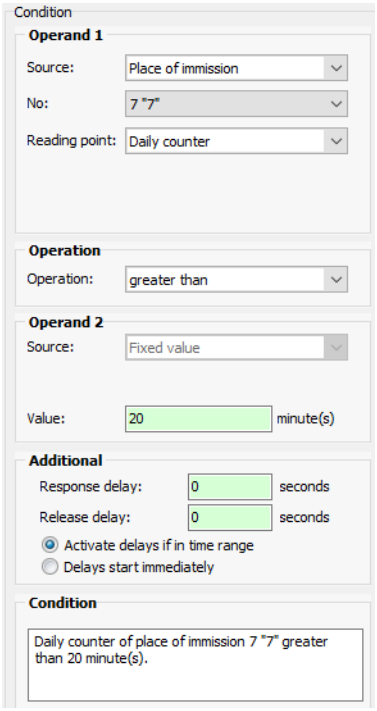
Parameter	Explanation of “Wind speed” reading
Source	The **WTG** option was selected **in the above example** so that the SMU will compare the wind speed measured by the WTG to a fixed value.
Number	Since it is possible to define more than one WTG in a project, you can select a specific WTG here. WTG 1 “12341” was selected **in the above example** in order to have the SMU compare the wind speed measured by this specific WTG to a fixed value.

Reading point	The **Wind speed** option was selected **in the above example** in order to have the SMU compare the wind speed measured by the WTG to a fixed value.
Offset*	Here you can specify a value that corrects the value provided by the WTG. **In the above example**, it is a known fact that the wind speed reading provided by the WTG is always 1 m/s above the actual wind speed. Therefore, a value of -1 m/s was entered here. Decimals possible, decimal point*
Hysteresis*	The hysteresis defines the desired permissible difference between the switching points for start-up or respectively shutdown. To ensure that the WTG will not be switched to frequently during times when the readings are unstable (e.g., gusty winds), you can delay the response by specifying a hysteresis. Only positive values can be entered. The direction in which the hysteresis works depends on the operation (greater than/less than) the value refers to. A hysteresis of 1 m/s was entered **in the above example** to specify that the WTG will be shut down if the wind speed drops below 6 m/s and will be started up when the measured wind speed exceeds 7 m/s. **Example of a shutdown condition with the reading "External temperature"** *External temperature greater than + 14 °C with 2 °C hysteresis*: The WTG is shut down when the external temperature exceeds 14 °C, and it will be started up again as soon as the external temperature drops below 12 °C. **Example of a shutdown condition with the reading "Precipitation"** *Precipitation less than + 0.5 mm with 0.1 mm hysteresis:* The WTG is shut down when the precipitation drops below 0.5 mm and will be started up again as soon as a precipitation of more than 0.6 mm is measured. **NOTE** The hysteresis is applied only if all conditions within one condition block are met (logical AND link).
Operation	The **less than** option was selected **in the above example** to ensure that the WTG is shut down if the wind speed drops BELOW a specific fixed value.
Fixed value*	6 m/h was selected **in the above example** to ensure that the WTG is shut down if the wind speed drops BELOW this value. Decimals possible, decimal point*
Response delay*	To ensure that the WTGs are not switched too frequently (high wear and tear) when conditions relating to wind speed, precipitation or temperature are involved, you can specify here that the shutdown conditions need to be met continuously over a specific period of time before a WTG will actually be shut down.

	A **Response delay** of 1800 seconds was selected **in the above example** to ensure that the WTG will be shut down only after a wind speed of less than 6 m/s has been measured continuously over a period of 30 minutes. Decimals possible, decimal point*
Release delay*	To ensure that the WTGs are not switched too frequently (high wear and tear) when conditions relating to wind speed, precipitation or temperature are involved, you can specify here that the shutdown conditions must NOT be present for a specific period of time before a WTG is actually started up on again after having been shut down due to a special shutdown. A **Release delay** of 1800 seconds was selected **in the above example** to ensure the WTG will not be started up again after a special shutdown until a wind speed of 6 m/s or above has been measured continuously over a period of 30 minutes. Decimals possible, decimal point*
Activate delays if in time range **OR** **Delays start immediately**	If a condition block contains a **Time** condition (e.g., sunset to sunrise), it may be useful to select the upper option (**Activate delays if in time range**). If selected, the parameters **Response delay** and **Release delay** will not take effect right away but only when the time range defined in each case also takes effect. The selection made here has the following effect: **Activate delays in time range** If the wind speed has already fallen below 7 m/s (fixed value of 6 m/s plus offset) long before sunset, the respective WTG is shut down 30 minutes after sunset at the **earliest** since the response delay does not take effect until sunset. **Delays start immediately** If the wind speed has already fallen below 7 m/s long before sunset and the response delay time has also already expired, then the WTG is shut down immediately at sunset and the set response delay **no** longer takes effect. **NOTE** You can choose between the two options, but it is **not** possible to activate both of them or to deactivate both of them. The selection is only relevant if the respective condition block also contains a **Time** condition, otherwise any set delays (response delay, response delay) always take effect immediately.
Condition	Displays the result of the parameters defined above. This condition is considered to be met if WTG 1 measures a wind speed of less than 7 m/s (fixed value plus offset).

*The input format corresponds to the default settings in the input area **Country-specific settings** (*File> Application Settings > ShadowManager > General*) and can be changed there at any time.

4.4.1.4.4 Shutdown condition with Source = POI

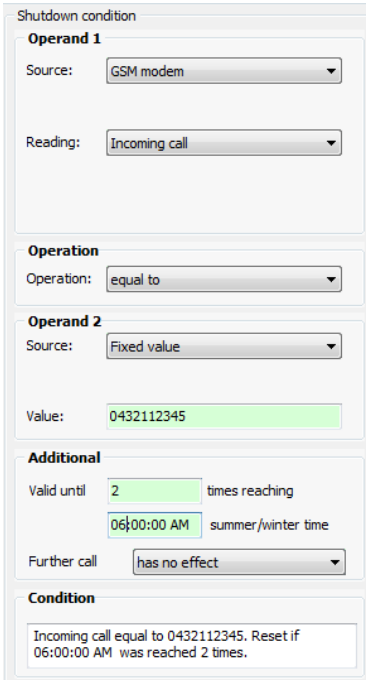


Parameter	Explanation of “Daily counter” reading
Source	**Place of immission** was selected **in the above example** to achieve that the SMU will compare its current counter reading with a number of minutes as defined below.
Number	Since each POI in the project has a daily counter as well as an annual counter, the number of the desired POI needs to be selected here. POI 7 “7” was selected **in the above example** in order to have the SMU compare the shadow impact minutes counted for this specific POI to a fixed value.
Reading point	The **Daily counter** was selected **in the above example** in order to compare the shadow impact minutes counted on the respective day to a fixed value. The only alternative to the Daily counter option in this case is the Annual counter option which is selected in order to have the SMU compare the shadow impact minutes counted in the current year to a fixed value.
Operation	The **greater than** option was selected **in the above example** to ensure that the condition is considered to be met if the counted shadow impact minutes have exceeded the fixed value defined below.
Fixed value	20 minutes was specified **in the above example** to ensure that the condition is considered to be met as soon as the currently counted shadow impact minutes have exceeded this specific value. minutes, decimals are possible, decimal point*

Condition	Displays the result of the parameters defined above. This condition is considered to be met as soon as the shadow impact minutes counted for POI 7 have exceeded the value of 20.

*The format stated here corresponds to the default settings in the input area **Country-Specific Settings** (*File> Application Settings > ShadowManager 4 > General*) and can be changed there at any time.

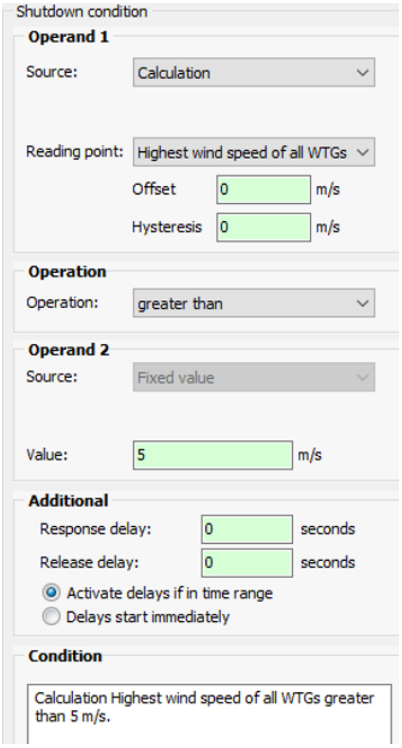
4.4.1.4.5 Shutdown condition with Source = GSM modem



Parameter	Explanation of “Incoming call” reading
Source	**In the example above**, the **GSM modem** option was selected so that the SMU will compare the phone number of the caller with a phone number defined below when an incoming call is received. **NOTE** The **GSM Modem** option is only available if the option **Use GSM modem (RS232)** was selected under *Project > Project Settings > Additional hardware*.
Reading point	The only reading available here is **Incoming Call**.
Operation	The only operation available here is **equal to**.

Value	Phone number of the caller who should be able to switch off by call. Input without spaces
Additional	**In the above example** it was determined that a possible shutdown call should be valid until the time 18:00:00 is reached twice and that another call will have no effect. There are 2 additional options in the **Further call** drop-down list: • **re-starts call** The triggered call is started again from the beginning – the counter is reset to the start value. • **ends call** The call is terminated immediately.
Condition	Displays the result of the parameters defined above. If the caller calls from the defined phone number at 16:00, for example, the deactivation remains in effect for exactly 26 hours. Special shutdowns by telephone call can be combined with other shutdown conditions in the usual way. For example, you could add "From sunrise to sunset" as a further condition, so that shutting down a WTG by phone is only possible if the sun can actually shine at all.

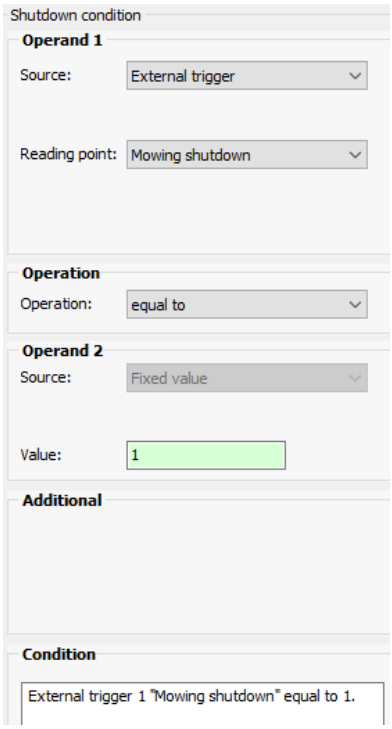
4.4.1.4.6 Shutdown condition with Source = Calculations



Shutdown conditions like this one may be used, e.g., in the following situation: in a wind park project that includes bat protection shutdown conditions, some WTGs are often sheltered from wind due to one or more other WTGs being located nearby. Therefore, the shutdown condition on wind speed is to be applied, **for all WTGs** of the park**,** based on the reading of the WTG that is picking up the **strongest** wind. This will prevent WTGs (that are located on the lee side of other WTGs and therefore measure **lower wind speeds than actually exist)** from being shut down even though the bat remains in safe harbor due to hard wind.

Parameter	Explanation of “Calculation” reading
Source	In the **above example**, the **Calculations** option was selected in order to have the SMU compare a number determined using a certain “Calculation” to a value defined further below. **NOTE:** The option is only available if at least one calculation has been defined under *Switching & Measurement > Calculations*.
Reading point	The automatic calculation set up in the **Calculations** window to determine the highest wind speed has been selected here.
Operation	“less than” was selected here, since the shutdown concerned was defined the for the purpose of bat protection, and bats only fly at low wind speeds.
Value	Value as required by the authorities.
Additional	Optional settings – for more information on condition on the settings available here, see section Shutdown condition with Source = WTG 202.
Condition	Result of the parameters defined above: Shutdown occurs when none of the WTGs in the wind park measures a wind speed of 5 m/s or more.

4.4.1.4.7 Shutdown condition with Source = External trigger



Parameter	Explanation of “External Trigger” reading
Source	**In the above example**, the **External Trigger** option (see Glossary 358) has been selected in order to have the SMU check whether the external trigger “mowing shutdown” is set or not. **NOTES** • The option is only available if an external trigger has been set up under *Hardware > Sensors and IO Signals > External Triggers* and the external special shutdown interface has been activated in the project settings (*Project > Project Settings*). • External triggers are set via the special shutdown interface (*SMU > Special Shutdown-Interface > Server settings*).
Reading point	Here the external trigger defined in the **Sensors and IO Signals** window was selected.
Operation	This parameter was set to “equal” and **Value** was set to “1” so that the shutdown condition be fulfilled when the external trigger is set.
Value	see above
Condition	Result of the parameters defined above: The respective WTG will be shut down as soon as the condition “mowing shutdown” equals 1.

Please also note the following information box on “External Triggers”.

There are two basic variants for the use of external triggers in SM4:

Type 1

- a trigger named “mowing shutdown” is define in SM4
- this trigger is included in the special shutdowns of all WTGs that would be affected once a certain meadow is mowed .

If this trigger is subsequently set by an external user, all these WTGs are stopped.

Advantage: comfortable shutdown of several WTGs “at one click”

Type 2

- a separate trigger is defined for each WTG in SM4; its name contains the respective WTG number
- for each WTG, the trigger defined for it is included in the shutdown of that WTG

In order to implement mowing shutdowns for certain WTGs, the external user must set a corresponding number of triggers.

Advantage: more flexible solution, changed affiliations of a WTG to a meadow can be implemented “externally” (no need to reconfigure the SMU).

Furthermore, conditions that cause a mowing shutdown via triggers can be limited to certain periods by including additional conditions (e.g..: sunrise and sunset, date range spring/ summer).

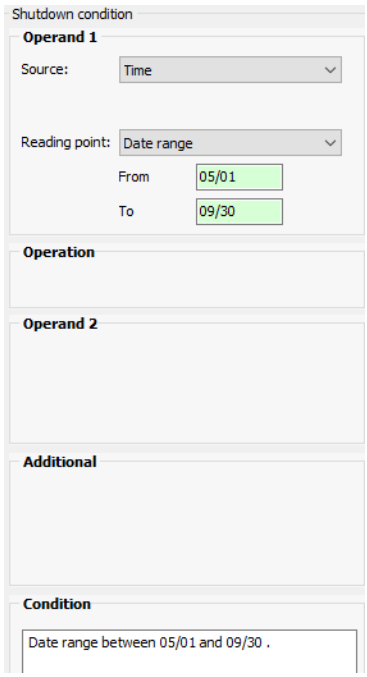
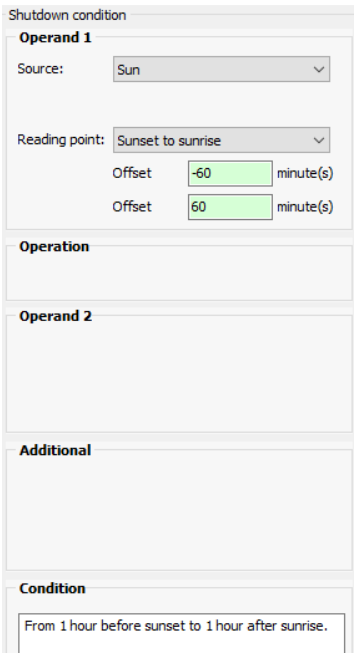
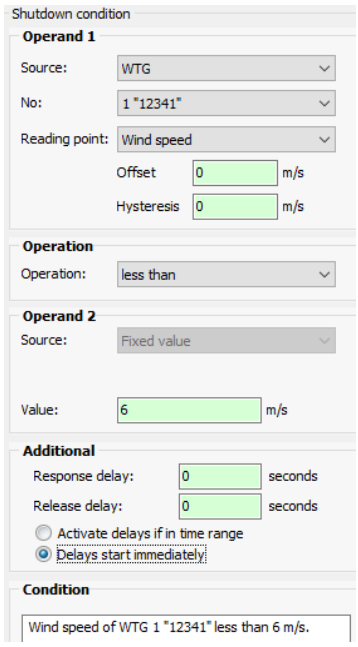
! Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

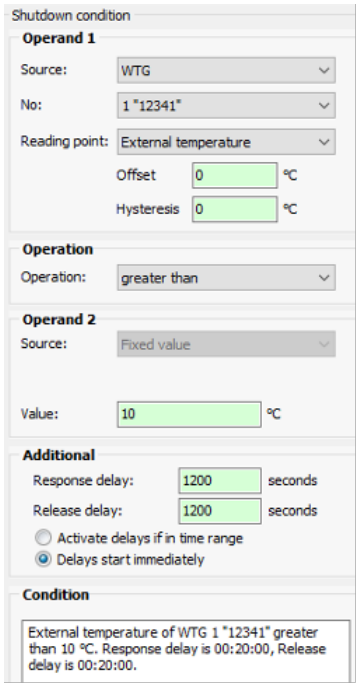
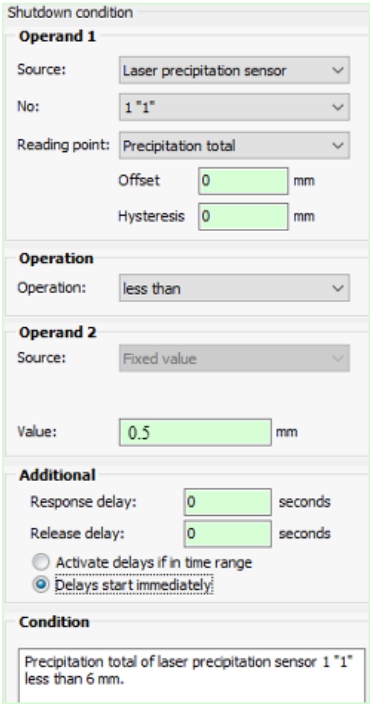
4.4.1.5 Typical condition blocks

In this section, you will find typically used condition blocks with detailed parameter settings, which you can use as a basis for your own projects.

A) Bat protection

Requirement: Shut down WTG 99 “12341” from 1 May to 30 September from 60 minutes before sunset until 60 minutes after sunrise on the following day provided that “this same WTG” (not one of the other WTGs) measures a wind speed of less than +6 m/s and an external temperature of more than +10 °C while precipitation sensor 1 measures a precipitation total of less than + 0.5 mm. The following shutdown conditions must be defined for this condition block:

Condition 1	Condition 2	Condition 3
		

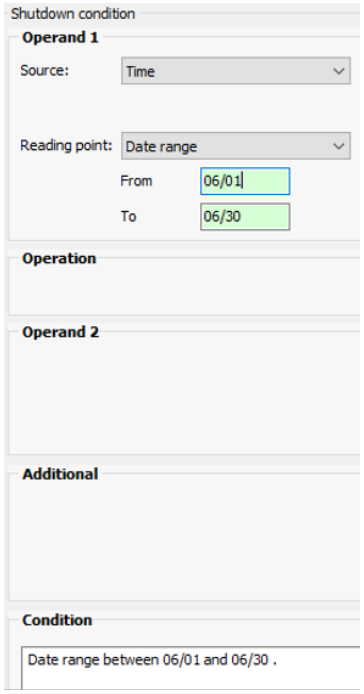
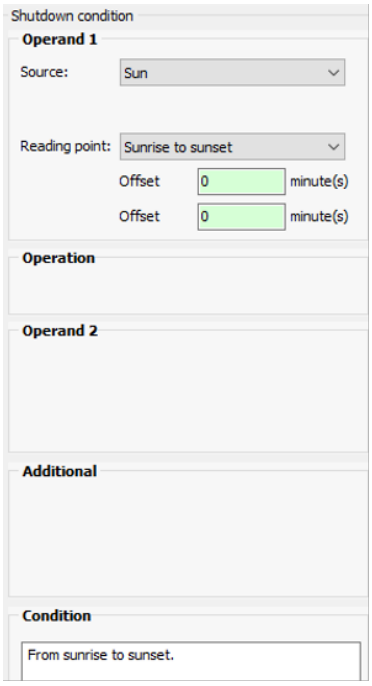
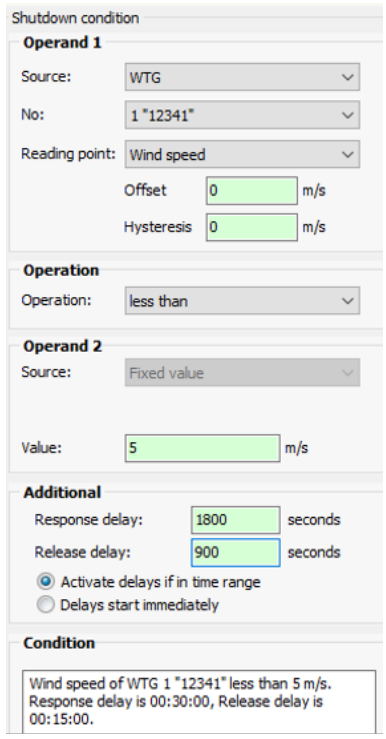
Condition 4	Condition 5
	

See also Practical example 6: Special shutdowns due to bat and bird protection without night slices plus noise protection 39

B) Bird protection

Requirement: Shut down WTG 1 “12341” from 1 June to 30 June from sunrise to sunset provided that this same WTG has measured a wind speed of less than +5 m/s for at least 30 minutes; after a shutdown due to wind speed, this condition must have been fulfilled over a period of at least 15 minutes before the WTG is started up again.

The following 3 shutdown conditions must be defined for this condition block:

Condition 1	Condition 2	Condition 3
		

NOTE

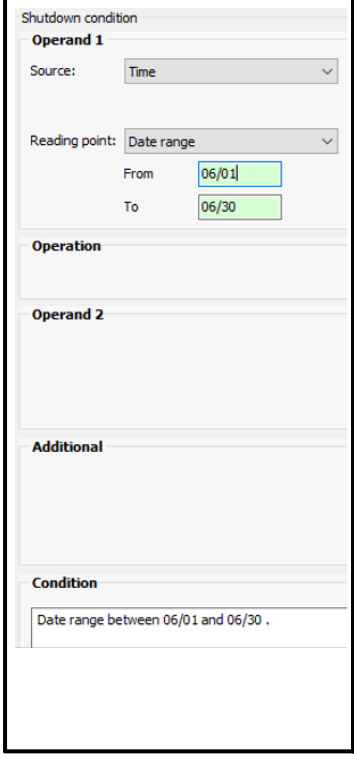
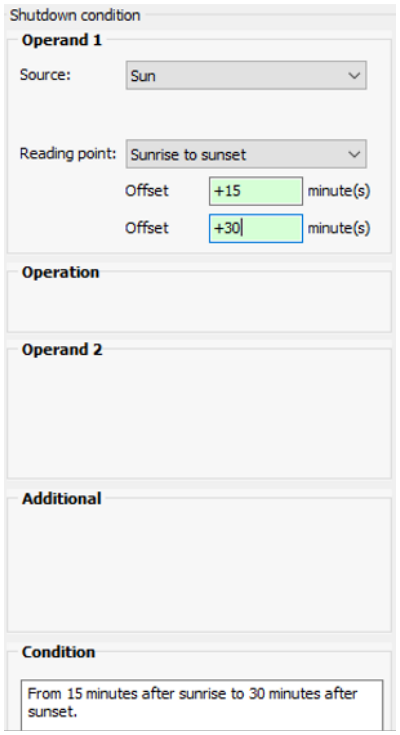
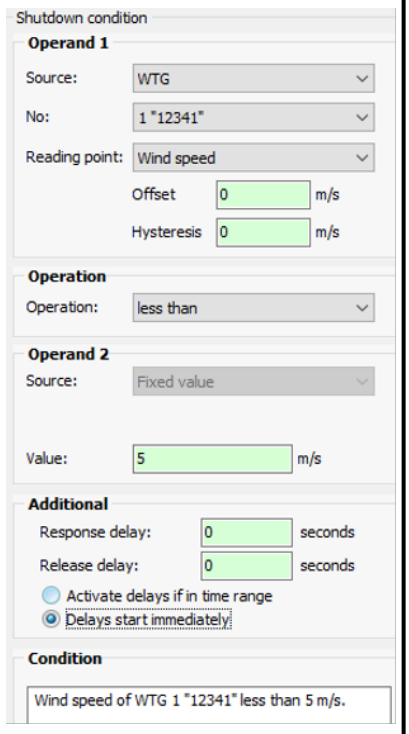
For condition 3, the option **Activate delays if in time range** is selected in the **Additional** input area, so that a shutdown will be carried out 30 minutes after sunset at the earliest. If **Delays start immediately** is selected and the wind speed has already fallen below 5 m/s, e.g., one hour before sunset, the respective WTG would be shut down right at sunset.

For more information, for example, on the **Additional** input area that see the section on special shutdowns underShutdown condition with Source = WTG 202.

C) Bird protection

Requirement: Shut down WTG 1 “12341” from 1 June to 30 June from 15 minutes after sunrise to 30 minutes after sunset, if wind speed is less than + 5 m/s at “this same WTG”.

The following 3 shutdown conditions must be defined for this condition block:

Condition 1	Condition 2	Condition 3
		

If a shutdown condition is displayed in **red** or **black** bold letters in the display area of the **Special Shutdowns** or **Night shutdowns** window (left half of the window), then SM4 has detected that an input is "not plausible". Please refer to the information in the Plausibilty check 194 section.

4.4.1.6 Easily duplicate special shutdowns using drag & drop

Defining special shutdowns for each WTG of a big wind park can be a very time-consuming process. Often, the conditions required for several if not all WTGs of a wind park are identical or at least very similar to each other. Therefore, they can be easily copied per drag & drop in order to save time. During this process, references to the source WTG (e.g., “Wind speed of WTG 2 less than +6 m/s”) can be replaced by corresponding references to the target WTG.

In the explanations of this subsection, it is assumed that you are familiar with the basic operation of the **Special Shutdowns** window. If this is not true, please read the following section on Special shutdowns:

Special Shutdowns window 185

Create a special shutdown – basic steps 192

Shutdown condition input area 193

Typical example: Transfer all conditions of one WTG to a new WTG

In many cases, it is useful to transfer the special shutdowns defined for one WTG to a 2nd WTG for which no special shutdowns have been defined thus far. Only 2 steps need to be carried out:

- create a new WTG block (target object)
- drag the WTG block (source object) that has already been defined to the target object

The new WTG block will now have the same condition blocks including (and shutdown conditions) as those source WTG block. If the latter contains shutdown conditions referring to the source WTG (the "own" WTG), these can be replaced in the target WTG block with references to the target WTG (the user must confirm this in a corresponding dialog window).

Not only WTG blocks but also individual condition blocks or shutdown conditions can be duplicated.

Please pay attention to the following notes when using drag & drop

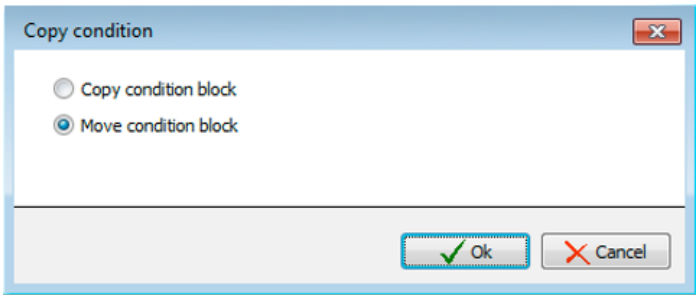
- An object can only be dragged to an object of the same type (example: a WTG block can only be dragged to another WTG but not to a condition block).
- It is also possible to copy a condition block ***within*** the same WTG block. In this case, you have to decide in a dialog window whether the block should either be moved or added as a new block, see dialog window A below.
- If a shutdown condition object is dragged ***within*** the same condition block, it can only be ***moved*** (in order to change its position in the list of shutdown conditions) – duplicating per drag & drop is **not** possible in this case.
- In order to duplicate a shutdown condition ***within*** the same condition block, select it by clicking on it (will be highlighted in blue) and click on **Add** at the bottom right in the window.
- If you try to drag an object to a "forbidden" target (e.g. you are trying to drag a condition block to a shutdown condition) a prohibition symbol (⃠) will be displayed instead of the mouse pointer.

- If you drop a WTG block onto another WTG block, all condition blocks including all shutdown conditions of the source WTG will be **added** to the target WTG block, no matter if the target block is empty or already contains condition blocks (i.e. **nothing will be overwritten**).
- If you drag an object that contains one or more shutdown conditions with a reference to the source WTG (e.g. wind speed of the source WTG less than + 6 m/s“), you have to decide in a dialog window whether the reference should be replaced by a reference to the target WTG (this is typically used) or the reference to the source WTG should remain unchanged, see dialog windows **B**, **C**, **D** below.

All dialog windows you may encounter when using drag & drop are explained in the following.

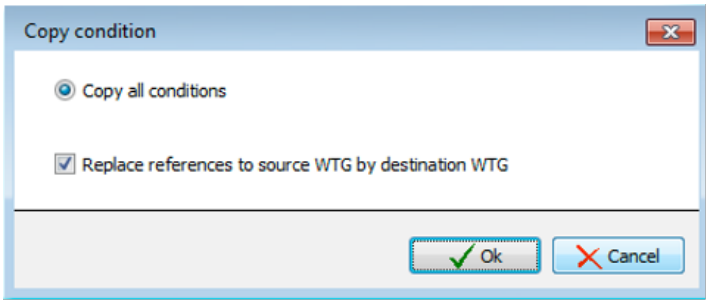
Dialog windows you may encounter when copying or moving an object

A



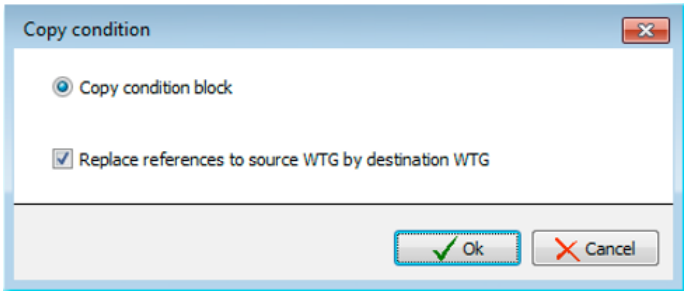
You are moving a condition block within its own WTG block. If you select **Copy condition block**, the condition block will be duplicated (the number of condition blocks increases by **1**). If you select **Move condition block**, nothing will change except for the position of the block.

B



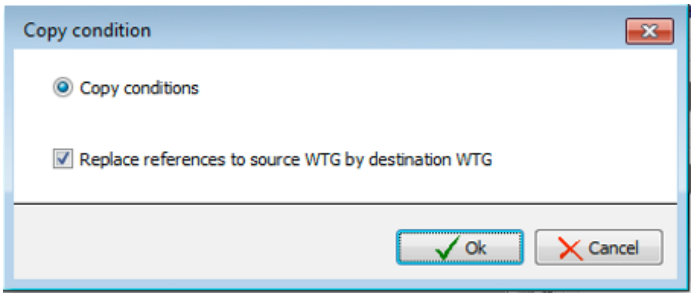
You are copying a WTG block that contains one or more shutdown conditions with reference to the source WTG (the same WTG). If a checkmark is set, the reference will be replaced with a reference to the target WTG (this is typically used), otherwise the reference to the source WTG will remain unchanged.

C



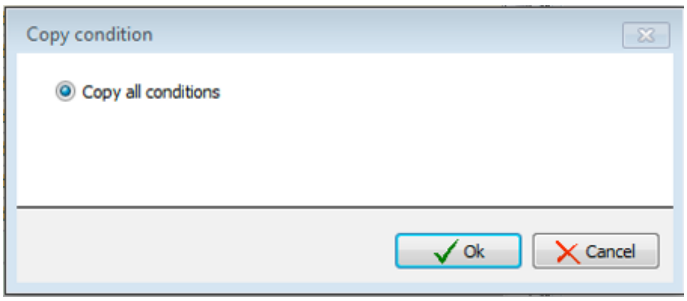
You are copying a condition block that contains one or more shutdown conditions with reference to the source WTG (the same WTG). If a checkmark is set, the reference will be replaced with a reference to the target WTG (this is typically used), otherwise the reference to the source WTG will remain unchanged.

D



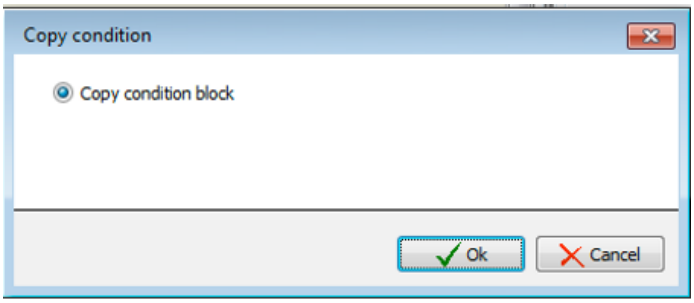
You are copying a shutdown condition with reference to the source WTG (the same WTG). If a checkmark is set, the reference will be replaced with a reference to the target WTG (this is typically used), otherwise the reference to the source WTG will remain unchanged.

E



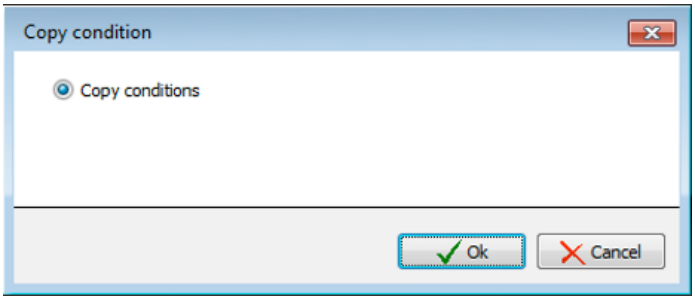
You are dragging a WTG object that contains NO shutdown condition with reference to the source WTG (the same WTG). To complete the process, click on OK. If the target object is **empty**, it will be overwritten; if it is **not empty**, the source object will be added as a new object.

F



You are dragging a condition block that contains NO shutdown condition with reference to the source WTG (the same WTG). To complete the process, click on OK. If the target object is **empty**, it will be overwritten; if it is **not empty**, the source object will be added as a new object.

G



You are dragging a shutdown condition without reference to the "same" WTG. To complete the process, click on OK. If the target object is **empty**, it will be overwritten; if it is **not empty**, the source object will be added as a new object.

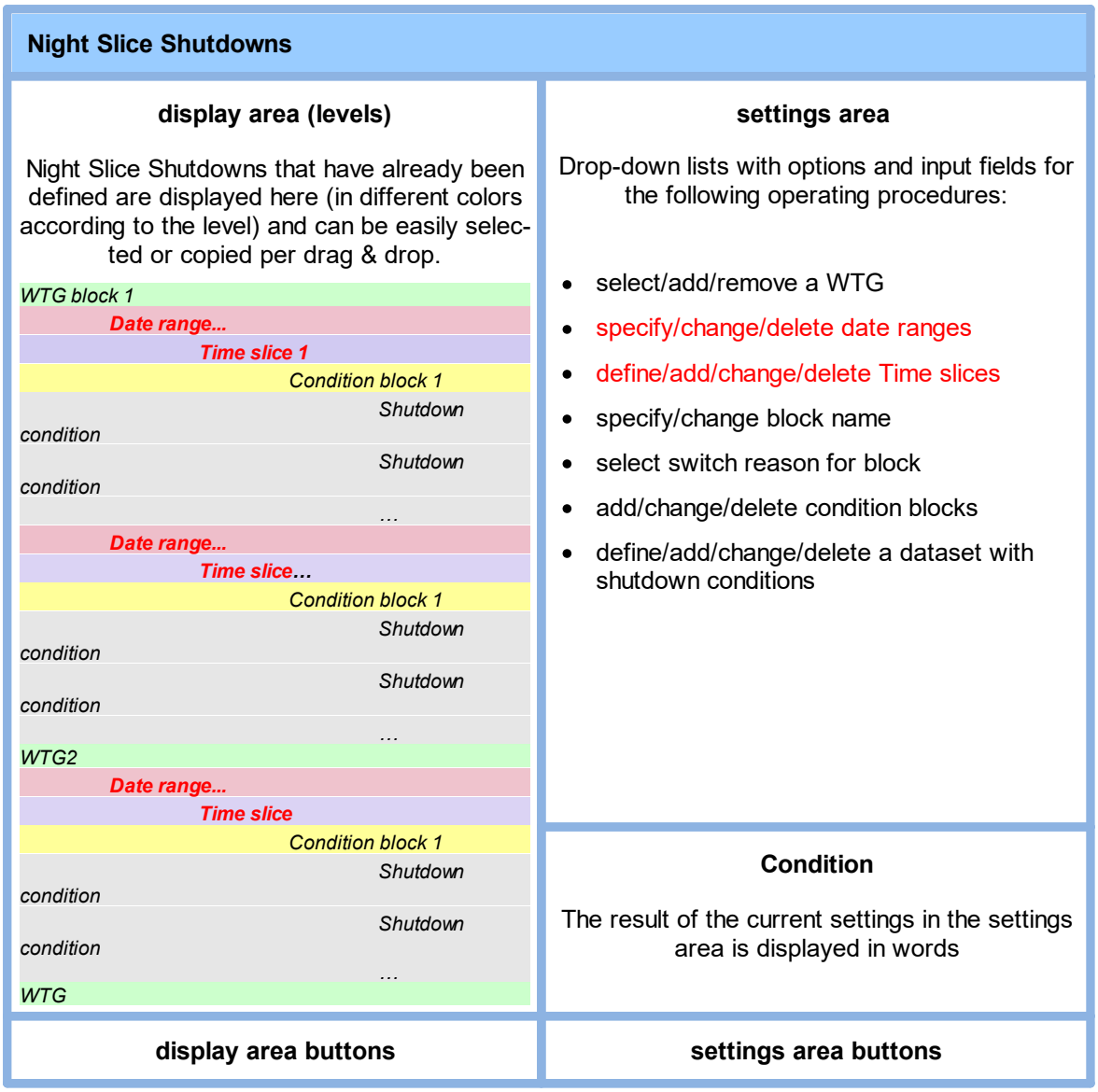
! If a shutdown condition is displayed in **red** or **black** bold letters in the display area of the **Special Shutdowns** or **Night shutdowns** window (left half of the window), then SM4 has detected that an input is "not plausible". Please refer to the information in the Plausibilty check 194 section.

4.4.2 Night Slice Shutdowns window

Purpose	Define complex shutdown conditions for bat protection (division of the night into slices with different conditions)
Symbol	
Path	*Switching & Measurement > Night Switching Shutdowns*
Window type	Divided vertically, see Vertically divided windows 21 (basic operation like the **Special Shutdowns** window)
Type of use	Interactive
Reference	Opened project

Some bat protection requirements are so complex that different conditions apply in different Time slices during the night. To fulfill such requirements, SM4 provides Night Slice Shutdowns options. If the bat protection requirements are less complex (shutdown conditions are the same for the entire night), you do not have to use the Night Slice Shutdowns settings and can simply use Special Shutdowns.

The basic structure and operation of the **Night Slice Shutdowns** window are based on the **Special Shutdowns** window. However, date ranges and night slices also exist in addition to WTG blocks, Condition blocks and shutdown conditions in the **Night Slice Shutdowns** window; see the following figure (differences to the **Special Shutdowns** window marked in red):



Schematic representation of the **Night Slice Shutdowns** window

Because the operation of the **Night Slice Shutdowns** window is almost no different to that of the **Special Shutdowns** window, only the basic procedures for creating night slice shutdowns are described below. Information on defining the individual shutdown conditions can be found under **Shutdown condition input area** 193.

Basic procedures for creating a Night Slice Shutdown

This section describes how you can set up a Night Slice Shutdown if none have been defined beforehand.

- Open the **Night Slice Shutdowns** window (*Switching & Measurement > Night Slice Shutdowns*).

- Select the respective WTG from the **WTG** drop-down menu at the top right and click on **Add** below.
- Click on the small arrow in front of the selected WTG at the top left in the window.
- Click on the red highlighted Date range and enter **Begin** and **End** at the right. Click on **Apply** at the bottom right in the window.

Date ranges that are defined with data on the year are only valid for the year entered. If no data on the year has been entered, the date range also applies to the following years. Years must be entered with **four digits**.

- Click on the small arrow in front of the date range at the top left in the window. The first Time slice will now be displayed. Click on it to select.
- Select the **Time slice before sunset** option in the drop-down list at the right in the window, enter the desired value for **Time slice length % of the night** (e.g. 15 %) and click on **+ Add** at the bottom of the window. The percentage refers to the time between sunset and sunrise. If no time slice before sunset is required, select **Night time slice** from the dropdown list.
- Click on the arrow in front of **Time slice before sunset** or respectively **Time slice 1**, then click on **Condition block 1**. Now enter the desired name in the **Block name** field on the right and click on **Apply**.
- Click on the arrow in front of **Condition block 1** and then on **<empty>**. The **Condition** input area will now appear on the right.
- Now define the conditions in the **Condition** input area. The operation is identical to that of the **Shutdown condition** area in the **Special Shutdowns** window (see Shutdown condition input area 193).
- Subsequently set up and define all other Time slices and Condition blocks according to the requirements of the authorities (a Night slice for the time after sunrise can also be defined).

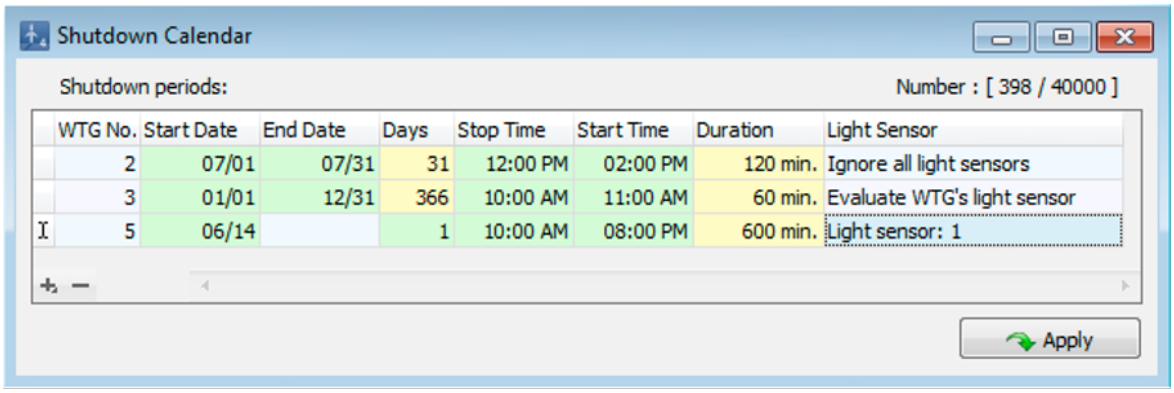
If a shutdown condition is displayed in **red** or **black** bold letters in the display area of the **Special Shutdowns** or **Night shutdowns** window (left half of the window), then SM4 has detected that an input is "not plausible". Please refer to the information in the Plausibilty check 194 section.

See also Practical example 5: Requirements for bat protection w/ night slices 35

4.4.3 Shutdown Calendar window

Purpose	Define fixed shutdown periods (unconditional)
Symbol	
Path	*Switching & Measurement > Shutdown Calendar*
Type of use	Interactive
Reference	Project

The **Shutdown Calendar** window is used to define fixed shutdown times to be applied regardless of other conditions, such as position of the rotor with respect to the sun. The only condition that can be defined in addition to time is **Sun is shining**, which is determined by the light sensor.



Shutdown Calendar window

General notes on the **Shutdown Calendar** window

- The shutdown times that have already been created are shown in a list. The information **398/40,000** in the upper-right corner of the screen means that 398 (31+366+1, see **Days** column) of 40000 possible shutdown periods have been created so far in this example.
- The shutdown periods are created/edited directly in the columns. To add a new shutdown time, click on the **+** character (bottom left); to remove a shutdown time, select the time to be removed and click on the - character (also bottom left).
- Mandatory fields are highlighted in red (only visible in empty lines).
- Correctly defined input fields are highlighted in green.
- If the values defined under **Days** or **Duration** result in a suspiciously long period, the value will be highlighted in yellow.

Operating instructions for the **Shutdown Calendar** window

- Move columns: Columns can be moved by drag & drop.

- Sort by column: You can sort a column according to its heading by clicking on it. If you then click again on the same column heading, the sort sequence will change from ascending to descending or vice versa.
  You can also sort by more than one column heading (criteria). To do this, first press and hold the shift key and then click on the desired column headings. The sorting will be carried out according to the order in which you click on the column headings.

The information, options or buttons are described in the following table

Element	Explanation/function	
WTG No.	Select the No. of the WTG to be shut down during fixed periods of time.	
Start date	Specify the first day of the period during which the respective WTGs is to be shut down during a specified period of time. DD.MM* (without full stop)	
End Date	Specify the last day of the period during which the respective WTGs is to be shut down during a specified period of time. However, this field can also remain empty if the parameters Stop time and Start time only apply to the Start date. DD.MM* (without full stop)	
Days	This field will be filled out automatically – you can use it to check that you entered the values correctly. If you have defined a date range that results in a period of more than 19 days, this field is highlighted in yellow, in order to point out that a WTG will be shut down over a fairly long period of time.	
Stop Time	Specify the time at which you want the shutdown period to end. Please also take into account the **Summer winter time handling** setting (*Project > Settings> SMU > Time settings*). 24-hour format, HH:MM*	
Start Time	Specify the time at which you want the shut-down period to end. Please also take into account the **Summer winter time handling** setting (*Project > Settings> SMU > Time settings*). 24-hour format, HH:MM*	
Duration	This field will be filled out automatically – you can use it to check that you entered the values correctly. If you have defined a time range that results in a period of more than 29 minutes, this field is highlighted in yellow in order to point out that a WTG will be shut down over a fairly long period of time.	
Light Sensor	Select one of the 3 options from the drop-down list:	
	Option	**Effect**
	Ignore all light sensors	The defined shutdown period is applied regardless of any other condition.

Element	Explanation/function	
	Evaluate WTG's light sensor	The defined shutdown period is applied only if the light sensor of the WTG reports that shadow impact is possible.
	Light sensor: 1... 40	The defined shutdown period is applied only if the selected light sensor reports that shadow impact is possible.
	This button is used to confirm the entered/selected data.	

*The format stated here corresponds to the default settings in the input area **Country-Specific Settings** (*File > Application Settings > ShadowManager 4 > General*) and can be changed there at any time.

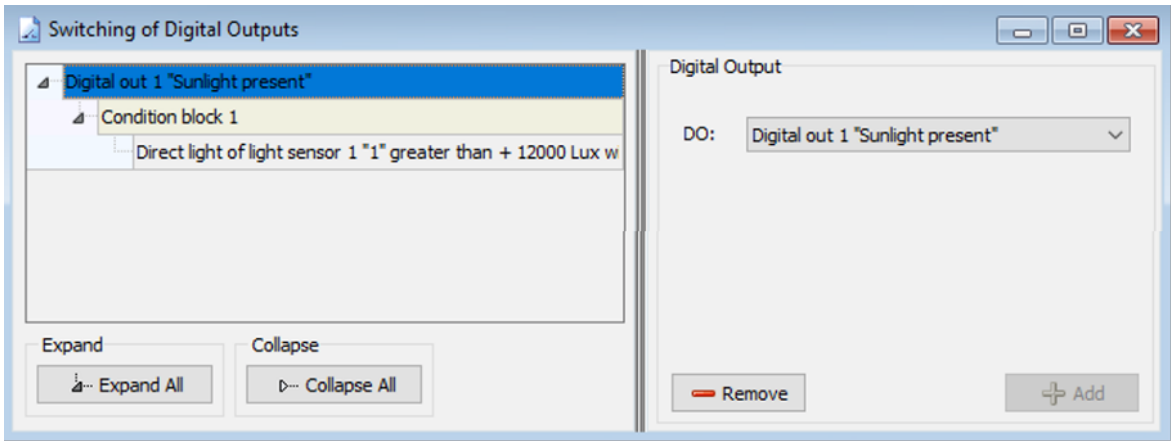
Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

4.4.4 Switching of Digital Outputs window

Purpose	Set conditions for switching digital outputs
Path	*Switching & Measurement > Digital out switching*
Type of use	Display + interactive
Reference	Entire project

In this window you can define conditions that set a digital output as soon as they are fulfilled and reset the output as soon as they not fulfilled anymore. The Set and Reset operations trigger events that can be referenced in the Events window 247.

The structure and operation of the vertically divided **Switching Digital Outputs** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185.



Switching of Digital Outputs window

Explanation of the above example window **Switching of digital outputs:**

- The digital output selected in the **DO** drop-down list (right half of the window) has previously been defined in the **Digital Outputs** tab (*Hardware > Sensors and IO Signals*).
- In the above example, the digital output is set when the measured light value of light sensor 1 is greater than 12000 lux, and reset again as soon as the light value has fallen below 11900 lux because of the hysteresis of 100 lux.
- An event is triggered by setting or resetting a digital output. In the **Events** window, the number of the DO and the values of the reading points from the conditions for switching the DO are logged as standard. Further reading points can be added by the user as desired.
- For switching of digital outputs to work, they must be assigned in the **Hardware Assignments** window (*Hardware > Hardware Assignments*), see section Hardware Assignments window 181 for more information.

4.4.5 Measurement Data Logging window

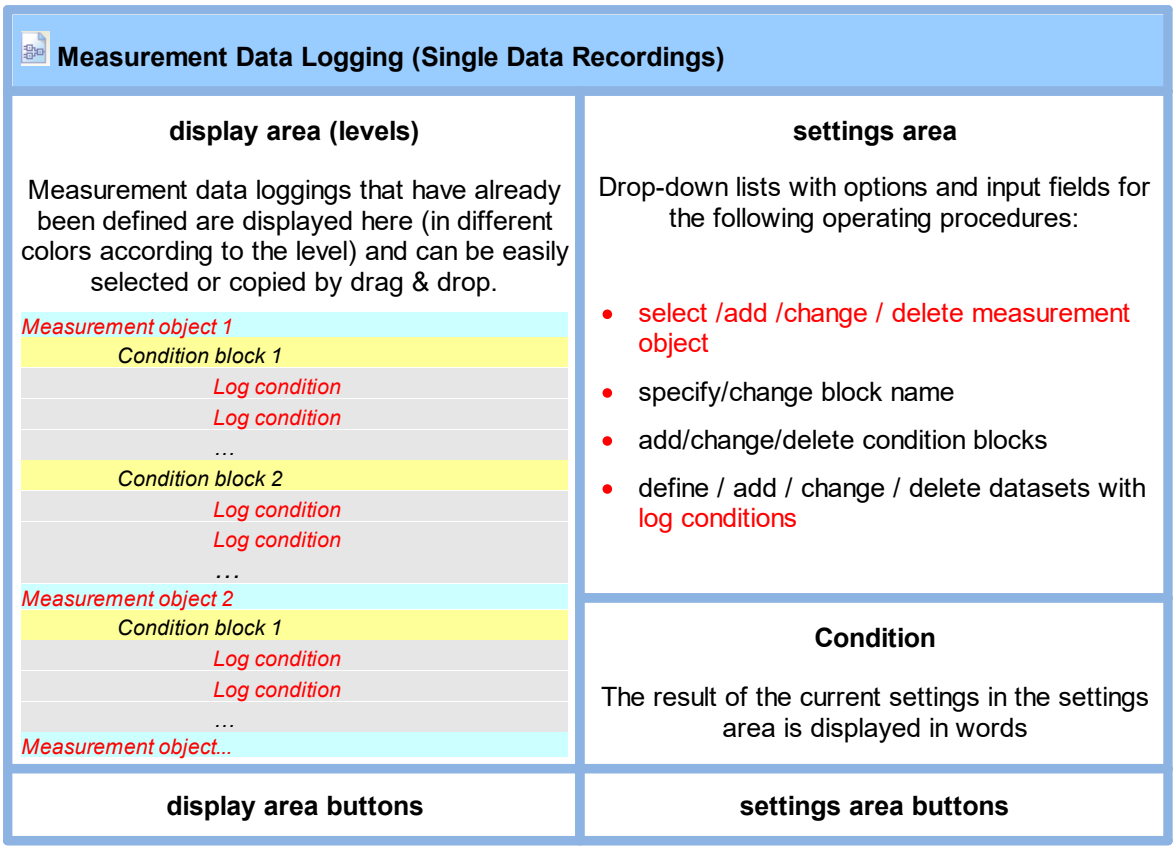
Purpose	To record individually selectable measurement data and link/compare them to one another. The corresponding data is output as a separate log.
Symbol	
Path	*Switching & Measurement > Single Data Recording*
Window type	Divided vertically, see Vertically divided windows 21 (basic operation like the **Special Shutdowns** window)
Type of use	Interactive
Reference	Project

In addition to the 3 standard logs (Operation/Shadow impact/Shutdown log) you can also define a user-defined log in SM4 with data that can be individually selected.

Logging can take place cyclically at selected intervals and/or depending on specific log conditions (**Attention**: the actual conditions, which are called “Shutdown conditions” for Special shutdowns, are designated as “Log conditions” here).

The linking logic is the same as for Special shutdowns (condition blocks are linked by OR and conditions by AND).

The basic structure and operation of the **Measurement Data Logging** window are based on the **Special Shutdowns** window. However, at the top level, you do not select the WTG to be shut down but a measurement object instead (source and reading) whose values should be logged. See the following figure (differences to the **Special Shutdowns** window are marked in red):



Schematic representation of the **Measurement Data Logging** window

Because operating the **Measurement Data Logging** window is almost no different to operating the **Special Shutdowns** window, only the basic procedures for creating measurement data logging are described. Defining individual log conditions corresponds to how shutdown conditions are defined, see **Shutdown condition input area** 193.

Basic procedures for setting up a Measurement Data Logging

This section describes how you can set up a Measurement Data Logging if none has been defined beforehand.

- Open the **Single Data Recordings** window *(Switching & Measurement > Single Data Recording)*.
- Select the desired source in **Source** at the top right.
- If applicable, enter a different number in **No**.
- Select the desired option at **Reading point**.
- If readings should be performed cyclically, set a checkmark at **Cyclic log** and define the **Log interval** underneath.
- Click on **Add** at the bottom of the window.

The following steps are optional

- Click on the small arrow in front of the created measurement object at the top left in the window.
- Now click on the small arrow in front of **Condition block 1**.
- Click on **<empty>.**
- Now define the actual condition in the **Log Condition** input area and then click on **Add**. The operation is identical to that of the **Shutdown condition** area in the **Special Shutdowns** window (see Shutdown condition input area 193).
- You can then set up and define all other measurement objects, condition blocks and log conditions as you wish.

4.4.6 Cyclic Multi Log window

Purpose	• Regular recording of a series of measured values • Define specifications exporting the results in .csv format
Abbreviation	Cyclic Multi Data Recording = CMDR
Path	*Switching & Measurement > Cyclic Multi Data Recording*
Window type	divided vertically, see Vertically divided windows 21 (basic operation similar to the **Special Shutdowns** window)
Type of use	left part: display only; right part: interactive
Reference	Project

Using **Cyclic Multiple Data Recordings**, the regular recording of an entire series of measured values can be conveniently implemented even for larger wind park projects. The subsequent output of the results in csv. format requires little more than clicking a button.

Single Data Recordings (previous section) are also used to log data, however, they require a separate recording being defined for each reading point (e.g., wind speed, temperature), and setting up CMDRs for larger projects, collecting the results and presenting them in a structured csv. file would be very time-consuming.

In the **Cyclic Multi Log** window, on the other hand, the focus is on the measuring interval and measuring conditions:

- You first set up a recording (e.g. data from WTG x) with a timer* (e.g., every 10 minutes).
- If required, you can assign measuring conditions, e.g. a time period (e.g., only record from sunset to sunrise).
- You can then assign several reading points to each of these WT records.
- In addition, the .csv export file can be predefined (e.g. file name and column headers).

*Interval timers are predefined in a separate window, see section Interval Timer window 232.

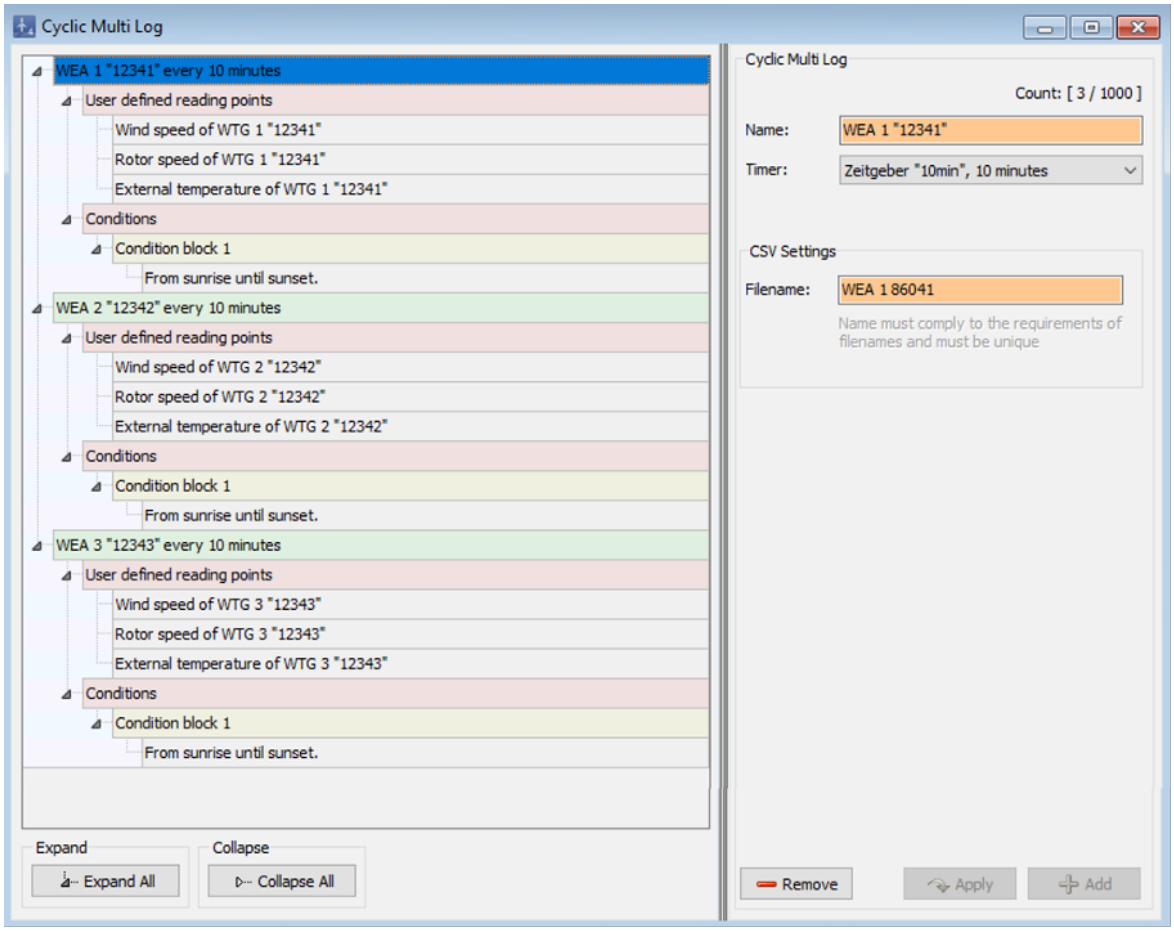
If, for example, in a project of 40 WTGs, four reading points are to be recorded for each of these WTGs, this requirement could be met by defining **just 40** CMDRs instead of **4x40 = 160** single data recordings.

CMDRs in the overall process

Once you transfer a project that contains one or more CMDRs to the SMU, the SMU will the record defined reading points in the specified time grid. Each measurement is logged as an event in a separate number range of the special shutdown log. These results, like all other events, could be filtered and presented in tabular form. However, to take advantage of the CMDR functionality, we recommend using the export function, see overall process:

1. Define CMDRs (*Switching & Measurement > Cyclic Multi Data Recordings*)
2. Save settings and send project to SMU (*Project > Configuration*)
3. Events are logged by the SMU
4. Download log files from SMU (*Logs > Log files SMU*)
5. Under *Logs > Local Log Files* select project and date range and click on **Export**
6. In the **Export Cyclic Multi Log** window, make last settings for the export and start the export.

The following is an example of the **Cyclic Multi Log** window with explanations.



Cyclic Multi Log

In the example window shown above, the task was to record the measured values "wind speed", "rotor speed", and "temperature" for WTG 1–3 of the project every 10 minutes from sunrise to sunset. The following was defined for this purpose:

- green level: three multiple recordings (one per WTG), the name of the recording is supplemented by the respective timer. Timers are defined beforehand in a separate window, see section Interval Timer window 232.
- red level – user-defined reading points: three user-defined reading points per WTG
- red layer – conditions: Condition block with the condition that should be recorded from sunrise to sunset
- The project on which the above example is based comprises 40 WTGs. The desired four reading points can be defined with just 40 CMDRs instead of 120 single data recordings.

In the following you will find further explanations on the **Cyclic Multi Log** window.

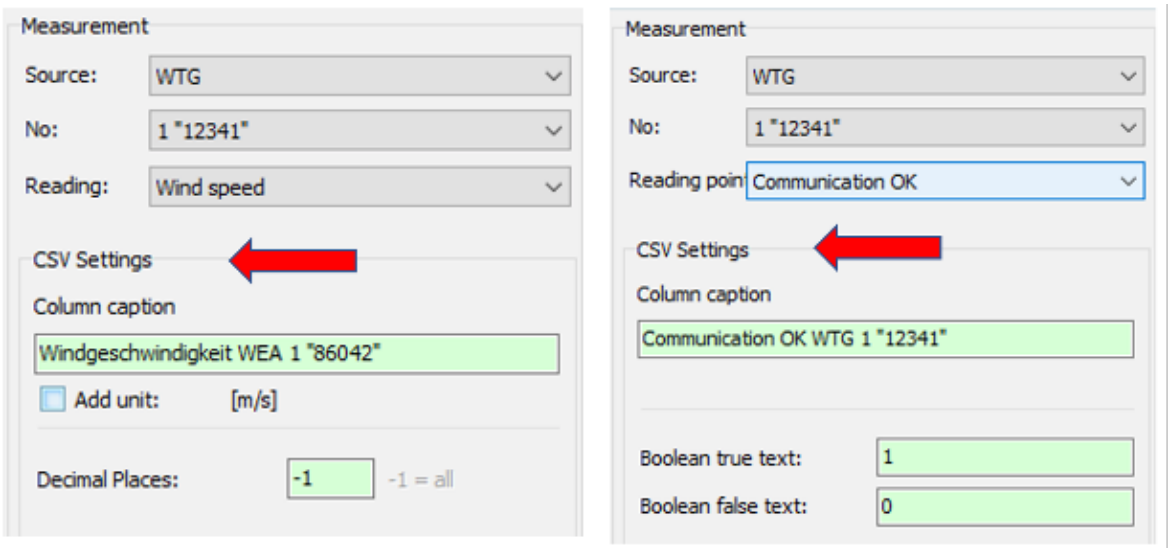
The structure and operation of the vertically divided **Cyclic Multi Data Recording** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185.

In the following, only those fields or properties are explained that are not self-explanatory or do not apply to vertically divided windows in general.

When creating a new recording (green level), you need to fill in the **Filename** field in the **CSV** Settings section (see above screenshot). Please note the following:

- conventions for Windows file names must be observed (certain characters and names, e.g. " : ; '< > as well as LPT0, COM0 etc. are not allowed), otherwise the field is highlighted in red
- all .csv files of all CMDRs will later be output to the same folder – therefore the file names must be unique so that they won't each other; file names are **not** case-insensitive, i.e., filename = fileName Filename = fileName Filename = fileName

Also when adding the reading points under **User defined reading points** (light gray layer), you will come across the **CSV Settings area, which there, depending on the type of reading point, will look like in one of the following examples:**



Cyclic Multi Data window (sections thereof)

The information, options or buttons are described in the following table

Box	Explanation/function
Column header*	In order to recognize later in the .csv file which value was recorded, column headers (captions) can be assigned. When adding a reading point, the name of the reading point is suggested together with the name and number of the source (e.g., sensor, WTG, etc.). **NOTE:** If a WTG or a sensor is assigned a new number, then all shutdowns, shutdown conditions, recordings etc. affected by the change are automatically adjusted. However, this does **NOT** apply to column captions – these must be adjusted manually. Preset by measuring point names, freely editable
Attach unit*/**	Here you determine whether the unit (if applicable) is added to the column header.
Decimal places**	For floating point values, you specify here the number of decimal places the values will have in .csv file.
Text for Boolean true **Text for Boolean untrue****	Boolean values default to "0" and "1". You can replace this, e.g., with "fail/OK" or "light/shadow".

* Can be edited in the **Export Cyclic Multi Log** window, see Export Cyclic Multi Log window 319.

Can be pre-defined int eh Application Settings** (seeApplication Settings window, Csv-Export, Cycl. Multi Data Recordings. 85) but this only affects new reading points, already defined reading points keep the original settings.

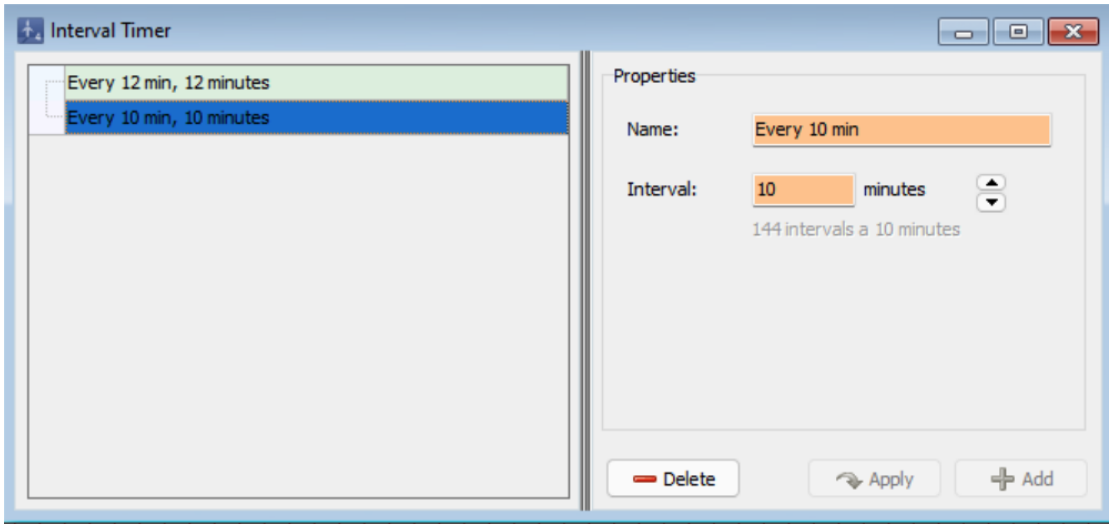
Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

See also Practical example 8: Regular recording of several measured values 46

4.4.7 Interval timer window

Purpose	Define intervals, e.g., for the **Cyclical Multi Data** window.
Path	*Switching & Measurement > Interval Timer*
Type of use	Display + interactive
Reference	Entire project

In this window, you can define intervals that can subsequently be selected as timers in other windows, e.g., in the **Cyclic Multi Log** window.



Interval Timer window

Notes on the **Interval Timer** window

As with any vertically split window 21 the datasets already created are displayed on the left, in this case interval timers, while the actual definition is done on the right.

- Up to 5 timers can be defined
- **Name** field: input freely selectable
- **Interval** field: The interval you enter here must fit “smoothly” into a period of 24 hours. Ergo, intervals such as “7” or “13” are not permissible and therefore cannot be entered (the input field is not green, but has a reddish background). The number of times the value you enter or select with the arrow keys will fit into 24 hours is displayed below the input field. If you select the value using the arrow keys, only permissible values are offered.
- Longest possible interval: 1 interval a day

4.4.8 Condition Flags window

Purpose	Define condition flags for special or night slice shutdowns that can be activated (set) by one set of conditions and cleared (reset) by another
Path	*Switching & Measurement > Calculations*
Window type	Divided vertically, see Vertically divided windows 21 (basic operation similar to the **Special Shutdowns** window)
Type of use	left part: display only; right part: interactive
Reference	can be used in special and night slice shutdowns

In connection with special and night slice shutdowns, it may be necessary or useful to treat a condition defined as a shutdown criterion (e.g., no precipitation present) as "not fulfilled" for a longer time than measured by the respective climate sensor.

A typical situation would be a regulation in the area of bat protection according to which a WTG doesn't have to be switched off for the rest of the night as soon as it rains, i.e., not even if it stops raining in the same night.

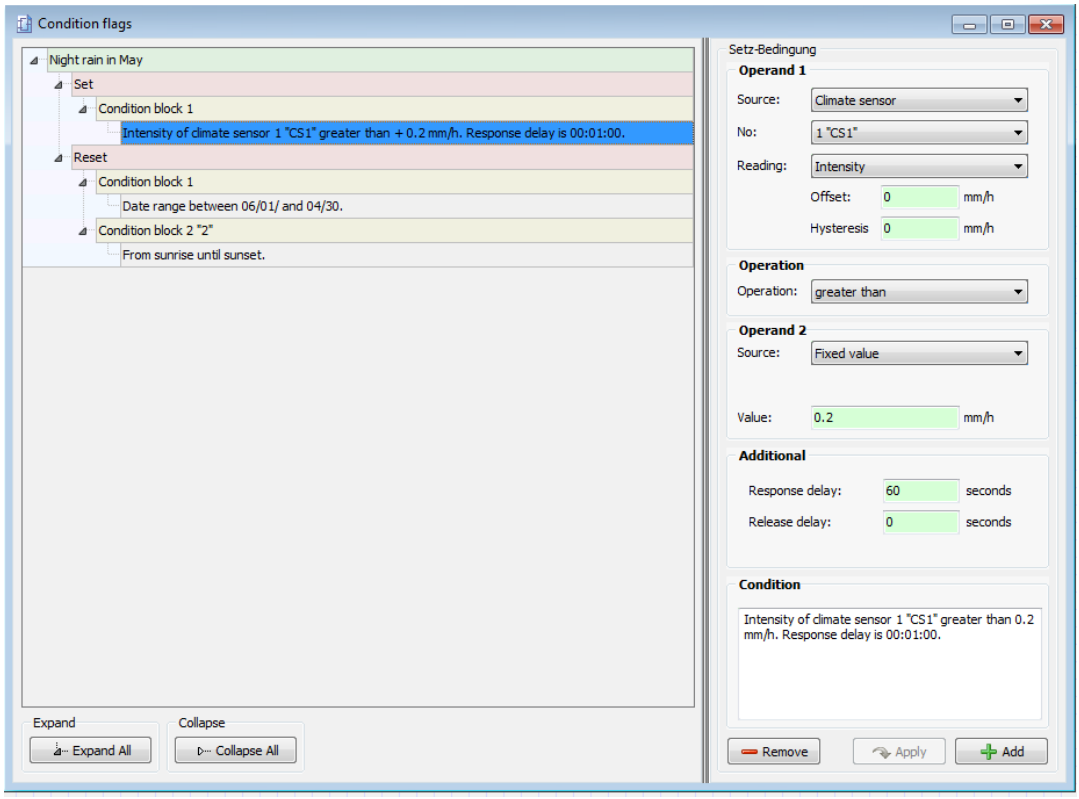
In order to reflect a scenario of this type, special or night slice shutdowns must be supplemented with so-called condition flags, which can be set by one set of conditions and cleared again by another, see also Example 7: Supplement a bat shutdown with condition flags 44.

Condition flags can only influence the shutdown/startup of WTGs if they are referenced in special or night slice shutdowns. Otherwise, they take no effect.

The structure and operation of the vertically divided **Condition Flags** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185.

Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

The **Condition Flags** window is described in detail in the following.



Condition Flags window

Explanation of the above **Condition Flags** example window

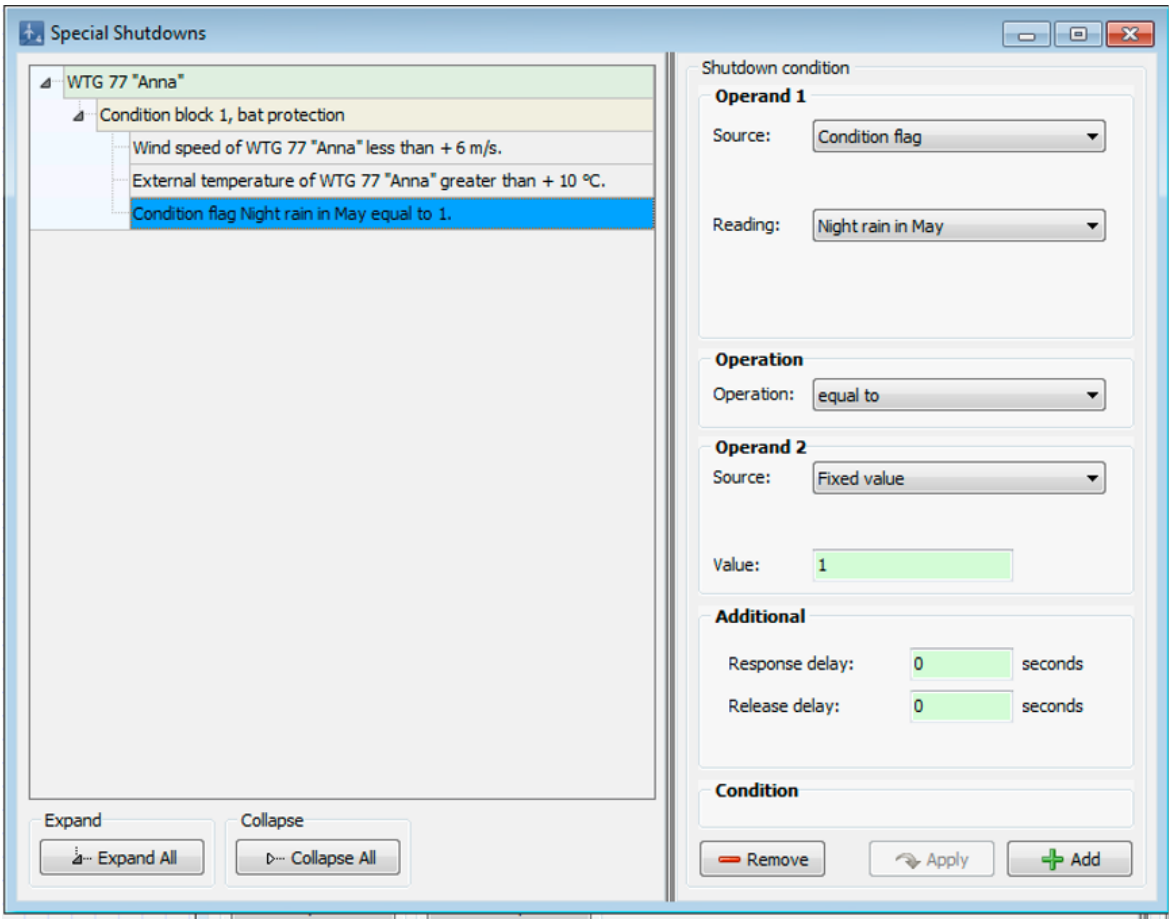
On the left side of the screen a condition flag **(Night-time rain in May**) is displayed, including its **Set** and **Reset** conditions (red layer). As is usual with vertically split windows, it was defined in the right half of the window. The following applies to the value of a flag:

Set condition(s) fulfilled = **1**, **Reset** condition(s) fulfilled = **0**

A flag is therefore set (i.e., **1** is returned) if the **Set** conditions are true. It remains set even if the **Set** conditions no longer apply. In the example above, the flag is set as soon as precipitation is measured. If it stops raining again, the flag will remain set.

A flag is cleared (i.e., **0** is returned) if the **Reset** conditions apply. Once the **Reset** conditions no longer apply, the **Set** conditions take over. In the example above, the flag can only be effective in the month of May and even then, only during the night.

On the following, the above example of **Night rain in May** is also used to describe how condition flags are used in special or night slice shutdowns.



Special Shutdowns window with condition flag

Explanation of the above **Special Shutdowns** example window

The **Night rain in May** condition flag can be defined as a reading for special shutdowns provided that the **Condition flag** option was selected as the **Source**.

In the above example, the WTG should "normally" be shut down as soon as it is warmer than 10 degrees and the wind is blowing at less than 6 m/s. The condition flag is used to ensure that the system is **not** shut down if these two conditions are met while at the same time it is raining or has rained.

The first two shutdown conditions (wind speed and external temperature) are overridden as soon as the condition flag (the third shutdown condition) is activated because the result is 1. In this case, the condition "Condition flag Night rain in May equals 0" is no longer fulfilled and a shutdown is therefore no longer possible, since the shutdown conditions within one condition block are connected to each other by a logical AND. The block (the shutdown) therefore only takes effect if ALL conditions are fulfilled. For the above example, this means in other words: As long as it does not rain during May nights, the other two shutdown conditions can cause the WTG to be shut down. Once it starts raining so that the condition flag is set, wind and temperature become irrelevant and remain so for the rest of the night:

- As a reminder: The following rules apply to conditions flags with regard to Set and Reset:

- A flag is set (i.e. it returns **1**) if the Set conditions apply.
  It remains set, even if the Set conditions no longer apply.
  In the above example, the fact that it is raining sets the flag. It remains set even when it has stopped raining.

- A flag is cleared (i.e. it returns **0**) if the Reset conditions apply.
  Once the Reset conditions no longer apply, the Set conditions take over.

In the example above, the flag is reset when the current date is before or after May or the sun has risen. Whether it rains or not is not relevant anymore. If the Reset condition is not met anymore, i.e. a May night begins, then the precipitation condition takes effect. This means here in particular that if it has already started raining before the night begins, the flag is set immediately as soon as the night begins.

Condition flags can only influence the shutdown/startup of WTGs if they are referenced in special or night slice shutdowns. Otherwise, they have no effect.

Concluding general notes on condition flags

- As already mentioned, condition flags can only be used in special and night slice shutdowns, but not in single data recordings (measurement data logging).
- Furthermore, they cannot be used as reading points in events of the special shutdown log. They can therefore neither be added by the user nor can they be automatically taken over as condition reading points from special and night slice shutdowns.
- Condition flags trigger an event when they are set or reset
  (see Events window 247).

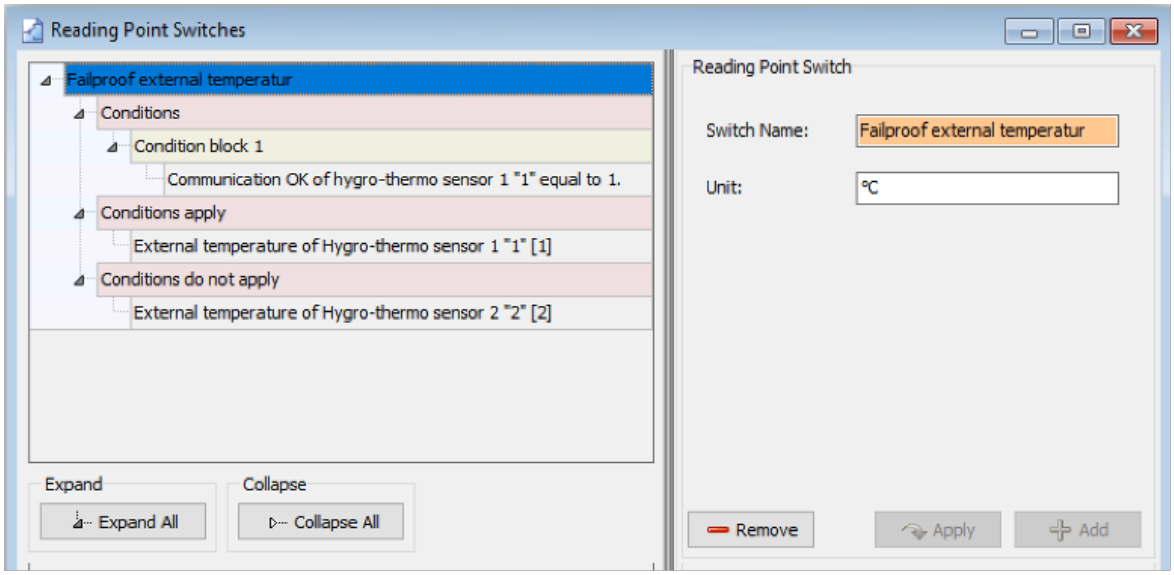
Please be very careful when entering values in Shadow Manager. Incorrect parameter values may result in avoidable wear and tear, loss of earnings, problems with authorities or residents and in the worst-case force operators to decommission wind turbine generators.

4.4.9 Reading Point Switches window

Purpose	Set up automatic switching between two reading points (e.g. to increase the reliability of sensors)
Path	*Switching & Measurement > Reading Point Switches*
Type of use	Display + interactive
Reference	Entire project

In this window you can, for example, set up automatic switching between the reading points of two sensors. If one of the two sensors fails, the second sensor supplies the required measured values in its place. The reading point switch acts as an "independent" sensor and can be used like one, e.g. in special shutdowns. This improved fail-safety could also be set up directly in the **special shutdowns** window, but only with considerably more work.

The structure and operation of the vertically divided **Reading Point Switches** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185.



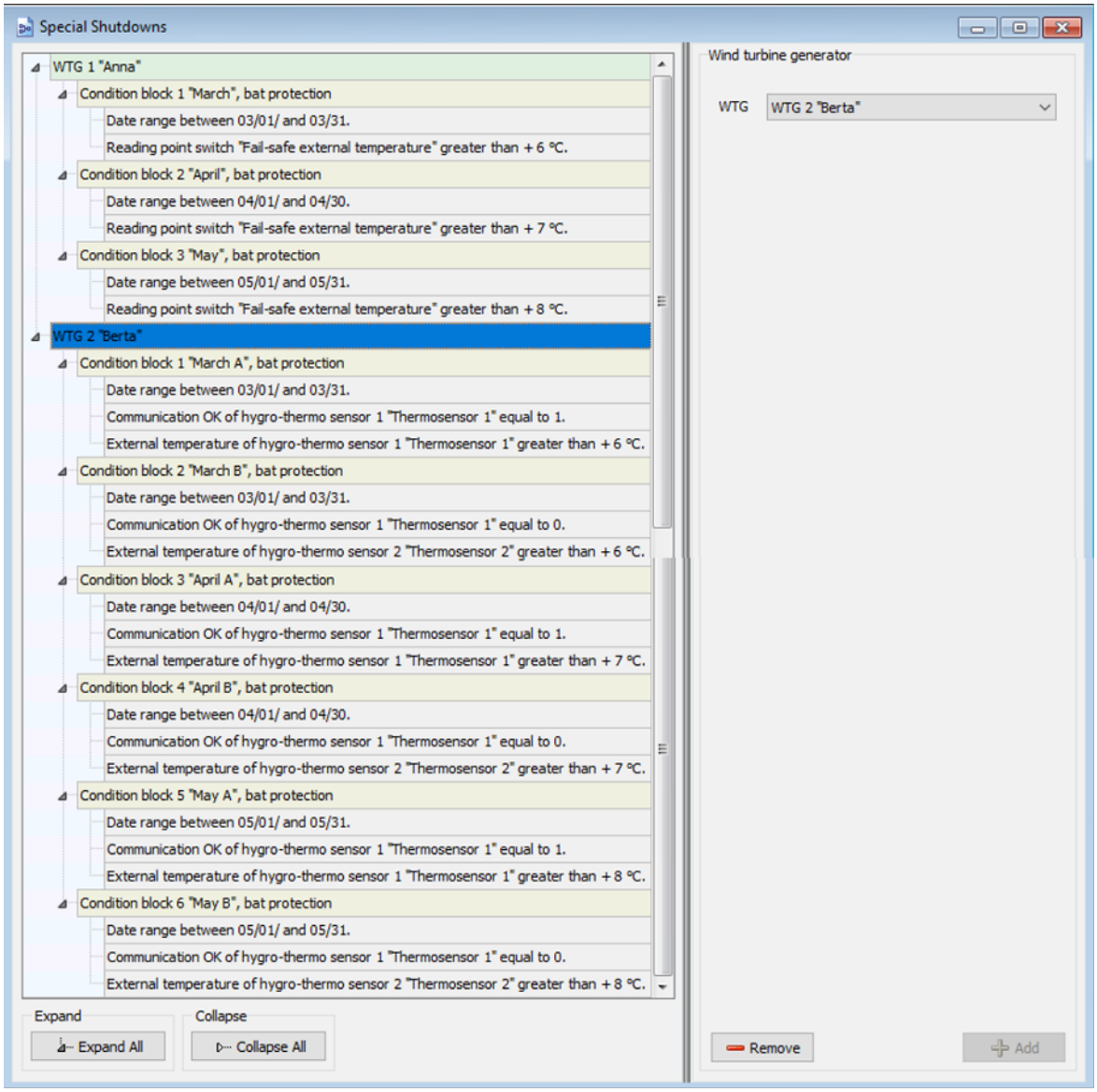
Reading Point Switches window

Notes on the above example for **reading point switches**

- On the right side, a name for the changeover switch has been entered (failproof external temperature), optionally a unit could be added.
- The function of the changeover switch can be seen on the left: Its (only) condition is to be considered true if **Communication OK** has the value 1, i.e. is "OK". If this is the case, the changeover switch supplies the temperature mesured by sensor 1. Only if this condition does not apply, the value of sensor 2 is passed on.

- The same options are available in the **Source** drop-down list for **Conditions, Conditions apply** and **Conditions do not apply** as in the windows **Special Shutdowns**, **Night Shutdowns,** etc. window, so the possiblities are rather endless.

On the next page you will find an example of setting up a "fail-safe external temperature", once **with** measuring point changeover switch, once **without**.



Special Shutdowns window (WTG 1 **with** reading point switches, WTG2 **without**)

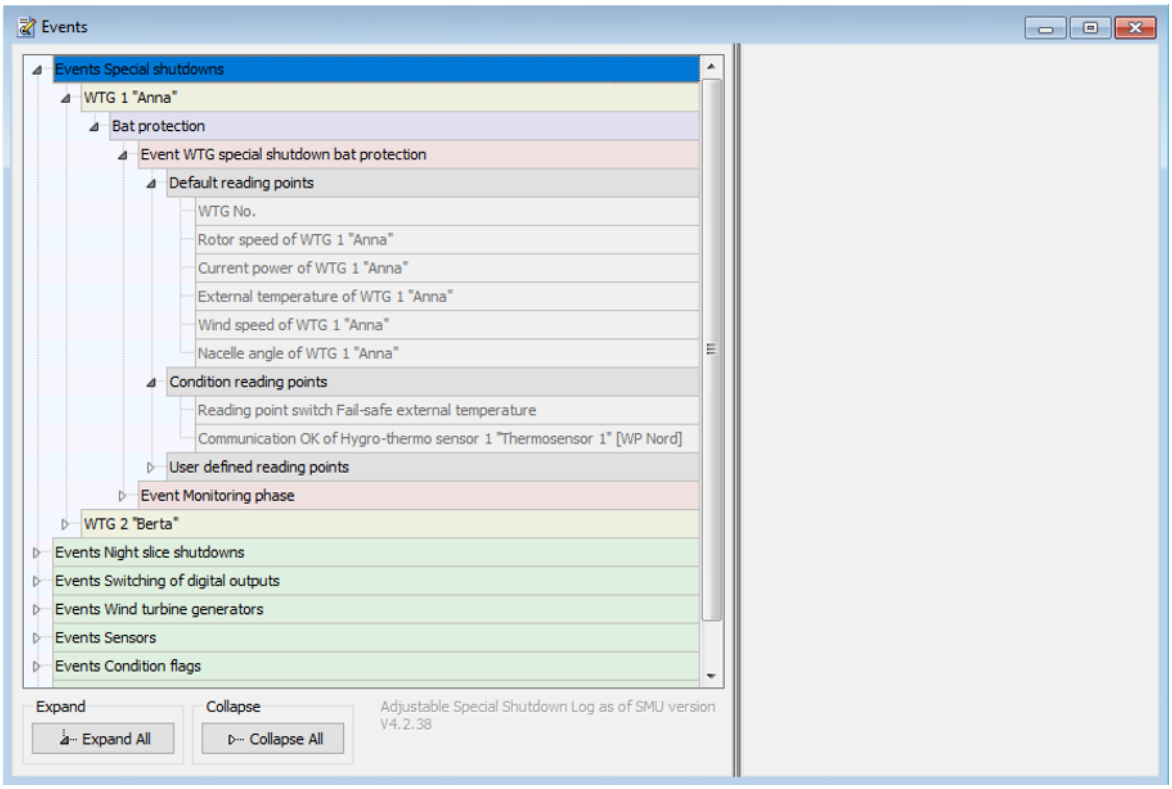
Notes on the above example

- Here you can see that the setup effort for WTG 2 **without** reanding point switches was significantly higher than that for WTG 1 **with** reading point switches. The savings in effort also apply to maintenance, of course.
- Reading point switches are also particularly useful for night slice shutdowns, where the night is divided into 10 or more slices and separate condition blocks and conditions have to be defined for each slice.

Since no separate events are logged for reading point switches, you will find more information on this topic on the next page.

Output values of reading point switches in the log (events)

Reading point switches don't trigger any events. Their output value as well as the measured values in their switchover conditions that have led to an output value are not logged automatically. Since these values are nevertheless interesting, especially if they have contributed to a special shutdown, for example, the measured values of reading point switches to be logged are included in the event record of the corresponding special shutdown, as can be seen in the following example.



Events window (using the example of WTG 1 "Anna")

Notes on the above example window **Events**

- Under the event "WTG special shutdown bat protection" of WTG 1, you can see that the first entry under Condition reaing points” is the output value of the reading point switch; this is the normal entry for the shutdown condition of the special shutdown itself.
- In addition, the communication status of thermo sensor 1 is displayed there, and this originates from the switching condition of the reading point switch. Thus, if a special shutdown occurs, all relevant values are logged with the event "WTG special shutdown".

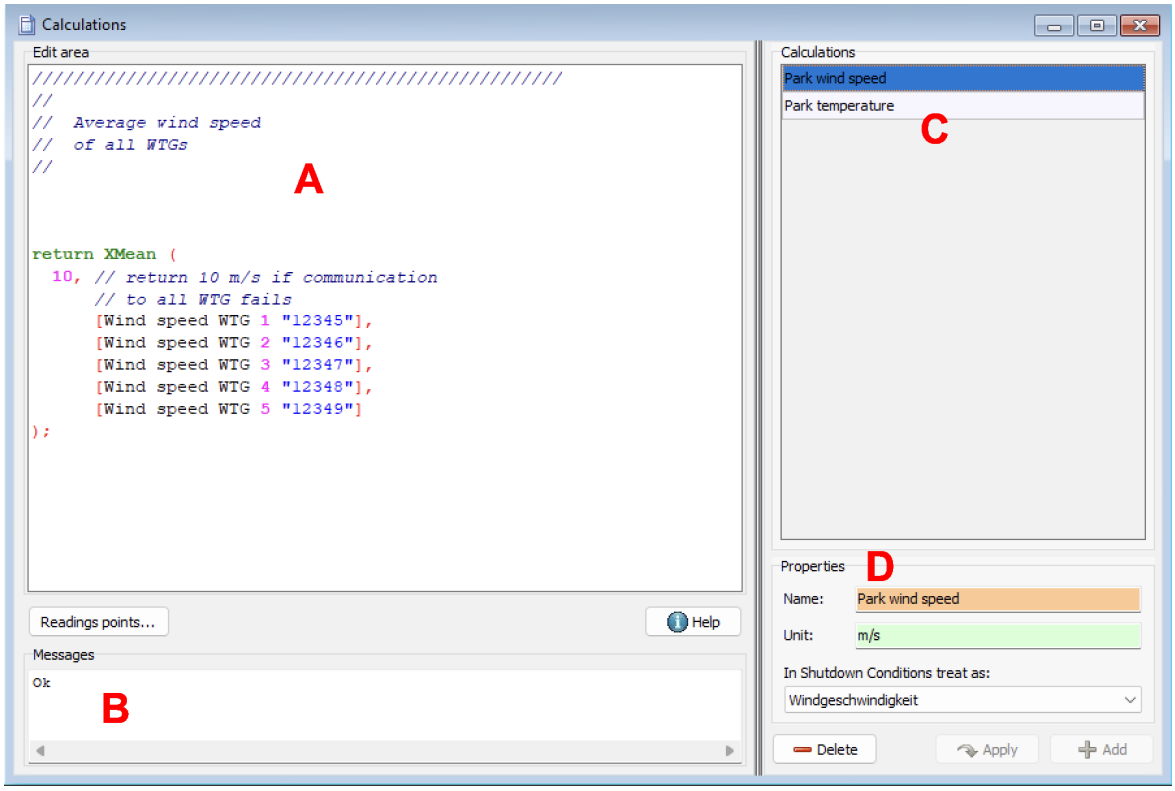
4.4.10 Calculations window

Purpose	Define automatic calculation of certain values to use them in shutdown conditions of Special Shutdowns and Night Slice Shutdowns, Measurement Data Logging or as user-defined reading points in the Special Shutdown Log, etc.
Path	*Switching & Measurement > Calculations*
Type of use	Display + interactive
Reference	Entire project

Use this window to define the automatic calculation of certain values, such as

- the average of a measured value over a certain period of time or
- the average park wind speed from the wind speeds of all WTGs,

and then use them as measured values of a sensor for shutdown conditions of Special Shutdowns and Night Slice Shutdowns, Measurement Data Logging, etc.



Calculations window

The **Calculations** window is divided into the following four areas:

A Edit area – here you can enter the syntax for the calculation and additional comments if desired.

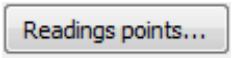
B Messages (display only) – calculations must comply with a certain syntax. On the one hand, errors that you may have made in the input area are reported here, and on the other, the system displays which entry it expects next.

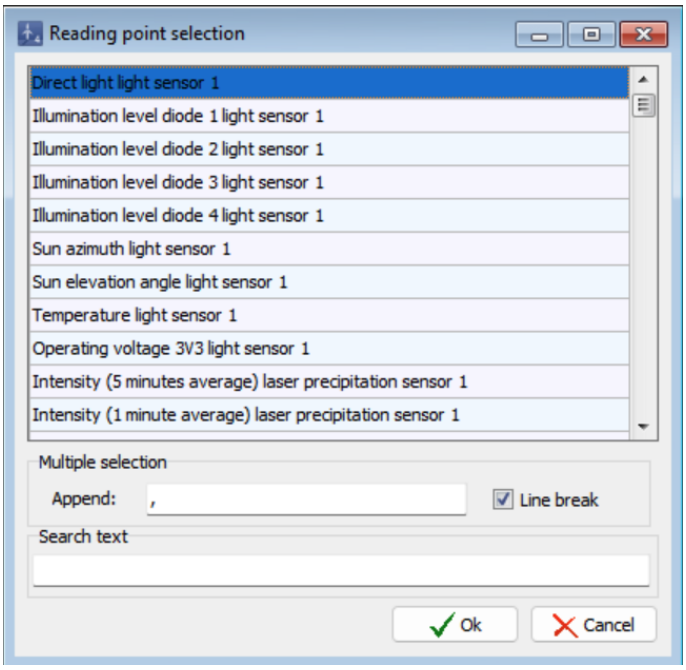
C Calculations (selection only) – any calculations that have already been defined are listed here and can be selected in order to **Delete** an existing calculation, **Apply** changes or **Add** a new one.

D Properties

- here, a calculation is given a name and optionally a unit. The calculation can then be referenced under this name, for example in a shutdown condition.
- **In Shutdown Conditions treat as**: Here you can define the way the result of a calculation is to be checked in a shutdown condition. If you select **Wind speed** here, then, in the windows **Special Shutdowns** or **Night Slice Shutdowns,** every shutdown condition that uses the current calculation will be checked according to the plausibility rules for wind speed. The "neutral" option would be **Not meteorological –** shutdown conditions with a calculation marked this way are not checked for plausibility**.** See also Plausibility check 194.

You will find an overview of the **Calculations**window in the following table

Element	Explanation
Input area	Here you can enter the actual calculation function; the following are currently possible: • **Minimum/Maximum** (e.g., maximum value of wind speeds measured by 2 or more sensors) • **Mean value** (e.g., average value of the intensity of illumination measured by a sensor over a period of 1–60 minutes) • **Rolling mean value** (e.g., repeated calculation of the average value of the intensity of illumination measured by a sensor over a period of 1–60 minutes) • **"Fail-safe" mean value** (e.g., average park wind speed from values of 2 or more sensors whose failure can be detected, and definition of a default value that will be used as a functional result in the event that all sensors have failed). The calculations have to comply with a certain syntax, which is explained in a separate section, seeSyntax for the input area in the Calculations window 244
	The names of the reading points of sensors must be entered exactly (even one additional or missing space makes them unrecognizable for SM4), but if you click on **Readings**, you can easily select one or more of the reading points available in the project in the following window:

	 You can filter the list of readings by making an entry in the **Search text** field. This field defaults to the word at which the cursor was positioned in the input area of the **Calculations** window. This word will be replaced there as soon as you close the **Reading point selection** window by clicking **Ok**. In the list of reading points, several entries can be marked simultaneously and applied to the input area of the calculations window. Before applying them, you can specify a separator to be inserted between the individual entries in the **Multiple selection** field and also specify that a line break be inserted between the entries.
Calculations	Any calculations that have already been defined are listed here and can be selected in order to **Apply** changes to an existing calculation or **Add** a new one.
	Serves to add a new calculation and is only active if a name has been entered for that calculation that does not yet exist in the list in the top right-hand corner of the window.
	Is used to edit an existing calculation and is only active if a calculation has been selected in the list and something has been changed. Changes will only be applied if you confirm them by clicking on **Apply**. Otherwise, the changes will be discarded as soon as you select a different calculation or close the window.
Name	Unique name of the calculation, no requirements.
Unit	Here you can define the unit for the result of a calculation. This text is used, for example, for shutdown conditions.

4.4.10.1 Syntax for the input area in the Calculations window

The input of a function must correspond to a certain definition language and syntax. Both will be explained in this section.

General notes

- The keyword "return" serves to return the result of the calculation.
- The parameters are entered in round brackets, the reading points in square brackets, the end is indicated by a semicolon, example:

```
return max ([reading 1], [reading 2]);
```

- The keywords of the definition language are in English – even if SM4 is set to German, "return" remains English. However, names of reading points are language dependent and are switched accordingly.
- The input area works much the same way as a standard text editor. You can mark, copy, delete, paste, etc. and also undo actions with Ctrl+z.
- Comments on the calculation can be entered in the input area. They start with two slashes and apply to the rest of the line, example:

```
// Maximum wind speed
return max ([reading 1], [reading 2]);
```

Other than that, line breaks have no effect. You can write everything in one line or insert breaks as you wish. The text can also be further formatted with spaces.

On the following pages you will find information on the syntax and further explanations of the individual calculation functions.

4.4.10.1.1 Calculation function “Minimum/Maximum”

Explanation: This function returns the highest/lowest value from the series of the specified measurements.

Syntax: min ([reading1], [reading2], ... [reading99])

max ([reading1], [reading2], ... [reading99])

Reading: any reading of a sensor

reading1…99

at least 2 reading points

Example: Maximum value of wind speed values measured by 3 sensors:

```
//Maximum wind speed WTG 1 to 3

return max (
[Wind speed WTG 1 "Anna"],
[Wind speed WTG 2 "Berta"],
[Wind speed WTG 3 "Charlotte"]
);
```

4.4.10.1.2 Calculation function “Mean value”

Explanation: Within the time period, values of the reading point are recorded on a regular basis. Once the time period has elapsed, the mean value is determined from the recorded values.

This function returns a new value for each time period.

Syntax: mean ([reading1], time period)

Reading: any reading of a sensor

Time period: Time period in minutes over which the values of a reading point are averaged.

Value range: 1–60 minutes

Example: Mean value of the intensity of illumination measured by a sensor over a period of 30 minutes

```
 // Rolling mean 30 min
return fmean (
[Illumination level diode 1 light sensor 1], 30);
```

4.4.10.1.3 Calculation function “Rolling mean value”

Explanation Values of the reading point are recorded on a regular basis. After each measured value recording, a new mean value is calculated from the latest measured values that were recorded during the specified period of time.

This function returns a new value for each measured value recording.

Syntax: fmean ([reading1], time period)

Reading: any reading of a sensor

Time period: Time period in minutes over which the values of a reading point are averaged.

Value range: 1–60 minutes

Example: Repeated calculation of the mean value of the intensity of illumination measured by a sensor over a period of 30 minutes

```
 // Rolling mean 30 min
return fmean (
[Illumination level diode 1 light sensor 1], 30);
```

4.4.10.1.4 Calculation function “Fail-safe mean value”

Explanation This function calculates the sum of the values of the specified reading points and divides the result by the number of reading points. If a sensor fails, its measured value is set to 0 and the number of reading points is reduced by 1. If all sensors fail, the default value is returned.

Syntax: xmean (default, [reading1], [reading2], [reading3], .. [reading99])

Reading: reading1…99

Reading of a sensor whose failure can be detected

at least 2 reading points

Example: An average park wind speed is to be determined from the wind speeds of all three WTGs. For this purpose, these reading points are entered as parameters for the xmean function. If the communication to one (or more) WTGs fails, the average park wind speed is only determined from the remaining WTGs and is thus distorted as little as possible. If the communication to all sensors fails, the result of the function is 10.

```
 // Failsafe mean with default
return xmean (10,          // Return 10 m/s if communication to all WTGs fails
[Wind speed WTG 1 "1234"], // These are the candidates
[Wind speed WTG 2 "1235"], // from which the mean value
[Wind speed WTG 3 "1236"]);// is calculated
```

4.4.11 Events window

Purpose	• Read out which reading points (measured values) are automatically logged for a special shutdown event • Add your own (user-defined) reading points
Symbol	
Path	*Switching & Measurement > Events*
Window type	Divided vertically, see Vertically divided windows 21 (basic operation like the **Special Shutdowns** window)
Type of use	left part: only display right part: interactive regarding user defined reading points
Reference	Project

The SMU writes events such as “WTG stop due to special shutdown", “Start of a night slice" or “Sunrise" into a log that can be downloaded in SM4. Such a log is only meaningful if it also records values that were measured at the time of an event, for example wind speed, humidity, etc. Some reading points are automatically recorded by the SMU and cannot be deleted or changed in the window described here. Others can be added by the user as desired, because often different reading points are relevant for each project.

The following reading points are available:

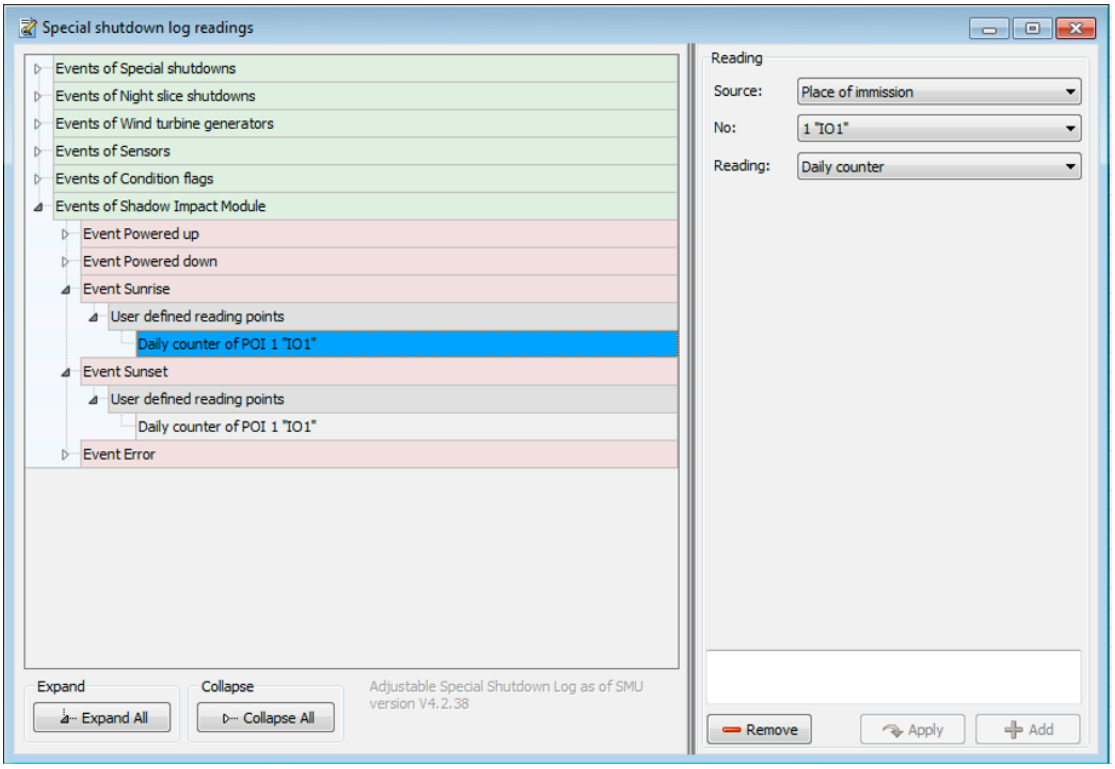
Default reading points
These reading points are permanently stored in SM4 and cannot be changed or deleted by the user. This ensures that the most important reading points are always recorded in the log.

Condition reading points
These reading points were used when defining shutdown conditions and can **only be edited there**. With the help of condition reading points, the log can show why a WTG was switched off at a certain time, e.g., because the hygro-thermo sensor exceeded a certain temperature. This makes much more sense if there are several conditions: the log will then also reveal which of conditions led to the stop (e.g., temperature or humidity or wind speed).

User-defined reading points
The user can add these reading points as required. User-defined calculations (*Switching & Measurement > Calculations*) can serve as a reading here. Reading points that are already included in the default or condition reading points cannot be added **again**.

The structure and operation of the vertically divided **Events** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185.

For more information about the **Events** window, see the following pages.



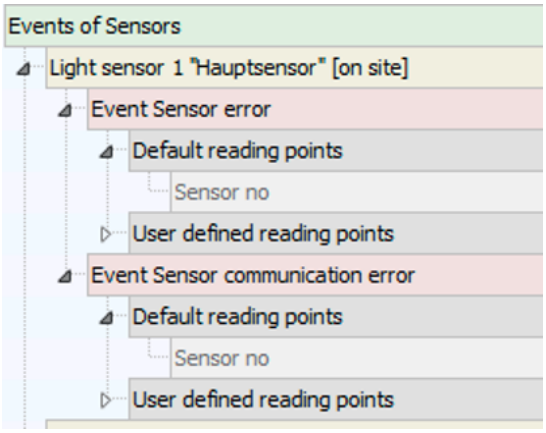
Events window (example)

Notes regarding the **Events** window:

- At the first level (green level) there are 6 logical groups of areas in which events can occur.
- The groups of the first level each have a different number of subordinate levels.
- In the example window above, only the **Events of shadow impact module** layer is expanded; its first sub-layer contains 5 possible events (red layer). As a second subordinate level, there is only the **User-defined reading points** level (gray layer).
- In the above example, the reading point **Daily counter of POI 1** was added to the events **Sunrise** and **Sunset** and would therefore be written into the special shutdowns log. Because nothing was defined for the event **Error**, a possible error would be logged here without further measured values.
- As is usual with vertically divided windows, the left part is a read-only area while the user-defined values are set in the right part of the window. There you can select from the set of reading points of WTGs, sensors etc. available in the project.
- The currently activated layer is highlighted in blue and can be edited in the right part of the window, provided it is of a type that can be edited.

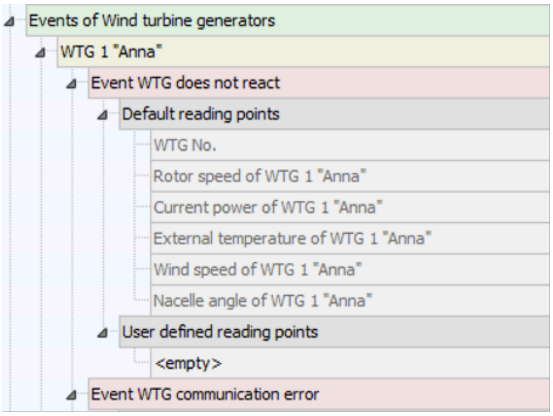
Example screenshots of the other logical groups on the first level, each followed by an explanation

Events of Sensors



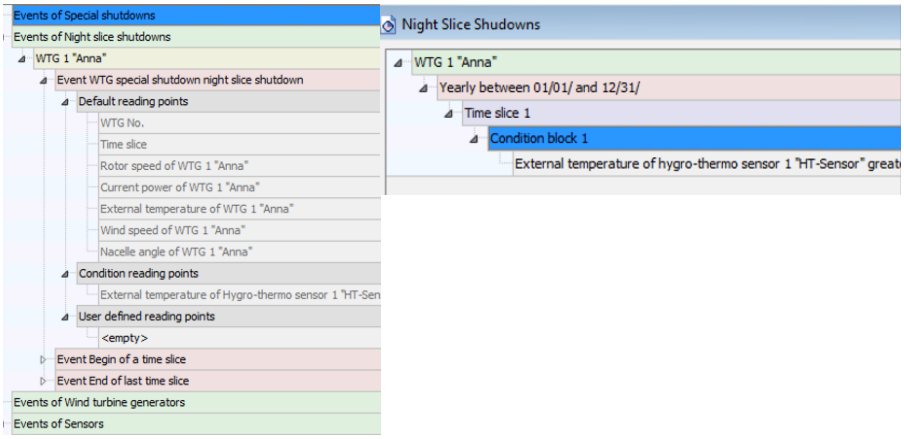
- There are only 2 possible events for each sensor (red layers)
- Default reading points (for sensors only **Sensor no**) are permanently stored in SM4 and cannot be changed or deleted by the user. This ensures that the most important reading points are always recorded in the log.

Events of Wind Turbine Generators



- Each WTG can trigger 9 different events (red layer) (only 2 of them are visible in the screenshot).
- The number of default reading points (gray layer, 6 per event) is also higher than in the case of the sensors.
- In order to limit the number of reading points logged for an event, only those reading points that are not yet included in the **Default reading point**s can be added under **User-defined reading points**. Example: If you would try to add the reading point **Wind speed of WTG 1** in the settings area on the right side of the window, the **Add** button would remain inactive. This principle applies to all events.

Events of Night Slice Shutdowns



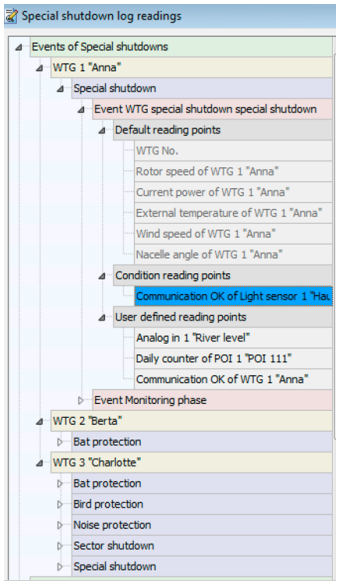
Screenshot on the left

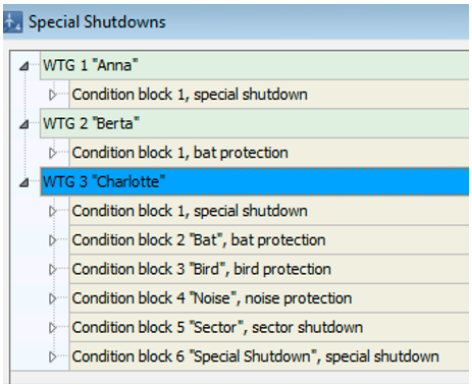
- In the left picture you can see that only WTG 1 has a night slice shutdown (yellow layer). If night slice shutdowns had been defined for other WTGs in the project as well, these would also be displayed here.
- There are 3 events per shutdown (red layer)
- On the reading points level, there are also the condition reading points. The reading points that were used when defining switch-off conditions are automatically listed here. With the help of condition reading points, the log can show why a WTG was switched off at a certain time, e.g. because the hygro-thermo sensor exceeded a certain temperature. This makes much more sense if there are several conditions: the log will then also reveal which of conditions led to the stop (e.g. temperature or humidity or wind speed).

Screenshot on the right

- Here you can see that for WTG 1 a night slice shutdown with a shutdown condition regarding the outside temperature was defined. This is reflected in the **Events** window.

Events of Special Shutdowns





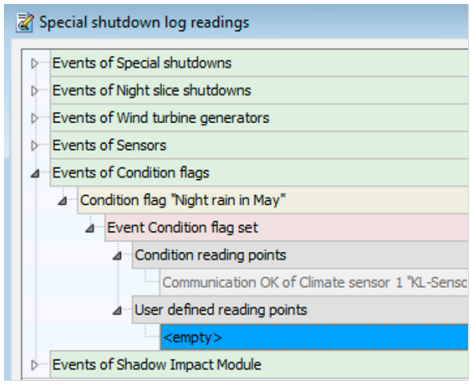
Screenshot on the left

- Of all the logical event groups, the group Events of Special Shutdowns group is the most complex. Here there is an additional purple layer, which classifies events according to the reason for shutdown.
- There are just 2 events per shutdown (red layer).

Screenshot on the right

- switch reasons are defined in the condition blocks of the **Special Shutdowns** window.
- switch reasons that have been defined several times (WTG3, condition blocks 1 and 6) are summarized in the **Special Shutdown Log Readings** window. Therefore, the left picture, under WTG 3 “Charlotte”, shows 5 instead of 6 reasons for shutdown.

Events of Condition Flags



- Condition flags trigger an event when they are set or reset
- The reading points entered here are the condition reading points of the set or reset conditions of the flag.
- The user can also add additional reading points from other sensors.
- There are no default reading points here.

NOTE

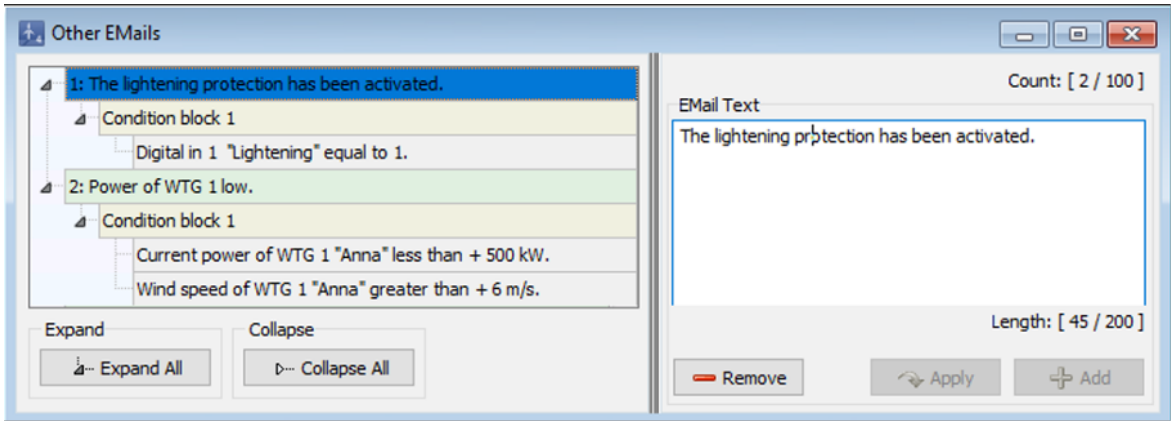
The maximum number of reading points per event is 27. This number consists of 7 default reading points for night slice shutdowns and 20 additional possibilities for reading points from conditions, as well as user-defined reading points.

4.4.12 Other Emails window

Purpose	Define emails to be triggered by conditions
Path	*Switching & Measurement > Email*
Type of use	Display + interactive
Reference	Entire project

This window allows you to define email messages that are sent automatically depending on certain conditions, for example, when the power of a WTG falls below a certain value.

The structure and operation of the vertically divided **Other Emails** window essentially corresponds to the **Special Shutdowns** window. If you are not familiar with the latter, please start by reading the sections Vertically divided windows 21 and Special Shutdowns window 185



Other Emails window

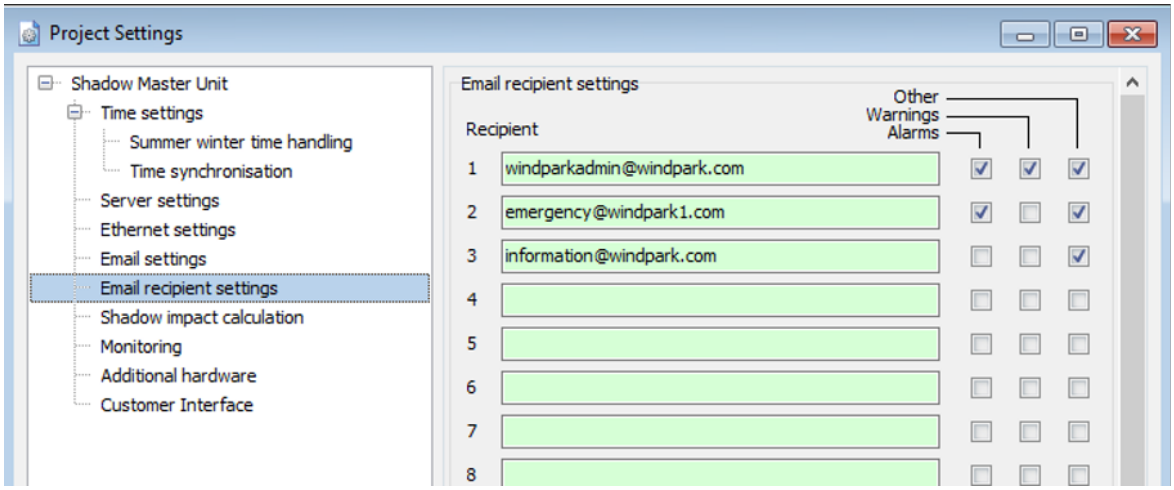
Explanation of the above example window:

- As you see in the upper right corner, 2 out of 100 possible other emails have been defined so far.
- green level: On the green level you set up the email yourself. 200 characters are possible.
- yellow level: Here you set up one or more condition blocks (logical OR operation).
- gray level: Here you set up one or more conditions (logical AND operation) that must be fulfilled in order for the corresponding e-mail to be sent.
- In the above example, email 1 is sent if the condition Lightning = 1 is fulfilled at digital input 1.
- Email 2 is only sent if less than 500 kW power is generated at WTG 1 while more than 6m/s wind speed is measured at the same time. In order to cause email 2 to be sent when only one of these conditions is fulfilled, they would have to be created in different condition blocks.

- At the bottom right, you can see that 45 of the possible 200 characters have been used for email 1.
- Please also pay attention to the following note…

NOTE

The intended recipients of the emails defined in this window must be defined in the **Project Settings** window (*Project > Project Settings > Email recipient settings*) and activated in the **Other** box, see the following screenshot:



Project Settings window (section thereof), recipients of **other** e-mails activated

4.5 SMU menu

The following table provides you with an overview of the **SMU** menu.

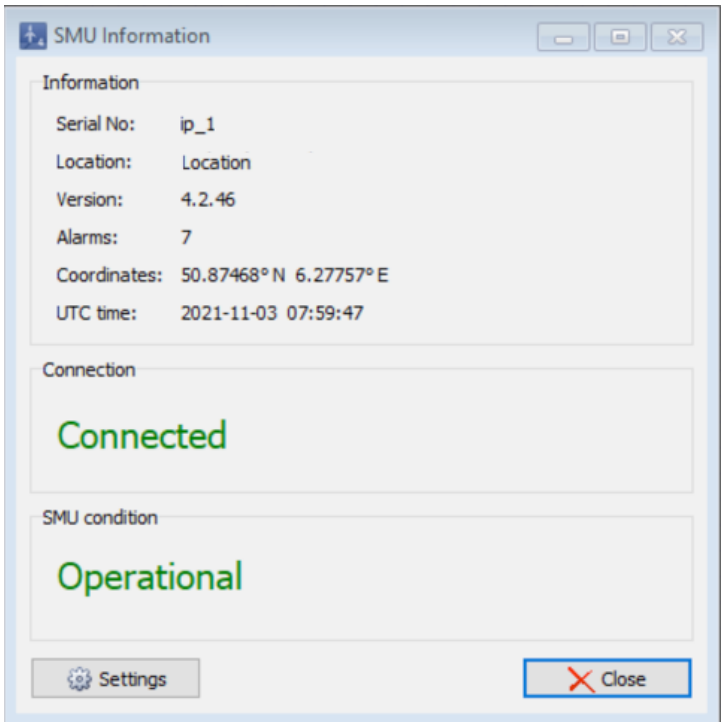
Menu item	Purpose
SMU Information 256	Check the availability of the SMU
Alarms 258	Display and acknowledge currently active alarms, carry out test alarms
Phone option 260	Set GSM modems for the use of the telephone option (**Places of Immission** window)
User Management	
Shadow Manager Interface 263	Store individually defined users with corresponding right groups in the SMU
Special Shutdown-Interface 265	Create/edit/remove user for special shutdown interface und Assign trigger numbers to users
Time	
Set time manually 268	Manually set the time and date of the SMU
Check time deviation 269	Check the time of the SMU manually
Tools	
SMU Update... 271	Update SMU software from an external location
SMU Ping 272	Check whether the target of the network connection can be reached (via direct connection to the SMU)

Click on a menu item to jump directly to more information.

4.5.1 SMU Information window

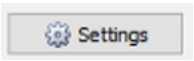
Purpose	SMU Information window
Path	*SMU > SMU Information*
Right group	Viewer
Prerequisites	Online connection to SMU, dongle
Type of use	Display+ Dialog
Reference	Project

This window shows almost the same information as the connectivity window (*Tools -> SMU Connectivity*), but here the information is provided via a different channel, namely via the direct connection between SM4 and the SMU. The connectivity window, on the other hand, obtains the information via the SMU website; access to this may be blocked by the park operator for security reasons. If the website is not accessible, you can use the window described here to display the required information.



SMU Information window

You will find a detailed description of this window in the following table

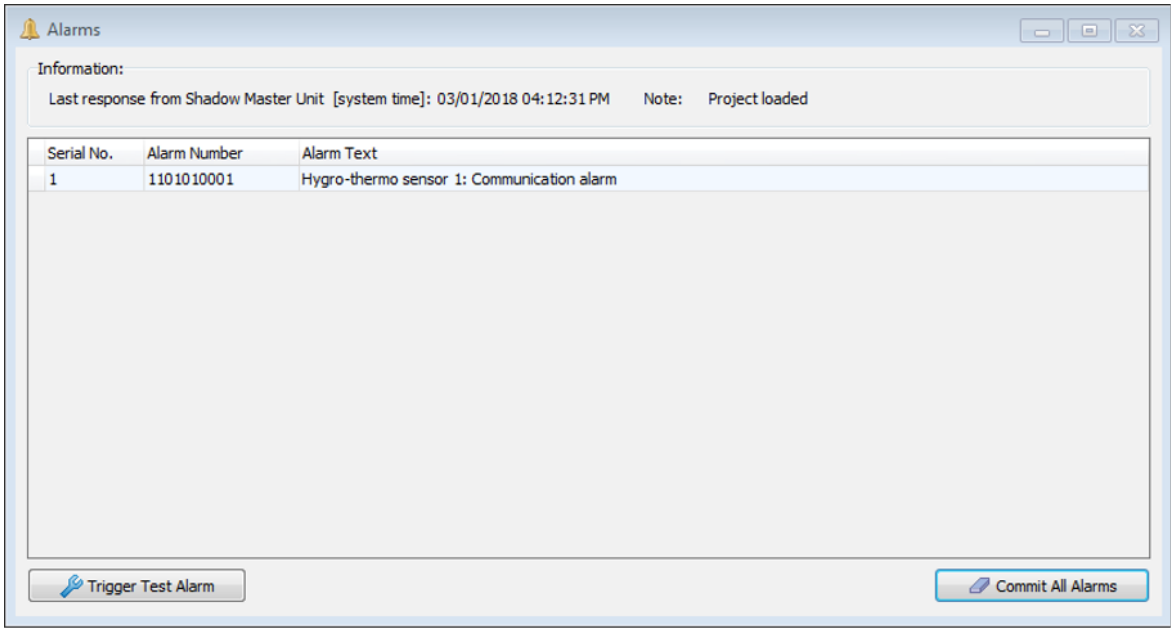
Element	Explanation
Serial No.	Serial number of the SMU
Location	Location of the SMU according to the **Project Data** window
Version	Version of the SMU
Alarms	If alarms are present, their number is displayed here
Coordinates	Coordinates of the location of the SMU according to **Project data** window
UTC time	Current UTC time
Connection	One of the following connection states is displayed here: **Connected** Connection to SMU has been established **Disconnected** Connection to SMU was disconnected **preparing...** Connection to SMU is being established
SMU Status	One of the following SMU conditions will be displayed here: --- Status cannot be determined, e.g., because SMU cannot be reached **Operational** The SMU is ready for operation, an existing shadow project is being processed **preparing...** The SMU is started, e.g., after an update **Stop** The SMU shuts down, e.g., before an update
	Clicking here opens the **Application Settings** window, **Live data** section, where you can specify the intervals at which live data windows should be updated.
	Closes the window.

4.5.2 Alarms window

Purpose	Display and acknowledge currently active alarms, carry out test alarms
Path	*SMU > Alarms*
Right group	Alarms, Viewer (acknowledge and test alarm not possible as a viewer)
Prerequisites	Online connection to the SMU – acknowledging alarms and initiating test alarms only with dongle
Type of use	Display + interactive
Reference	Project

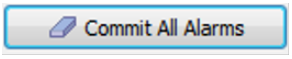
If you have established an online connection to an SMU (*File > Connect*), you can display currently active alarms here. **Alarms** right group users can also acknowledge alarms and initiate test alarms.

! It is essential to check what consequences the respective alarm will have for the SMU prior to initiating a test (e.g., stop command to the WTG).



Alarms window

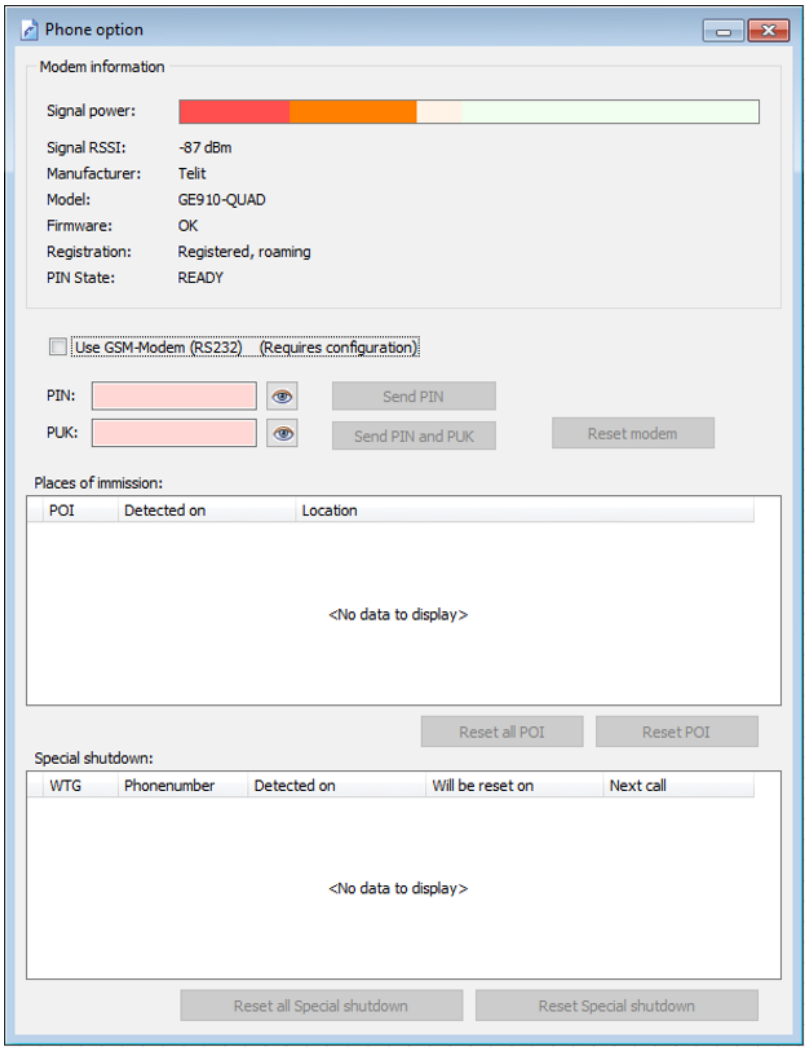
The information, options or buttons are described in the following table

Element	Explanation
Last response from the Shadow Impact module [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Project loaded** — The project file of the shadow impact scenario running on the SMU is has been downloaded. **No project found** — A shadow impact scenario could not be found on the SMU. **Loading project…** — The project file of the shadow impact scenario running on the SMU is being downloaded.
Ser. No.	Consecutive number of the alarm
Alarm Number	Fixed number of the respective type of alarm
Alarm Text	A self-explanatory term is displayed for the respective alarm in this column. **NOTE** Please get in contact with us every time a fatal alarm occurs. The alarm text of fatal alarms always contains the request “Please contact NorthTec”. Example: *SWMP01MainStartOpLog internal alarm: Please contact NorthTec*
	A test alarm can only be initiated by a user who is assigned the **Alarms** right group. Triggering a test alarm may be necessary, e.g., to check that the alarm message is being correctly sent by email. **NOTE** It is essential to check what consequences the respective alarm will have for the SMU prior to initiating a test (e.g., stop command to the WTG).
	An alarm can only be committed if the reason no longer exists.

4.5.3 Phone Option window

Purpose	• Get information about the modem and the signal quality • Set GSM modems for the use of the telephone option (**Places of Immission** window and **Special Shutdowns** window)
Path	*SMU > Phone option*
Right group	Viewer
Prerequisites	• Online connection to the SMU • SMU version V4.2.34 or later • **Use GSM modem** (RS232) must be selected under *Project Settings > SMU > Additional hardware*
Type of use	Display + interactive
Reference	Entire project

In this window you make the settings of the GSM modem, which is required for the Phone Option functionality – the Phone Option is used to switch off WTGs by calling a specific phone number (*Project > Places of Immission > Phone option*, for further information see Phone Option sub window 134).



Phone option window

The information, options or buttons are described in the following table

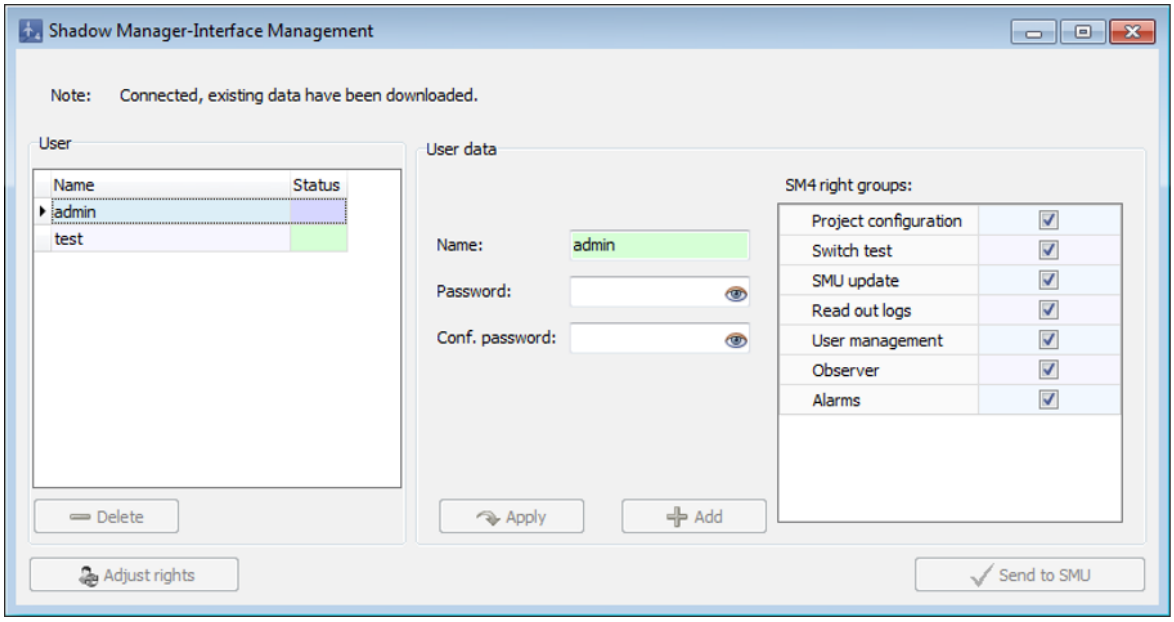
Element	Explanation
Top part of the window **Modem information** – This information is read out from the modem (display only).	
Signal power	Optical interpretation of the signal quality displayed at **Signal RSSI**
Signal RSSI	Display of signal quality in dBm
Manufacturer, Model, Firmware	Fixed data of the modem

Element	Explanation
Registration	Indicates whether the modem has dialed into the network of the mobile network operator or respectively the current status of the di-al-in.
PIN State	Indicates whether the card is ready for use or if a PIN (or PUK) must be entered for that card. **READY**: no action required **SIM PIN**: PIN must be entered **SIM PUK**: PUK must be entered. In addition, the new PIN must be specified.
Middle part of the window	
Use GSM modem (RS232)	While this option is activated, the functionality of a connected mo-dem will be used. **NOTES** • Activating/deactivating this option is only effective after configu-ring the SMU (*Project > Configuration*). • The self-explanatory named input fields and buttons for PIN and PUK are only active if a check mark has been placed here. • If you click on an eye  , the PIN or PUK will displayed/hidden.
Reset modem	To temporarily disconnect the modem from the power supply (via relay) using this button in order to reset the modem, a check mark must be set at **Use "Modem reset"** (*Project > Project Settings > Monitoring*). The corresponding digital output (DO) must also be assigned.
Bottom part of the window	
Places of Immission	Calls to the POIs are reset daily at 00:00 by the SMU.
Special Shutdowns	For special shutdowns, the time of the reset and the reaction to a further call can be defined. This setting is made when defining the special shutdown.

4.5.4 Shadow Manager Interface Management window

Purpose	Store individually defined users with corresponding right groups in the SMU
Path	*SMU > Shadow Manager Interface*
Right group	User Management
Prerequisites	Online connection to the SMU
Type of use	Display + interactive
Reference	Entire project

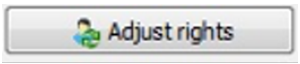
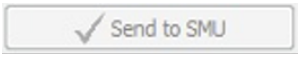
If you have established an online connection to an SMU (*File > Connect*), you can add individually defined users and assign them specific right groups in addition to the users **admin** and **northtec**, which are included as default at delivery.



Shadow Manager Interface User Management Window

The information, options or buttons are described in the following table

Element/area	Explanation
User	Currently available users are displayed in the left third of the window. If you select a user, you can see which right groups they are assigned on the right-hand side. **The** users **admin** and **northtec** are default users that are available upon delivery. You can delete these after you have assigned the User management group a new user if you do not want anyone else to have access.

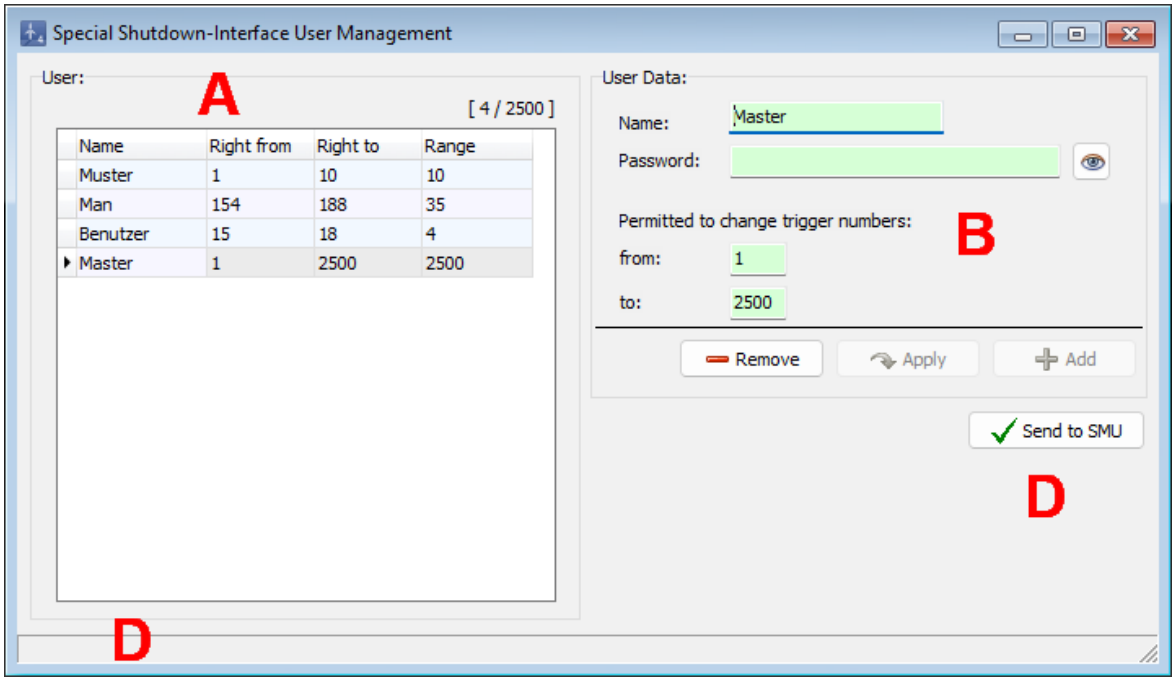
Element/area	Explanation
	NOTE If you delete the two default users before you assign a new user or the access data for the newly assigned user gets lost, it is no longer possible to connect to the system!
	Deletes a user selected in the list.
	While an online connection to the SMU is being established, the rights of the logged-in user are checked for changes. If it is determined that something has changed, the following dialog is displayed: *"Your user rights must be updated in the SMU User Management window. If you do not have access to the SMU User Management, please contact the administrator."* In this case, click **Adjust rights** to trigger the update. **NOTE** The button remains active even after clicking and after the update has been completed. There is no dialog that confirms that the update was completed successfully. The button is only deactivated in the following cases: • the SMU version is older than 4.2.18 • the connection to the SMU is established and the data have not yet been initialized • SM4 does not support the communication protocol version of the SMU
User Data	To create a new user, assign them a corresponding name in the middle part of the window, enter the same password twice and then click on **Add**. To change the password or the assignment of right groups to a user, select the user on the left, carry out the desired changes and then click on **Apply**.
SM4 Right Groups	The SM4right groups, with self-explanatory names, are pre-defined and cannot be changed. They can only be activated/deactivated by placing or removing the checkmark.
	If you have created a new user, deleted an existing one, or changed the rights of an existing user, these changes do not take effect until you click **Send to SMU**.

If you delete the two default users before you assign a new user or the access data for the newly assigned user gets lost, it is no longer possible to connect to the system!

4.5.5 Special Shutdown-Interface User Management window

Purpose	• Create/edit/remove user for special shutdown interface • Assign trigger numbers to users
Path	*SMU > Special shutdown interface*
Right group	Project configuration
Prerequisites	Online connection to SMU, SMU version 4.2.44 or higher, external triggers
Type of use	Interactive
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can use this window to define users who can access the special shutdown interface. In addition, you can assign specific trigger numbers to defined users or revoke them (for more information, see “External triggers” in the Glossary 358).



Special Shutdown-Interface User Management window

The above window is divided into the following sections

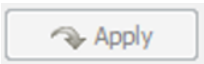
A List of already created users (data as downloaded from the SMU or data created/edited via this window); the current/maximum number of users is displayed on the right above the list.

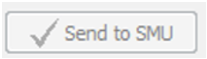
B Input fields and buttons for user data

C Button for sending the current user data to SMU

D Progress bar for receiving/ sending user data from/ to SMU

You will find a detailed description of this window in the following table.

Element/area	Explanation
User	
[x/2500]	x = Number of already created users of max. 2500
User	List of created users (data downloaded from the SMU or created/edited in this window). If you select a user in the list, the data of this user will be displayed on the right.
User Data	
Name	Here you enter the name of a user to be created. 1–19 ASCII characters, no spaces, must be unique
Password	Here you enter or change the password of the user to be created. 1–31 ASCII characters, no spaces **NOTE** If you leave this field blank when editing an existing user, and then click **Apply,** the “old” password is retained.
From	In the **from** and **to** fields, you specify the trigger numbers to which the respective right shall apply. 1–2500, muss be less than or equal to
By	see above from–2500, must be greater than or equal to from
	Deletes the user selected in the list completely. available when • a user is selected in the list • no data is being transferred between SM4 and the SMU
	Confirms changed user data. available when • a user is selected in the list • valid changes have been made to an entry

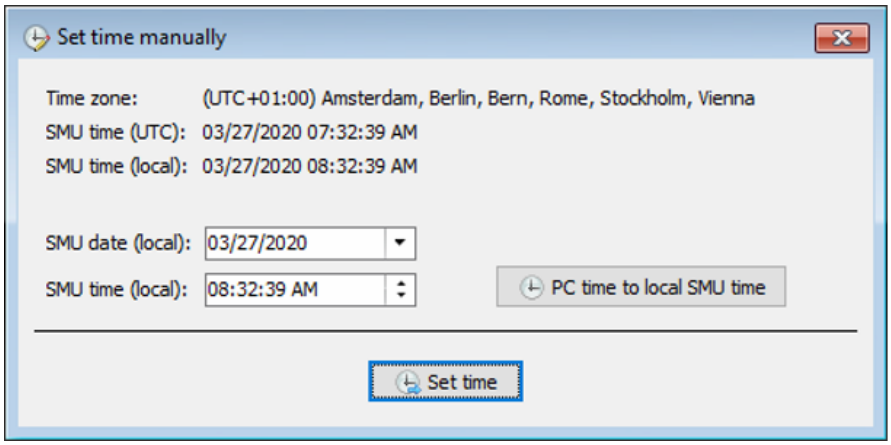
Element/area	Explanation
	• no data is being transferred between SM4 and the SMU
	Adds newly created users. available when • all entries are valid • max. number of users not reached • no data is being transferred between SM4 and the SMU
	If you click here, the existing and changed user data will be sent to or retrieved from the SMU. A bar at the bottom of the window shows the progress. only available if user data have been changed

Once the connection to the SMU is disconnected, the **Special Shutdown-Interface User Management** window will be closed automatically.

4.5.6 Set time manually window

Purpose	Manually set the time and date of the SMU
Path	*SMU > Set time manually*
Prerequisites	Dongle, online connection to the SMU
Type of use	Interactive
Reference	Project

If you have established an online connection to a SMU (*File > Connect*), you can manually set the SMU time here.



Set time manually window

Notes on the window above

- The upper third of the window displays the current time zone of the SMU and the current time of the SMU in UTC as well as in local time.
- In the middle part there are two input fields where you can enter the date and time to be set for the SMU. Both input fields refer to the local time of the SMU.
- If you click on PC time to local SMU time to the right of the input fields, the local PC time is retrieved, converted according to the local time of the SMU and written into the input fields. The conversion is based on the time zone set in the SMU.
- If you click **Set time** at the bottom of the window, the date and time as shown in the input fields will be sent to the SMU.
- During log operations (directory check and download), the time cannot be set manually. The corresponding option in the menu is then deactivated (*SMU > Set time manually*).

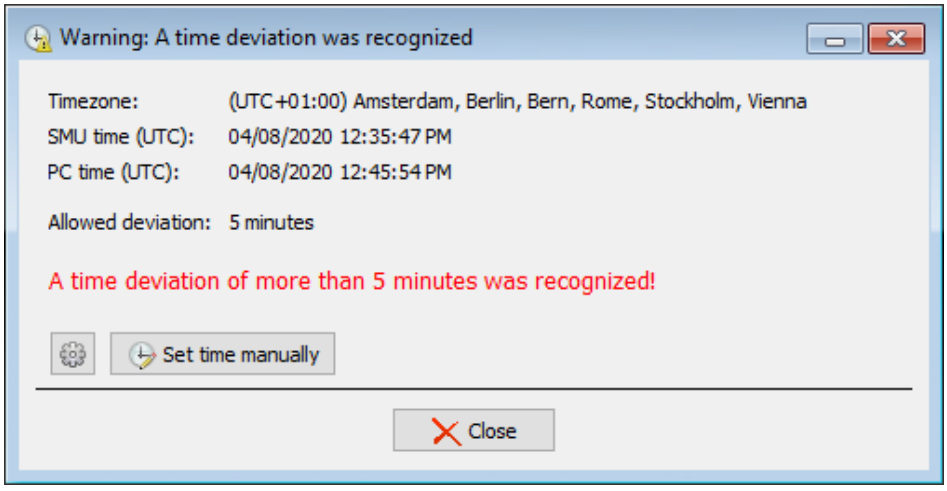
4.5.7 Check Time Deviation menu item

Purpose	Check the time of the SMU manually
Path	*SMU > Check Time Deviation*
Right group	Project configuration
Prerequisites	Dongle, online connection to the SMU
Type of use	Interactive
Reference	Project

When you select the **Check Time Deviation** menu item, the system will check whether the time of the SMU (UTC) is different from the time of the computer (UTC). The deviation tolerance can be defined in the *Application Settings* (*File > Application Settings > Warning limits > SMU time > Allowed deviation*). You can set values from one minute to one year (all values in minutes).

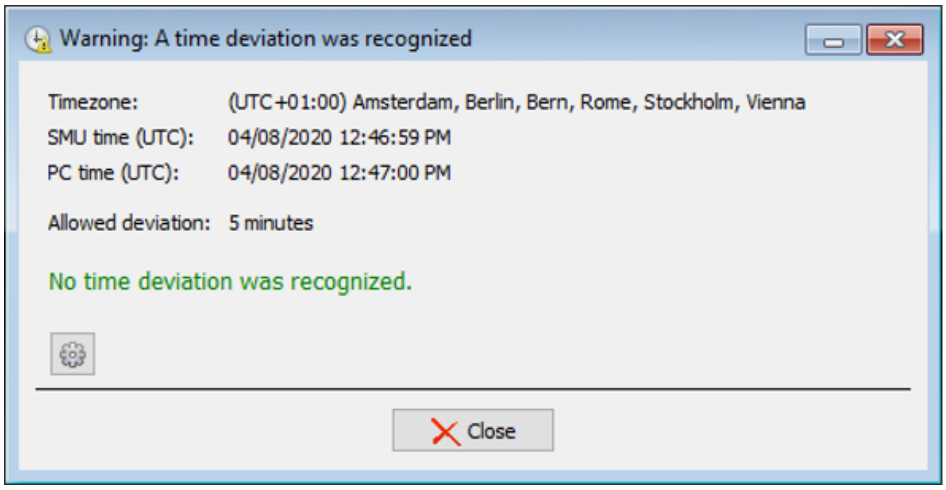
After you have selected the menu item, it may take a few seconds until the result is displayed, depending on the load of the SMU.

If the deviation determined during automatic check exceeds the permitted value, the following window opens:



Warning: A time deviation was recognized window

If the deviation determined during automatic check **does not** exceed the permitted value, the following window opens:



Warning: A time deviation was recognized window

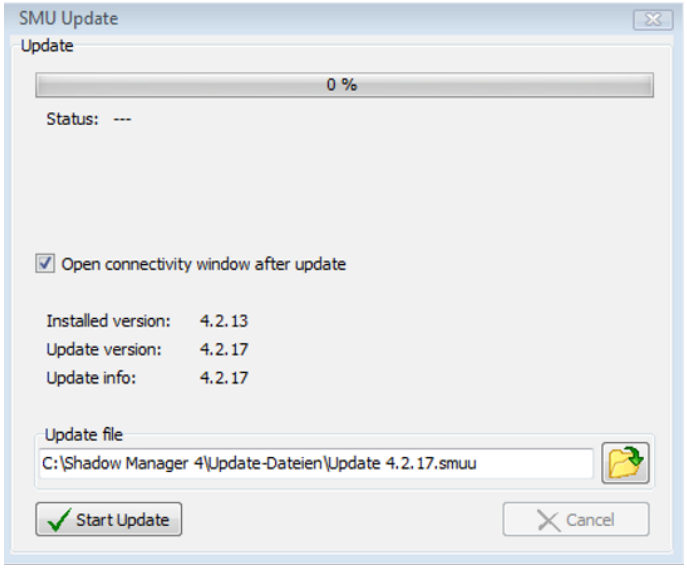
Notes on the above windows

- The windows display the current time zone of the SMU, the time of the SMU (UTC) and the time of the computer (UTC). The permitted deviation is also displayed.
- If you click on the gear symbol, you are taken directly to the **Allowed deviation** setting.
- The button **Set time manually** only appears if a dongle is connected. Clicking this button takes you directly to the **Set time manually** window.
- While logs are being downloaded from the SMU, this function and the **Set time manually** function are not available.
- When you establish a connection to the SMU, the system carries out an Automatic check of the SMU time 56.

4.5.8 SMU Update window

Purpose	Update SMU software from an external location
Path	*SMU > SMU Update*
Right group	SMU update
Prerequisites	Online connection to the SMU
Type of use	Interactive
Reference	Project

If you have established an online connection to a SMU (*File > Connect*), you can update its software.



SMU Update window

Notes on the window above

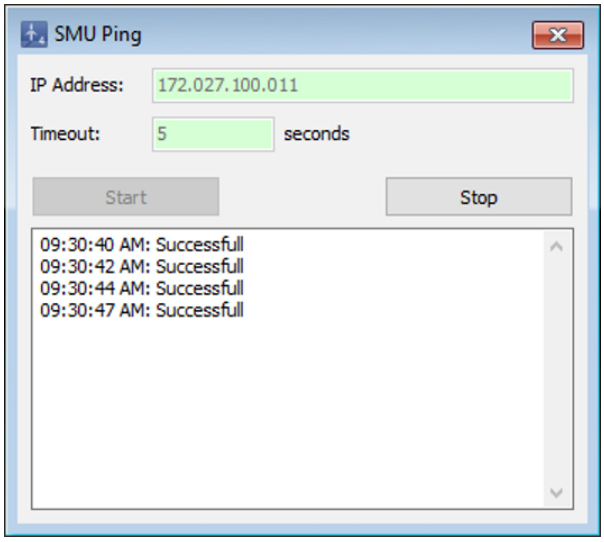
- To perform an update, click on the folder symbol at the bottom right and select the path for the update and the update itself.
- If you set a checkmark at **Open connectivity window after update**, you can identify in the **Connectivity** window whether, after carrying out an update, the SMU has reconnected and is ready for operation. This helps you avoid unsuccessful attempts to connect to the SMU.
- Once you have clicked on **Start Update**, the bar at the top will display the update progress.
- Please do not remove the dongle while the update is running, as this could cause the software to not function properly.

4.5.9 SMU Ping window

Purpose	Check whether the target of the network connection can be reached (via direct connection to the SMU)
Path	*SMU > SMU Ping*
Prerequisites	Dongle, online connection to SMU, SMU offers ping possibility
Type of use	Interactive
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can check in this window whether the target of the network connection to be set up or already set up can be reached in principle. This function is usually only used when setting up a network connection or in the event of problems with the same, but not in normal operation.

When "pinging", a specific data packet is sent to a network address. If there is a receiving instance, it will a response packet back to the sender. If this works, one can assume that a connection is possible.



SMU Ping window

Notes on the window above

- In the top line, specify the destination to be "pinged".
- The timeout below determines how long to wait for a response. If the response comes back within this time, then this ping is reported as "Successful", otherwise as "Timeout error".
- The ping mechanism runs until you click on **Stop** or close the window.

4.6 Realtime Data menu

The following table provides you with an overview of the **Realtime Data** menu

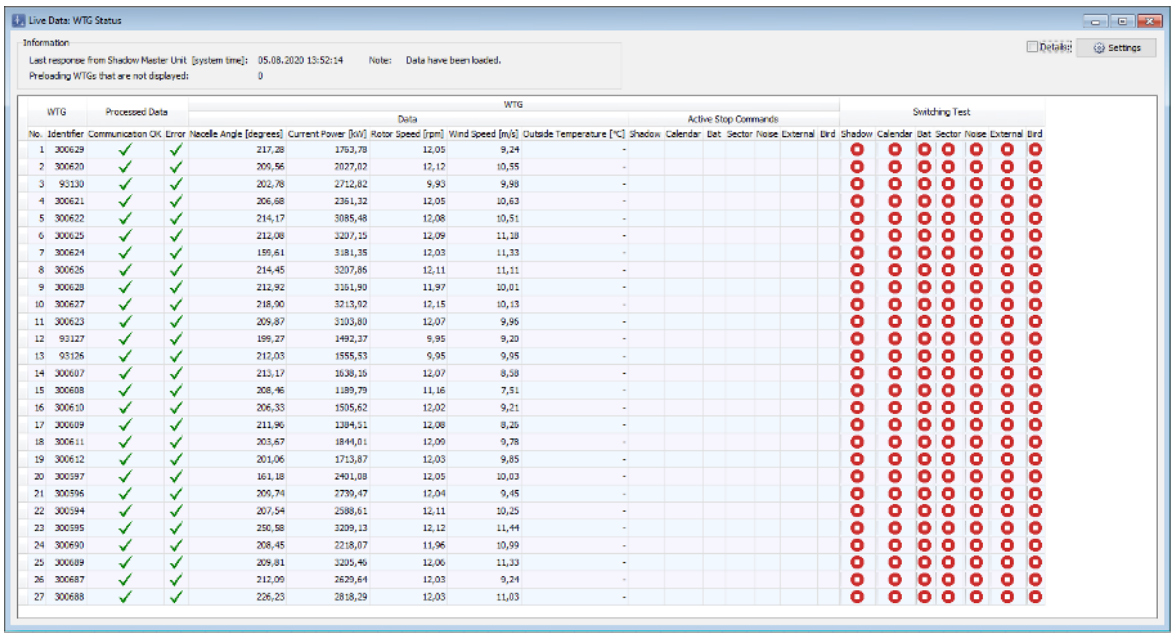
Menu item	Purpose
WTG Status 274	Display data received by the SMU from the wind turbine generators (WTG) and execute switching test
Light Sensors 278	Display the sensor data live
Laser Precipitation Sensors 281	Display the sensor data live
Hygro Thermo Sensors 284	Display the sensor data live
Climate Sensors 287	Display the sensor data live
iSpin Sensors 290	Display the sensor data live
Visibility Sensors 293	Display the sensor data live
External Trigger 300	Display and test triggers defined in the project
Calculations 302	Display calculations defined in the project with current calculation result
POI Counter Readings 304	Visualize shadow impact

Click on a menu item to jump directly to more information.

4.6.1 Live Data: WTG Status

Purpose	Display data received by the SMU from the wind turbine generators (WTG) and execute switching test
Path	*Realtime Data > WTG Status*
Right group	Switching test or view (no switching test possible as viewer)
Prerequisites	Online connection to the SMU, dongle (for switching test)
Type of use	Display + interactive
Reference	Entire project

If you have established an online connection to an SMU (*File > Connect*), you can display the live data the SMU receives from the WTGs and perform a shutdown test individually for every switch reason.



Live Data: WTG Status (without footer, see table below)

Notes on the window above

- Information on the individual columns can be found on the next page.
- If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Connected, existing data have been downloaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Preloading WTGs that are not displayed	This figure indicates the number of WTGs that do not belong to the "own" wind park and have nevertheless been set up in the project as there are places of immission in the project at which these "foreign" WTGs cause shadow impact (*Project > Wind Turbine Generators*). Since the SMU cannot communicate with these foreign WTGs, it does not receive any data from them and cannot switch them.
No.	Consecutive number of the WTG.
Identifier	WTG identifier as defined in the **Add/Edit WTG** window.
Communication OK	The status of the communication channel to the WTG is displayed here.  Communication to the WTG possible  Communication to the WTG not possible, e.g., due to incorrect IP address or network problems
Error	This is a collective error for the following situations:  If a communication error has been detected (see above), a red cross is also displayed here. Even if the WTG does not respond to a stop command issued by the SMU, an error is signaled here.

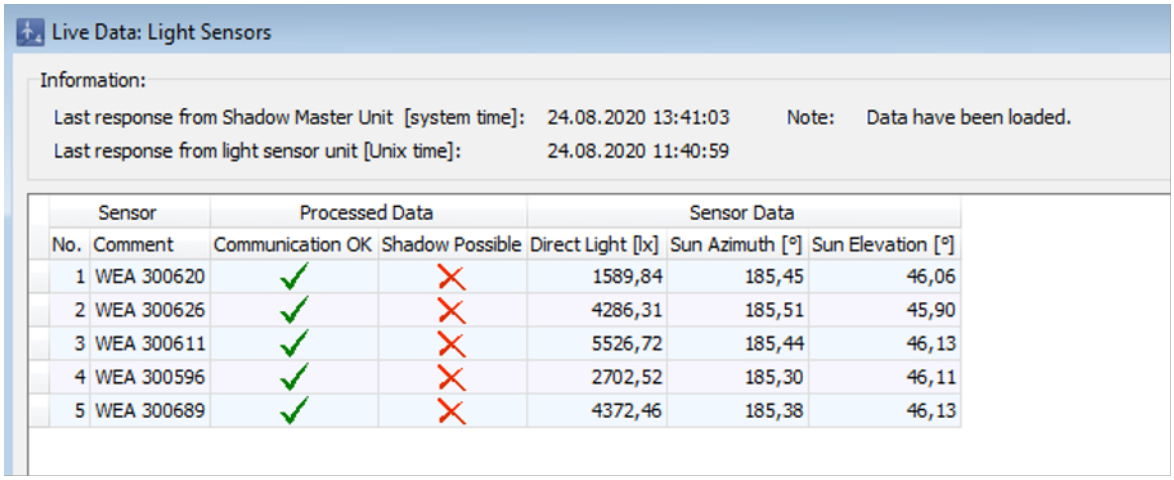
Element	Explanation
	 If the communication is ok and the WTG responds to stop commands, the green checkmark is displayed here.
Nacelle Angle [degree]	Analog or digitally determined value, depending on the WTG type.
Current Power [kW]	self-explanatory
Rotor Speed [rpm]	self-explanatory
Wind Speed [m/s]	self-explanatory
Outside Temp. [°C]	self-explanatory
Active Stop Commands: **Shadow/ Calendar/ Bat/ Sector/ Noise/ External/ Bird**	If a system has been stopped due to shadow impact, calendar shut-down etc., this is indicated here by a green checkmark.
Switching test: 	You can test here whether the shutdown procedure is working by clicking on the corresponding red button for every individual switch reason (shadow, calendar, bat, etc.). This option is frequently used if not all WTGs are switchable at the time of installation of the SMU to test the shutdown procedure at a later point in time, even externally.
	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.
Footer	Park data is displayed in a footer; note the following: Mean values are indicated with "Ø =" . Power is displayed as the sum of all column values. Values are only included in the calculation if: • the communication is ok • no error is present • the value is recorded (possibly only visible under details, '-' is then displayed as value if not recorded)

Element	Explanation
	WTG Data celle Angle [degrees] | Current Power [kW] | Rotor Speed [rpm] | Wind Speed [m/s] | Outside Temperature [°C] | Shadow 175,00 | 10,71 | 7,95 | 3,91 | 23,39 212,00 | 40,73 | 7,88 | 3,10 | 23,22 152,00 | 237,36 | 7,81 | 5,03 | 23,80 224,00 | 87,88 | 7,89 | 4,13 | 24,57 Ø = 190,75 ° | 376,68 kW | Ø = 4,04 m/s | Ø = 23,74 °C

4.6.2 Live Data: Light Sensors

Purpose	Display live data from the light sensor(s) of the wind park
Path	*Realtime Data > Light Sensors*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display live data of the connected light sensors in this window.



Sensor		Processed Data		Sensor Data		
No.	Comment	Communication OK	Shadow Possible	Direct Light [lx]	Sun Azimuth [°]	Sun Elevation [°]
1	WEA 300620	✓	✗	1589,84	185,45	46,06
2	WEA 300626	✓	✗	4286,31	185,51	45,90
3	WEA 300611	✓	✗	5526,72	185,44	46,13
4	WEA 300596	✓	✗	2702,52	185,30	46,11
5	WEA 300689	✓	✗	4372,46	185,38	46,13

Live Data: Light Sensors window

Notes on the window above

- The figure above only shows a section of the **Live Data: Light Sensors.**
- Information on the individual columns can be found on the next page.
- If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right (not included in the figure). Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

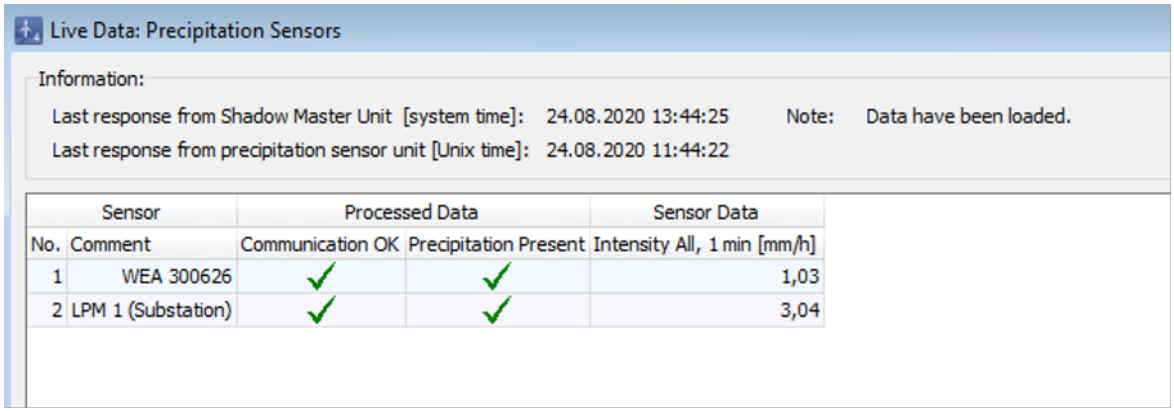
Element	Explanation
Last response from Shadow Master Unit	SM4 received its last response from the SMU at the date and time displayed here.
Last response from light sensor unit	The SMU received its last response from the light sensor at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Sensor	
No.	Sequential No. of the light sensor.
Comment	Name as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
Processed Data Two types of data can be displayed here in addition to information on e.g., Communication, Error Status, Last receipt: (a) data SM4 uses or processes in any way, e.g. as off-line values when a sensor is not accessible; (b) data edited by the SMU, e.g. to generate averaged values of reading points, such as “Precipitation present” in the case of a laser precipitation sensor.	
Communication OK	The status of the communication channel to the WTG is shown here. ✓ Communication to sensor possible ✗ Communication to sensor not possible, e.g. due to incorrect IP address or network problems
Shadow Possible	✓ Shadow impact possible ✗ No shadow impact possible

Element	Explanation
Sensor Data Data displayed here as received from the sensor	
Direct Light [lx]	The value measured by the four photo diodes of the light sensor.
Sun Azimuth [°]	Value calculated by the sensor itself.
Sun Elevation Angle [°]	Value calculated by the sensor itself.
	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.3 Live Data: Laser Precipitation Sensors

Purpose	Display live data on the wind park's laser precipitation sensors
Path	*Realtime Data > Laser Precipitation Sensors*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display live data of the connected laser precipitation sensors in this window.



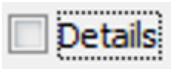
Live Data: Laser Precipitation Sensors window (section)

Notes on the window above

- The figure above only shows a section of the **Live Data: Laser Precipitation Sensors.**
- Information on the individual columns can be found on the next page.
- If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right (not included in the figure). Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

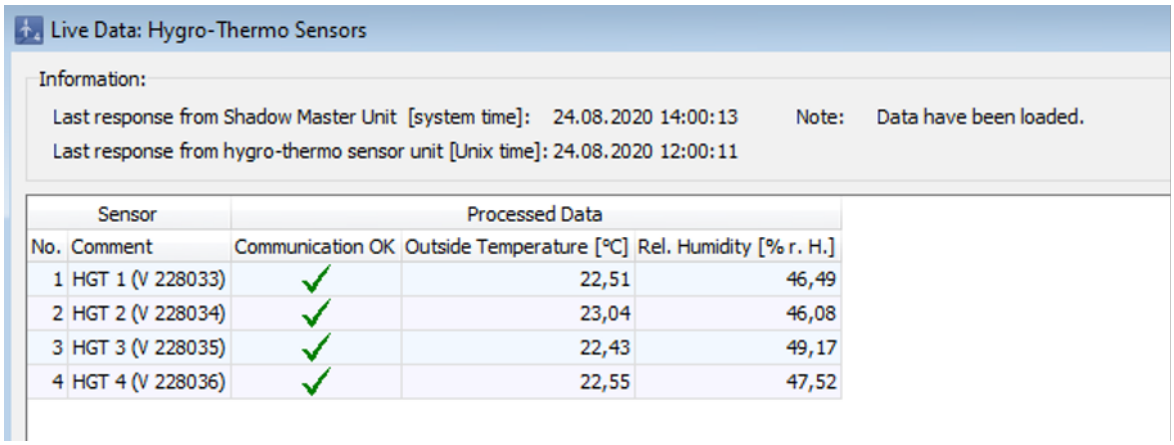
Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Last response from the precipitation sensor unit [Unix time]	This is the time the SMU last received a response from a precipitation sensor.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Sensor	
No.	Sequential No. of the laser precipitation sensor.
Comment	Name as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
Processed Data Two types of data can be displayed here in addition to information on e.g., Communication, Error Status, Last receipt: (a) data SM4 uses or processes in any way, e.g. as off-line values when a sensor is not accessible; (b) data edited by the SMU, e.g. to generate averaged values of reading points, such as “Precipitation present” in the case of a laser precipitation sensor.	
Communication OK	The status of the communication channel to the WTG is displayed here.
	Communication to sensor possible
	Communication to sensor not possible, e.g. due to incorrect IP address or network problems
Precipitation Present	see **Processed Data** above

Element	Explanation
Sensor Data Data displayed here as received from the climate sensor	
Intensity All, 1 min [mm/h]	The precipitation amount measured by the sensor at intervals of one minute.
	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.4 Live Data: Hygro-Thermo Sensors

Purpose	Display live data on the wind park's hygro-thermo sensors
Path	*Realtime Data > Hygro-Thermo Sensors*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display live data of the connected hygro-thermo sensors in this window.



Sensor		Processed Data		
No.	Comment	Communication OK	Outside Temperature [°C]	Rel. Humidity [% r. H.]
1	HGT 1 (V 228033)	✓	22,51	46,49
2	HGT 2 (V 228034)	✓	23,04	46,08
3	HGT 3 (V 228035)	✓	22,43	49,17
4	HGT 4 (V 228036)	✓	22,55	47,52

Live Data: Hygro-Thermo Sensors window (section)

Notes on the window above

- The figure above only shows a section of the **Live Data: Hygro-Thermo Sensors.**.
- Information on the individual columns can be found on the next page.
- If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right (not included in the figure). Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

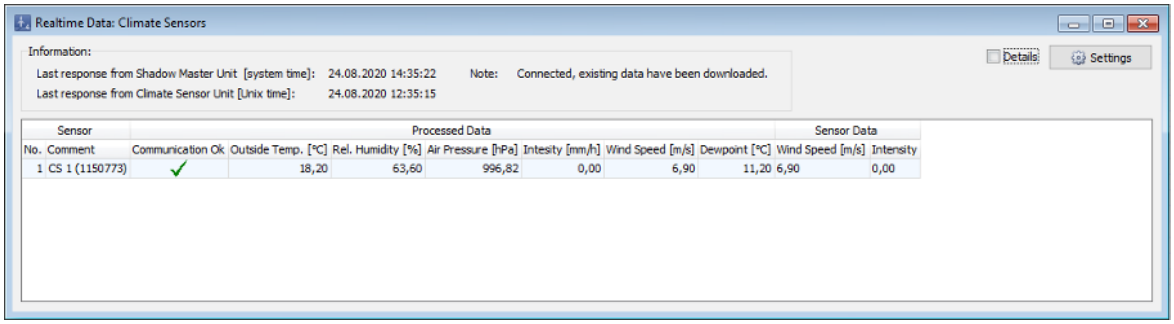
Element	Explanation	
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.	
Last response from the hygro-thermo sensor unit [Unix time]	The SMU received its last response from a hygro-thermo sensor at the date and time displayed here.	
Note	Depending on the status of the live data shown in the list below, the following can be displayed here:	
	Connected, initializing data	The project file of the shadow impact scenario running on the SMU is being downloaded.
	Data have been loaded	The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*).
	No data available	This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project.
	Disconnected	Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Sensor		
No.	Sequential No. of the hygro-thermo sensor.	
Comment	Name as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).	
Processed Data Two types of data can be displayed here in addition to information on e.g., Communication, Error Status, Last receipt: (a) data SM4 uses or processes in any way, e.g. as off-line values when a sensor is not accessible; (b) data edited by the SMU, e.g. to generate averaged values of reading points, such as “Precipitation present” in the case of a laser precipitation sensor.		
Communication OK	The status of the communication channel to the WTG is displayed here.	
		Communication to sensor possible
		Communication to sensor not possible, e.g. due to incorrect IP address or network problems
Outside Temperat. [°C]	see **Processed Data** above	

Element	Explanation
Rel. Humidity [% r.F.]	see **Processed Data** above
	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.5 Live Data: Climate Sensors

Purpose	Display real-time data of the wind park's climate sensors
Path	*Realtime Data > Climate Sensors*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display live data of the connected climate sensors in this window.



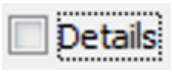
Live Data: Climate Sensors

Notes on the window above

- Information on the individual columns can be found on the next page.
- If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

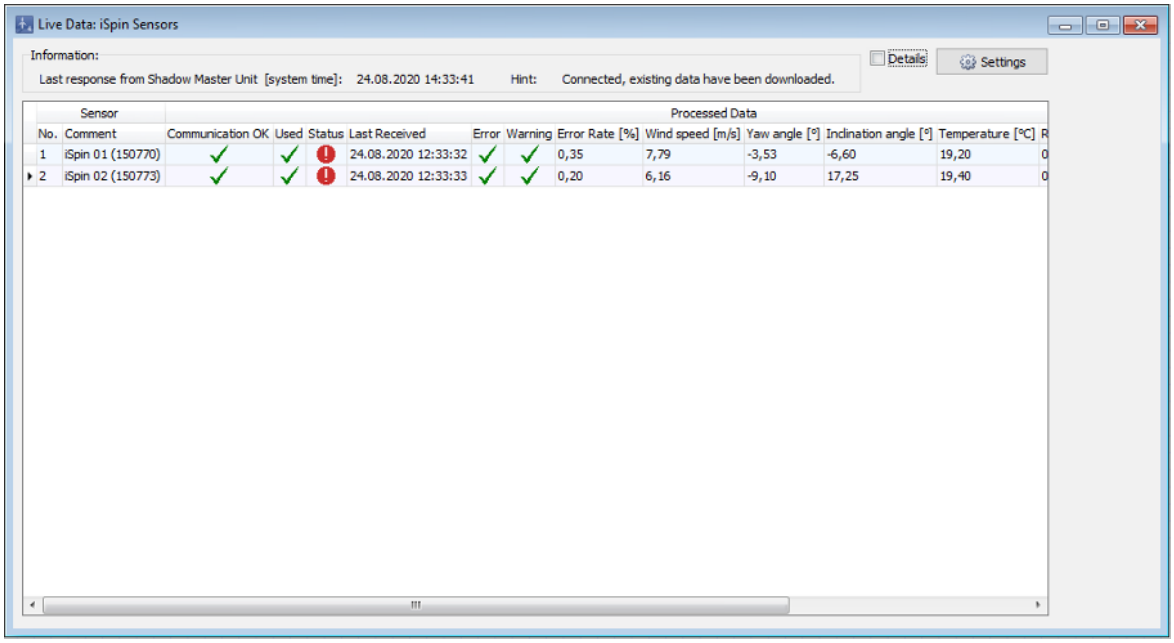
Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Last response from Climate Sensor Unit [Unix time]	The SMU received its last response from a climate sensor at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Sensor	
No.	Sequential no. of the climate sensor
Comment	Name as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
Processed Data Two types of data can be displayed here in addition to information on e.g., Communication, Error Status, Last receipt: (a) data SM4 uses or processes in any way, e.g. as off-line values when a sensor is not accessible; (b) data edited by the SMU, e.g. to generate averaged values of reading points, such as “Precipitation present” in the case of a laser precipitation sensor.	
Communication OK	The status of the communication channel to the WTG is displayed here. ✓ Communication to sensor possible ✗ Communication to sensor not possible, e.g. due to incorrect IP address or network problems
Outside Temperature [°C], Rel. Hum. [%]	see **Processed Data** above

Element	Explanation
etc.	
Sensor Data Data displayed here as received from the climate sensor	
	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.6 Live Data: iSpin Sensors window

Purpose	Display real-time data of the wind park's iSpin sensors
Path	*Realtime Data > iSpin Sensors*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display live data of the connected iSpin sensors in this window.



Live Data: iSpin Sensors window

Notes on the window above

If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

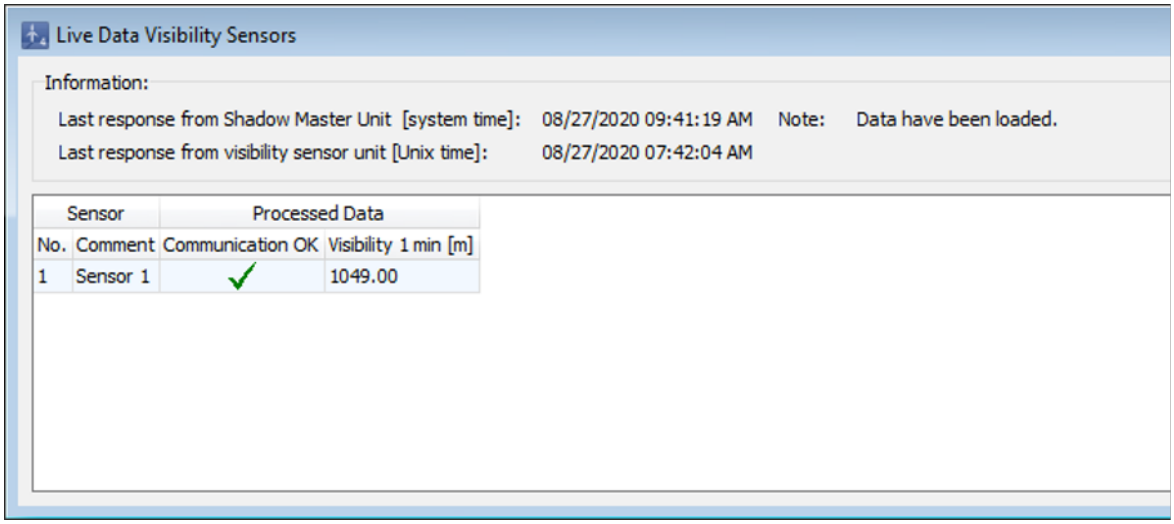
Element	Explanation	
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.	
Note	Depending on the status of the live data shown in the list below, the following can be displayed here:	
	Connected, initializing data	The project file of the shadow impact scenario running on the SMU is being downloaded.
	Data have been loaded	The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*).
	No data available	This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project.
	Disconnected	Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Sensor		
No.	Sequential number of the iSpin sensor	
Comment	Name as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).	
Processed Data Two types of data can be displayed here in addition to information on e.g. Communication, Error Status, Last receipt: (a) data SM4 uses or processes in any way, e.g. as off-line values when a sensor is not accessible; (b) data edited by the SMU, e.g. to generate averaged values of reading points, such as “Precipitation present” in the case of a laser precipitation sensor.		
Communication OK	The status of the communication channel to the WTG is displayed here.	
	✓	Communication to sensor possible
	✗	Communication to sensor not possible, e.g. due to incorrect IP address or network problems
Used	A green checkmark indicates that basically all is fine with the sensor.	
Status	Various individual information concerning communication and error status of the sensor is displayed here as follows:	
	✓	Communication exists, no warning at the sensor

Element	Explanation	
	✗	There is no communication to the sensor, or the sensor reports an error
	!	Communication exists, but the sensor reports a warning
Last Received	Date and time of the last time data were received from the sensor.	
Error	Indicates as follows whether the sensor reports an error:	
	✓	The sensor reports no errors, everything is fine
	✗	The sensor reports a serious error
Warning	Here it is indicated as follows whether a warning is pending:	
	✓	No warning is pending
	✗	There is a warning pending
Error Rate [%]	The error rate indicates the ratio between (a) the requests sent to a sensor and (b) the correctly received responses to them. However, many situations lead to an answer being falsely judged as incorrect: • Timeout – no response was received. • Incorrect content of the response, e.g. unexpected values or range overruns • Checksum error in the response data Possible reasons for this: network problems, interference, power supply problems and much more. It is not possible to say in general terms what error rate is acceptable in a particular situation. In principle, the error rate should be as low and constant as possible.	
Wind Speed [ms], Yaw Angle [°] etc.	see **Processed Data** above	
	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.	
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.	

4.6.7 Live Data: Visibility Sensors

Purpose	Display real-time data of the wind park's visibility sensors
Path	*Realtime Data > Visibility Sensors*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display live data of the connected visibility sensors in this window.



Live Data: Visibility sensors window (section)

Notes on the window above

- The figure above only shows a section of the **Live Data: Visibility Sensors**window.
- If you would like to display all available information and not just the standard columns, check the **Details** option in the window at the top right (not included in the figure). Only the content of the standard columns is explained in the table on the next page as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

The information, options or buttons are described in the following table

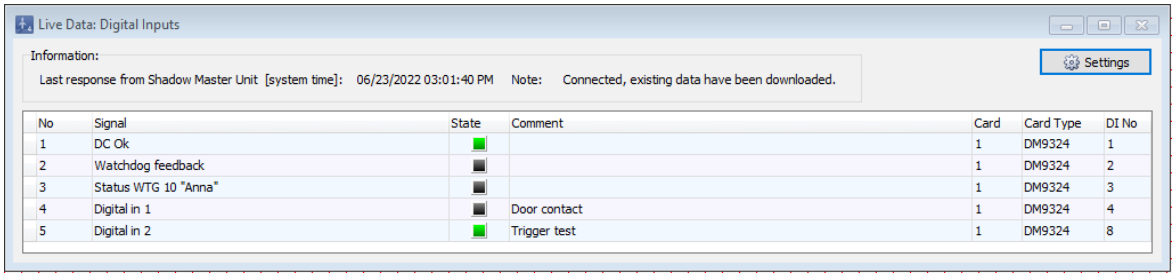
Element	Explanation
Last response from SMU [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
Sensor	
No.	Sequential no. of the visibility sensor
Comment	Name as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
Processed Data : Two types of data can be displayed here in addition to information on e.g. Communication, Error Status, Last receipt: (a) data SM4 uses or processes in any way, e.g. as off-line values when a sensor is not accessible; (b) data edited by the SMU, e.g. to generate averaged values of reading points, such as “Precipitation present” in the case of a laser precipitation sensor.	
Visibility 1 min	The visibility in meters measured by the sensor at intervals of one minute.
Communication OK	The status of the communication channel to the WTG is displayed here. ✓ Communication to sensor possible ✗ Communication to sensor not possible, e.g. due to incorrect IP address or network problems
Details	If you would like to display all available information and not just the standard columns, select the **Details** option in the window at the top right. Only the content of the standard columns is explained in the table as the detailed view is intended exclusively for technicians for the purpose of troubleshooting.

Element	Explanation
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.8 Live Data: Digital Inputs

Purpose	Display digital input data in real time
Path	*Realtime Data > Digital Inputs*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display + dialog
Reference	Project

If you have established an online connection to an SMUF(*File > Connect*), you can display the digital inputs defined in the current project and their state in this window.



Live Data: Digital Inputs

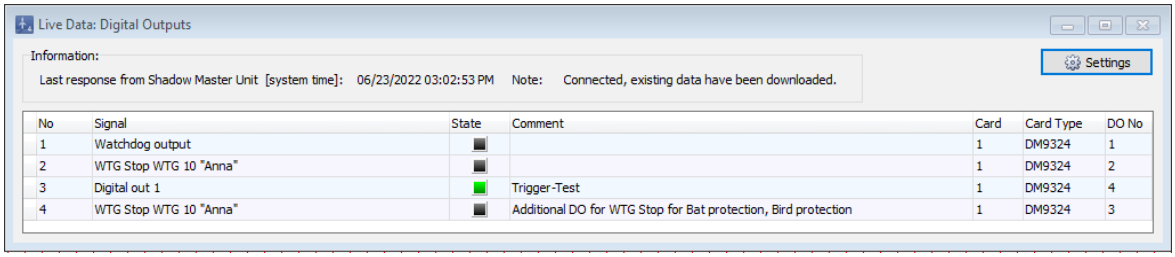
The information, options or buttons are described in the following table

Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
No.	Consecutive number of the signal
Signal	Name of the digital input as defined in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
State	 = 1  = 0
Card	Number of the card on which the digital input is located.
Card Type	-
DI No	Number of the digital input as in the **Sensors and IO Signals** window *(Hardware > Sensors and IO Signals*).
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.9 Live Data: Digital Outputs

Purpose	Display digital output data in real time
Path	*Realtime Data > Digital Outputs*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display + dialog
Reference	Project

If you have established an online connection to an SMUF(*File > Connect*), you can display the digital outputs defined in the current project and their state in this window.



Live Data: Digital Outputs

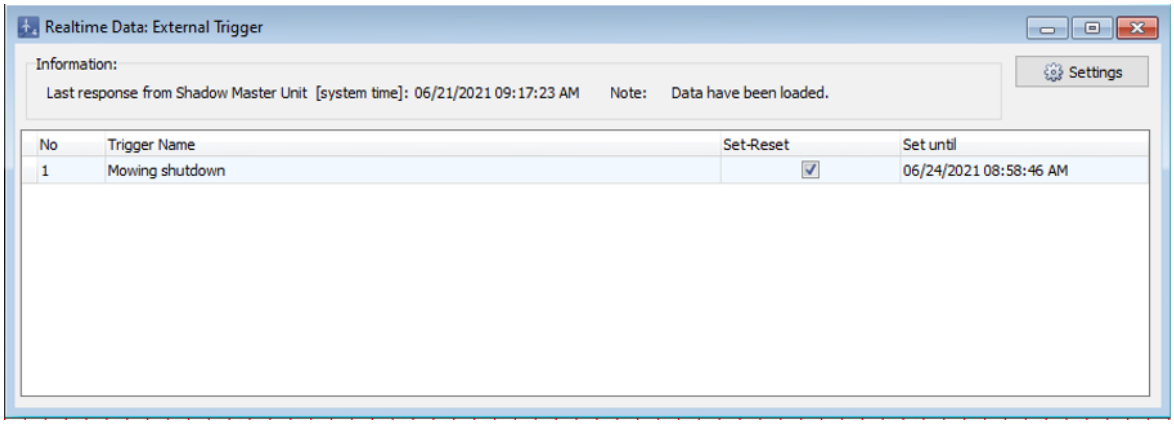
The information, options or buttons are described in the following table

Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
No.	Consecutive number of the signal
Signal	Name of the digital output as defined in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
State	 = 1  = 0
Card	Number of the card on which the digital output is located.
Card Type	-
DI No	Number of the digital output as in the **Sensors and IO Signals** window *(Hardware > Sensors and IO Signals*).
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there.

4.6.10 Live Data: External triggers

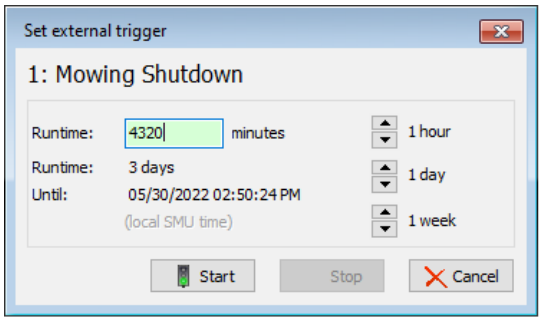
Purpose	• Display triggers defined in the project • Change states of triggers for test purposes
Path	*Realtime Data > External Trigger*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display + dialog
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can use this window to display the external triggers defined in the current project (see Glossary 358) and their state (reset or set to a specific time). In addition, it is possible here to change the state of a trigger for test purposes or to correct false triggers.



Live Data: External triggers

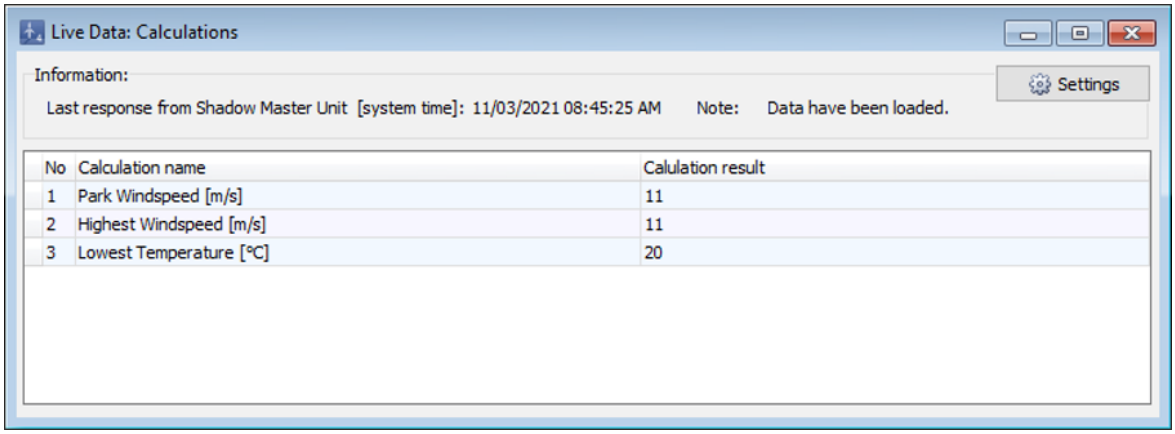
The information, options or buttons are described in the following table

Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*).
No.	Consecutive number of the external trigger
Trigger Name	Name of the trigger as entered in the **Sensors and IO Signals** window (*Hardware > Sensors and IO Signals*).
Set/Reset	If you click on the box, the **Set External Trigger** window opens, see the following example.  Here you can enter the desired runtime or select it via the arrow keys. Press Start to start the trigger, press Stop to stop it. After the window is closed, the following is displayed: ☐ Trigger is not active (has been stopped or has expired) ☑ Trigger is set until the time specified under **Set to.**
Set until	see above
Settings	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there..

4.6.11 Live Data: Calculations

Purpose	Display calculations defined in the project with current calculation result
Path	*Real-time data > Calculations*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	display only
Reference	Project

If you have established an online connection to an SMU (*File > Connect*), you can display the calculations defined in the current project in this window. For more information on calculations, see section Calculations window 241.



Live Data: Calculations

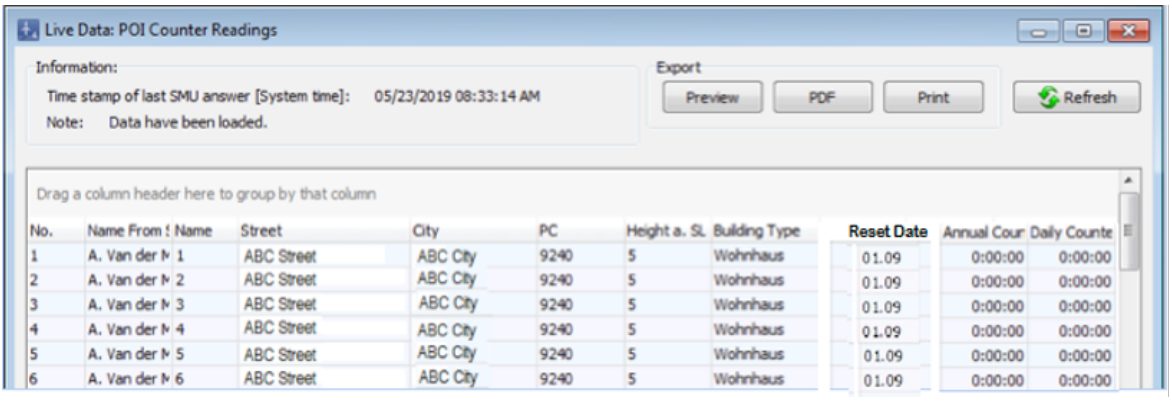
The information, options or buttons are described in the following table

Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*).
No.	Consecutive number of the calculation
Calculation name	Name of the calculation as defined in the **Calculations** window (*Switching & Measurement > Calculations*).
Calculation result	Current results of the calculations.
	If you click on this button, the **Application Settings** window, **Update intervals for live data windows** (*File > Application Settings > Live Data*) input area opens. The interval can be changed there. The interval can be changed there.

4.6.12 Live Data: POI Counter Readings

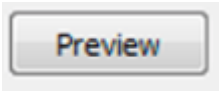
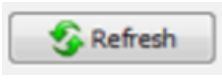
Purpose	Quick overview of current daily and annual counters
Path	*Realtime Data > POI Counter Readings*
Right group	Viewer
Prerequisites	Online connection to the SMU
Type of use	Display + interactive
Reference	Project

If you have established an online connection to a SMU (*File > Connect*), you can use this window to display an overview of the current daily and annual counter readings for the individual places of immission. While other live data windows read out the values automatically, you must manually trigger the reading of the data here by clicking on **Refresh**.



Live Data: POI Counter Readings window (section)

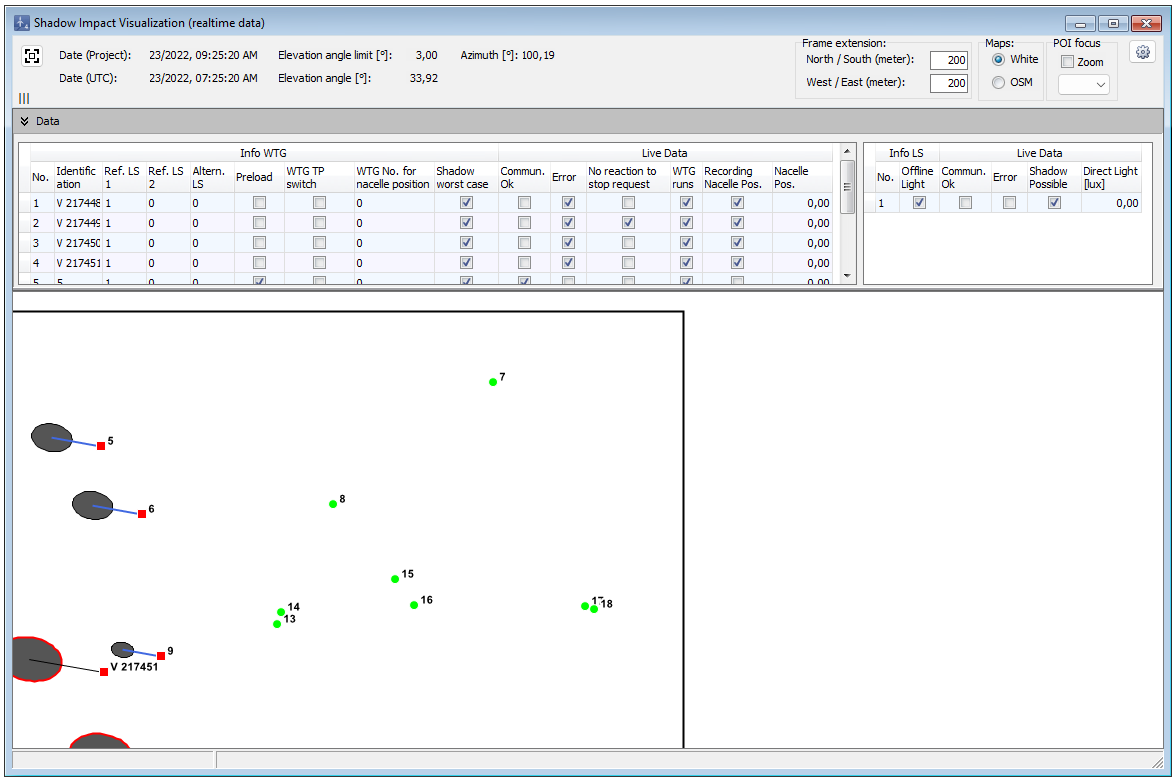
The information, options or buttons are described in the following table

Element	Explanation
Last response from Shadow Master Unit [system time]	SM4 received its last response from the SMU at the date and time displayed here.
Note	Depending on the status of the live data shown in the list below, the following can be displayed here: **Connected, initializing data** — The project file of the shadow impact scenario running on the SMU is being downloaded. **Data have been loaded** — The project file has been downloaded completely, and the live data are displayed according to the interval set (*File > Application Settings > Live data*). **No data available** — This can be displayed, for example, when a live data window is opened for a sensor type that has not been defined in the project. **Disconnected** — Connection to the SMU has been disconnected, displayed live data are no longer up to date.
	Opens the preview window of the read out counter readings. This button, as well as the **PDF** and **Print** buttons, are only active if the counter readings have been successfully read out by clicking **Refresh**.
	Used to save counter readings in PDF format.
	Used to print the PDF view of the counter readings on paper. There is no language setting for the document to be printed. The document will be printed in the language selected under SM4 (*File > Application Settings -> General -> Language*).
	Reads out the current counter readings from the SMU.

4.6.13 Live Data: Shadow Impact Visualisation

Purpose	Visualize the current shadow impact situation
Path	*Realtime data > Shadow Impact Visualization*
Right group	Viewer
Prerequisites	
Type of use	Display + interactive
Reference	Project

If you have established an online connection to an SMU*(File > Connect)*, you can visualize the current shadow impact situation in this window. This window remains open even after the connection to the SMU has been terminated.

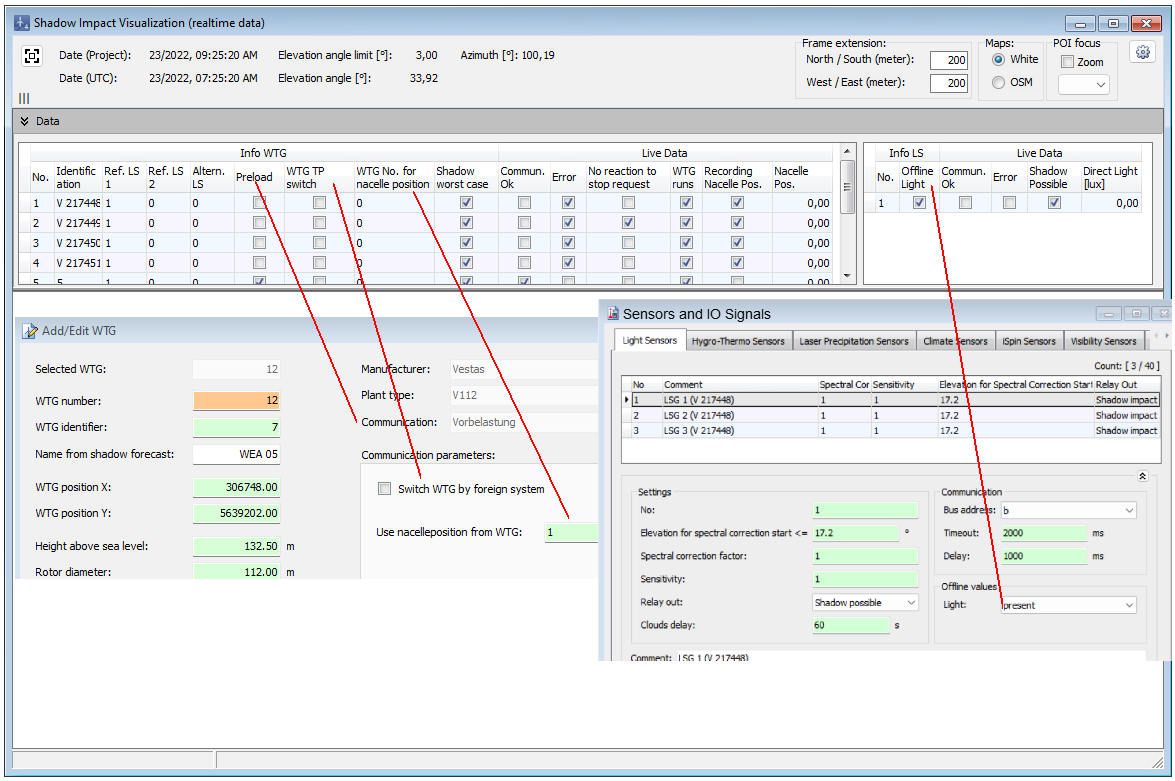


Live Date**: Shadow Impact Visualization** window

You will find an explanation of the symbols (tower shadow blue/black, rotor shadow light/dark etc.) that are used to display the current shadow impact situation in the lower half of the window, in the following section SI visualization symbols 309.

An explanation of the information, options or buttons can be found in the following table.

Element	Explanation
Date (Project)	Here you can see the date of the currently displayed shadow impact scenario.
Date (UTC)	Here you can see the time of the currently displayed shadow impact scenario.
Elevation angle limit [°]	Value as defined und *Project > Application Settings > Shadow impact calculation > Min. sun elevation*. This parameter defines the minimum elevation angle – below this minimum elevation, shadow impact effects are not deemed possible and will not be visualized here.
Elevation angle [°]	Elevation angle of the sun as calculated by SM4.
Azimuth [°]	Azimuth of the sun as calculated by SM4.
Frame extension	Outside the project frame, the shadow impact ellipses are cut off. Input range 0-10000 m, default 200 m
Maps	**White** – Background is white.
	OSM – Open Street Map is displayed in the background. **NOTE:** To use OSM, the computer must be connected to the Internet.
POI Focus	If you check the **Zoom** box, you can select a POI number in the selection list below to center the map on this particular POI.
	Opens the **Live Data** settings area in at *File > Program Settings > Live Data*, where you can change the interval for updating the display of the shadow impact scenario.
Data: The tables displayed in the **Data** area cannot be edited here (display only).	
Info WTG	Data from the **Add/Edit WTG** window *(Project > Wind Turbine Generators > Add WTG)* is displayed here, please also refer to the screenshot below this table. **Shadow worst case** column Since it is not always possible to tell from the shape of the rotor shadow whether it corresponds to a detected nacelle position or depicts a worst case scenario, a check mark is displayed here whenever the latter applies.
Live Data	Data from the **Real-time data: WTG status** window is displayed here.
Info LS	Data from the **Light Sensors** tab *(Hardware > Sensors and IO Signals)* is displayed here, please also refer to the screenshot below this table.
Live Data (far right)	Data from the **Live Data: Light Sensors** is displayed here.

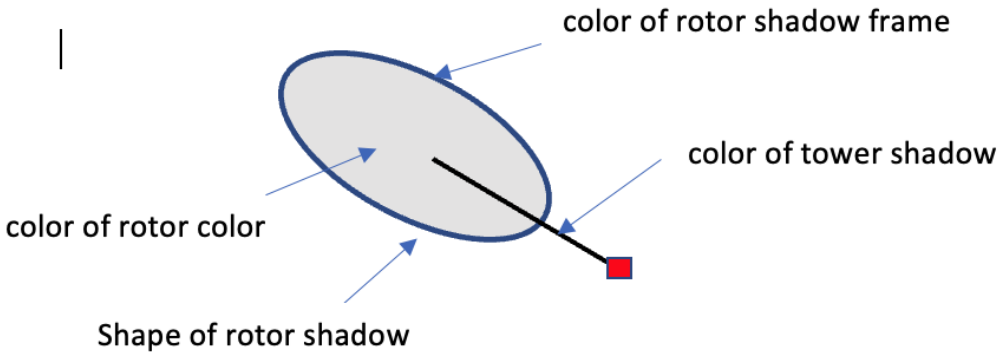


Live Data: Shadow Impact Visualization window**,** display area **Data**

An explanation of the symbols (tower shadow blue/black, rotor shadow light/dark, etc.) can be found in the next section.

4.6.13.1 SI visualization symbols

The 4 elements shown in the following figure are used in the **Shadow Impact Visualization** window to visualize the current shadow impact situation:



The properties of the elements, which vary depending on the shadow impact situation, are described in the following tables 1 to 4:

Table 1: Color of the tower shadow

Color	Reason
blue 	WTG is not switchable (WTG type = preload)
black 	WTG is switchable (WTG type ≠ preload)

NOTE

If the WTG is not switchable (WTG type = preload), then no communication with the WTG is possible, i.e. no real-time data can be requested from the WTG and the rotor shadow frame cannot be displayed in red - however, the light sensor data is still taken into account.

Table 2: Color of the rotor shadow

Color	Possible reasons
light 	• Communication with light sensor (LS) ok **And** there is no error at LS – but according to real-time data, shadow is not possible • Communication with LS not ok **Or** there is an error at the LS – offline value: **Light = not present** • WTG is not running (communication ok)
dark 	• Communication with LS ok **And** there is no error at LS – according to real-time data shadow is possible • Communication with LS not ok **Or** there is an error at the LS – offline value. **Light = present** • WTG is running • WTG communication not ok

HINTS

- If the WTG is not running, the light sensor data is not taken into account, because even if the light sensor is ok and shadow is possible, there can be no shadow impact, since the rotor is not turning.
- Even though the WTG is running, the rotor shadow may be displayed in light gray because no shadow is possible according to LS readings or because the offline value of the LS has been set to "not present".

Regarding the visualization of shadow according to the readings reported by light sensors (LS), the following combinations and states of light sensors should be taken into account

faulty *= communication not ok or LS faulty*
n.c. *= not configured*
LS 1 *= reference light sensor 1,* ***LS 2*** *= reference light sensor 2,* ***LS A*** *= alternative light sensor*

One light sensor

LS 1	LS 2	LS A	Visualization according to...
OK	n.c.	n.c.	LS 1
faulty	n.c.	n.c.	LS 1 (offline value)
n.c.	OK	n.c.	LS 2
n.c.	faulty	n.c.	LS 2 (offline value)
n.c.	n.c.	OK	LS A
n.c.	n.c.	faulty	LS A (offline value)

If the LS = OK, the real-time data are evaluated; otherwise, the visualization takes place according to offline values.

Two light sensors

LS 1	LS 2	LS A	Visualization according to...	see
OK	OK	n.c.	LS 1 or LS 2	a)
faulty	OK	n.c.	LS 1 (offline value) or LS 2	a)
OK	faulty	n.c.	LS 1 or LS 2 (offline value)	a)
faulty	faulty	n.c.	LS 1 (offline value) or LS 2 (offline value)	a)
OK	n.c.	OK	LS 1	b)
faulty	n.c.	OK	LS A	b)
OK	n.c.	faulty	LS 1	b)
faulty	n.c.	faulty	LS 1 (offline value)	b)
n.c.	OK	OK	LS 2	b)
n.c.	faulty	OK	LS A	b)
n.c.	OK	faulty	LS 2	b)
n.c.	faulty	faulty	LS 2 (offline value)	b)

a) If two reference LSs are configured, both are evaluated whether faulty or ok – if one of the evaluations results in shadow, then shadow applies.
b) If a reference LS and an alternative LS are configured, then the following applies:
   - if both LSs are ok, then the value of the reference LS is evaluated
   - if one LS is ok, then the value of the non-faulty LS is evaluated
   - if both LSs are faulty, then only the offline value of the reference LS is taken into account

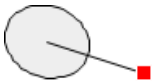
Three light sensors

LS 1	LS 2	LS A	Visualization according to...	see also
OK	OK	OK	LS 1 or LS 2	a)
OK	OK	faulty	LS 1 or LS 2	a)
faulty	OK	OK	LS 2 or LS A	b)
OK	faulty	OK	LS 1 or LS A	b)
faulty	faulty	OK	LS A	-
faulty	OK	faulty	LS 1 (offline value) or LS 2 or LS A (offline value)	c)
OK	faulty	faulty	LS 1 or LS 2 (offline value) or LS A (offline value)	c)
faulty	faulty	faulty	LS 1 (offline value) or LS 2 (offline value) or LS A (offline value)	d)

a) If LS 1 and LS 2 or all LSs are ok, then LS 1 and LS 2 are evaluated – if one of the evaluations results in shadow, then shadow applies

b) If LS1 or LS 2 is faulty, then also LS A is evaluated – if one of the evaluations results in shadow, then shadow applies
c) If LS 1 or LS 2 is faulty and LS A is faulty, then the offline values of the faulty LS and the real-time data of the functional LS are evaluated.
d) If all LSs are faulty, then all offline values are evaluated – if an offline value = light is present, then shadow applies

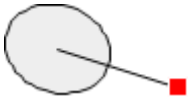
Table 3: Shape of the rotor shadow

Form	Possible reasons
nacelle position 	WTG is **switchable:** • Nacelle position is detected (communication ok) WTG is **not switchable** (preload): • WTG No. for nacelle position is not 0 (exists in the project) and is recorded
worst case 	WTG is **switchable**: • Nacelle position of WTG is not detected • Communication not ok WTG is **not switchable** (preload) : • WTG no. for nacelle position = 0 (WTG no. for nacelle position does not exist in the project) • Nacelle position of the WTG no. is not recorded

NOTE

If WTG type = preload, the values entered in the **Add/Edit WTG** window under **Communication parameters** are checked (since no communication to the WTG and thus no access to the Live Data is possible).

Table 4: Shape of the rotor shadow frame

Color	Possible reasons
black 	• WTG communication ok • No error is present
red 	• WTG communication not ok • An error is present

4.7 Logs menu

The SMU generates the following 4 logs:

- Operation log
- Shadow Impact
- Special Shutdown
- Single Data Recordings

In addition to downloading the desired logs in the **Logs** menu, you can filter them before displaying, exporting or printing.

The following table provides you with an overview of the **Logs** menu.

Menu item	Purpose
Local 314	Opens the **Logs from Local LogPool** window. Here you can, for example, filter, display, export and print logs that have already been downloaded. Here you can also access the sub window for exporting CMDRs, see Cyclic Multi Log sub window 319.
SMU 329	Opens the **Logs from the SMU** window. Here you can download specific logs or all logs from the SMU, see Logs from the SMU 329.

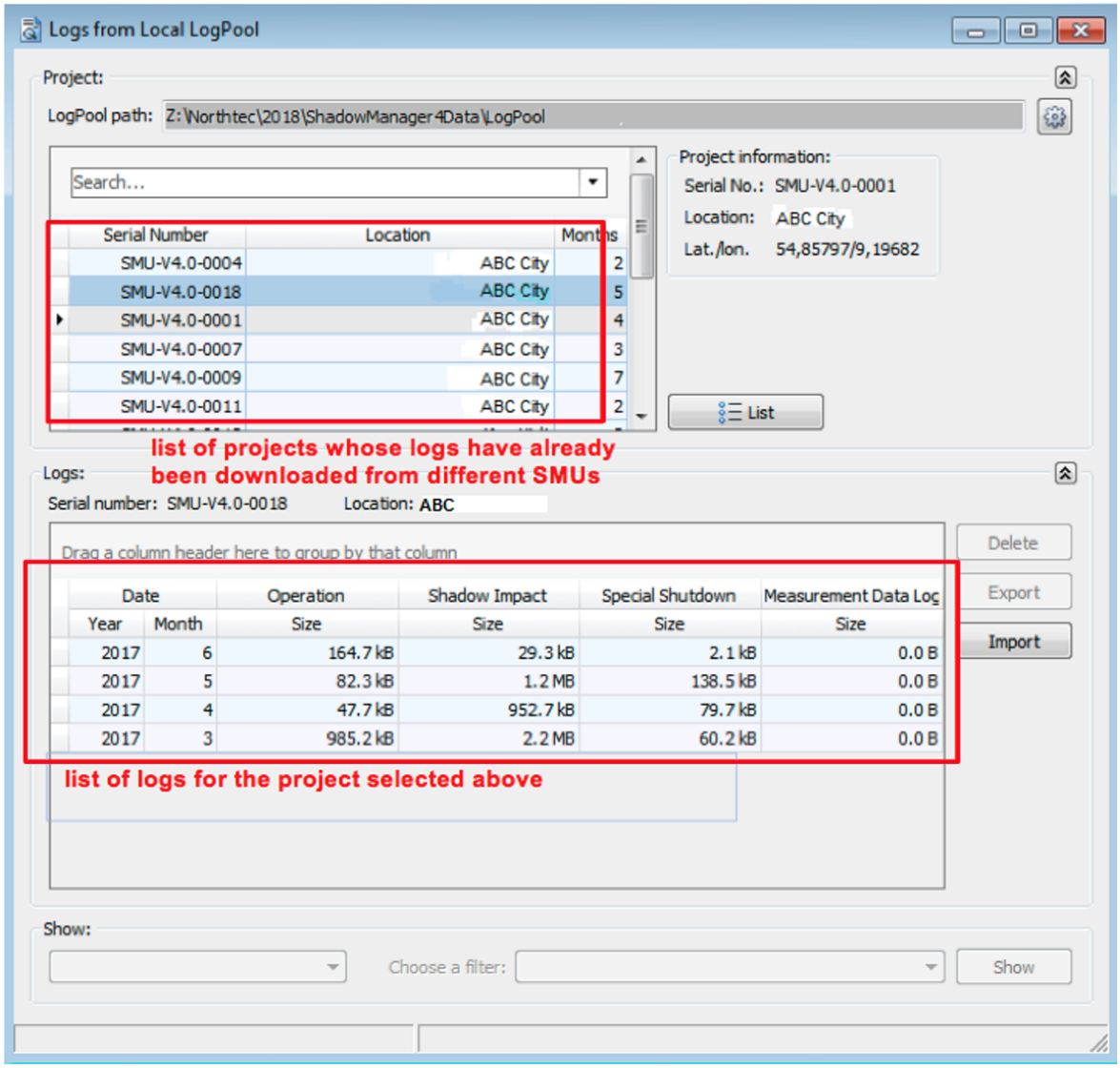
Click on a menu item to jump directly to more information.

4.7.1 Logs from Local LogPool window

Purpose	Filter, display, export and print logs that have already been downloaded
Path	*Logs > Local Log Files*
Right group	Read out logs
Type of use	Display + interactive
Reference	Cross-project

In this window you can

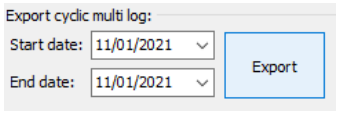
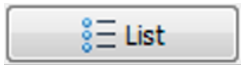
- list logs that have already been downloaded from the SMU
- filter, display, export and print listed logs and
- expand the details of individual logs
- apply pre-defined or user-defined filters before displaying the log in order to reduce the load on the computer

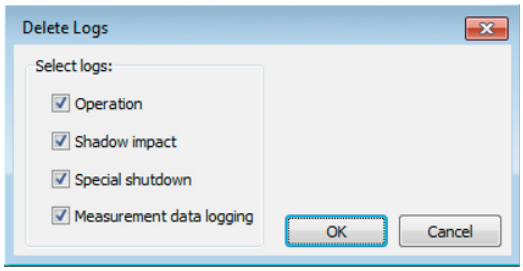
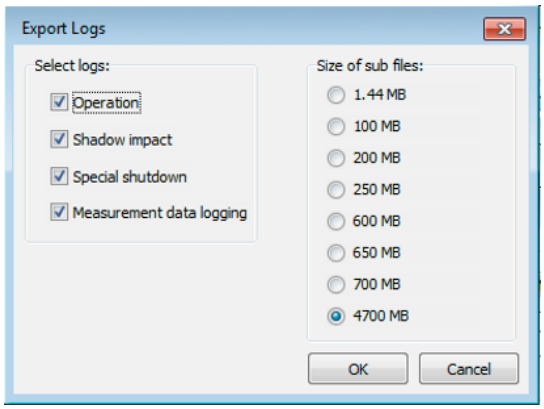


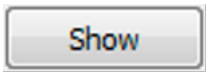
Logs from Local LogPool window

The information, options or buttons are described in the following table

Element	Explanation
Project area	(top window half)
or	This button is located at the right-hand-side window edge. It serves to show or hide the **Project** window area.
LogPool path	The file path to the folder where you stored the .exe file for running SM4 is displayed here. As soon as you run this .exe file, the **ShadowManager4Data\LogPool** folder structure will be created in the same directory, and, once you download logs from the SMU, these will be automatically stored in the **LogPool** folder. It is also possible to change this path, see the next table row.

Element	Explanation
	This button is used for calling up the display filter application settings, where you can change the path, amongst other things, see section Display filters 81.
Search...	Here you can search for a specific project by entering free text.
Serial Number	Serial number of the respective SMU
Location	Location of the wind park
Months	Logs are downloaded month by month. Here you can view the number of downloaded logs.
Project Information	Information on the project selected on the left-hand side of the lists window is displayed here. The input of coordinates (lat./lon.) respectively relate to the automatically determined project center.
	For information on this input area, please refer to Cyclic Multi Log sub window 319.
	After you have selected a project from the top left of the window, click on this button to list the corresponding logs in the bottom half of the window. **NOTE:** You can also double-click on a list entry to list the logs.
Logs area	(bottom window half)
 or	This button is located at the right-hand-side window edge. It serves to show or hide the **Logs** window area.
Serial Number	Serial number of the SMU that generated the displayed logs.
Location	Location of the associated wind farm
Drag a column heading here to group according to the heading.	If you have a large number of logs, it may be helpful to drag & drop the columns **Year** or **Month** to this field in order to sort the tables and display the logs for a specific year or month more clearly.
Date/ Operation/ Shadow Impact/ Special Shutdown/ Measurement Data Logging	You will find the following information under these column headings: **Date**: Information on the year and month of the respective log **Operation**: Size of the available operation log **Shadow Impact**: Size of the available shadow impact log **Special Shutdown**: Size of the available special shutdown logs (bat, bird, sector, noise, external) **Measurement Data Logging**: Size of the available Measurement data logs.

Element	Explanation
Delete	Is used for deleting a line of logs selected in the **Logs** area. If you click on **Delete**, a dialog window will open where you can individually exclude each of the four logs from being deleted. 
Export	It is used to export logs selected in the **Logs** area. If you click on **Export**, a dialog window will open where you can individually exclude each of the four logs from being exported. Moreover, you can limit the size of the export file by making the corresponding selection for **Size of sub files**. 
Import	Used to import a log from a local storage location or an external storage medium to the LogPool. **NOTE:** Always use this import function when importing. If you instead simply move the corresponding files to the LogPool in Windows Explorer, the file structure will often be damaged.
Show drop-down list	Here you can select the log you wish to display. The SMU generates 4 different logs (**operating log**, **shadow impact log**, **shutdown log** (special shutdown) and **measurement data logging**). A very large volume of data can be generated depending on the selection. In order not to overload the PC when processing this data, the entries can be pre-filtered using the Display Filter. Alongside this function, entries from various different types of logs can also be combined. Log entries from an operating log can, e.g., be presented with entries from the shadow impact log in one view.

Element	Explanation
	The **single data recording** logs are the exception. In this case the values set by the user are recorded. No display filters can be used for this log and its entries cannot be combined with entries from other logs. **NOTE**: Instead of 4 logs, the dropdown list offers 8 logs to choose from. The reason for this is that the shutdown log is divided into the following logs here: **bat protection, bird protection, sector shutdown, noise protection** and **special shutdown**. So, when you select one of these 5 options, you are selecting part of the shutdown log.
Choose a filter drop-down list	If you have set a user-defined filter in the application settings (see Application Settings window, Display filters 81), you can select this filter here in order to further filter the log you have selected in the **Show** dropdown list.
	Click on **Show** and the log you selected will appear in a separate window. The entries displayed here correspond to the display filter you selected. You can find more information on this window in the next chapter. **NOTE**: This button is only active if you selected a log listed in the **Logs** area.

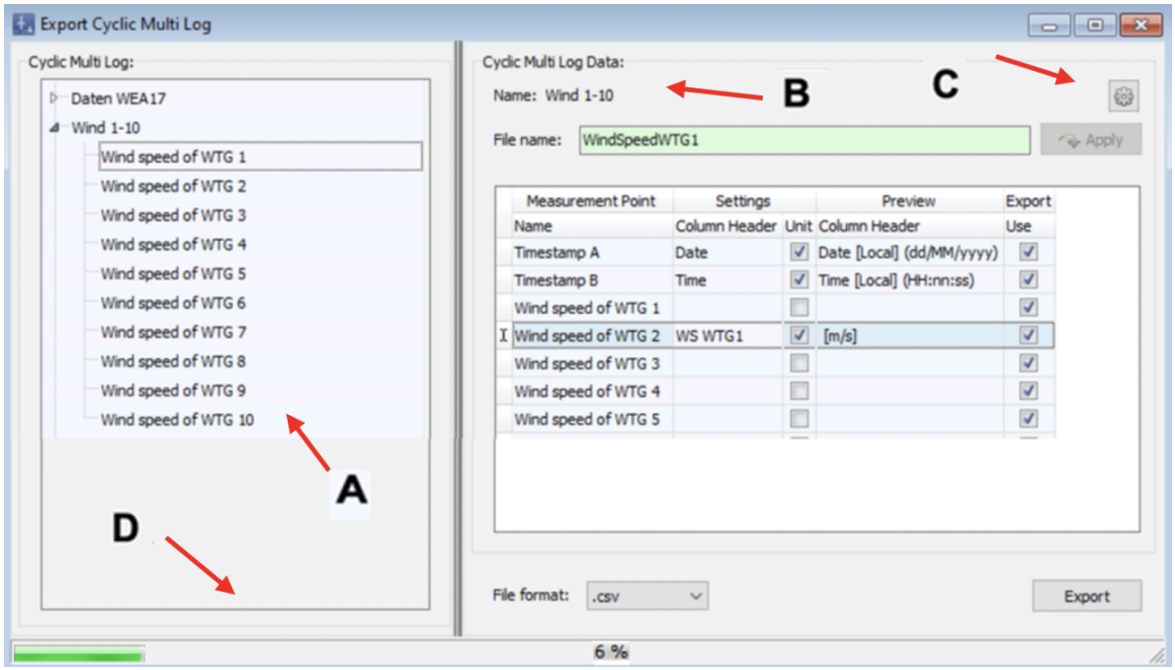
While downloading logs in the **Logs from the SMU** window, the functions of the **Logs from local LogPool** window are blocked.

4.7.1.1 Export Cyclic Multi Log sub window

Purpose	Display logged events of defined cyclic multi data recordings (CMDR), edit their display and export the data to a .csv file
Path	*Logs > Local Log Files > **Export** button* (after selecting project & date range)
Prerequisites	The following steps must have been carried out beforehand: • Define CMDR (see Cyclic Multi Log window 228) • Send project to the SMU (see Switching of Digital Outputs 224) • SMU records data • Download log files from the SMU (see Logs from the SMU window 329) • Export recorded data in the **Logs from local LogPool** window (see Cyclic Multi Log sub window 319)
Type of use	Display + interactive
Reference	Project

After the steps listed under **Prerequisites (**see above) have been carried out and you have finally clicked on **Export** in the **Logs from local LogPool** window, the **Export Cyclic Multi Log** window opens. The **combined** CMDRs are displayed here, see example screenshot below.

"Merged" in this context means that the reading points of the current project file/configuration **AS WELL as** the readings points from legends, i.e. older project files/configurations, are taken into account. Thus, reading points that have long been deleted may also be displayed here.



Export Cyclic Multi Log window

The above window is divided into the following sections

A Tree structure of the combined CMDRs with their reading points

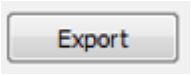
B Data of a CMDR selected on the left with the possibility to change settings

C Opens the relevant settings area in the **Application Settings** window

D Shows the progress of the data summary and the .csv export.

The information, options or buttons are described in the following table

Element	Explanation
Left part of window	
Cyclic Multi Log	In this display of the merged CMDRs, you can show or hide the reading points – otherwise **no editing is** possible. Once you select a recording, its reading points will be displayed in the right area of the window. If you select more than one recording on the left, *<no data to display> will* appear on the right, as it is not possible to display the data from more than *one* recording. **NOTE** It is possible that more reading points are displayed for a CMDR than are currently defined in the **Cyclic Multi Log** window, because the **merged** setups from *several* project files (legends) are displayed here, i.e. possibly also those reading points that were created at some point but later deleted again. When merging, the system checks for upper and lower case so that, e.g., the reading points of a recording called "Data WTG 1" are **not** merged with those of a recording called "data WTG 1".
Right side of window	
Name	Name of the recording as defined in the **Cyclic Multi Log** window. Display only
	Opens the relevant area in the **Application Settings** window where you can specify general settings for the .csv files to which CMDRs are exported. For more information on this settings area, see Application Settings window, Csv-Export, Cycl. Multi Data Recordings 85. **NOTE** The settings you make there in the **Measurement point settings** area are defaults for the fields of the same name in the **Cyclic Multi Log** window. They **only** affect those reading points that are **newly** added; reading points that have already been defined retain their .csv settings.

Element	Explanation
	This button for changing the file name is only active, • if a directory name is selected in the tree structure on the left side of the window (no reading point) AND • the entry in the **File name** field corresponds to the conventions for Windows file names, see next line.
File name	File name of the export file. When merging the data, the file name is taken from the CMDR of the last transferred project file (configuration). Note the following for the file name • conventions for Windows file names must be observed (certain characters and names, e.g. " : ; '< > as well as LPT0, COM0 etc. are not allowed), otherwise the field is highlighted in red • all .csv files of all CMDRs are output to the same folder – therefore the file names must be unique so they do **not** overwrite each other (case-insensitive): Filename = fileName
Table	Displays the reading points and two additional items (timestamps: **Date** and **Time**). The rows can be dragged and dropped to change the column order in the export file. You will find a detailed explanation below this table.
File format	Only the .csv format is currently supported.
	Starts the .csv export; is disabled during an ongoing export.

Measurement Point	Settings		Preview	Export
Name	Column Header	Unit	Column Header	Use
Timestamp A	Date	☑	Date [Local] (dd/MM/yyyy)	☑
Timestamp B	Time	☑	Time [Local] (HH:nn:ss)	☑
Rotor speed of WTG 17	RotSpeed	☑	RotSpeed [1/min]	☑
WTG status of WTG 17	WTG Status	☐	WTG Status	☑
Wind speed of WTG 17	WSpeed	☑	WSpeed [m/s]	☑
External temperature of WTG 17	Temp	☑	Temp [°C]	☑
Power, 10 min. average of WTG 17	PWR	☑	PWR [kW]	☑
Nacelle angle of WTG 17	NacAng	☑	NacAng [°]	☑

Table in the right area of the **Export Cyclic Multi Log** window

Element	Explanation
Name	Name of a reading point that will allow you to recognize it in the tree structure Display only
Column Header	Column title for the export file If you leave this field blank, the corresponding measured value will still be exported, but it will appear in the .csv file in a column without a title, or the title may only contain the respective unit (if activated).
Unit	Determines whether the unit is displayed in the column title. Display only for **Date** and **Time**
Column Header	What you see here will later appear 1:1 in the column title of the export file. Display only
Use	Determines whether the record (column) is exported. Display only for **Date** and **Time**

Notes on the above table

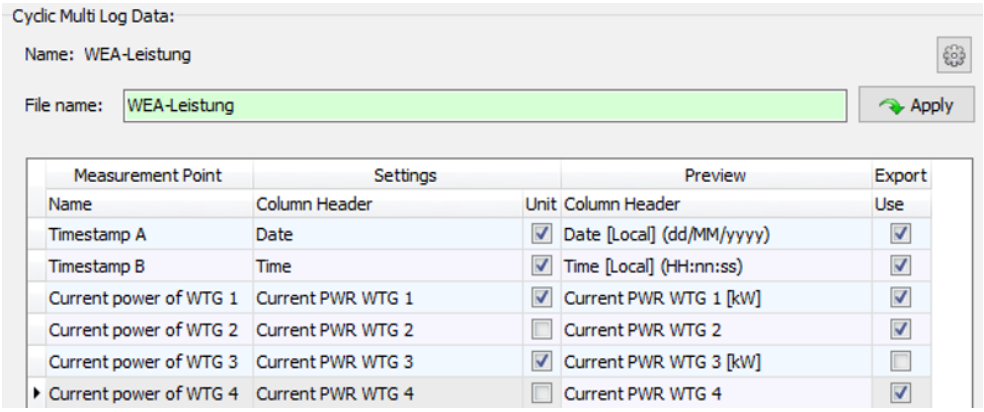
- In the table, you can rename the column titles of the export file; a row corresponds to a "column" in the export file.
- The rows can be dragged and dropped to change the column order in the export file.
- While an export is being executed, data cannot be edited and the drag & drop function is disabled.

The following is an example of an export file.

Export window **Cyclic multiple word recording -** Example of an export file

In this section you will find an example of the preview of a CMDR and the corresponding export file.

The following CMDR has been exported:



If the corresponding export file is opened in Excel, the result will look like this:

	A	B	C	D	E
1	Date [UTC] (dd/MM/yyyy)	Time [UTC] (HH:nn:ss)	Current PWR 1 [kW]	Current PWR 2	Current PWR 4
2	27.07.21	22:00:01	0	0	0
3	27.07.21	22:10:02	0	0	0
4	27.07.21	22:20:00	9999	9999	9999
5	27.07.21	22:30:00	9999	9999	9999
6	27.07.21	22:40:03	9999	9999	9999
7	27.07.21	22:50:02	9999	9999	9999
8	27.07.21	23:00:01	9999	9999	9999
9	27.07.21	23:10:00	9999	9999	9999
10	27.07.21	23:20:02	17326	271,1	
11	27.07.21	23:30:02	16769	133,1	
12	27.07.21	23:40:02	16362	71	
13	27.07.21	23:50:02	13857	23,6	

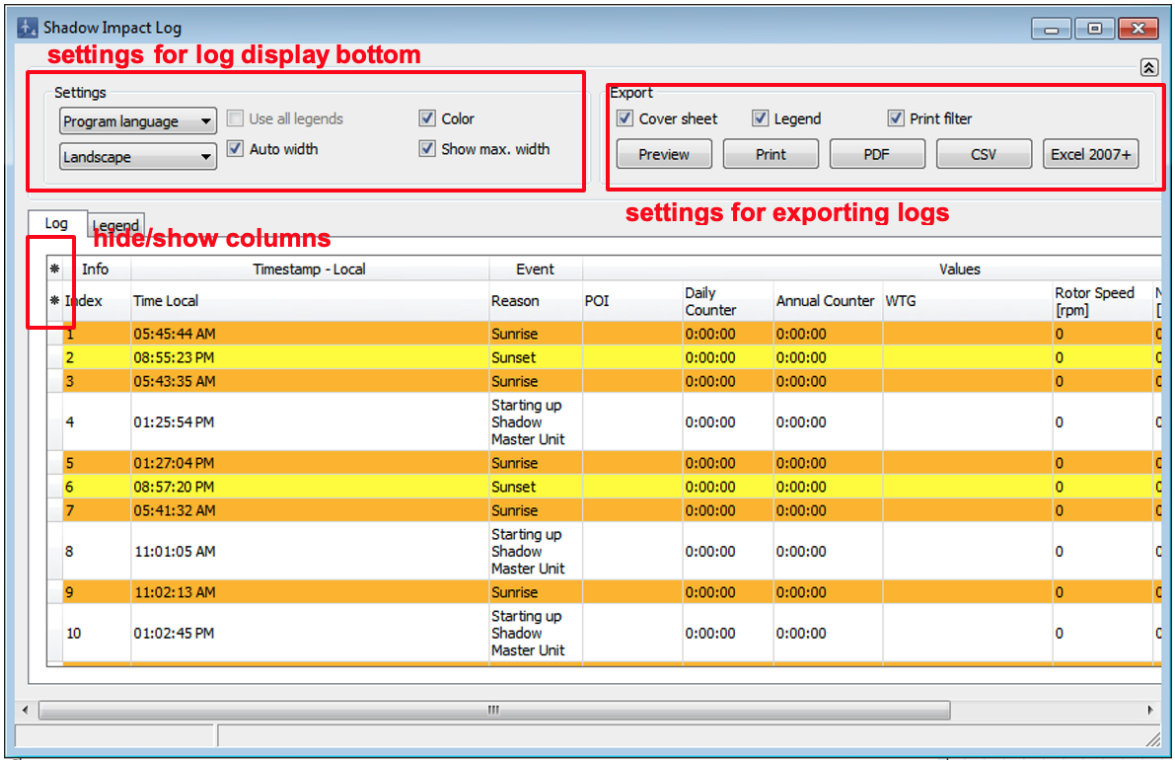
As you can see, the columns, as well as the column order, unit yes/no, etc. correspond to the settings from the screenshot above.

See also Practical example 8: Regular recording of several measured values 46

4.7.1.2 Operation Log/Shadow Impact Log/Shutdown Log sub windows

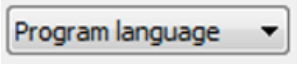
Purpose	Display, print, etc. logs that have already been downloaded from the SMU.
Path	*Logs > Local > **Display** button* (after selecting a log)
Type of use	Display + interactive
Reference	Project

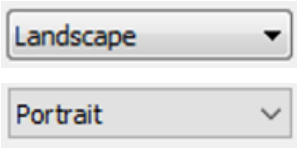
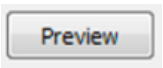
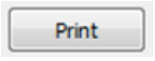
The logs you selected in the **Show** dropdown list of the **Logs from Local LogPool** window are displayed in this window.



Log display window example: **Shadow Impact Log**

The information, options or buttons are described in the following table

Element	Explanation
Settings area	
	In this drop-down list, you can specify in which language the log should be output. In all cases, the **Program language** option (report language = language of the SM4user interface) can be selected. The other languages available depend on the supported languages.

Element	Explanation
	Here you can specify whether the log should be displayed/printed in **Landscape** or **Portrait** format.
Use all legends	As the name of a POI/WTG can change over the course of time, there may be several legends for a POI/WTG, as applicable. If this option has been selected, the **Legend** tab will display older legends will be displayed. Otherwise, only the latest legend will be displayed.
Auto width	If you select this option, all hidden columns will be automatically distributed over the available width.
Show max. width	If you a) have not activated the **Auto width** option and b) have so many hidden columns that they cannot easily fit on one page, all the columns moved to the next page will be highlighted in grey on the screen.
Color	When this option is activated, all colors assigned to events *File > Application Settings > Display filters > Operation log/ Shadow impact log /...* are shown (it can be seen in the example window on the previous page that the **Sunset** event has been assigned the color yellow). Information on assigning colors can be found in section Application Settings window, Display filters 81.
Export area	
Cover sheet	When activated, a cover page is generated for the log.
Legend	When activated, an explanation of the abbreviations of the places of immission is provided at the end of the log (address, e.g. 1 ABC Street, 12345 ABC City).
Print filter	When activated, the filter that was used is listed at the end of the log (*File > Settings > Display filter > Operation log/ Shadow impact log/ ...*) see Application Settings for Display filters, section Display filters 81.
	Opens the preview window of the log.
	Is used to print the log using a printer connected to SM4.
	Is used to save the log as a PDF.
	For exporting in .csv format; e.g., for external analyses.

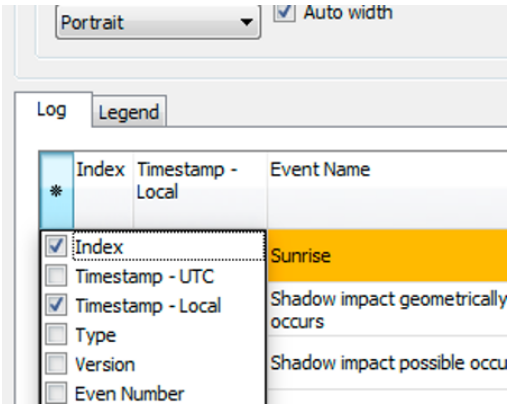
Element	Explanation
Excel 2007+	Exports the log as an .xlsx file that can be opened with Microsoft Office 2007 and later versions (the colors are also exported).

Notes regarding the log display window (**Operation Log/ Shadow Impact Log/ Shutdown Log**)

- Only the log events that are assigned in the respective filter in the Application Settings (*File > Application Settings> Display filters*) are displayed in the Shutdown log. They are displayed in the log under the same term that is displayed in the **Event** column.
- What you see is what you get: The log is printed out/saved as a PDF exactly as displayed here.
- Move columns: Columns can be moved by drag & drop.
- Sort by column: You can sort a column according to its heading by clicking on it. If you then click again on the same column heading, the sort sequence will change from ascending to descending or vice versa.
  You can also sort by more than one column heading (criteria). To do this, first press and hold the shift key and then click on the desired column headings. The sorting will be carried out according to the order in which you click on the column headings.
- Hide/show columns: Columns can be hidden/shown, see the next page.
- Column filters: Filters can be applied to columns, see section Apply log column filter 327.
- In the **Shutdown Log** window, there are dynamically created columns in addition to the standard columns. This is dscreibte under Dynamically created columns in the Shutdown Log 328.
- If you notice that the font of some entries in the log is not black but colored, they may have been downloaded incorrectly from the SMU.

4.7.1.3 Hide/show log columns

To hide/show columns in the **Operation Log/ Shadow Impact Log/ Shutdown Log** windows, click on the asterisk * at the top left of the **Log** tab. A list of possible column headings will then be shown, see the following figure.



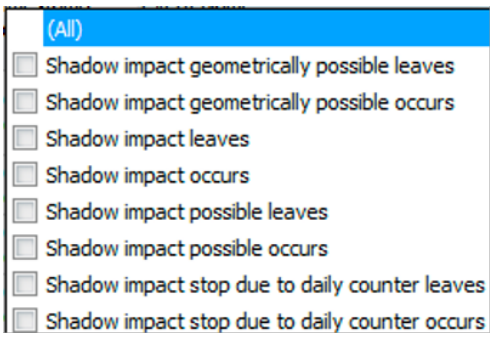
Hide/show log columns

Each column can be hidden/shown as desired by selecting and deselecting the individual column headings.

4.7.1.4 Apply log column filter

The column headings of the log are provided with a filter function, which you can use as follows:

Move the mouse cursor to the top right-hand corner of a column heading until a small filter symbol appears. Click on the filter symbol. A list of possible entries will then be shown.



Column filter

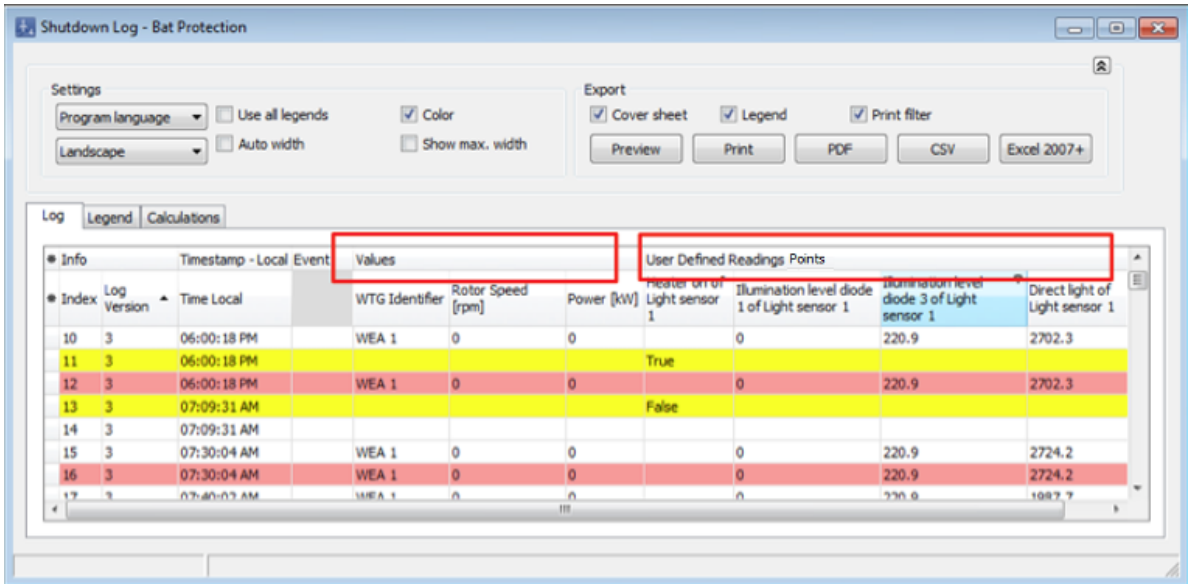
Now set a checkmark next to the desired events. Only selected events are displayed afterwards.

4.7.1.5 Dynamically created columns in the Shutdown Log

In the case of the **Operating Log** and **Shadow Impact Log**, the SMU determines which values (readings) are logged in connection with an event. In the case of the **Shutdown Log**, on the other hand, further reading points can be recorded in addition to these "standard values" in connection with an event. The following reading points are available:

- Default reading points
  These reading points are permanently stored in SM4 and cannot be changed or deleted by the user. This ensures that the most important reading points are always recorded in the log.
- Condition reading points
  These reading points were used when defining shutdown conditions and can only be edited there. With the help of condition reading points, the log can show why a WTG was switched off at a certain time, e.g. because the hygro-thermo sensor exceeded a certain temperature. This makes much more sense if there are several conditions: the log will then also reveal which of conditions led to the stop (e.g. temperature or humidity or wind speed).
- User-defined reading points
  The user can add these reading points as required. User-defined calculations (*Switching & Measurement > Calculations*) can serve as a reading here. Reading points that are already included in the default or condition reading points cannot be added **again**.

For the standard reading points there are fixed columns in the log display window **Shutdown Log**, which are displayed in the table area **Values**. **Condition reading points** as well as **User-defined reading points** are displayed under **User Defined Reading points**. These columns are created dynamically as required. See the following example:



The columns in the table area **User Defined Reading points** were created dynamically, because

- reading points of the same name are part of a defined special shutdown or night slice shutdown or because they were added as **User-defined reading points** in the **Events** window, and
- values were actually logged in the selected period.

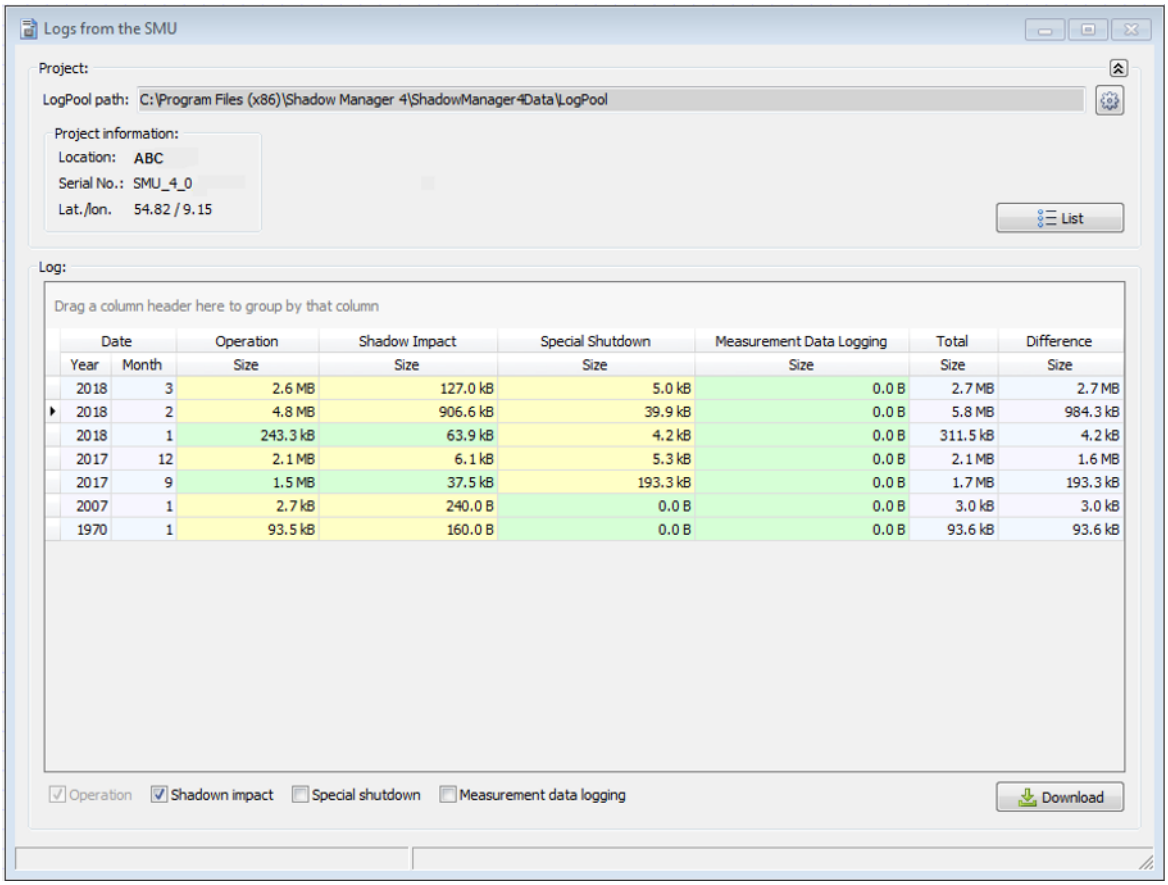
4.7.2 Logs from the SMU window

Purpose	Downloading logs from the SMU
Path	*Logs > SMU*
Right group	Read out logs
Prerequisites	Online connection to the SMU
Type of use	Interactive
Reference	Project

The SMU generates the following 4 logs:

- Operation
- Shadow Impact
- Special Shutdown
- Single Data Recordings

In the **Logs from the SMU** window, you can download specific or all logs from the SMU.



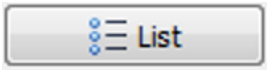
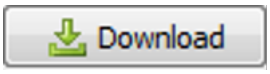
Logs from the SMU window

NOTE

You can only download logs in the window above. Open the **Logs from Local LogPool** window (*Logs > Local Log Files*) to display, filter, print out, etc.

The information, options or buttons are described in the following table

Element	Explanation
or	This button is located at the right-hand-side window edge. It serves to show or hide the **Project** window area.
LogPool path	The file path to the folder in which you stored the .exe file for running Shadow Manager 4 is displayed here. As soon as you run this .exe file, the **ShadowManager4Data\LogPool** folder structure will be created in the same directory, and, once you download logs from the SMU, these will be automatically stored in the **LogPool** folder. It is also possible to change this path, see the next table row.

	This button is used for calling up the display filter application settings, where you can change the path, amongst other things, see section Application Settings window, Display filters 81.
Project Information	Information on the currently open project is shown here. Information on the project selected on the left-hand side of the lists window is displayed here. The input of coordinates (lat./lon.) respectively relate to the automatically determined project center.
	When you click on **List**, the SMU will notify SM4 about which logs are available on the SMU and prepare these to send to SM4. The existing logs will not yet be downloaded but merely listed in the bottom half of the window in the **Log** area (this process can take several minutes). After "listing" all logs available in the SMU, all months (lines in the list) and all logs (checkboxes) are automatically selected, so when you click **Download**, all logs are downloaded.
Log	After clicking on **List**, the logs that are available on the SMU will be highlighted in a color here. The colors have the following meaning: green: completely downloaded onto the local computer yellow: incompletely/partly downloaded red: there are more logs locally than exist on the SMU (this should be avoided, and, in this case, it is advisable to delete the entire month and download the logs again) **NOTE** This status is **undesired**; a user may have deleted, e.g., individual files in the local directory. We strongly recommend leaving the local directory untouched. Otherwise, log files could become irretrievably lost, since the SMU automatically cleans up at some point for storage space reasons and deletes older log files permanently.
Operation	Is selected to include the Operation log when downloading.
Shadow impact	Is selected to include the Shadow Impact log when downloading (the Operation log is automatically selected at the same time).
Special shutdown	Is selected to include the Special Shutdown log when downloading.
Measurement data logging	Is selected to include the Single Data Recordings when downloading.
	Click on this button click to start downloading the logs. Following a successful download, a dialog appears, which you must confirm by clicking **OK** before you can continue working.

4.8 Tools menu

The following table provides you with an overview of the **Tools**menu.

Menu item	Purpose
Integrity Check 333	Manually initiate an integrity check (it is checked whether the project is coherent).
Simulation 338	Calculate the worst-case shadow impact scenario over a specific period of time.
Shadow Impact Visualization 343	Visualize shadows impact over time
SMU Connectivity 347	Identify at a glance whether the SMU is ready for a connection
Project Comparison window 349	Clearly juxtapose two projects from different sources
WTG Types 352	List possible WTG types
Window 353	Reset window positions and screen detection

Click on a menu item to jump directly to more information.

4.8.1 Project Integrity window

Purpose	Manually initiate an integrity check
Path	*Tools > Integrity Check*
Prerequisites	-
Type of use	display only
Reference	opened project

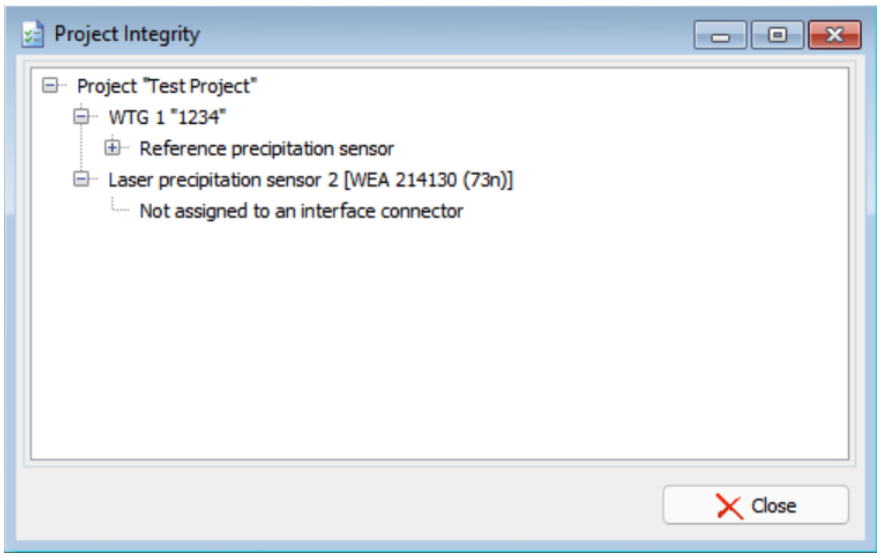
SM4 has an integrity module installed, which is used to test for integrity in a project (incomplete references, missing parameters and other “errors”) prior to uploading to the SMU. The results of the test are displayed in this window.

You can create a project or a project component (e.g. light sensor) in the SM4, even if not all the required parameters are known, in order to prepare the project as far as possible. The following situations are conceivable:

- creating a new project without an IP address being assigned for the SMU
- adding a light sensor that is not yet connected to the hardware
- defining a WTG that refers to sensors that do not yet exist

However, an incomplete project may not be transferred to the SMU (configured). The **Configuration Check** window will open when the user selects *Project > Configuration*. You can click here on **Test Config.** to initiate a test in this window for testing various aspects, including project integrity. All incomplete references will be detected and clearly displayed to the user in the process. The project is only complete when it is no longer possible to detect any unresolved items (only notes on unused objects can be ignored, see below).

An integrity check can be called up manually at any time (*Tools > Integrity Check*) to determine which items still need to be completed. The results will be displayed in the **Project Integrity** window, see the example window below:



Project Integrity window

Notes on the example window above

- A light sensor has been added here and already referenced in a special shutdown for WTG 1. The connection from the light sensor to the hardware (in this case via an interface connector) to enable it to operate on the SMU is missing.
- Moreover, an additional hygro-thermo sensor has been defined. Due to the fact that, however, this is not referenced anywhere else, SM4 simply reports this as an “unused object”, which can only be viewed as a note.

4.8.1.1 Dependencies window

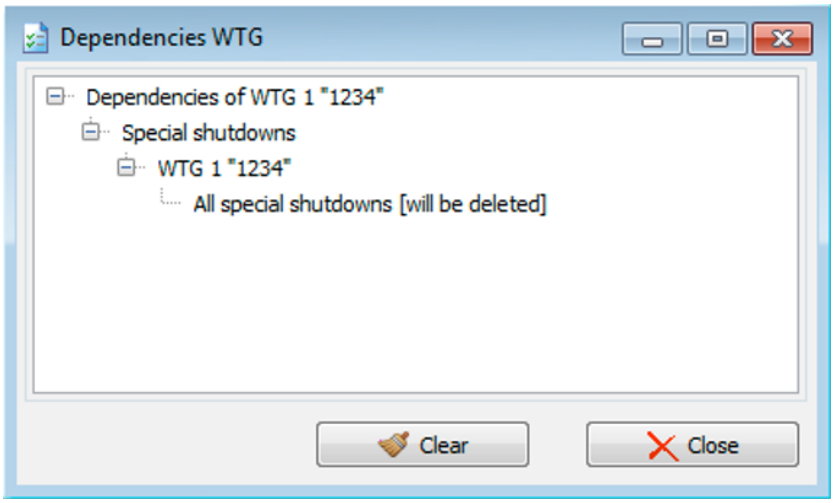
The **Dependencies** window is a part of the integrity module and will always open if a change planned by a user will have consequences for other parts of the project.

Example A: A WTG needs to be removed from the wind park.

Here it is necessary to check where reference has been made to this WTG in the current scenario, for example in the following settings:

- Readings of the WTG in Shutdown conditions of Special and Night Slice Shutdowns
- Special and Night Slice Shutdowns for the WTG itself
- Readings and conditions of this WTG in Single Data Recordings

The user is shown the consequences of removing the WTG in the **Dependencies** window; see the example window below:

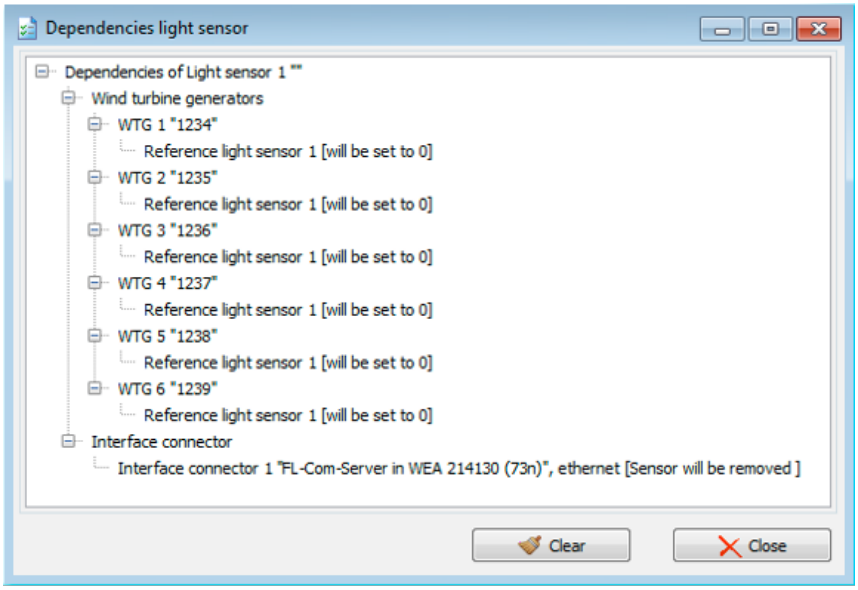


Dependencies window (example A: deleting a WTG)

Notes on the example window above (example A)

- It is apparent that special shutdowns exist for this WTG – none of which will be useful after it has been deleted.
- The **Clear** button is also always available for this type of report from the integrity module. If you click on it, the action that is listed in square brackets after the affected object or objects will be implemented. In this case all special shutdowns that exist for the WTG to be deleted will also be deleted.
- If this window is closed by clicking on **Close**, however, nothing else will happen and the entire process will be cancelled. This means that the planned deletion of the WTG will not take place.

Example B: A light sensor needs to be removed.



Dependencies window (example B: deleting a light sensor)

Notes on the example window above (example B)

- If this sensor is deleted, this will have an impact on other sensors as well, due to the bypass function.
- Furthermore, the light sensor serves as reference sensor for four WTGs.
- And it is assigned to an interface connector.These windows for dependencies are only displayed if an action would have real consequences.

If you attempt to remove a digital input (DI) that is not referenced anywhere, for example, the deleting process will be implemented directly by clicking on the **Remove** button in the **Sensors and IO Signals** window.

The following actions could have consequences for other objects:

- delete WTG/POI
- delete analog/digital inputs/outputs
- delete sensor
- delete interface connectors
- delete interface cards
- new number assignment for /move a WTG/POI
- new number assignment for analog/digital inputs/outputs

- new number assignment for sensors
- new number assignment for interface connectors

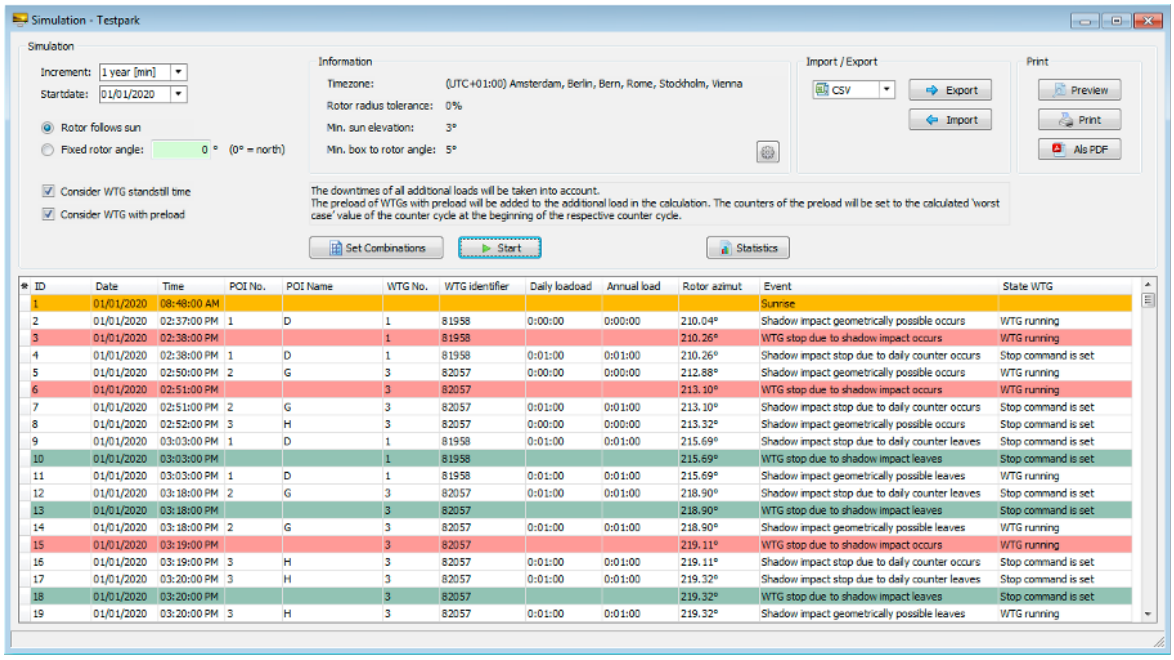
The following objects could be affected by actions:

- conditions for special and night slice shutdowns
- actual special and night slice shutdowns
- conditions for single data recordings
- single data recordings
- shutdown calendars
- interface connectors
- hardware assignments
- bypass sensors

4.8.2 Simulation window

Purpose	• Calculate, display, print, export worst-case shadow impact scenarios over a specified period of time for the entire wind farm or specific combinations of WTGs and POIs • Display, print, export statistics with different perspectives and representations
Path	*Tools > Simulation*
Prerequisites	Dongle
Type of use	Interactive
Reference	Project

The currently loaded shadow impact scenario is calculated over a desired time period (max 1 year) by a simulation. This calculation does not take place in the SMU but within SM4.



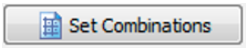
Simulation window

General notes regarding the **Simulation** window

- According to the factory default, the system, when simulating a shadow impact scenario, always assumes the worst-case, i.e. there is always enough light during the day to cause shadow impact, and the rotors of the wind turbine generators are always in a 90 °position with respect to the sun.
- Furthermore, it can be determined whether downtimes of the wind park's own WTGs and of the preloading WTGs (WTGs of other wind parks) should be taken into account.
- The same algorithm and the same temporal resolution are used as those used in the SMU. This ensures the simulated results are comparable to the SMU's Shadow impact log.

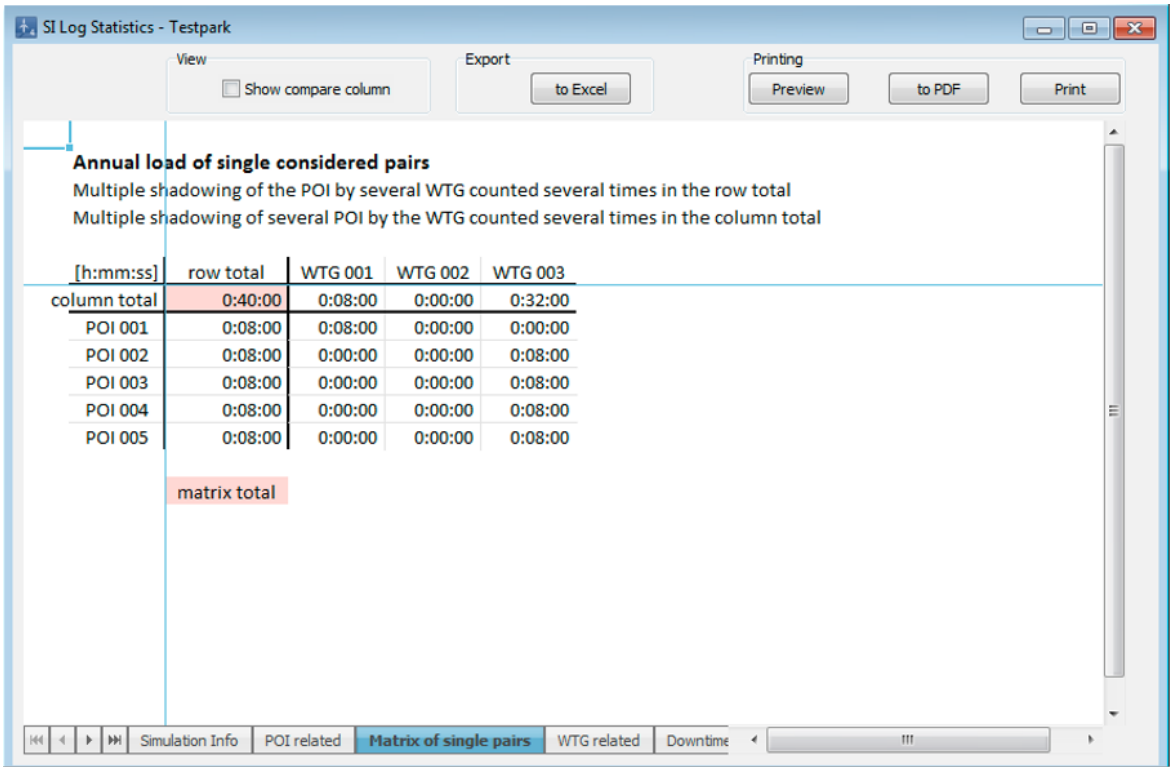
The information, options or buttons are described in the following table

Element	Explanation
Increment	Here you select the simulation period and the resolution – the latter is given in square brackets.
Start date	For example, if you select 01.05.2020 as the start date, the loaded shadow impact scenario is calculated until 30.04.2021. A **Today** button is available in the dropdown list for entering the date, so that you can simulate only the current day with just a few clicks.
Rotor follows sun	If this option is activated, the system assumes that the rotor always remains in a 90 °angle with respect to the sun during the simulation (worst-case).
Fixed rotor angle	If, for example, you want to calculate a scenario that corresponds to the wind direction prevailing in the wind park instead of the worst-case, select the **Fixed rotor angle** option instead of the **Rotor follows sun** option and enter the desired angle: 0° = north, 90° = east, etc.
Consider WTG standstill time	If this option is activated, the daily and annual counters of all additional loads (loads of the POIs caused by WTGs of your own wind park) are considered and in case of an overflow a stop event is generated. If this option is not activated, only the geometrically possible shadow impact will be simulated.
Consider WTG with preload	Here it is determined whether WTGs that cannot be switched by your own wind park (WTGs of another wind park) but still cause immission should be included in the daily and annual counter calculation. You can recognize such "preloads" by the fact that, for example, the first entry of a POI in the column **Daily load** or **Annual load** does not begin with 0:00:00.
Information	The information area displays current settings from the project configuration (*File > Application Settings > SMU > Shadow impact calculation*). These settings are required for the internal calculations of the simulation. Click on the gear symbol to go directly to the setting options.

	With this button you open a selection window in which you can choose the combinations of WTGs to POIs to be simulated. You can select entire columns and rows at once by clicking a column or row title, or set each combination individually by clicking it.
	Click here to simulate the selected combination of WTGs and POIs according to the defined settings. A progress bar is displayed at the bottom of the window.
	Click here to open the statistics window for a calculated simulation. A detailed description of the window is given at the end of this section.
Import / Export	Here you can export the simulation result in CSV, XML, JSON or SM4SIM format. Only the NorthTec proprietary SM4SIM format can be imported.
Print	Here you can display a print preview, print the result or save it as a PDF document.

4.8.2.1 SI Log Statistics sub window

Purpose	Display, print, export simulation statistics with different perspectives and representations
Path	*Tools > Simulation > Statistics*
Prerequisites	Dongle
Type of use	Interactive
Reference	opened project



SI Log Statistik window (using the **Einzelpaarungsmatrix**tab as an example)

General notes regarding the **SI Log Statistics** sub window

- The **Show compare column** option is only relevant for the tabs **POI related** and **WTG related**.
- All tabs can be exported by clicking the **to Excel** button.
- In the **Print** area you can choose between preview, PDF export or direct printing.

The tabs (lower edge of screen) are described in the following table

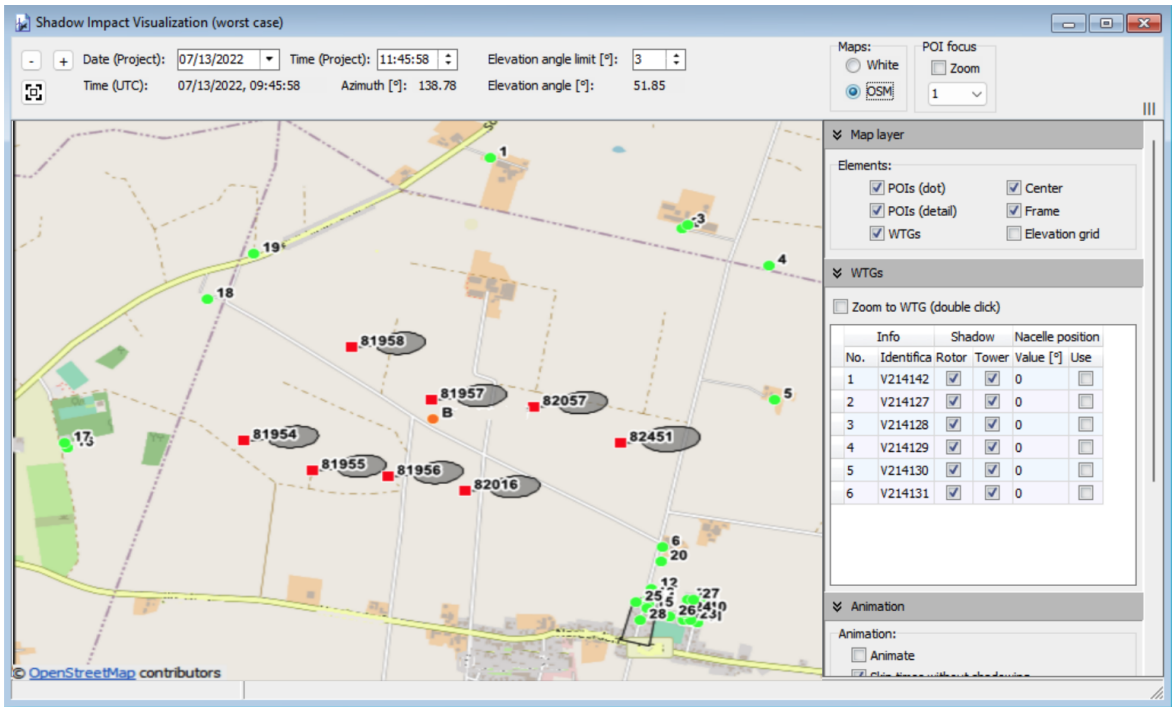
Tab	Explanation
Simulation info	Displays the settings and combination the current simulation is based on.
POI related	Here the shadow impact duration of the POIs is displayed for each POI individually, but also in total, with the following column headings: **Preload** = shadow impact caused by non-switchable WTGs (not belonging to your own wind park) **Additional load** = shadow impact caused by your own WTGs **Total load** = sum of preload and additional load "**counted once**" means that for POIs at which 2 or more WTG cause shadow impact simultaneously (multiple shading), these loads are only considered from the point of view of their effect and are therefore **not** added up. You can use the **Show compare column** option to show a column that displays the **Row total** from the **Matrix of single pairs** tab page, that is, multiple shading is added here (considered from the point of view of the cause).
Matrix of single pairs	Matrix of single pairs tab Matrix of single pairs tabThis is the matrix of the individual pairings of WTGs and POIs. When calculating the shadow impact duration, all other WTGs are hidden here. In the row total per POI, multiple shadings are counted several times (added up, consideration from the point of view of the cause). The arithmetic column sum per WTG counts the shading of several POIs simultaneously several times. The calculated matrix sum corresponds to the park total shadow impact duration if no multiple shading exists. If the option **Consider WTG standstill time** was activated, the shadow events of the other POIs and their counter readings influence the result of the single pairing.
WTG related	Here the duration of shadow impact caused by the WTG is shown. For "overlapping" events from neighboring POIs, the duration from the first immission at the first POI to the last immission at the last POI is added up. You can use the **Show compare column** option to show a column that displays the **Column total** from the **Matrix of single pairs** tab page, that is, multiple shading is added here (considered from the point of view of the cause).
Standstill	If the **Consider WTG standstill time** option was activated, the downtime per WTG caused by an overflow of the annual or daily counter is displayed here. For WTGs with preload, as a rule, no shutdown is assumed. If the option **Consider WTGs with preload** was deactivated, the corresponding WTGs are treated as additional load.
Combinations matrix	This tab shows which combinations of WTGs and POIs were set.

4.8.3 Shadow Impact Visualisation

Purpose	Visualize shadows impact over time
Symbol	
Path	*Tools > Shadow Impact Visualization*
Prerequisites	Dongle
Type of use	Display + interactive
Reference	Project

In the **Shadow Impact Visualization (worst case)** window, you can visualize the shadow impact of the currently open project as it could occur in the worst case, i.e., assuming that the rotor points towards the sun while at the same time the direct sunlight is so strong that shadow impact effects actually can occur. What is depicted here, not only refers to a specific point in time but shows the shadow impact over the course time in user-selectable time steps, always assuming the rotor follows the sun (worst case). In addition, you can make further settings, e.g., exclude individual WTGs from the visualization.

If residents complain about shadow impact, this visualization can be very informative and may contribute to discussions being held based on facts.

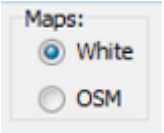


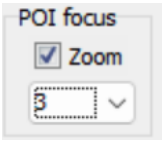
Shadow Impact Visualization window

Notes on the window above

- Click on the map and use the mouse wheel/touchpad or press the plus (+) or minus (-) key to zoom in or out.
- To move the map, hold down the left mouse button and drag the map in the desired direction or use the arrow keys on the keyboard.
- If you zoom in strongly on the map and have selected the POI (detail) option, you can also see the defined walls and areas. The small rectangular line on walls indicates their orientation.

The information, options or buttons are described in the following table

Option/ Button	Explanation
	Use these buttons to adjust the displayed time back or forward by one day with each click.
Date (Project)	Here you can see the date of the currently displayed shadow impact scenario and change it by clicking on the small black arrow to open a drop-down list.
Time (Project)	Here you can see the time of the currently displayed shadow impact scenario and can change it by clicking on the arrow keys or overwriting the current time.
Elevation angle limit [°]	Here you define the minimum elevation angle the sun must have so that shadow impact effects are considered to be possible and are visualized here. Input range 0.1 to 15 degrees, default: depending on project (*Project > Project Settings > Shadow impact calculation*)
	If you click on this button, the map section is moved so that the project center is displayed in the middle of the map.
Time (UTC)	Shows the project time in universal time.
Azimuth [°]	Azimuth of the sun as calculated by SM4.
Elevation angle [°]	Elevation angle of the sun as calculated by SM4.
	If you switch to OSM here, Open Street Map is displayed in the background. **NOTE** The computer must be connected to the internet to use the OSM.

Option/ Button	Explanation
	If you check the **Zoom** box, you can select a POI number in the selection list below to center the map on this particular POI.
	Displays/hides the settings area on the right side of the screen.
Map layer	
POIs (dot)	Used to show/hide defined places of immission. Defined POIs are displayed as green dots:
POIs (detail)	Used to show/hide defined walls and areas. Defined walls and areas are displayed as black lines. The view needs to be greatly enlarged to be able to detect them. The small rectangular line on walls indicates their orientation.
WTGs	Used to show/hide defined wind turbine generators. Defined WTGs are displayed as red squares.
Frame	Used to show/hide a black project frame.
Center	Used to show/hide the project center, i.e. the center of all WTGs according to latitudes and longitudes from the project data. The project center is shown as an orange circle. It is calculated automatically.
WTG	
Zoom to WTG (double-click)	If this field has been activated, you can click on a WTG in the table underneath to make it the center of the map.
Info	The number corresponds to the respective **WTG number** in the **Wind Turbine Generators** window. The identification corresponds to the respective **Name from Shadow Forecast** in the **Wind Turbine Generators** window. Display only
Shadow	You can show or hide rotor shadows and tower shadows of a WTG by placing or removing the respective check mark. If you right-click the right to the left or right of a check mark, a context menu opens in which you can apply the respective setting to all other WTGs.
Nacelle angle	If you check the **Use** box and enter, e.g., 45 at **Value**, the shadow impact visualization will be based on the assumption that the nacelle, and therefore the rotor, are oriented to north east.

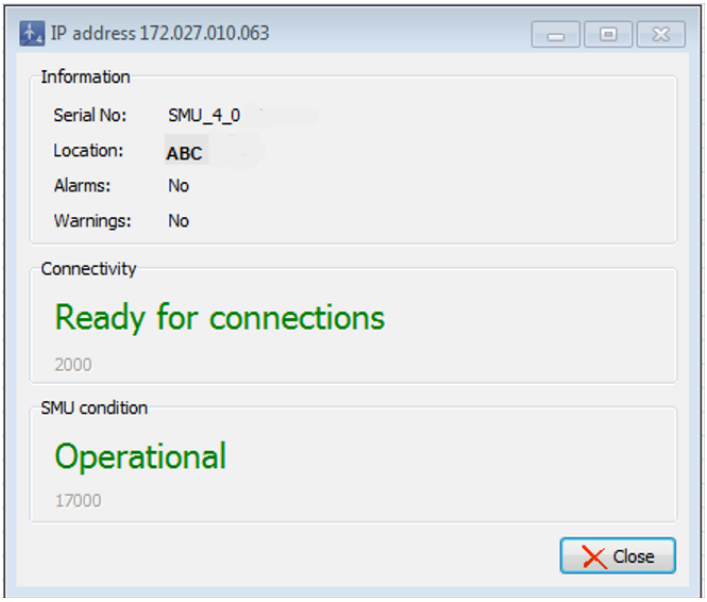
Option/ Button	Explanation
	If you do not check the **Use** box, the worst case will be assumed for the shadow impacting visualization. 0° = North, 90° = East, 180° = South, 270° = West **Application example:** In the case of a specific complaint by a resident regarding a defined time period, you could take the corresponding nacelle position from the shadow Impacting log, enter it here and thus visually reconstruct whether there was real shadow Impacting at the time in question. Input range 0–359 degrees, default 0 degrees
Animation	
Animate	If you set a check mark here, the shadow Impact is automatically displayed over time, according to the following settings. If you do not check this box, the settings in the **Animation** section will have no effect.
Skip times without shadowing	If you set a check mark here, times in which real shadows cannot be cast (because the elevation angle has fallen below the limit) are automatically skipped during animation.
Time steps/ Day steps	For animation, you can choose **time steps** OR **day steps**. If you select the **Time Steps** option, these correspond to the setting below (Time Steps (minutes)).
Time steps (minutes)	Setting for above option **Time steps** Input range 1-120 min, default 3
Animation interval (sec.)	Here you select the interval at which the display should change (jump to the next time period or day). Input range 1–60 s, default 1 s
Project framework	
North / South **West / East**	Outside the project frame, the shadow impact ellipses are truncated. Input range 0–10000 m, default 200 m

4.8.4 SMU Connectivity window

Purpose	Check the availability of the SMU via the SMU's IP address
Path	*Tools > SMU Connectivity*
Type of use	Display only
Reference	Project

If you install a software update or a new project configuration on the SMU, it will automatically restart, if applicable, sometimes twice. Every attempt to connect to the SMU during this period will be unsuccessful. In this window you can identify at a glance whether the SMU is ready for a connection, which avoids unsuccessful connect retries.

The connectivity window, on the other hand, obtains the information via the SMU website, and access to this may be prevented by the park operator for security reasons. So if the website is not accessible, you can also get the information such as serial no., location, version, etc. from the **SMU Information** window (SMU > SMU Information).



SMU Connectivity window

NOTE

HTTP port 80 must be accessible for this window to work. This may apply in particular to routers or firewalls of wind parks.

The following table provides an explanation on the information contained in the **SMU Connectivity** window.

Information in the **SMU Connectivity** window:

Element	Explanation	
Serial No.	Serial number of the SMU	
Location	Location of the SMU according to the **Project Data** window	
Version	Version of the SMU	
Alarms	Here, **Yes**/**No** indicates whether alarms are set. If **Yes**, you can check the type of alarm in the **Alarms** window (*SMU > Alarm*).	
Warning	**Yes**/**No** indicates whether there are warnings here. If **Yes**, you can also check the type of warning in the **Alarms** window (*SMU > Alarm*).	
Connectivity	One of the following connectivity conditions will be displayed here:	
	Ready for connections	A connection can now be established.
	preparing	The Shadow Manager interface is being prepared.
	Busy	A connection already exists between a different SM4 installation and the SMU.
	SMU not available	The SMU is currently starting up/ is switched off / cannot be accessed in the network/ faulty, or similar.
SMU Status	One of the following SMU conditions will be displayed here:	
	---	Status cannot be determined, e.g., because SMU cannot be reached
	Operational	The SMU is ready for operation, an existing shadow project is being processed
	preparing	The SMU is started, e.g., after an update
	Stop	The SMU shuts down, e.g., before an update
	Closes the window.	

4.8.5 Project Comparison window

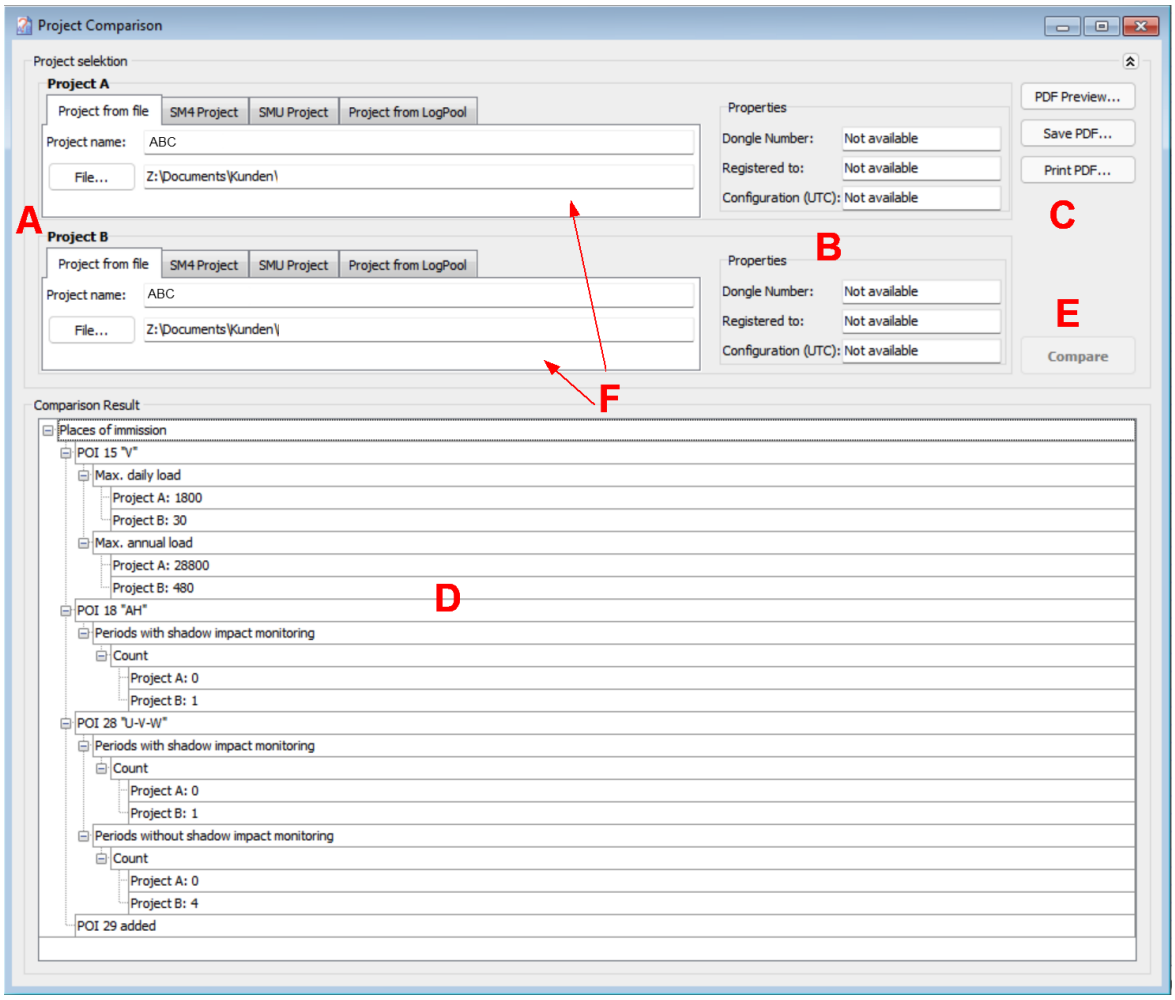
Purpose	To clearly juxtapose two projects (project versions)
Path	*Tools > Project comparison*
Usage type	Dialog + display
Reference	Project

Changes usually occur frequently in every wind farm project, for example because a new POI has come into life that needs to be protected, to name just one example. In this simplest case, the new POI is first added to SM4, then the updated configuration is sent to the SMU. In this way, new versions of one project are created again and again over time, and in the **Project Compare** window, two versions of the same project from different sources (see tabs in the top left of the following screenshot) can be conveniently compared with each other. Depending on the type of change detected in the process, the results area will either only show *that* something has been changed, or also *how* something has been changed.

Practical example: A project was set up by NorthTec and delivered. It was then extended by the customer, but is now to be reset to its original state. A project comparison shows what has been changed at the push of a button, thus facilitating the reset.

NOTE

Please note that a project comparison always involves comparing two versions of one and the same project. Thus, strictly speaking, "project" in this context means "version of a project".



Project Comparision window

Overview of the individual areas of the **Project Comparison** window

A In this area you select the two projects (version A+B) that you want to compare with each other. According to the four tabs, there are four possible sources for A + B respectively:

- **Project from file** – select an .smp4 project file stored on your own computer
- **SM4 Project** – if you select this tab for **project A** or **project B**, the project currently opened in SM4 will become a candidate for comparison. To enable comparison, you must select a different tab for **Project B** or **Project A,** respectively.
- **SMU Project** – If you are connected to a SMU, you can load the current SMU project as the comparison candidate at **Project A** or **Project B**. To enable a comparison, you must select a different register at **Project A** or **Project B,** respectively**.**
- **Project from LogPool** – Here you can use log data downloaded from a SMU for comparison, since these also contain all data needed for a comparison in the form of a so-called project file (ProjectInfo.dat). If there are several legends for a project (see glossary 358), the desired one can be selected.

B Provided that the corresponding information is available, this area shows WHO (Registered to) created the respective project with which DONGLE (Dongle Number) and then sent it at what TIME **(Configuration (UTC)**) to SMU.

C In this area you can view, save, or print the comparison result as PDF.

D Here the comparison result is displayed as a tree structure. Depending on the type of change detected, the result area will either only show *that* something has changed, or also *how* something was changed.

In the example above, you can see the value by which the **Max. daily** and **annual load** was changed for POI 15. For POIs 18 and 28, on the other hand, you can only see *that* the number of times with shadow impact monitoring have changed, but not *how* they have changed.

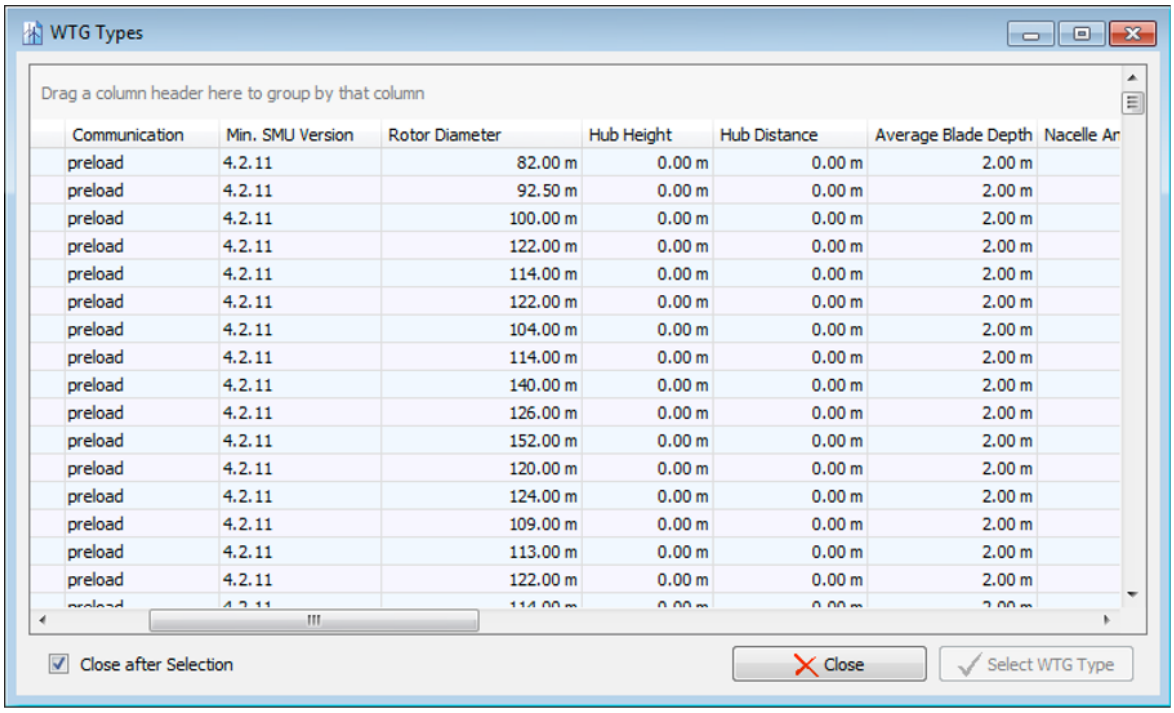
E After you have selected two projects in Area **A**, click this button to run the comparison.

F You can load an SM4 project set as project A or B either into the current SM4 instance or into another instance by right-clicking in one of the white areas.

4.8.6 WTG Types window

Purpose	List possible WTG types
Path	*Tools > WTG Types*
Prerequisites	-
Type of use	Display only
Reference	Project

All WTG types that can be selected in the **Add/Edit WTG** window are listed in this window and can be selected by pressing the corresponding button.



Communication	Min. SMU Version	Rotor Diameter	Hub Height	Hub Distance	Average Blade Depth	Nacelle Ar
preload	4.2.11	82.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	92.50 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	100.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	122.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	114.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	122.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	104.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	114.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	140.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	126.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	152.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	120.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	124.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	109.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	113.00 m	0.00 m	0.00 m	2.00 m	
preload	4.2.11	122.00 m	0.00 m	0.00 m	2.00 m	

WTG Types window (section)

Notes on the window above

- The same information that is displayed in this window is displayed in the **WTG Types** window that can be called up in the **Add/Edit WTG** window via the WTG Types button.
- The **Select WTG Type** button is shaded in grey here, as this window is only for the purpose of display.
- In the **Add/Edit WTG** window, it is used to quickly select the presets specified for the respective types (values that are always the same for every WTG type).

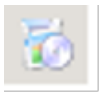
4.8.7 Windows menu item

Purpose	Reset window positions and screen detection
Path	*Tools > Windows*
Reference	Project

The **Window** menu item offers access to both of the following functions:

Function	Explanation
Reset Window Positions	SM4 takes note of the last position of the window when you close windows or the entire application. This means that the next time you open the same window, they will also be displayed in their previous position. This will enable you to permanently arrange your working area the way that is most convenient to you. You should only select **Reset Window Position** if you want to reset the position of all windows to their respective default position.
Reset Screen Detection	SM4 detects the number of monitors used and the set resolution. This thus generates a type of “fingerprint”. The stored window positions are arranged according to this fingerprint. This is an especially interesting SM4 feature if you use the portable version on two different computers. If you work on a computer with one monitor, for example, and on another with two monitors, Shadow Manager will detect this and use the last applied window position for the respective system. The **Reset Screen Detection** menu item deletes all “fingerprints” and the SM4 will then begin the detection process again.

4.9 Help menu

Symbol	Window	Description
	**NorthTec Homepage**	NorthTec Homepage
	**Check for New Version**	When this menu entry is selected, the software will automatically check whether updates for Shadow Manager 4 are available.
	**About Shadow Manager 4**	Display of information on the software version, on NorthTec (telephone number, address etc.) and on the operating system used.

5 Appendix

The appendix contains information relating to the entire software or respectively entire manual/online help.

5.1 Troubleshooting

Should you encounter any problems when using Shadow Manager, please read the information in this chapter. This might help you to quickly find the cause and solution for your problem.

Problem/ error message	Possible cause and solution
The SMU cannot be accessed once a project has been transferred. (under **SMU Connectivity** (*Tools > SMU Connectivity*) the system indicates "SMU not available")	The SMU is starting up, is switched off/not available in the network etc. If this lasts longer than a few minutes, the IP address stored in the SMU might have (accidentally) been altered. In this event, a NorthTec service technician will have to determine the IP address of the SMU on site.
SM4 indicates an incorrect user name and/or password when trying to connect to the SMU (*File > Connect*).	User name and/or password were not entered correctly. Entries are case-sensitive: User name "John Doe" is different from "john doe".
A menu item has not been activated, although I have established a connection to the SMU and been assigned the access rights to the menu item.	For activities involving editing rights, e.g. **SMU update**, you are required to log on with a dongle.
The input window for the menu item I selected is not displayed.	The size of the SM4 main window has possibly been reduced and the input window has opened outside of the visible part. Check whether a scroll-bar has appeared on the right or at the bottom of the SM4 screen that allows you to move the visible part.
The background remains white when I select **OSM** on the overview map.	To use the **OSM** (Open Street Map) function, your computer must be connected to the Internet.
Although I can see the active alarms in the **Alarms** window, I can't click on the buttons.	The buttons only function if you have been assigned the **Alarm** rights group and you logged on using a dongle. If this is not the case, you may only view the alarms. (**Observer** rights group).

Problem/ error message	Possible cause and solution
Send Configuration The **Send Configuration** button is not available (grayed out).	You have to purchase a dongle from us in order to be able to configure an SMU with SM4.
Edit Walls and Areas When I enter the coordinates for the length of a wall or the side of an area in the **Edit Walls and Areas** window, the field in which these coordinates are shown in meters is highlighted in yellow.	If the field **Length** of a wall or area in meters (last field of the line) is highlighted in yellow (instead of green), the entered values are not plausible or the maximum length of a wall or side of an area according to the warning limit (*File > Application Settings > Warning limits*) has been exceeded. Check that you have entered the coordinates correctly. For further information, please refer to the Warning limits 74 section.
Edit Walls and Areas The coordinates I entered in the **Edit Walls and Areas** window to define the length of a wall or an area side are not plausible.	The coordinates of all WTGs and POIs must be defined using the same metric coordinate system. You may have used figures based on different coordinate systems. For further information refer to the Edit Walls and Areas sub window 130 section .
SM4 is not functioning as expected (data is not shown, values cannot be entered etc.)	If SM4 does not operate as expected, consider whether the reason for this could be the application settings (*File > Application Settings*) or the project settings (*Project > Project Settings*). **EXAMPLE** You enter the value “3.0” for the “Hub distance” in the **Add/Edit WTG** window but SM4 does not accept the value (the field remains highlighted in red). You have probably selected the **decimal separator** “,” (decimal comma) under the **Country-specific settings** in the **Application Settings**.
“Internal Error:...” or **“Error: ...”**	Error messages starting with these words are fatal errors that you cannot resolve yourself: In this case, please contact NorthTec.
„Internal Error: Unknown Response-ID by command”	This is a fatal error. Please note down the two numbers (x, y) and contact NorthTec.
“The registered user does not have the authorization required”	After this error message the connection to the SMU will be disconnected. You should ask your administrator to assign you the required right group.

Problem/ error message	Possible cause and solution
The **Wind Turbine Generators** window (*Project > Wind Turbine Generators*) displays more WTGs than the **Live Data: WTG Status** window (*Realtime Data > WTG Status*).	In the **Wind Turbine Generators** window, WTGs that do not belong to the project's wind park may have been created in the project (*Project > Wind Turbine Generators*), as there are places of immission in the project at which these "foreign" WTGs may cause shadow impact. They therefore represent a so-called "preload. However, the **Live Data: WTG Status** window only displays the number of these "foreign" WTGs (see **WTGs with pre-load that are not displayed**), because the SMU cannot communicate with these foreign WTGs.

5.2 Glossary

Configuration

SM4 derives the configuration data for the SMU from the project created by the user (for one or more WTGs or a wind park). The configuration therefore contains processed data from a project, which the system for shadow impact monitoring and species conservation needs to carry out its monitoring functions. When preparing the project data for configuration, unneeded telephone numbers and addresses, for example, are removed and some data are converted.

The project file and the SMU configuration contain the same information for the shadow impact scenario.

External triggers

“External triggers” were introduced in SM4 as a way of allowing users to remotely control shutdowns or other processes in a convenient yet IT-safe manner. In simple terms, external triggers are software versions of digital inputs (hardware), as they perform the same function. They are, therefore, also located in the same place in SM4 (*Hardware > Sensors and IO Signals*). The best application example is the so-called mowing shutdown where farmers can use a smartphone app to independently shut down WTGs during harvesting work that attracts large birds. For this purpose, defined triggers are assigned user rights in SM4 and then included as shutdown triggers in special shutdowns.

Legend

To be able to interpret log data correctly, SM4 also always requires the respective SM4 project file. This file contains, for example, street names, comments, and other information about a POI. The information contained is not relevant to the SMU for calculating the shadow impact scenario but is supplied to the SMU with every configuration process, nonetheless. The SMU does not touch the SM4 project file but stores it as a file with the current timestamp, where the timestamp prevents older project files from being overwritten. When logs are downloaded, these project files are automatically included. They are called "legends" in SM4 and can be exported or printed together with the log data if required (see also Operation Log/Shadow Impact Log/Shutdown Log sub windows 324).

Power Threshold

One of several ways to reduce revenue losses in SM4 is by defining a **power threshold** for every combination consisting of a WTG and the surrounding buildings (places of immission). If a WTG is operated below this power threshold while causing shadow impact in a place of immission, the respective WTG is shut down immediately. While a WTG is running above the power threshold, the permitted periods of shadow impact will be exploited. Thus, the shadow impact budget will be reserved for times when the WTG can operate at a higher power output. See WTG Combinations sub window.

Place of Immission (POI)

Places of immission are buildings on which a wind turbine generator causes shadow impact; these can be defined in Shadow Manager using co-ordinates.

Project

To ensure the system for shadow impact monitoring and species conservation can fulfill its most important task, namely shutting down wind turbine generators because of shadow impact or bat protection etc., it is necessary that data specific to the project is first created in SM4.

To do so, a project is created or an existing one is opened in SM4. The project contains all data and settings relevant to a specific wind park or its SMU and the connected sensors (e.g., the SMU's port number/IP address, coordinates of the WTGs/POIs, shutdown periods). If a project is complete and inherently consistent, SM4 is then able to derive the configuration data for the SMU. The project and the configuration data are then encrypted and transferred to the SMU. Once it is there, the SMU stores the project as a file and is then configured according to the configuration data. Only then is it possible for it to fulfill its main task: shutting down and (restarting) WTGs according to the specifications of the authorities and other factors (e.g., yield optimization).

Shadow range

The shadow range is the distance between a WTG and a POI up to which perceptible shadow impact is deemed possible. If the distance between a WTG and a POI is greater than this range, it is assumed that any shadow impact caused at the POI will not be perceived (as disturbing). When determining shadow range, SM4 uses the blade data provided by the respective WTG manufacturer to calculate the point at which 20% of the face of the sun will be obscured (German 20% obscuration criterion). According to the German guideline, the arithmetic mean between the maximum blade depth and the blade depth at 90% of the rotor radius is used as the mean blade depth, since the blade depth decreases towards the rotor tip. As an alternative, a rectangular rotor blade with a mean blade depth is calculated as follows:

Average blade depth = ½ (max. blade depth + min. blade depth at 0.9*rotor radius)

Shadow Impact Budget

Approving authorities usually require that daily and annual shadow impact limits are complied with for buildings located in the vicinity of wind parks.

Shadow Master Unit (SMU)

The SMU is located in the WTG or in the hand-over station; it logs the calculated as well as the actual shadow impact caused at the monitored buildings and also the shutdown periods of the WTGs. The logs can be read out via a network interface. The SMU takes over the following tasks:

- calculates shadow impact periods on the buildings to be monitored
- retrieves light sensor data
- communicates with wind turbine generators (WTG)

- stops the relevant WTG if the shadow impact limit has been exceeded
- automatically shuts down WTGs according to specified time periods and meteorological conditions (protection of bats)
- records all shadow impact and WTG shutdown events forecasts possible shadow impact

Watchdog

Time relay for external error notification. The watchdog is generally triggered by the master unit and subsequently sends feedback signalizing that everything is ok. If, for example, the master unit determines that a light sensor is defect, i.e., if it is not sending any data, it doesn't trigger the watchdog and subsequently this can externally signalize a defect. An entry is made to the log and a red light flashes in the SMU cabinet. The following errors can be registered using this system:

- sensor defect
- WTG does not react to stop commands
- WTG is not sending any data
- the SMU is in a non-definable operating status (crashed) the SMU has been switched off by an unauthorized party

Worst case

With regard to the NorthTec system for shadow impact monitoring & species conservation, "worst case" means that the rotor points towards the sun, or, when considering a time course, always follows the sun, while the direct sunlight is so strong that shadow impact effects can occur.

5.3 Factory defaults in the Alarm Settings window

Alarm No	Operat.Log No.		Active	Defaults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
102010001	100056	100057	Yes	No	Yes	No	No	No	300	0	Main program error: No memory file found
102010002	100058	100059	Yes	No	Yes	No	No	No	300	0	Main program error: Hardware and software are not compat.
102010003	100060	100061	Yes	No	Yes	Yes	No	No	300	0	Main program error: System time has not been updated for xxx days
102020001	100000	100001	Yes	No	Yes	No	No	No	300	0	Main program error: Task oplog could not be started
102020002	100002	100003	Yes	No	Yes	No	No	No	300	0	Main program error: Task memory could not be started
102020003	100004	100005	Yes	No	Yes	No	No	No	300	0	Main program error: Task erma could not be started
102020004	100006	100007	Yes	No	Yes	No	No	No	300	0	Main program error: Task iom could not be started
102020005	100008	100009	Yes	No	Yes	No	No	No	300	0	Main program error: Task shmif could not be started
102020006	100010	100011	Yes	No	Yes	No	No	No	300	0	Main program error: Task smail could not be started
102020007	100012	100013	Yes	No	Yes	No	No	No	300	0	Main program error: Task sif could not be started
102020008	100014	100015	Yes	No	Yes	No	No	No	300	0	Main program error: Task silog could not be started
102030001–102030020	100016	100017	Yes	No	Yes	No	No	No	300	0	Main program error: Task 1 could not be started
102030002	100018	100019	Yes	No	Yes	No	No	No	300	0	Main program error: Task 2 could not be started
102030003	100020	100021	Yes	No	Yes	No	No	No	300	0	Main program error: Task 3 could not be started
102030004	100022	100023	Yes	No	Yes	No	No	No	300	0	Main program error: Task 4 could not be started
102030005	100024	100025	Yes	No	Yes	No	No	No	300	0	Main program error: Task 5 could not be started
102030006	100026	100027	Yes	No	Yes	No	No	No	300	0	Main program error: Task 6 could not be started
102030007	100028	100029	Yes	No	Yes	No	No	No	300	0	Main program error: Task 7 could not be started
102030008	100030	100031	Yes	No	Yes	No	No	No	300	0	Main program error: Task 8 could not be started
102030009	100032	100033	Yes	No	Yes	No	No	No	300	0	Main program error: Task 9 could not be started
102030010	100034	100035	Yes	No	Yes	No	No	No	300	0	Main program error: Task 10 could not be started
102030011	100036	100037	Yes	No	Yes	No	No	No	300	0	Main program error: Task 11 could not be started
102030012	100038	100039	Yes	No	Yes	No	No	No	300	0	Main program error: Task 12 could not be started
102030013	100040	100041	Yes	No	Yes	No	No	No	300	0	Main program error: Task 13 could not be started
102030014	100042	100043	Yes	No	Yes	No	No	No	300	0	Main program error: Task 14 could not be started

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
102030015	100044	100045	Yes	No	Yes	No	No	No	300	0	Main program error: Task 15 could not be started
102030016	100046	100047	Yes	No	Yes	No	No	No	300	0	Main program error: Task 16 could not be started
102030017	100048	100049	Yes	No	Yes	No	No	No	300	0	Main program error: Task 17 could not be started
102030018	100050	100051	Yes	No	Yes	No	No	No	300	0	Main program error: Task 18 could not be started
102030019	100052	100053	Yes	No	Yes	No	No	No	300	0	Main program error: Task 19 could not be started
102030020	100054	100055	Yes	No	Yes	No	No	No	300	0	Main program error: Task 20 could not be started
201010001	1100000	1100001	Yes	No	Yes	No	No	No	300	0	Storage program error: Loading of the memory file failed
201010002	1100002	1100003	Yes	No	Yes	No	No	No	300	0	Storage program error: Saving the memory file failed
201010003	1100004	1100005	Yes	No	Yes	No	No	No	300	0	Storage program error: Memory file is invalid
201010004	1100006	1100007	Yes	No	Yes	No	No	No	300	0	Storage program error: File system or disk error
201010005	1100008	1100009	Yes	No	Yes	No	No	No	300	0	Storage program error: Contents of the memory file
301010001	2000000	2000001	Yes	No	Yes	No	No	No	300	0	Operation log error: File system or disk error
301010002	2000002	2000003	Yes	No	Yes	Yes	No	No	300	0	Operation log error: Writing an entry failed
301010003	2000004	2000005	Yes	No	Yes	Yes	No	No	300	0	Operation log error: Operating log buffer exceeded
302010001	3000000	3000001	Yes	No	Yes	No	No	No	300	0	Shadow impact log error File system or disk error
302010002	3000002	3000003	Yes	No	Yes	Yes	No	No	300	0	Shadow impact log error Writing an entry failed
302010003	3000004	3000005	Yes	No	Yes	Yes	No	No	300	0	Shadow impact log error Operating log buffer exceeded
303010001	38000000	38000001	Yes	No	Yes	No	No	No	300	0	Error in measured value recording: File system or disk error
303010002	38000002	38000003	Yes	No	Yes	Yes	No	No	300	0	Error in measured value recording: Writing an entry failed
303010003	38000004	38000005	Yes	No	Yes	Yes	No	No	300	0	Error in measured value recording: Operating log buffer exceeded
304010001	39000000	39000001	Yes	No	Yes	No	No	No	300	0	Special shutdowns log error File system or disk error
304010002	39000002	39000003	Yes	No	Yes	Yes	No	No	300	0	Special shutdowns log error Writing an entry failed
304010003	39000004	39000005	Yes	No	Yes	Yes	No	No	300	0	Special shutdowns log error Operating log buffer exceeded
501010001	4100000	4100001	Yes	No	Yes	No	No	Yes	300	60	Alarm management error: Watchdog feedback
501010002	4100002	4100003	Yes	No	Yes	No	No	No	300	0	Alarm management error: Test alarm
601010001	5000000	5000001	Yes	No	Yes	No	No	No	300	0	Hardware management error: Internal system error

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601010002	5000002	5000003	Yes	No	Yes	No	No	No	300	0	Hardware management error: Unknown hardware was detected.
601010003	5000004	5000005	Yes	No	Yes	No	No	No	300	0	Hardware management error: Plugged in hardware and configured hardware are not identical
601020001	5000006	5000007	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 1 faulty o. not available
601020002	5000008	5000009	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 2 faulty o. not available
601020003	5000010	5000011	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 3 faulty o. not available
601020004	5000012	5000013	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 4 faulty o. not available
601020005	5000014	5000015	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 5 faulty o. not available
601020006	5000016	5000017	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 6 faulty o. not available
601020007	5000018	5000019	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 7 faulty o. not available
601020008	5000020	5000021	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 8 faulty o. not available
601020009	5000022	5000023	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 9 faulty o. not available
601020010	5000024	5000025	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 10 faulty o. not available
601020011	5000026	5000027	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 11 faulty o. not available
601020012	5000028	5000029	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 12 faulty o. not available
601020013	5000030	5000031	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 13 faulty o. not available
601020014	5000032	5000033	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 14 faulty o. not available
601020015	5000034	5000035	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 15 faulty o. not available
601020016	5000036	5000037	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 16 faulty o. not available
601020017	5000038	5000039	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 17 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020018	5000040	5000041	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 18 faulty o. not available
601020019	5000042	5000043	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 19 faulty o. not available
601020020	5000044	5000045	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 20 faulty o. not available
601020021	5000046	5000047	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 21 faulty o. not available
601020022	5000048	5000049	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 22 faulty o. not available
601020023	5000050	5000051	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 23 faulty o. not available
601020024	5000052	5000053	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 24 faulty o. not available
601020025	5000054	5000055	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 25 faulty o. not available
601020026	5000056	5000057	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 26 faulty o. not available
601020027	5000058	5000059	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 27 faulty o. not available
601020028	5000060	5000061	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 28 faulty o. not available
601020029	5000062	5000063	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 29 faulty o. not available
601020030	5000064	5000065	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 30 faulty o. not available
601020031	5000066	5000067	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 31 faulty o. not available
601020032	5000068	5000069	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 32 faulty o. not available
601020033	5000070	5000071	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 33 faulty o. not available
601020034	5000072	5000073	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 34 faulty o. not available
601020035	5000074	5000075	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 35 faulty o. not available
601020036	5000076	5000077	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 36 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020037	5000078	5000079	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 37 faulty o. not available
601020038	5000080	5000081	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 38 faulty o. not available
601020039	5000082	5000083	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 39 faulty o. not available
601020040	5000084	5000085	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 40 faulty o. not available
601020041	5000086	5000087	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 41 faulty o. not available
601020042	5000088	5000089	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 42 faulty o. not available
601020043	5000090	5000091	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 43 faulty o. not available
601020044	5000092	5000093	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 44 faulty o. not available
601020045	5000094	5000095	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 45 faulty o. not available
601020046	5000096	5000097	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 46 faulty o. not available
601020047	5000098	5000099	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 47 faulty o. not available
601020048	5000100	5000101	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 48 faulty o. not available
601020049	5000102	5000103	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 49 faulty o. not available
601020050	5000104	5000105	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 50 faulty o. not available
601020051	5000106	5000107	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 51 faulty o. not available
601020052	5000108	5000109	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 52 faulty o. not available
601020053	5000110	5000111	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 53 faulty o. not available
601020054	5000112	5000113	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 54 faulty o. not available
601020055	5000114	5000115	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 55 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020056	5000116	5000117	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 56 faulty o. not available
601020057	5000118	5000119	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 57 faulty o. not available
601020058	5000120	5000121	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 58 faulty o. not available
601020059	5000122	5000123	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 59 faulty o. not available
601020060	5000124	5000125	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 60 faulty o. not available
601020061	5000126	5000127	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 61 faulty o. not available
601020062	5000128	5000129	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 62 faulty o. not available
601020063	5000130	5000131	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 63 faulty o. not available
601020064	5000132	5000133	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 64 faulty o. not available
601020065	5000134	5000135	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 65 faulty o. not available
601020066	5000136	5000137	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 66 faulty o. not available
601020067	5000138	5000139	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 67 faulty o. not available
601020068	5000140	5000141	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 68 faulty o. not available
601020069	5000142	5000143	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 69 faulty o. not available
601020070	5000144	5000145	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 70 faulty o. not available
601020071	5000146	5000147	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 71 faulty o. not available
601020072	5000148	5000149	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 72 faulty o. not available
601020073	5000150	5000151	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 73 faulty o. not available
601020074	5000152	5000153	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 74 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020075	5000154	5000155	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 75 faulty o. not available
601020076	5000156	5000157	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 76 faulty o. not available
601020077	5000158	5000159	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 77 faulty o. not available
601020078	5000160	5000161	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 78 faulty o. not available
601020079	5000162	5000163	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 79 faulty o. not available
601020080	5000164	5000165	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 80 faulty o. not available
601020081	5000166	5000167	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 81 faulty o. not available
601020082	5000168	5000169	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 82 faulty o. not available
601020083	5000170	5000171	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 83 faulty o. not available
601020084	5000172	5000173	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 84 faulty o. not available
601020085	5000174	5000175	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 85 faulty o. not available
601020086	5000176	5000177	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 86 faulty o. not available
601020087	5000178	5000179	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 87 faulty o. not available
601020088	5000180	5000181	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 88 faulty o. not available
601020089	5000182	5000183	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 89 faulty o. not available
601020090	5000184	5000185	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 90 faulty o. not available
601020091	5000186	5000187	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 91 faulty o. not available
601020092	5000188	5000189	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 92 faulty o. not available
601020093	5000190	5000191	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 93 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020094	5000192	5000193	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 94 faulty o. not available
601020095	5000194	5000195	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 95 faulty o. not available
601020096	5000196	5000197	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 96 faulty o. not available
601020097	5000198	5000199	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 97 faulty o. not available
601020098	5000200	5000201	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 98 faulty o. not available
601020099	5000202	5000203	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 99 faulty o. not available
601020100	5000204	5000205	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 100 faulty o. not available
601020101	5000206	5000207	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 101 faulty o. not available
601020102	5000208	5000209	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 102 faulty o. not available
601020103	5000210	5000211	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 103 faulty o. not available
601020104	5000212	5000213	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 104 faulty o. not available
601020105	5000214	5000215	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 105 faulty o. not available
601020106	5000216	5000217	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 106 faulty o. not available
601020107	5000218	5000219	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 107 faulty o. not available
601020108	5000220	5000221	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 108 faulty o. not available
601020109	5000222	5000223	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 109 faulty o. not available
601020110	5000224	5000225	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 110 faulty o. not available
601020111	5000226	5000227	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 111 faulty o. not available
601020112	5000228	5000229	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 112 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020113	5000230	5000231	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 113 faulty o. not available
601020114	5000232	5000233	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 114 faulty o. not available
601020115	5000234	5000235	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 115 faulty o. not available
601020116	5000236	5000237	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 116 faulty o. not available
601020117	5000238	5000239	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 117 faulty o. not available
601020118	5000240	5000241	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 118 faulty o. not available
601020119	5000242	5000243	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 119 faulty o. not available
601020120	5000244	5000245	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 120 faulty o. not available
601020121	5000246	5000247	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 121 faulty o. not available
601020122	5000248	5000249	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 122 faulty o. not available
601020123	5000250	5000251	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 123 faulty o. not available
601020124	5000252	5000253	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 124 faulty o. not available
601020125	5000254	5000255	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 125 faulty o. not available
601020126	5000256	5000257	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 126 faulty o. not available
601020127	5000258	5000259	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 127 faulty o. not available
601020128	5000260	5000261	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 128 faulty o. not available
601020129	5000262	5000263	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 129 faulty o. not available
601020130	5000264	5000265	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 130 faulty o. not available
601020131	5000266	5000267	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 131 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020132	5000268	5000269	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 132 faulty o. not available
601020133	5000270	5000271	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 133 faulty o. not available
601020134	5000272	5000273	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 134 faulty o. not available
601020135	5000274	5000275	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 135 faulty o. not available
601020136	5000276	5000277	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 136 faulty o. not available
601020137	5000278	5000279	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 137 faulty o. not available
601020138	5000280	5000281	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 138 faulty o. not available
601020139	5000282	5000283	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 139 faulty o. not available
601020140	5000284	5000285	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 140 faulty o. not available
601020141	5000286	5000287	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 141 faulty o. not available
601020142	5000288	5000289	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 142 faulty o. not available
601020143	5000290	5000291	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 143 faulty o. not available
601020144	5000292	5000293	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 144 faulty o. not available
601020145	5000294	5000295	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 145 faulty o. not available
601020146	5000296	5000297	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 146 faulty o. not available
601020147	5000298	5000299	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 147 faulty o. not available
601020148	5000300	5000301	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 148 faulty o. not available
601020149	5000302	5000303	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 149 faulty o. not available
601020150	5000304	5000305	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 150 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030001	5000306	5000307	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 1 faulty
601030002	5000308	5000309	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 2 faulty
601030003	5000310	5000311	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 3 faulty
601030004	5000312	5000313	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 4 faulty
601030005	5000314	5000315	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 5 faulty
601030006	5000316	5000317	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 6 faulty
601030007	5000318	5000319	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 7 faulty
601030008	5000320	5000321	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 8 faulty
601030009	5000322	5000323	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 9 faulty
601030010	5000324	5000325	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 10 faulty
601030011	5000326	5000327	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 11 faulty
601030012	5000328	5000329	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 12 faulty
601030013	5000330	5000331	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 13 faulty
601030014	5000332	5000333	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 14 faulty
601030015	5000334	5000335	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 15 faulty
601030016	5000336	5000337	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 16 faulty
601030017	5000338	5000339	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 17 faulty
601030018	5000340	5000341	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 18 faulty
601030019	5000342	5000343	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 19 faulty
601030020	5000344	5000345	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 20 faulty
601030021	5000346	5000347	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 21 faulty
601030022	5000348	5000349	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 22 faulty
601030023	5000350	5000351	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 23 faulty
601030024	5000352	5000353	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 24 faulty
601030025	5000354	5000355	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 25 faulty
601030026	5000356	5000357	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 26 faulty
601030027	5000358	5000359	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 27 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030028	5000360	5000361	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 28 faulty
601030029	5000362	5000363	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 29 faulty
601030030	5000364	5000365	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 30 faulty
601030031	5000366	5000367	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 31 faulty
601030032	5000368	5000369	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 32 faulty
601030033	5000370	5000371	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 33 faulty
601030034	5000372	5000373	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 34 faulty
601030035	5000374	5000375	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 35 faulty
601030036	5000376	5000377	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 36 faulty
601030037	5000378	5000379	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 37 faulty
601030038	5000380	5000381	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 38 faulty
601030039	5000382	5000383	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 39 faulty
601030040	5000384	5000385	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 40 faulty
601030041	5000386	5000387	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 41 faulty
601030042	5000388	5000389	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 42 faulty
601030043	5000390	5000391	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 43 faulty
601030044	5000392	5000393	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 44 faulty
601030045	5000394	5000395	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 45 faulty
601030046	5000396	5000397	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 46 faulty
601030047	5000398	5000399	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 47 faulty
601030048	5000400	5000401	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 48 faulty
601030049	5000402	5000403	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 49 faulty
601030050	5000404	5000405	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 50 faulty
601030051	5000406	5000407	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 51 faulty
601030052	5000408	5000409	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 52 faulty
601030053	5000410	5000411	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 53 faulty
601030054	5000412	5000413	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 54 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030055	5000414	5000415	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 55 faulty
601030056	5000416	5000417	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 56 faulty
601030057	5000418	5000419	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 57 faulty
601030058	5000420	5000421	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 58 faulty
601030059	5000422	5000423	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 59 faulty
601030060	5000424	5000425	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 60 faulty
601030061	5000426	5000427	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 61 faulty
601030062	5000428	5000429	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 62 faulty
601030063	5000430	5000431	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 63 faulty
601030064	5000432	5000433	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 64 faulty
601030065	5000434	5000435	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 65 faulty
601030066	5000436	5000437	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 66 faulty
601030067	5000438	5000439	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 67 faulty
601030068	5000440	5000441	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 68 faulty
601030069	5000442	5000443	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 69 faulty
601030070	5000444	5000445	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 70 faulty
601030071	5000446	5000447	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 71 faulty
601030072	5000448	5000449	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 72 faulty
601030073	5000450	5000451	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 73 faulty
601030074	5000452	5000453	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 74 faulty
601030075	5000454	5000455	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 75 faulty
601030076	5000456	5000457	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 76 faulty
601030077	5000458	5000459	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 77 faulty
601030078	5000460	5000461	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 78 faulty
601030079	5000462	5000463	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 79 faulty
601030080	5000464	5000465	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 80 faulty
601030081	5000466	5000467	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 81 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030082	5000468	5000469	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 82 faulty
601030083	5000470	5000471	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 83 faulty
601030084	5000472	5000473	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 84 faulty
601030085	5000474	5000475	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 85 faulty
601030086	5000476	5000477	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 86 faulty
601030087	5000478	5000479	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 87 faulty
601030088	5000480	5000481	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 88 faulty
601030089	5000482	5000483	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 89 faulty
601030090	5000484	5000485	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 90 faulty
601030091	5000486	5000487	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 91 faulty
601030092	5000488	5000489	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 92 faulty
601030093	5000490	5000491	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 93 faulty
601030094	5000492	5000493	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 94 faulty
601030095	5000494	5000495	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 95 faulty
601030096	5000496	5000497	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 96 faulty
601030097	5000498	5000499	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 97 faulty
601030098	5000500	5000501	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 98 faulty
601030099	5000502	5000503	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 99 faulty
601030100	5000504	5000505	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 100 faulty
601030101	5000506	5000507	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 101 faulty
601030102	5000508	5000509	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 102 faulty
601030103	5000510	5000511	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 103 faulty
601030104	5000512	5000513	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 104 faulty
601030105	5000514	5000515	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 105 faulty
601030106	5000516	5000517	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 106 faulty
601030107	5000518	5000519	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 107 faulty
601030108	5000520	5000521	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 108 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030109	5000522	5000523	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 109 faulty
601030110	5000524	5000525	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 110 faulty
601030111	5000526	5000527	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 111 faulty
601030112	5000528	5000529	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 112 faulty
601030113	5000530	5000531	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 113 faulty
601030114	5000532	5000533	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 114 faulty
601030115	5000534	5000535	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 115 faulty
601030116	5000536	5000537	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 116 faulty
601030117	5000538	5000539	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 117 faulty
601030118	5000540	5000541	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 118 faulty
601030119	5000542	5000543	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 119 faulty
601030120	5000544	5000545	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 120 faulty
601030121	5000546	5000547	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 121 faulty
601030122	5000548	5000549	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 122 faulty
601030123	5000550	5000551	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 123 faulty
601030124	5000552	5000553	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 124 faulty
601030125	5000554	5000555	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 125 faulty
601030126	5000556	5000557	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 126 faulty
601030127	5000558	5000559	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 127 faulty
601030128	5000560	5000561	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 128 faulty
601030129	5000562	5000563	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 129 faulty
601030130	5000564	5000565	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 130 faulty
601030131	5000566	5000567	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 131 faulty
601030132	5000568	5000569	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 132 faulty
601030133	5000570	5000571	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 133 faulty
601030134	5000572	5000573	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 134 faulty
601030135	5000574	5000575	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 135 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030136	5000576	5000577	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 136 faulty
601030137	5000578	5000579	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 137 faulty
601030138	5000580	5000581	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 138 faulty
601030139	5000582	5000583	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 139 faulty
601030140	5000584	5000585	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 140 faulty
601030141	5000586	5000587	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 141 faulty
601030142	5000588	5000589	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 142 faulty
601030143	5000590	5000591	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 143 faulty
601030144	5000592	5000593	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 144 faulty
601030145	5000594	5000595	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 145 faulty
601030146	5000596	5000597	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 146 faulty
601030147	5000598	5000599	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 147 faulty
601030148	5000600	5000601	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 148 faulty
601030149	5000602	5000603	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 149 faulty
601030150	5000604	5000605	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 150 faulty
601030151	5000606	5000607	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 151 faulty
601030152	5000608	5000609	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 152 faulty
601030153	5000610	5000611	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 153 faulty
601030154	5000612	5000613	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 154 faulty
601030155	5000614	5000615	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 155 faulty
601030156	5000616	5000617	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 156 faulty
601030157	5000618	5000619	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 157 faulty
601030158	5000620	5000621	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 158 faulty
601030159	5000622	5000623	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 159 faulty
601030160	5000624	5000625	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 160 faulty
601030161	5000626	5000627	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 161 faulty
601030162	5000628	5000629	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 162 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030163	5000630	5000631	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 163 faulty
601030164	5000632	5000633	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 164 faulty
601030165	5000634	5000635	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 165 faulty
601030166	5000636	5000637	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 166 faulty
601030167	5000638	5000639	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 167 faulty
601030168	5000640	5000641	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 168 faulty
601030169	5000642	5000643	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 169 faulty
601030170	5000644	5000645	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 170 faulty
601030171	5000646	5000647	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 171 faulty
601030172	5000648	5000649	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 172 faulty
601030173	5000650	5000651	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 173 faulty
601030174	5000652	5000653	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 174 faulty
601030175	5000654	5000655	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 175 faulty
601030176	5000656	5000657	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 176 faulty
601030177	5000658	5000659	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 177 faulty
601030178	5000660	5000661	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 178 faulty
601030179	5000662	5000663	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 179 faulty
601030180	5000664	5000665	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 180 faulty
601030181	5000666	5000667	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 181 faulty
601030182	5000668	5000669	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 182 faulty
601030183	5000670	5000671	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 183 faulty
601030184	5000672	5000673	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 184 faulty
601030185	5000674	5000675	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 185 faulty
601030186	5000676	5000677	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 186 faulty
601030187	5000678	5000679	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 187 faulty
601030188	5000680	5000681	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 188 faulty
601030189	5000682	5000683	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 189 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030190	5000684	5000685	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 190 faulty
601030191	5000686	5000687	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 191 faulty
601030192	5000688	5000689	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 192 faulty
601030193	5000690	5000691	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 193 faulty
601030194	5000692	5000693	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 194 faulty
601030195	5000694	5000695	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 195 faulty
601030196	5000696	5000697	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 196 faulty
601030197	5000698	5000699	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 197 faulty
601030198	5000700	5000701	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 198 faulty
601030199	5000702	5000703	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 199 faulty
601030200	5000704	5000705	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 200 faulty
601040001	5000706	5000707	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 1 faulty
601040002	5000708	5000709	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 2 faulty
601040003	5000710	5000711	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 3 faulty
601040004	5000712	5000713	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 4 faulty
601040005	5000714	5000715	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 5 faulty
601040006	5000716	5000717	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 6 faulty
601040007	5000718	5000719	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 7 faulty
601040008	5000720	5000721	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 8 faulty
601040009	5000722	5000723	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 9 faulty
601040010	5000724	5000725	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 10 faulty
601040011	5000726	5000727	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 11 faulty
601040012	5000728	5000729	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 12 faulty
601040013	5000730	5000731	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 13 faulty
601040014	5000732	5000733	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 14 faulty
601040015	5000734	5000735	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 15 faulty
601040016	5000736	5000737	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 16 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040017	5000738	5000739	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 17 faulty
601040018	5000740	5000741	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 18 faulty
601040019	5000742	5000743	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 19 faulty
601040020	5000744	5000745	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 20 faulty
601040021	5000746	5000747	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 21 faulty
601040022	5000748	5000749	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 22 faulty
601040023	5000750	5000751	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 23 faulty
601040024	5000752	5000753	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 24 faulty
601040025	5000754	5000755	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 25 faulty
601040026	5000756	5000757	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 26 faulty
601040027	5000758	5000759	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 27 faulty
601040028	5000760	5000761	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 28 faulty
601040029	5000762	5000763	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 29 faulty
601040030	5000764	5000765	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 30 faulty
601040031	5000766	5000767	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 31 faulty
601040032	5000768	5000769	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 32 faulty
601040033	5000770	5000771	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 33 faulty
601040034	5000772	5000773	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 34 faulty
601040035	5000774	5000775	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 35 faulty
601040036	5000776	5000777	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 36 faulty
601040037	5000778	5000779	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 37 faulty
601040038	5000780	5000781	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 38 faulty
601040039	5000782	5000783	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 39 faulty
601040040	5000784	5000785	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 40 faulty
601040041	5000786	5000787	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 41 faulty
601040042	5000788	5000789	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 42 faulty
601040043	5000790	5000791	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 43 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040044	5000792	5000793	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 44 faulty
601040045	5000794	5000795	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 45 faulty
601040046	5000796	5000797	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 46 faulty
601040047	5000798	5000799	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 47 faulty
601040048	5000800	5000801	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 48 faulty
601040049	5000802	5000803	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 49 faulty
601040050	5000804	5000805	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 50 faulty
601040051	5000806	5000807	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 51 faulty
601040052	5000808	5000809	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 52 faulty
601040053	5000810	5000811	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 53 faulty
601040054	5000812	5000813	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 54 faulty
601040055	5000814	5000815	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 55 faulty
601040056	5000816	5000817	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 56 faulty
601040057	5000818	5000819	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 57 faulty
601040058	5000820	5000821	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 58 faulty
601040059	5000822	5000823	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 59 faulty
601040060	5000824	5000825	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 60 faulty
601040061	5000826	5000827	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 61 faulty
601040062	5000828	5000829	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 62 faulty
601040063	5000830	5000831	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 63 faulty
601040064	5000832	5000833	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 64 faulty
601040065	5000834	5000835	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 65 faulty
601040066	5000836	5000837	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 66 faulty
601040067	5000838	5000839	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 67 faulty
601040068	5000840	5000841	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 68 faulty
601040069	5000842	5000843	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 69 faulty
601040070	5000844	5000845	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 70 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040071	5000846	5000847	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 71 faulty
601040072	5000848	5000849	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 72 faulty
601040073	5000850	5000851	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 73 faulty
601040074	5000852	5000853	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 74 faulty
601040075	5000854	5000855	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 75 faulty
601040076	5000856	5000857	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 76 faulty
601040077	5000858	5000859	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 77 faulty
601040078	5000860	5000861	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 78 faulty
601040079	5000862	5000863	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 79 faulty
601040080	5000864	5000865	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 80 faulty
601040081	5000866	5000867	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 81 faulty
601040082	5000868	5000869	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 82 faulty
601040083	5000870	5000871	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 83 faulty
601040084	5000872	5000873	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 84 faulty
601040085	5000874	5000875	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 85 faulty
601040086	5000876	5000877	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 86 faulty
601040087	5000878	5000879	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 87 faulty
601040088	5000880	5000881	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 88 faulty
601040089	5000882	5000883	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 89 faulty
601040090	5000884	5000885	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 90 faulty
601040091	5000886	5000887	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 91 faulty
601040092	5000888	5000889	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 92 faulty
601040093	5000890	5000891	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 93 faulty
601040094	5000892	5000893	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 94 faulty
601040095	5000894	5000895	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 95 faulty
601040096	5000896	5000897	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 96 faulty
601040097	5000898	5000899	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 97 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040098	5000900	5000901	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 98 faulty
601040099	5000902	5000903	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 99 faulty
601040100	5000904	5000905	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 100 faulty
601040101	5000906	5000907	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 101 faulty
601040102	5000908	5000909	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 102 faulty
601040103	5000910	5000911	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 103 faulty
601040104	5000912	5000913	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 104 faulty
601040105	5000914	5000915	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 105 faulty
601040106	5000916	5000917	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 106 faulty
601040107	5000918	5000919	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 107 faulty
601040108	5000920	5000921	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 108 faulty
601040109	5000922	5000923	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 109 faulty
601040110	5000924	5000925	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 110 faulty
601040111	5000926	5000927	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 111 faulty
601040112	5000928	5000929	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 112 faulty
601040113	5000930	5000931	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 113 faulty
601040114	5000932	5000933	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 114 faulty
601040115	5000934	5000935	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 115 faulty
601040116	5000936	5000937	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 116 faulty
601040117	5000938	5000939	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 117 faulty
601040118	5000940	5000941	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 118 faulty
601040119	5000942	5000943	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 119 faulty
601040120	5000944	5000945	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 120 faulty
601040121	5000946	5000947	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 121 faulty
601040122	5000948	5000949	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 122 faulty
601040123	5000950	5000951	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 123 faulty
601040124	5000952	5000953	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 124 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040125	5000954	5000955	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 125 faulty
601040126	5000956	5000957	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 126 faulty
601040127	5000958	5000959	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 127 faulty
601040128	5000960	5000961	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 128 faulty
601040129	5000962	5000963	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 129 faulty
601040130	5000964	5000965	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 130 faulty
601040131	5000966	5000967	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 131 faulty
601040132	5000968	5000969	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 132 faulty
601040133	5000970	5000971	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 133 faulty
601040134	5000972	5000973	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 134 faulty
601040135	5000974	5000975	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 135 faulty
601040136	5000976	5000977	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 136 faulty
601040137	5000978	5000979	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 137 faulty
601040138	5000980	5000981	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 138 faulty
601040139	5000982	5000983	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 139 faulty
601040140	5000984	5000985	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 140 faulty
601040141	5000986	5000987	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 141 faulty
601040142	5000988	5000989	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 142 faulty
601040143	5000990	5000991	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 143 faulty
601040144	5000992	5000993	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 144 faulty
601040145	5000994	5000995	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 145 faulty
601040146	5000996	5000997	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 146 faulty
601040147	5000998	5000999	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 147 faulty
601040148	5001000	5001001	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 148 faulty
601040149	5001002	5001003	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 149 faulty
601040150	5001004	5001005	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 150 faulty
601040151	5001006	5001007	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 151 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040152	5001008	5001009	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 152 faulty
601040153	5001010	5001011	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 153 faulty
601040154	5001012	5001013	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 154 faulty
601040155	5001014	5001015	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 155 faulty
601040156	5001016	5001017	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 156 faulty
601040157	5001018	5001019	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 157 faulty
601040158	5001020	5001021	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 158 faulty
601040159	5001022	5001023	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 159 faulty
601040160	5001024	5001025	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 160 faulty
601040161	5001026	5001027	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 161 faulty
601040162	5001028	5001029	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 162 faulty
601040163	5001030	5001031	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 163 faulty
601040164	5001032	5001033	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 164 faulty
601040165	5001034	5001035	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 165 faulty
601040166	5001036	5001037	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 166 faulty
601040167	5001038	5001039	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 167 faulty
601040168	5001040	5001041	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 168 faulty
601040169	5001042	5001043	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 169 faulty
601040170	5001044	5001045	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 170 faulty
601040171	5001046	5001047	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 171 faulty
601040172	5001048	5001049	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 172 faulty
601040173	5001050	5001051	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 173 faulty
601040174	5001052	5001053	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 174 faulty
601040175	5001054	5001055	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 175 faulty
601040176	5001056	5001057	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 176 faulty
601040177	5001058	5001059	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 177 faulty
601040178	5001060	5001061	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 178 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040179	5001062	5001063	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 179 faulty
601040180	5001064	5001065	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 180 faulty
601040181	5001066	5001067	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 181 faulty
601040182	5001068	5001069	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 182 faulty
601040183	5001070	5001071	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 183 faulty
601040184	5001072	5001073	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 184 faulty
601040185	5001074	5001075	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 185 faulty
601040186	5001076	5001077	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 186 faulty
601040187	5001078	5001079	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 187 faulty
601040188	5001080	5001081	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 188 faulty
601040189	5001082	5001083	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 189 faulty
601040190	5001084	5001085	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 190 faulty
601040191	5001086	5001087	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 191 faulty
601040192	5001088	5001089	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 192 faulty
601040193	5001090	5001091	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 193 faulty
601040194	5001092	5001093	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 194 faulty
601040195	5001094	5001095	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 195 faulty
601040196	5001096	5001097	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 196 faulty
601040197	5001098	5001099	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 197 faulty
601040198	5001100	5001101	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 198 faulty
601040199	5001102	5001103	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 199 faulty
601040200	5001104	5001105	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 200 faulty
601040201	5001106	5001107	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 201 faulty
601040202	5001108	5001109	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 202 faulty
601040203	5001110	5001111	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 203 faulty
601040204	5001112	5001113	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 204 faulty
601040205	5001114	5001115	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 205 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040206	5001116	5001117	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 206 faulty
601040207	5001118	5001119	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 207 faulty
601040208	5001120	5001121	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 208 faulty
601040209	5001122	5001123	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 209 faulty
601040210	5001124	5001125	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 210 faulty
601040211	5001126	5001127	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 211 faulty
601040212	5001128	5001129	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 212 faulty
601040213	5001130	5001131	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 213 faulty
601040214	5001132	5001133	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 214 faulty
601040215	5001134	5001135	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 215 faulty
601040216	5001136	5001137	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 216 faulty
601040217	5001138	5001139	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 217 faulty
601040218	5001140	5001141	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 218 faulty
601040219	5001142	5001143	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 219 faulty
601040220	5001144	5001145	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 220 faulty
601040221	5001146	5001147	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 221 faulty
601040222	5001148	5001149	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 222 faulty
601040223	5001150	5001151	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 223 faulty
601040224	5001152	5001153	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 224 faulty
601040225	5001154	5001155	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 225 faulty
601040226	5001156	5001157	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 226 faulty
601040227	5001158	5001159	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 227 faulty
601040228	5001160	5001161	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 228 faulty
601040229	5001162	5001163	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 229 faulty
601040230	5001164	5001165	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 230 faulty
601040231	5001166	5001167	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 231 faulty
601040232	5001168	5001169	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 232 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040233	5001170	5001171	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 233 faulty
601040234	5001172	5001173	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 234 faulty
601040235	5001174	5001175	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 235 faulty
601040236	5001176	5001177	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 236 faulty
601040237	5001178	5001179	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 237 faulty
601040238	5001180	5001181	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 238 faulty
601040239	5001182	5001183	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 239 faulty
601040240	5001184	5001185	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 240 faulty
601040241	5001186	5001187	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 241 faulty
601040242	5001188	5001189	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 242 faulty
601040243	5001190	5001191	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 243 faulty
601040244	5001192	5001193	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 244 faulty
601040245	5001194	5001195	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 245 faulty
601040246	5001196	5001197	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 246 faulty
601040247	5001198	5001199	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 247 faulty
601040248	5001200	5001201	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 248 faulty
601040249	5001202	5001203	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 249 faulty
601040250	5001204	5001205	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 250 faulty
601040251	5001206	5001207	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 251 faulty
601040252	5001208	5001209	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 252 faulty
601040253	5001210	5001211	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 253 faulty
601040254	5001212	5001213	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 254 faulty
601040255	5001214	5001215	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 255 faulty
601040256	5001216	5001217	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 256 faulty
601040257	5001218	5001219	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 257 faulty
601040258	5001220	5001221	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 258 faulty
601040259	5001222	5001223	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 259 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040260	5001224	5001225	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 260 faulty
601040261	5001226	5001227	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 261 faulty
601040262	5001228	5001229	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 262 faulty
601040263	5001230	5001231	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 263 faulty
601040264	5001232	5001233	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 264 faulty
601040265	5001234	5001235	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 265 faulty
601040266	5001236	5001237	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 266 faulty
601040267	5001238	5001239	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 267 faulty
601040268	5001240	5001241	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 268 faulty
601040269	5001242	5001243	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 269 faulty
601040270	5001244	5001245	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 270 faulty
601040271	5001246	5001247	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 271 faulty
601040272	5001248	5001249	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 272 faulty
601040273	5001250	5001251	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 273 faulty
601040274	5001252	5001253	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 274 faulty
601040275	5001254	5001255	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 275 faulty
601040276	5001256	5001257	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 276 faulty
601040277	5001258	5001259	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 277 faulty
601040278	5001260	5001261	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 278 faulty
601040279	5001262	5001263	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 279 faulty
601040280	5001264	5001265	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 280 faulty
601040281	5001266	5001267	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 281 faulty
601040282	5001268	5001269	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 282 faulty
601040283	5001270	5001271	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 283 faulty
601040284	5001272	5001273	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 284 faulty
601040285	5001274	5001275	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 285 faulty
601040286	5001276	5001277	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 286 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040287	5001278	5001279	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 287 faulty
601040288	5001280	5001281	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 288 faulty
601040289	5001282	5001283	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 289 faulty
601040290	5001284	5001285	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 290 faulty
601040291	5001286	5001287	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 291 faulty
601040292	5001288	5001289	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 292 faulty
601040293	5001290	5001291	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 293 faulty
601040294	5001292	5001293	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 294 faulty
601040295	5001294	5001295	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 295 faulty
601040296	5001296	5001297	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 296 faulty
601040297	5001298	5001299	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 297 faulty
601040298	5001300	5001301	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 298 faulty
601040299	5001302	5001303	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 299 faulty
601040300	5001304	5001305	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 300 faulty
601040301	5001306	5001307	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 301 faulty
601040302	5001308	5001309	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 302 faulty
601040303	5001310	5001311	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 303 faulty
601040304	5001312	5001313	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 304 faulty
601040305	5001314	5001315	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 305 faulty
601040306	5001316	5001317	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 306 faulty
601040307	5001318	5001319	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 307 faulty
601040308	5001320	5001321	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 308 faulty
601040309	5001322	5001323	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 309 faulty
601040310	5001324	5001325	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 310 faulty
601040311	5001326	5001327	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 311 faulty
601040312	5001328	5001329	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 312 faulty
601040313	5001330	5001331	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 313 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040314	5001332	5001333	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 314 faulty
601040315	5001334	5001335	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 315 faulty
601040316	5001336	5001337	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 316 faulty
601040317	5001338	5001339	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 317 faulty
601040318	5001340	5001341	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 318 faulty
601040319	5001342	5001343	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 319 faulty
601040320	5001344	5001345	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 320 faulty
601040321	5001346	5001347	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 321 faulty
601040322	5001348	5001349	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 322 faulty
601040323	5001350	5001351	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 323 faulty
601040324	5001352	5001353	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 324 faulty
601040325	5001354	5001355	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 325 faulty
601040326	5001356	5001357	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 326 faulty
601040327	5001358	5001359	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 327 faulty
601040328	5001360	5001361	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 328 faulty
601040329	5001362	5001363	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 329 faulty
601040330	5001364	5001365	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 330 faulty
601040331	5001366	5001367	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 331 faulty
601040332	5001368	5001369	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 332 faulty
601040333	5001370	5001371	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 333 faulty
601040334	5001372	5001373	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 334 faulty
601040335	5001374	5001375	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 335 faulty
601040336	5001376	5001377	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 336 faulty
601040337	5001378	5001379	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 337 faulty
601040338	5001380	5001381	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 338 faulty
601040339	5001382	5001383	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 339 faulty
601040340	5001384	5001385	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 340 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040341	5001386	5001387	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 341 faulty
601040342	5001388	5001389	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 342 faulty
601040343	5001390	5001391	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 343 faulty
601040344	5001392	5001393	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 344 faulty
601040345	5001394	5001395	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 345 faulty
601040346	5001396	5001397	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 346 faulty
601040347	5001398	5001399	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 347 faulty
601040348	5001400	5001401	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 348 faulty
601040349	5001402	5001403	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 349 faulty
601040350	5001404	5001405	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 350 faulty
601040351	5001406	5001407	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 351 faulty
601040352	5001408	5001409	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 352 faulty
601040353	5001410	5001411	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 353 faulty
601040354	5001412	5001413	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 354 faulty
601040355	5001414	5001415	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 355 faulty
601040356	5001416	5001417	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 356 faulty
601040357	5001418	5001419	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 357 faulty
601040358	5001420	5001421	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 358 faulty
601040359	5001422	5001423	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 359 faulty
601040360	5001424	5001425	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 360 faulty
601040361	5001426	5001427	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 361 faulty
601040362	5001428	5001429	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 362 faulty
601040363	5001430	5001431	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 363 faulty
601040364	5001432	5001433	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 364 faulty
601040365	5001434	5001435	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 365 faulty
601040366	5001436	5001437	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 366 faulty
601040367	5001438	5001439	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 367 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040368	5001440	5001441	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 368 faulty
601040369	5001442	5001443	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 369 faulty
601040370	5001444	5001445	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 370 faulty
601040371	5001446	5001447	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 371 faulty
601040372	5001448	5001449	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 372 faulty
601040373	5001450	5001451	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 373 faulty
601040374	5001452	5001453	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 374 faulty
601040375	5001454	5001455	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 375 faulty
601040376	5001456	5001457	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 376 faulty
601040377	5001458	5001459	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 377 faulty
601040378	5001460	5001461	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 378 faulty
601040379	5001462	5001463	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 379 faulty
601040380	5001464	5001465	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 380 faulty
601040381	5001466	5001467	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 381 faulty
601040382	5001468	5001469	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 382 faulty
601040383	5001470	5001471	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 383 faulty
601040384	5001472	5001473	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 384 faulty
601040385	5001474	5001475	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 385 faulty
601040386	5001476	5001477	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 386 faulty
601040387	5001478	5001479	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 387 faulty
601040388	5001480	5001481	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 388 faulty
601040389	5001482	5001483	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 389 faulty
601040390	5001484	5001485	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 390 faulty
601040391	5001486	5001487	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 391 faulty
601040392	5001488	5001489	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 392 faulty
601040393	5001490	5001491	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 393 faulty
601040394	5001492	5001493	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 394 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040395	5001494	5001495	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 395 faulty
601040396	5001496	5001497	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 396 faulty
601040397	5001498	5001499	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 397 faulty
601040398	5001500	5001501	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 398 faulty
601040399	5001502	5001503	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 399 faulty
601040400	5001504	5001505	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 400 faulty
601050001	5001506	5001507	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 1 faulty
601050002	5001508	5001509	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 2 faulty
601050003	5001510	5001511	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 3 faulty
601050004	5001512	5001513	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 4 faulty
601050005	5001514	5001515	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 5 faulty
601050006	5001516	5001517	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 6 faulty
601050007	5001518	5001519	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 7 faulty
601050008	5001520	5001521	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 8 faulty
601050009	5001522	5001523	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 9 faulty
601050010	5001524	5001525	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 10 faulty
601050011	5001526	5001527	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 11 faulty
601050012	5001528	5001529	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 12 faulty
601050013	5001530	5001531	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 13 faulty
601050014	5001532	5001533	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 14 faulty
601050015	5001534	5001535	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 15 faulty
601050016	5001536	5001537	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 16 faulty
601050017	5001538	5001539	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 17 faulty
601050018	5001540	5001541	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 18 faulty
601050019	5001542	5001543	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 19 faulty
601050020	5001544	5001545	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 20 faulty
601050021	5001546	5001547	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 21 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050022	5001548	5001549	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 22 faulty
601050023	5001550	5001551	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 23 faulty
601050024	5001552	5001553	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 24 faulty
601050025	5001554	5001555	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 25 faulty
601050026	5001556	5001557	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 26 faulty
601050027	5001558	5001559	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 27 faulty
601050028	5001560	5001561	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 28 faulty
601050029	5001562	5001563	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 29 faulty
601050030	5001564	5001565	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 30 faulty
601050031	5001566	5001567	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 31 faulty
601050032	5001568	5001569	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 32 faulty
601050033	5001570	5001571	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 33 faulty
601050034	5001572	5001573	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 34 faulty
601050035	5001574	5001575	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 35 faulty
601050036	5001576	5001577	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 36 faulty
601050037	5001578	5001579	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 37 faulty
601050038	5001580	5001581	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 38 faulty
601050039	5001582	5001583	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 39 faulty
601050040	5001584	5001585	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 40 faulty
601050041	5001586	5001587	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 41 faulty
601050042	5001588	5001589	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 42 faulty
601050043	5001590	5001591	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 43 faulty
601050044	5001592	5001593	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 44 faulty
601050045	5001594	5001595	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 45 faulty
601050046	5001596	5001597	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 46 faulty
601050047	5001598	5001599	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 47 faulty
601050048	5001600	5001601	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 48 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050049	5001602	5001603	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 49 faulty
601050050	5001604	5001605	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 50 faulty
601050051	5001606	5001607	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 51 faulty
601050052	5001608	5001609	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 52 faulty
601050053	5001610	5001611	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 53 faulty
601050054	5001612	5001613	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 54 faulty
601050055	5001614	5001615	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 55 faulty
601050056	5001616	5001617	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 56 faulty
601050057	5001618	5001619	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 57 faulty
601050058	5001620	5001621	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 58 faulty
601050059	5001622	5001623	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 59 faulty
601050060	5001624	5001625	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 60 faulty
601050061	5001626	5001627	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 61 faulty
601050062	5001628	5001629	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 62 faulty
601050063	5001630	5001631	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 63 faulty
601050064	5001632	5001633	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 64 faulty
601050065	5001634	5001635	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 65 faulty
601050066	5001636	5001637	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 66 faulty
601050067	5001638	5001639	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 67 faulty
601050068	5001640	5001641	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 68 faulty
601050069	5001642	5001643	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 69 faulty
601050070	5001644	5001645	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 70 faulty
601050071	5001646	5001647	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 71 faulty
601050072	5001648	5001649	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 72 faulty
601050073	5001650	5001651	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 73 faulty
601050074	5001652	5001653	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 74 faulty
601050075	5001654	5001655	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 75 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050076	5001656	5001657	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 76 faulty
601050077	5001658	5001659	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 77 faulty
601050078	5001660	5001661	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 78 faulty
601050079	5001662	5001663	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 79 faulty
601050080	5001664	5001665	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 80 faulty
601050081	5001666	5001667	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 81 faulty
601050082	5001668	5001669	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 82 faulty
601050083	5001670	5001671	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 83 faulty
601050084	5001672	5001673	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 84 faulty
601050085	5001674	5001675	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 85 faulty
601050086	5001676	5001677	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 86 faulty
601050087	5001678	5001679	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 87 faulty
601050088	5001680	5001681	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 88 faulty
601050089	5001682	5001683	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 89 faulty
601050090	5001684	5001685	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 90 faulty
601050091	5001686	5001687	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 91 faulty
601050092	5001688	5001689	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 92 faulty
601050093	5001690	5001691	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 93 faulty
601050094	5001692	5001693	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 94 faulty
601050095	5001694	5001695	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 95 faulty
601050096	5001696	5001697	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 96 faulty
601050097	5001698	5001699	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 97 faulty
601050098	5001700	5001701	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 98 faulty
601050099	5001702	5001703	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 99 faulty
601050100	5001704	5001705	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 100 faulty
601050101	5001706	5001707	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 101 faulty
601050102	5001708	5001709	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 102 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050103	5001710	5001711	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 103 faulty
601050104	5001712	5001713	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 104 faulty
601050105	5001714	5001715	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 105 faulty
601050106	5001716	5001717	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 106 faulty
601050107	5001718	5001719	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 107 faulty
601050108	5001720	5001721	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 108 faulty
601050109	5001722	5001723	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 109 faulty
601050110	5001724	5001725	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 110 faulty
601050111	5001726	5001727	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 111 faulty
601050112	5001728	5001729	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 112 faulty
601050113	5001730	5001731	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 113 faulty
601050114	5001732	5001733	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 114 faulty
601050115	5001734	5001735	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 115 faulty
601050116	5001736	5001737	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 116 faulty
601050117	5001738	5001739	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 117 faulty
601050118	5001740	5001741	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 118 faulty
601050119	5001742	5001743	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 119 faulty
601050120	5001744	5001745	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 120 faulty
601050121	5001746	5001747	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 121 faulty
601050122	5001748	5001749	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 122 faulty
601050123	5001750	5001751	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 123 faulty
601050124	5001752	5001753	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 124 faulty
601050125	5001754	5001755	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 125 faulty
601050126	5001756	5001757	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 126 faulty
601050127	5001758	5001759	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 127 faulty
601050128	5001760	5001761	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 128 faulty
601050129	5001762	5001763	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 129 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050130	5001764	5001765	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 130 faulty
601050131	5001766	5001767	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 131 faulty
601050132	5001768	5001769	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 132 faulty
601050133	5001770	5001771	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 133 faulty
601050134	5001772	5001773	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 134 faulty
601050135	5001774	5001775	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 135 faulty
601050136	5001776	5001777	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 136 faulty
601050137	5001778	5001779	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 137 faulty
601050138	5001780	5001781	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 138 faulty
601050139	5001782	5001783	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 139 faulty
601050140	5001784	5001785	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 140 faulty
601050141	5001786	5001787	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 141 faulty
601050142	5001788	5001789	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 142 faulty
601050143	5001790	5001791	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 143 faulty
601050144	5001792	5001793	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 144 faulty
601050145	5001794	5001795	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 145 faulty
601050146	5001796	5001797	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 146 faulty
601050147	5001798	5001799	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 147 faulty
601050148	5001800	5001801	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 148 faulty
601050149	5001802	5001803	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 149 faulty
601050150	5001804	5001805	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 150 faulty
601050151	5001806	5001807	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 151 faulty
601050152	5001808	5001809	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 152 faulty
601050153	5001810	5001811	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 153 faulty
601050154	5001812	5001813	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 154 faulty
601050155	5001814	5001815	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 155 faulty
601050156	5001816	5001817	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 156 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050157	5001818	5001819	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 157 faulty
601050158	5001820	5001821	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 158 faulty
601050159	5001822	5001823	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 159 faulty
601050160	5001824	5001825	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 160 faulty
601050161	5001826	5001827	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 161 faulty
601050162	5001828	5001829	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 162 faulty
601050163	5001830	5001831	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 163 faulty
601050164	5001832	5001833	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 164 faulty
601050165	5001834	5001835	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 165 faulty
601050166	5001836	5001837	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 166 faulty
601050167	5001838	5001839	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 167 faulty
601050168	5001840	5001841	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 168 faulty
601050169	5001842	5001843	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 169 faulty
601050170	5001844	5001845	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 170 faulty
601050171	5001846	5001847	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 171 faulty
601050172	5001848	5001849	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 172 faulty
601050173	5001850	5001851	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 173 faulty
601050174	5001852	5001853	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 174 faulty
601050175	5001854	5001855	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 175 faulty
601050176	5001856	5001857	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 176 faulty
601050177	5001858	5001859	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 177 faulty
601050178	5001860	5001861	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 178 faulty
601050179	5001862	5001863	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 179 faulty
601050180	5001864	5001865	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 180 faulty
601050181	5001866	5001867	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 181 faulty
601050182	5001868	5001869	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 182 faulty
601050183	5001870	5001871	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 183 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050184	5001872	5001873	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 184 faulty
601050185	5001874	5001875	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 185 faulty
601050186	5001876	5001877	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 186 faulty
601050187	5001878	5001879	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 187 faulty
601050188	5001880	5001881	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 188 faulty
601050189	5001882	5001883	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 189 faulty
601050190	5001884	5001885	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 190 faulty
601050191	5001886	5001887	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 191 faulty
601050192	5001888	5001889	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 192 faulty
601050193	5001890	5001891	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 193 faulty
601050194	5001892	5001893	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 194 faulty
601050195	5001894	5001895	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 195 faulty
601050196	5001896	5001897	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 196 faulty
601050197	5001898	5001899	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 197 faulty
601050198	5001900	5001901	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 198 faulty
601050199	5001902	5001903	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 199 faulty
601050200	5001904	5001905	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 200 faulty
601050201	5001906	5001907	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 201 faulty
601050202	5001908	5001909	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 202 faulty
601050203	5001910	5001911	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 203 faulty
601050204	5001912	5001913	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 204 faulty
601050205	5001914	5001915	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 205 faulty
601050206	5001916	5001917	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 206 faulty
601050207	5001918	5001919	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 207 faulty
601050208	5001920	5001921	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 208 faulty
601050209	5001922	5001923	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 209 faulty
601050210	5001924	5001925	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 210 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050211	5001926	5001927	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 211 faulty
601050212	5001928	5001929	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 212 faulty
601050213	5001930	5001931	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 213 faulty
601050214	5001932	5001933	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 214 faulty
601050215	5001934	5001935	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 215 faulty
601050216	5001936	5001937	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 216 faulty
601050217	5001938	5001939	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 217 faulty
601050218	5001940	5001941	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 218 faulty
601050219	5001942	5001943	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 219 faulty
601050220	5001944	5001945	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 220 faulty
601050221	5001946	5001947	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 221 faulty
601050222	5001948	5001949	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 222 faulty
601050223	5001950	5001951	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 223 faulty
601050224	5001952	5001953	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 224 faulty
601050225	5001954	5001955	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 225 faulty
601050226	5001956	5001957	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 226 faulty
601050227	5001958	5001959	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 227 faulty
601050228	5001960	5001961	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 228 faulty
601050229	5001962	5001963	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 229 faulty
601050230	5001964	5001965	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 230 faulty
601050231	5001966	5001967	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 231 faulty
601050232	5001968	5001969	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 232 faulty
601050233	5001970	5001971	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 233 faulty
601050234	5001972	5001973	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 234 faulty
601050235	5001974	5001975	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 235 faulty
601050236	5001976	5001977	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 236 faulty
601050237	5001978	5001979	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 237 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050238	5001980	5001981	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 238 faulty
601050239	5001982	5001983	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 239 faulty
601050240	5001984	5001985	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 240 faulty
601050241	5001986	5001987	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 241 faulty
601050242	5001988	5001989	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 242 faulty
601050243	5001990	5001991	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 243 faulty
601050244	5001992	5001993	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 244 faulty
601050245	5001994	5001995	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 245 faulty
601050246	5001996	5001997	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 246 faulty
601050247	5001998	5001999	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 247 faulty
601050248	5002000	5002001	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 248 faulty
601050249	5002002	5002003	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 249 faulty
601050250	5002004	5002005	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 250 faulty
601050251	5002006	5002007	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 251 faulty
601050252	5002008	5002009	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 252 faulty
601050253	5002010	5002011	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 253 faulty
601050254	5002012	5002013	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 254 faulty
601050255	5002014	5002015	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 255 faulty
601050256	5002016	5002017	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 256 faulty
601050257	5002018	5002019	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 257 faulty
601050258	5002020	5002021	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 258 faulty
601050259	5002022	5002023	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 259 faulty
601050260	5002024	5002025	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 260 faulty
601050261	5002026	5002027	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 261 faulty
601050262	5002028	5002029	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 262 faulty
601050263	5002030	5002031	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 263 faulty
601050264	5002032	5002033	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 264 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050265	5002034	5002035	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 265 faulty
601050266	5002036	5002037	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 266 faulty
601050267	5002038	5002039	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 267 faulty
601050268	5002040	5002041	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 268 faulty
601050269	5002042	5002043	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 269 faulty
601050270	5002044	5002045	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 270 faulty
601050271	5002046	5002047	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 271 faulty
601050272	5002048	5002049	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 272 faulty
601050273	5002050	5002051	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 273 faulty
601050274	5002052	5002053	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 274 faulty
601050275	5002054	5002055	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 275 faulty
601050276	5002056	5002057	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 276 faulty
601050277	5002058	5002059	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 277 faulty
601050278	5002060	5002061	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 278 faulty
601050279	5002062	5002063	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 279 faulty
601050280	5002064	5002065	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 280 faulty
601050281	5002066	5002067	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 281 faulty
601050282	5002068	5002069	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 282 faulty
601050283	5002070	5002071	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 283 faulty
601050284	5002072	5002073	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 284 faulty
601050285	5002074	5002075	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 285 faulty
601050286	5002076	5002077	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 286 faulty
601050287	5002078	5002079	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 287 faulty
601050288	5002080	5002081	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 288 faulty
601050289	5002082	5002083	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 289 faulty
601050290	5002084	5002085	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 290 faulty
601050291	5002086	5002087	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 291 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050292	5002088	5002089	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 292 faulty
601050293	5002090	5002091	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 293 faulty
601050294	5002092	5002093	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 294 faulty
601050295	5002094	5002095	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 295 faulty
601050296	5002096	5002097	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 296 faulty
601050297	5002098	5002099	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 297 faulty
601050298	5002100	5002101	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 298 faulty
601050299	5002102	5002103	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 299 faulty
601050300	5002104	5002105	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 300 faulty
601050301	5002106	5002107	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 301 faulty
601050302	5002108	5002109	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 302 faulty
601050303	5002110	5002111	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 303 faulty
601050304	5002112	5002113	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 304 faulty
601050305	5002114	5002115	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 305 faulty
601050306	5002116	5002117	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 306 faulty
601050307	5002118	5002119	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 307 faulty
601050308	5002120	5002121	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 308 faulty
601050309	5002122	5002123	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 309 faulty
601050310	5002124	5002125	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 310 faulty
601050311	5002126	5002127	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 311 faulty
601050312	5002128	5002129	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 312 faulty
601050313	5002130	5002131	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 313 faulty
601050314	5002132	5002133	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 314 faulty
601050315	5002134	5002135	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 315 faulty
601050316	5002136	5002137	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 316 faulty
601050317	5002138	5002139	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 317 faulty
601050318	5002140	5002141	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 318 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050319	5002142	5002143	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 319 faulty
601050320	5002144	5002145	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 320 faulty
601050321	5002146	5002147	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 321 faulty
601050322	5002148	5002149	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 322 faulty
601050323	5002150	5002151	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 323 faulty
601050324	5002152	5002153	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 324 faulty
601050325	5002154	5002155	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 325 faulty
601050326	5002156	5002157	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 326 faulty
601050327	5002158	5002159	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 327 faulty
601050328	5002160	5002161	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 328 faulty
601050329	5002162	5002163	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 329 faulty
601050330	5002164	5002165	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 330 faulty
601050331	5002166	5002167	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 331 faulty
601050332	5002168	5002169	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 332 faulty
601050333	5002170	5002171	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 333 faulty
601050334	5002172	5002173	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 334 faulty
601050335	5002174	5002175	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 335 faulty
601050336	5002176	5002177	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 336 faulty
601050337	5002178	5002179	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 337 faulty
601050338	5002180	5002181	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 338 faulty
601050339	5002182	5002183	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 339 faulty
601050340	5002184	5002185	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 340 faulty
601050341	5002186	5002187	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 341 faulty
601050342	5002188	5002189	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 342 faulty
601050343	5002190	5002191	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 343 faulty
601050344	5002192	5002193	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 344 faulty
601050345	5002194	5002195	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 345 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050346	5002196	5002197	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 346 faulty
601050347	5002198	5002199	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 347 faulty
601050348	5002200	5002201	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 348 faulty
601050349	5002202	5002203	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 349 faulty
601050350	5002204	5002205	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 350 faulty
601050351	5002206	5002207	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 351 faulty
601050352	5002208	5002209	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 352 faulty
601050353	5002210	5002211	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 353 faulty
601050354	5002212	5002213	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 354 faulty
601050355	5002214	5002215	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 355 faulty
601050356	5002216	5002217	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 356 faulty
601050357	5002218	5002219	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 357 faulty
601050358	5002220	5002221	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 358 faulty
601050359	5002222	5002223	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 359 faulty
601050360	5002224	5002225	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 360 faulty
601050361	5002226	5002227	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 361 faulty
601050362	5002228	5002229	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 362 faulty
601050363	5002230	5002231	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 363 faulty
601050364	5002232	5002233	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 364 faulty
601050365	5002234	5002235	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 365 faulty
601050366	5002236	5002237	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 366 faulty
601050367	5002238	5002239	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 367 faulty
601050368	5002240	5002241	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 368 faulty
601050369	5002242	5002243	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 369 faulty
601050370	5002244	5002245	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 370 faulty
601050371	5002246	5002247	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 371 faulty
601050372	5002248	5002249	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 372 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050373	5002250	5002251	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 373 faulty
601050374	5002252	5002253	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 374 faulty
601050375	5002254	5002255	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 375 faulty
601050376	5002256	5002257	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 376 faulty
601050377	5002258	5002259	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 377 faulty
601050378	5002260	5002261	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 378 faulty
601050379	5002262	5002263	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 379 faulty
601050380	5002264	5002265	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 380 faulty
601050381	5002266	5002267	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 381 faulty
601050382	5002268	5002269	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 382 faulty
601050383	5002270	5002271	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 383 faulty
601050384	5002272	5002273	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 384 faulty
601050385	5002274	5002275	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 385 faulty
601050386	5002276	5002277	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 386 faulty
601050387	5002278	5002279	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 387 faulty
601050388	5002280	5002281	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 388 faulty
601050389	5002282	5002283	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 389 faulty
601050390	5002284	5002285	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 390 faulty
601050391	5002286	5002287	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 391 faulty
601050392	5002288	5002289	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 392 faulty
601050393	5002290	5002291	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 393 faulty
601050394	5002292	5002293	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 394 faulty
601050395	5002294	5002295	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 395 faulty
601050396	5002296	5002297	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 396 faulty
601050397	5002298	5002299	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 397 faulty
601050398	5002300	5002301	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 398 faulty
601050399	5002302	5002303	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 399 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050400	5002304	5002305	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 400 faulty
601050401	5002306	5002307	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 401 faulty
601050402	5002308	5002309	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 402 faulty
601050403	5002310	5002311	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 403 faulty
601050404	5002312	5002313	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 404 faulty
601050405	5002314	5002315	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 405 faulty
601050406	5002316	5002317	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 406 faulty
601050407	5002318	5002319	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 407 faulty
601050408	5002320	5002321	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 408 faulty
601050409	5002322	5002323	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 409 faulty
601050410	5002324	5002325	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 410 faulty
601050411	5002326	5002327	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 411 faulty
601050412	5002328	5002329	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 412 faulty
601050413	5002330	5002331	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 413 faulty
601050414	5002332	5002333	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 414 faulty
601050415	5002334	5002335	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 415 faulty
601050416	5002336	5002337	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 416 faulty
601050417	5002338	5002339	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 417 faulty
601050418	5002340	5002341	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 418 faulty
601050419	5002342	5002343	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 419 faulty
601050420	5002344	5002345	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 420 faulty
601050421	5002346	5002347	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 421 faulty
601050422	5002348	5002349	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 422 faulty
601050423	5002350	5002351	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 423 faulty
601050424	5002352	5002353	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 424 faulty
601050425	5002354	5002355	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 425 faulty
601050426	5002356	5002357	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 426 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050427	5002358	5002359	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 427 faulty
601050428	5002360	5002361	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 428 faulty
601050429	5002362	5002363	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 429 faulty
601050430	5002364	5002365	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 430 faulty
601050431	5002366	5002367	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 431 faulty
601050432	5002368	5002369	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 432 faulty
601050433	5002370	5002371	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 433 faulty
601050434	5002372	5002373	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 434 faulty
601050435	5002374	5002375	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 435 faulty
601050436	5002376	5002377	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 436 faulty
601050437	5002378	5002379	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 437 faulty
601050438	5002380	5002381	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 438 faulty
601050439	5002382	5002383	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 439 faulty
601050440	5002384	5002385	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 440 faulty
601050441	5002386	5002387	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 441 faulty
601050442	5002388	5002389	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 442 faulty
601050443	5002390	5002391	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 443 faulty
601050444	5002392	5002393	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 444 faulty
601050445	5002394	5002395	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 445 faulty
601050446	5002396	5002397	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 446 faulty
601050447	5002398	5002399	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 447 faulty
601050448	5002400	5002401	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 448 faulty
601050449	5002402	5002403	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 449 faulty
601050450	5002404	5002405	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 450 faulty
601050451	5002406	5002407	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 451 faulty
601050452	5002408	5002409	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 452 faulty
601050453	5002410	5002411	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 453 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050454	5002412	5002413	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 454 faulty
601050455	5002414	5002415	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 455 faulty
601050456	5002416	5002417	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 456 faulty
601050457	5002418	5002419	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 457 faulty
601050458	5002420	5002421	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 458 faulty
601050459	5002422	5002423	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 459 faulty
601050460	5002424	5002425	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 460 faulty
601050461	5002426	5002427	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 461 faulty
601050462	5002428	5002429	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 462 faulty
601050463	5002430	5002431	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 463 faulty
601050464	5002432	5002433	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 464 faulty
601050465	5002434	5002435	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 465 faulty
601050466	5002436	5002437	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 466 faulty
601050467	5002438	5002439	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 467 faulty
601050468	5002440	5002441	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 468 faulty
601050469	5002442	5002443	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 469 faulty
601050470	5002444	5002445	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 470 faulty
601050471	5002446	5002447	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 471 faulty
601050472	5002448	5002449	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 472 faulty
601050473	5002450	5002451	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 473 faulty
601050474	5002452	5002453	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 474 faulty
601050475	5002454	5002455	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 475 faulty
601050476	5002456	5002457	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 476 faulty
601050477	5002458	5002459	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 477 faulty
601050478	5002460	5002461	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 478 faulty
601050479	5002462	5002463	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 479 faulty
601050480	5002464	5002465	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 480 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050481	5002466	5002467	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 481 faulty
601050482	5002468	5002469	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 482 faulty
601050483	5002470	5002471	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 483 faulty
601050484	5002472	5002473	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 484 faulty
601050485	5002474	5002475	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 485 faulty
601050486	5002476	5002477	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 486 faulty
601050487	5002478	5002479	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 487 faulty
601050488	5002480	5002481	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 488 faulty
601050489	5002482	5002483	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 489 faulty
601050490	5002484	5002485	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 490 faulty
601050491	5002486	5002487	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 491 faulty
601050492	5002488	5002489	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 492 faulty
601050493	5002490	5002491	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 493 faulty
601050494	5002492	5002493	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 494 faulty
601050495	5002494	5002495	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 495 faulty
601050496	5002496	5002497	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 496 faulty
601050497	5002498	5002499	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 497 faulty
601050498	5002500	5002501	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 498 faulty
601050499	5002502	5002503	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 499 faulty
601050500	5002504	5002505	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 500 faulty
601060001	5002506	5002507	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 1 faulty
601060002	5002508	5002509	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 2 faulty
601060003	5002510	5002511	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 3 faulty
601060004	5002512	5002513	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 4 faulty
601060005	5002514	5002515	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 5 faulty
601060006	5002516	5002517	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 6 faulty
601060007	5002518	5002519	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 7 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060008	5002520	5002521	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 8 faulty
601060009	5002522	5002523	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 9 faulty
601060010	5002524	5002525	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 10 faulty
601060011	5002526	5002527	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 11 faulty
601060012	5002528	5002529	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 12 faulty
601060013	5002530	5002531	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 13 faulty
601060014	5002532	5002533	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 14 faulty
601060015	5002534	5002535	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 15 faulty
601060016	5002536	5002537	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 16 faulty
601060017	5002538	5002539	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 17 faulty
601060018	5002540	5002541	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 18 faulty
601060019	5002542	5002543	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 19 faulty
601060020	5002544	5002545	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 20 faulty
601060021	5002546	5002547	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 21 faulty
601060022	5002548	5002549	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 22 faulty
601060023	5002550	5002551	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 23 faulty
601060024	5002552	5002553	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 24 faulty
601060025	5002554	5002555	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 25 faulty
601060026	5002556	5002557	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 26 faulty
601060027	5002558	5002559	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 27 faulty
601060028	5002560	5002561	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 28 faulty
601060029	5002562	5002563	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 29 faulty
601060030	5002564	5002565	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 30 faulty
601060031	5002566	5002567	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 31 faulty
601060032	5002568	5002569	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 32 faulty
601060033	5002570	5002571	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 33 faulty
601060034	5002572	5002573	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 34 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060035	5002574	5002575	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 35 faulty
601060036	5002576	5002577	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 36 faulty
601060037	5002578	5002579	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 37 faulty
601060038	5002580	5002581	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 38 faulty
601060039	5002582	5002583	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 39 faulty
601060040	5002584	5002585	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 40 faulty
601060041	5002586	5002587	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 41 faulty
601060042	5002588	5002589	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 42 faulty
601060043	5002590	5002591	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 43 faulty
601060044	5002592	5002593	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 44 faulty
601060045	5002594	5002595	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 45 faulty
601060046	5002596	5002597	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 46 faulty
601060047	5002598	5002599	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 47 faulty
601060048	5002600	5002601	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 48 faulty
601060049	5002602	5002603	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 49 faulty
601060050	5002604	5002605	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 50 faulty
601060051	5002606	5002607	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 51 faulty
601060052	5002608	5002609	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 52 faulty
601060053	5002610	5002611	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 53 faulty
601060054	5002612	5002613	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 54 faulty
601060055	5002614	5002615	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 55 faulty
601060056	5002616	5002617	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 56 faulty
601060057	5002618	5002619	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 57 faulty
601060058	5002620	5002621	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 58 faulty
601060059	5002622	5002623	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 59 faulty
601060060	5002624	5002625	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 60 faulty
601060061	5002626	5002627	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 61 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060062	5002628	5002629	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 62 faulty
601060063	5002630	5002631	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 63 faulty
601060064	5002632	5002633	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 64 faulty
601060065	5002634	5002635	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 65 faulty
601060066	5002636	5002637	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 66 faulty
601060067	5002638	5002639	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 67 faulty
601060068	5002640	5002641	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 68 faulty
601060069	5002642	5002643	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 69 faulty
601060070	5002644	5002645	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 70 faulty
601060071	5002646	5002647	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 71 faulty
601060072	5002648	5002649	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 72 faulty
601060073	5002650	5002651	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 73 faulty
601060074	5002652	5002653	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 74 faulty
601060075	5002654	5002655	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 75 faulty
601060076	5002656	5002657	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 76 faulty
601060077	5002658	5002659	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 77 faulty
601060078	5002660	5002661	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 78 faulty
601060079	5002662	5002663	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 79 faulty
601060080	5002664	5002665	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 80 faulty
601060081	5002666	5002667	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 81 faulty
601060082	5002668	5002669	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 82 faulty
601060083	5002670	5002671	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 83 faulty
601060084	5002672	5002673	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 84 faulty
601060085	5002674	5002675	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 85 faulty
601060086	5002676	5002677	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 86 faulty
601060087	5002678	5002679	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 87 faulty
601060088	5002680	5002681	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 88 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060089	5002682	5002683	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 89 faulty
601060090	5002684	5002685	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 90 faulty
601060091	5002686	5002687	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 91 faulty
601060092	5002688	5002689	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 92 faulty
601060093	5002690	5002691	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 93 faulty
601060094	5002692	5002693	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 94 faulty
601060095	5002694	5002695	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 95 faulty
601060096	5002696	5002697	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 96 faulty
601060097	5002698	5002699	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 97 faulty
601060098	5002700	5002701	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 98 faulty
601060099	5002702	5002703	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 99 faulty
601060100	5002704	5002705	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 100 faulty
601070001	5002706	5002707	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 1 faulty
601070002	5002708	5002709	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 2 faulty
601070003	5002710	5002711	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 3 faulty
601070004	5002712	5002713	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 4 faulty
601070005	5002714	5002715	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 5 faulty
601070006	5002716	5002717	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 6 faulty
601070007	5002718	5002719	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 7 faulty
601070008	5002720	5002721	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 8 faulty
601070009	5002722	5002723	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 9 faulty
601070010	5002724	5002725	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 10 faulty
601070011	5002726	5002727	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 11 faulty
601070012	5002728	5002729	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 12 faulty
601070013	5002730	5002731	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 13 faulty
601070014	5002732	5002733	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 14 faulty
601070015	5002734	5002735	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 15 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601070016	5002736	5002737	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 16 faulty
601070017	5002738	5002739	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 17 faulty
601070018	5002740	5002741	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 18 faulty
601070019	5002742	5002743	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 19 faulty
601070020	5002744	5002745	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 20 faulty
601070021	5002746	5002747	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 21 faulty
601070022	5002748	5002749	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 22 faulty
601070023	5002750	5002751	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 23 faulty
601070024	5002752	5002753	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 24 faulty
601070025	5002754	5002755	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 25 faulty
601070026	5002756	5002757	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 26 faulty
601070027	5002758	5002759	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 27 faulty
601070028	5002760	5002761	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 28 faulty
601070029	5002762	5002763	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 29 faulty
601070030	5002764	5002765	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 30 faulty
601080001	5002766	5002767	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 1 faulty
601080002	5002768	5002769	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 2 faulty
601080003	5002770	5002771	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 3 faulty
601080004	5002772	5002773	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 4 faulty
601080005	5002774	5002775	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 5 faulty
601080006	5002776	5002777	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 6 faulty
601080007	5002778	5002779	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 7 faulty
601080008	5002780	5002781	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 8 faulty
601080009	5002782	5002783	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 9 faulty
601080010	5002784	5002785	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 10 faulty
601080011	5002786	5002787	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 11 faulty
601080012	5002788	5002789	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 12 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601080013	5002790	5002791	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 13 faulty
601080014	5002792	5002793	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 14 faulty
601080015	5002794	5002795	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 15 faulty
601080016	5002796	5002797	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 16 faulty
601080017	5002798	5002799	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 17 faulty
601080018	5002800	5002801	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 18 faulty
601080019	5002802	5002803	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 19 faulty
601080020	5002804	5002805	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 20 faulty
601080021	5002806	5002807	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 21 faulty
601080022	5002808	5002809	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 22 faulty
601080023	5002810	5002811	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 23 faulty
601080024	5002812	5002813	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 24 faulty
601080025	5002814	5002815	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 25 faulty
601080026	5002816	5002817	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 26 faulty
601080027	5002818	5002819	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 27 faulty
601080028	5002820	5002821	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 28 faulty
601080029	5002822	5002823	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 29 faulty
601080030	5002824	5002825	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 30 faulty
601080031	5002826	5002827	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 31 faulty
601080032	5002828	5002829	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 32 faulty
601080033	5002830	5002831	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 33 faulty
601080034	5002832	5002833	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 34 faulty
601080035	5002834	5002835	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 35 faulty
601080036	5002836	5002837	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 36 faulty
601080037	5002838	5002839	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 37 faulty
601080038	5002840	5002841	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 38 faulty
601080039	5002842	5002843	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 39 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601080040	5002844	5002845	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 40 faulty
601080041	5002846	5002847	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 41 faulty
601080042	5002848	5002849	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 42 faulty
601080043	5002850	5002851	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 43 faulty
601080044	5002852	5002853	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 44 faulty
601080045	5002854	5002855	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 45 faulty
601080046	5002856	5002857	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 46 faulty
601080047	5002858	5002859	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 47 faulty
601080048	5002860	5002861	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 48 faulty
601080049	5002862	5002863	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 49 faulty
601080050	5002864	5002865	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 50 faulty
602010001	36000000	36000001	No	No	Yes	No	No	No	300	0	Identification program error Internal system error
701010001	6000001	6000002	Yes	No	Yes	No	No	No	300	0	Email program error: The host name could not be resolved.
701010002	6000003	6000004	Yes	No	Yes	Yes	No	No	300	0	Email program error: The attachment could not be processed.
701010003	6000005	6000006	Yes	No	Yes	Yes	No	No	300	0	Email program error: Sending the email failed
801010001	7000107	7000108	Yes	No	Yes	No	No	No	300	0	Shadow Manager communication error: Internal system error
901010001	8010000	8010001	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 1
901010002	8010002	8010003	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 2
901010003	8010004	8010005	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 3
901010004	8010006	8010007	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 4
901010005	8010008	8010009	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 5
901010006	8010010	8010011	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 6
901010007	8010012	8010013	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 7

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901010008	8010014	8010015	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 8
901010009	8010016	8010017	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 9
901010010	8010018	8010019	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 10
901010011	8010020	8010021	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Communication with Light sensor 11
901010012	8010022	8010023	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 12
901010013	8010024	8010025	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 13
901010014	8010026	8010027	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 14
901010015	8010028	8010029	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 15
901010016	8010030	8010031	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 16
901010017	8010032	8010033	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 17
901010018	8010034	8010035	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 18
901010019	8010036	8010037	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 19
901010020	8010038	8010039	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 20
901010021	8010040	8010041	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 21
901010022	8010042	8010043	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 22
901010023	8010044	8010045	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 23
901010024	8010046	8010047	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 24
901010025	8010048	8010049	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 25
901010026	8010050	8010051	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 26

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901010027	8010052	8010053	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 27
901010028	8010054	8010055	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 28
901010029	8010056	8010057	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 29
901010030	8010058	8010059	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 30
901010031	8010060	8010061	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 31
901010032	8010062	8010063	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 32
901010033	8010064	8010065	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 33
901010034	8010066	8010067	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 34
901010035	8010068	8010069	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 35
901010036	8010070	8010071	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 36
901010037	8010072	8010073	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 37
901010038	8010074	8010075	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 38
901010039	8010076	8010077	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 39
901010040	8010078	8010079	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 40
901020001	8010080	8010081	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 1 faulty
901020002	8010082	8010083	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 2 faulty
901020003	8010084	8010085	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 3 faulty
901020004	8010086	8010087	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 4 faulty
901020005	8010088	8010089	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 5 faulty
901020006	8010090	8010091	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 6 faulty
901020007	8010092	8010093	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 7 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901020008	8010094	8010095	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 8 faulty
901020009	8010096	8010097	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 9 faulty
901020010	8010098	8010099	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 10 faulty
901020011	8010100	8010101	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 11 faulty
901020012	8010102	8010103	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 12 faulty
901020013	8010104	8010105	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 13 faulty
901020014	8010106	8010107	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 14 faulty
901020015	8010108	8010109	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 15 faulty
901020016	8010110	8010111	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 16 faulty
901020017	8010112	8010113	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 17 faulty
901020018	8010114	8010115	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 18 faulty
901020019	8010116	8010117	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 19 faulty
901020020	8010118	8010119	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 20 faulty
901020021	8010120	8010121	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 21 faulty
901020022	8010122	8010123	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 22 faulty
901020023	8010124	8010125	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 23 faulty
901020024	8010126	8010127	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 24 faulty
901020025	8010128	8010129	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 25 faulty
901020026	8010130	8010131	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 26 faulty
901020027	8010132	8010133	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 27 faulty
901020028	8010134	8010135	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 28 faulty
901020029	8010136	8010137	Yes	No	Yes	No	No	Yes	300	60	Error Lichtsensor: Lichts. 29 faulty
901020030	8010138	8010139	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 30 faulty
901020031	8010140	8010141	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 31 faulty
901020032	8010142	8010143	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 32 faulty
901020033	8010144	8010145	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 33 faulty
901020034	8010146	8010147	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 34 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901020035	8010148	8010149	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 35 faulty
901020036	8010150	8010151	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 36 faulty
901020037	8010152	8010153	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 37 faulty
901020038	8010154	8010155	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 38 faulty
901020039	8010156	8010157	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 39 faulty
901020040	8010158	8010159	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 40 faulty
901030001	8010160	8010161	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 1 faulty
901030002	8010162	8010163	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 2 faulty
901030003	8010164	8010165	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 3 faulty
901030004	8010166	8010167	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 4 faulty
901030005	8010168	8010169	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 5 faulty
901030006	8010170	8010171	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 6 faulty
901030007	8010172	8010173	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 7 faulty
901030008	8010174	8010175	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 8 faulty
901030009	8010176	8010177	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 9 faulty
901030010	8010178	8010179	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 10 faulty
901030011	8010180	8010181	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 11 faulty
901030012	8010182	8010183	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 12 faulty
901030013	8010184	8010185	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 13 faulty
901030014	8010186	8010187	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 14 faulty
901030015	8010188	8010189	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 15 faulty
901030016	8010190	8010191	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 16 faulty
901030017	8010192	8010193	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 17 faulty
901030018	8010194	8010195	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 18 faulty
901030019	8010196	8010197	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 19 faulty
901030020	8010198	8010199	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 20 faulty
901040001	8010200	8010201	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 1 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901040002	8010202	8010203	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 2 faulty
901040003	8010204	8010205	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 3 faulty
901040004	8010206	8010207	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 4 faulty
901040005	8010208	8010209	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 5 faulty
901040006	8010210	8010211	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 6 faulty
901040007	8010212	8010213	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 7 faulty
901040008	8010214	8010215	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 8 faulty
901040009	8010216	8010217	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 9 faulty
901040010	8010218	8010219	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 10 faulty
901040011	8010220	8010221	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 11 faulty
901040012	8010222	8010223	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 12 faulty
901040013	8010224	8010225	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 13 faulty
901040014	8010226	8010227	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 14 faulty
901040015	8010228	8010229	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 15 faulty
901040016	8010230	8010231	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 16 faulty
901040017	8010232	8010233	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 17 faulty
901040018	8010234	8010235	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 18 faulty
901040019	8010236	8010237	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 19 faulty
901040020	8010238	8010239	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 20 faulty
901040021	8010240	8010241	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 21 faulty
901040022	8010242	8010243	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 22 faulty
901040023	8010244	8010245	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 23 faulty
901040024	8010246	8010247	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 24 faulty
901040025	8010248	8010249	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 25 faulty
901040026	8010250	8010251	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 26 faulty
901040027	8010252	8010253	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 27 faulty
901040028	8010254	8010255	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 28 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901040029	8010256	8010257	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 29 faulty
901040030	8010258	8010259	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 30 faulty
901040031	8010260	8010261	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 31 faulty
901040032	8010262	8010263	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 32 faulty
901040033	8010264	8010265	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 33 faulty
901040034	8010266	8010267	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 34 faulty
901040035	8010268	8010269	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 35 faulty
901040036	8010270	8010271	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 36 faulty
901040037	8010272	8010273	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 37 faulty
901040038	8010274	8010275	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 38 faulty
901040039	8010276	8010277	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 39 faulty
901040040	8010278	8010279	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 40 faulty
1001010001	9010000	9010001	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 1
1001010002	9010002	9010003	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 2
1001010003	9010004	9010005	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 3
1001010004	9010006	9010007	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 4
1001010005	9010008	9010009	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 5
1001020001	9010010	9010011	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 1 is dirty or faulty
1001020002	9010012	9010013	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 2 is dirty or faulty
1001020003	9010014	9010015	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 3 is dirty or faulty
1001020004	9010016	9010017	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 4 is dirty or faulty
1001020005	9010018	9010019	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 5 is dirty or faulty
1001030001	9010020	9010021	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 1 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1001030002	9010022	9010023	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 2 faulty
1001030003	9010024	9010025	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 3 faulty
1001030004	9010026	9010027	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 4 faulty
1001030005	9010028	9010029	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 5 faulty
1001040001	9010030	9010031	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 1 faulty
1001040002	9010032	9010033	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 2 faulty
1001040003	9010034	9010035	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 3 faulty
1001040004	9010036	9010037	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 4 faulty
1001040005	9010038	9010039	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 5 faulty
1101010001	10010000	10010001	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with temperature sensor 1
1101010002	10010002	10010003	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with temperature sensor 2
1101010003	10010004	10010005	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with temperature sensor 3
1101010004	10010006	10010007	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communic. with temperature sensor 4
1101010005	10010008	10010009	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with Temperature 5
1101020001	10010010	10010011	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 1 faulty
1101020002	10010012	10010013	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 2 faulty
1101020003	10010014	10010015	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 3 faulty
1101020004	10010016	10010017	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 4 faulty
1101020005	10010018	10010019	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 5 faulty
1101030001	10010020	10010021	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 1 faulty
1101030002	10010022	10010023	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 2 faulty
1101030003	10010024	10010025	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 3 faulty
1101030004	10010026	10010027	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 4 faulty
1101030005	10010028	10010029	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 5 faulty
1101040001	10010030	10010031	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 1 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1101040002	10010032	10010033	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 2 faulty
1101040003	10010034	10010035	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 3 faulty
1101040004	10010036	10010037	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 4 faulty
1101040005	10010038	10010039	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 5 faulty
1201020001	11100000	11100001	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 1
1201020002	11100002	11100003	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 2
1201020003	11100004	11100005	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 3
1201020004	11100006	11100007	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 4
1201020005	11100008	11100009	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 5
1201020006	11100010	11100011	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 6
1201020007	11100012	11100013	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 7
1201020008	11100014	11100015	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 8
1201020009	11100016	11100017	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 9
1201020010	11100018	11100019	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 10
1201020011	11100020	11100021	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 11
1201020012	11100022	11100023	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 12
1201020013	11100024	11100025	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 13
1201020014	11100026	11100027	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 14
1201020015	11100028	11100029	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 15
1201020016	11100030	11100031	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 16

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020017	11100032	11100033	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 17
1201020018	11100034	11100035	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 18
1201020019	11100036	11100037	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 19
1201020020	11100038	11100039	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 20
1201020021	11100040	11100041	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 21
1201020022	11100042	11100043	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 22
1201020023	11100044	11100045	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 23
1201020024	11100046	11100047	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 24
1201020025	11100048	11100049	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 25
1201020026	11100050	11100051	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 26
1201020027	11100052	11100053	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 27
1201020028	11100054	11100055	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 28
1201020029	11100056	11100057	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 29
1201020030	11100058	11100059	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 30
1201020031	11100060	11100061	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 31
1201020032	11100062	11100063	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 32
1201020033	11100064	11100065	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 33
1201020034	11100066	11100067	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 34
1201020035	11100068	11100069	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 35

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020036	11100070	11100071	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 36
1201020037	11100072	11100073	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 37
1201020038	11100074	11100075	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 38
1201020039	11100076	11100077	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 39
1201020040	11100078	11100079	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 40
1201020041	11100080	11100081	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 41
1201020042	11100082	11100083	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 42
1201020043	11100084	11100085	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 43
1201020044	11100086	11100087	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 44
1201020045	11100088	11100089	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 45
1201020046	11100090	11100091	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 46
1201020047	11100092	11100093	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 47
1201020048	11100094	11100095	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 48
1201020049	11100096	11100097	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 49
1201020050	11100098	11100099	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 50
1201020051	11100100	11100101	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 51
1201020052	11100102	11100103	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 52
1201020053	11100104	11100105	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 53
1201020054	11100106	11100107	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 54

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020055	11100108	11100109	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 55
1201020056	11100110	11100111	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 56
1201020057	11100112	11100113	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 57
1201020058	11100114	11100115	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 58
1201020059	11100116	11100117	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 59
1201020060	11100118	11100119	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 60
1201020061	11100120	11100121	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 61
1201020062	11100122	11100123	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 62
1201020063	11100124	11100125	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 63
1201020064	11100126	11100127	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 64
1201020065	11100128	11100129	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 65
1201020066	11100130	11100131	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 66
1201020067	11100132	11100133	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 67
1201020068	11100134	11100135	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 68
1201020069	11100136	11100137	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 69
1201020070	11100138	11100139	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 70
1201020071	11100140	11100141	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 71
1201020072	11100142	11100143	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 72
1201020073	11100144	11100145	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 73

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020074	11100146	11100147	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 74
1201020075	11100148	11100149	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 75
1201020076	11100150	11100151	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 76
1201020077	11100152	11100153	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 77
1201020078	11100154	11100155	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 78
1201020079	11100156	11100157	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 79
1201020080	11100158	11100159	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 80
1201020081	11100160	11100161	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 81
1201020082	11100162	11100163	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 82
1201020083	11100164	11100165	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 83
1201020084	11100166	11100167	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 84
1201020085	11100168	11100169	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 85
1201020086	11100170	11100171	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 86
1201020087	11100172	11100173	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 87
1201020088	11100174	11100175	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 88
1201020089	11100176	11100177	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 89
1201020090	11100178	11100179	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 90
1201020091	11100180	11100181	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 91
1201020092	11100182	11100183	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 92

Alarm No	Operat.Log No.		Active	Defaults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020093	11100184	11100185	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 93
1201020094	11100186	11100187	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 94
1201020095	11100188	11100189	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 95
1201020096	11100190	11100191	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 96
1201020097	11100192	11100193	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 97
1201020098	11100194	11100195	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 98
1201020099	11100196	11100197	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 99
1201020100	11100198	11100199	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 100
1201030001	11100200	11100201	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 1 does not respond to stop command
1201030002	11100202	11100203	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 2 does not respond to stop command
1201030003	11100204	11100205	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 3 does not respond to stop command
1201030004	11100206	11100207	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 4 does not respond to stop command
1201030005	11100208	11100209	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 5 does not respond to stop command
1201030006	11100210	11100211	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 6 does not respond to stop command
1201030007	11100212	11100213	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 7 does not respond to stop command
1201030008	11100214	11100215	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 8 does not respond to stop command
1201030009	11100216	11100217	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 9 does not respond to stop command
1201030010	11100218	11100219	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 10 does not respond to stop command
1201030011	11100220	11100221	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 11 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030012	11100222	11100223	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 12 does not respond to stop command
1201030013	11100224	11100225	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 13 does not respond to stop command
1201030014	11100226	11100227	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 14 does not respond to stop command
1201030015	11100228	11100229	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 15 does not respond to stop command
1201030016	11100230	11100231	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 16 does not respond to stop command
1201030017	11100232	11100233	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 17 does not respond to stop command
1201030018	11100234	11100235	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 18 does not respond to stop command
1201030019	11100236	11100237	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 19 does not respond to stop command
1201030020	11100238	11100239	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 20 does not respond to stop command
1201030021	11100240	11100241	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 21 does not respond to stop command
1201030022	11100242	11100243	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 22 does not respond to stop command
1201030023	11100244	11100245	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 23 does not respond to stop command
1201030024	11100246	11100247	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 24 does not respond to stop command
1201030025	11100248	11100249	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 25 does not respond to stop command
1201030026	11100250	11100251	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 26 does not respond to stop command
1201030027	11100252	11100253	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 27 does not respond to stop command
1201030028	11100254	11100255	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 28 does not respond to stop command
1201030029	11100256	11100257	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 29 does not respond to stop command
1201030030	11100258	11100259	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 30 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030031	11100260	11100261	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 31 does not respond to stop command
1201030032	11100262	11100263	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 32 does not respond to stop command
1201030033	11100264	11100265	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 33 does not respond to stop command
1201030034	11100266	11100267	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 34 does not respond to stop command
1201030035	11100268	11100269	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 35 does not respond to stop command
1201030036	11100270	11100271	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 36 does not respond to stop command
1201030037	11100272	11100273	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 37 does not respond to stop command
1201030038	11100274	11100275	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 38 does not respond to stop command
1201030039	11100276	11100277	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 39 does not respond to stop command
1201030040	11100278	11100279	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 40 does not respond to stop command
1201030041	11100280	11100281	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 41 does not respond to stop command
1201030042	11100282	11100283	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 42 does not respond to stop command
1201030043	11100284	11100285	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 43 does not respond to stop command
1201030044	11100286	11100287	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 44 does not respond to stop command
1201030045	11100288	11100289	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 45 does not respond to stop command
1201030046	11100290	11100291	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 46 does not respond to stop command
1201030047	11100292	11100293	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 47 does not respond to stop command
1201030048	11100294	11100295	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 48 does not respond to stop command
1201030049	11100296	11100297	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 49 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030050	11100298	11100299	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 50 does not respond to stop command
1201030051	11100300	11100301	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 51 does not respond to stop command
1201030052	11100302	11100303	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 52 does not respond to stop command
1201030053	11100304	11100305	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 53 does not respond to stop command
1201030054	11100306	11100307	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 54 does not respond to stop command
1201030055	11100308	11100309	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 55 does not respond to stop command
1201030056	11100310	11100311	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 56 does not respond to stop command
1201030057	11100312	11100313	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 57 does not respond to stop command
1201030058	11100314	11100315	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 58 does not respond to stop command
1201030059	11100316	11100317	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 59 does not respond to stop command
1201030060	11100318	11100319	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 60 does not respond to stop command
1201030061	11100320	11100321	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 61 does not respond to stop command
1201030062	11100322	11100323	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 62 does not respond to stop command
1201030063	11100324	11100325	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 63 does not respond to stop command
1201030064	11100326	11100327	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 64 does not respond to stop command
1201030065	11100328	11100329	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 65 does not respond to stop command
1201030066	11100330	11100331	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 66 does not respond to stop command
1201030067	11100332	11100333	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 67 does not respond to stop command
1201030068	11100334	11100335	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 68 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030069	11100336	11100337	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 69 does not respond to stop command
1201030070	11100338	11100339	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 70 does not respond to stop command
1201030071	11100340	11100341	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 71 does not respond to stop command
1201030072	11100342	11100343	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 72 does not respond to stop command
1201030073	11100344	11100345	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 73 does not respond to stop command
1201030074	11100346	11100347	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 74 does not respond to stop command
1201030075	11100348	11100349	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 75 does not respond to stop command
1201030076	11100350	11100351	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 76 does not respond to stop command
1201030077	11100352	11100353	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 77 does not respond to stop command
1201030078	11100354	11100355	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 78 does not respond to stop command
1201030079	11100356	11100357	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 79 does not respond to stop command
1201030080	11100358	11100359	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 80 does not respond to stop command
1201030081	11100360	11100361	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 81 does not respond to stop command
1201030082	11100362	11100363	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 82 does not respond to stop command
1201030083	11100364	11100365	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 83 does not respond to stop command
1201030084	11100366	11100367	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 84 does not respond to stop command
1201030085	11100368	11100369	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 85 does not respond to stop command
1201030086	11100370	11100371	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 86 does not respond to stop command
1201030087	11100372	11100373	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 87 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030088	11100374	11100375	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 88 does not respond to stop command
1201030089	11100376	11100377	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 89 does not respond to stop command
1201030090	11100378	11100379	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 90 does not respond to stop command
1201030091	11100380	11100381	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 91 does not respond to stop command
1201030092	11100382	11100383	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 92 does not respond to stop command
1201030093	11100384	11100385	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 93 does not respond to stop command
1201030094	11100386	11100387	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 94 does not respond to stop command
1201030095	11100388	11100389	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 95 does not respond to stop command
1201030096	11100390	11100391	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 96 does not respond to stop command
1201030097	11100392	11100393	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 97 does not respond to stop command
1201030098	11100394	11100395	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 98 does not respond to stop command
1201030099	11100396	11100397	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 99 does not respond to stop command
1201030100	11100398	11100399	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 100 does not respond to stop command
1401010001	32100000	32100001	Yes	No	Yes	No	No	No	300	0	Special shutdowns error Internal system error
1501010001	33100000	33100001	Yes	No	Yes	No	No	No	300	0	Shutdown calendar error: Internal system error
1601010001	34100000	34100001	Yes	No	Yes	No	No	No	300	0	Web interface error: Internal system error
1801010001	37002000	37002001	Yes	No	Yes	No	No	No	300	0	Phone option error: Internal system error
1801010002	37002002	37002003	Yes	No	Yes	No	No	No	300	0	Phone option error: Modem malfunction
1901010001	41010000	41010001	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 01
1901010002	41010002	41010003	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 02
1901010003	41010004	41010005	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate

Alarm No	Operat.Log No. occurs	Operat.Log No. leaves	Active	De-faults Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	Meaning
											sensor 03
1901010004	41010006	41010007	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 04
1901010005	41010008	41010009	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 05
1901020001	41010010	41010011	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 1 faulty
1901020002	41010012	41010013	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 2 faulty
1901020003	41010014	41010015	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 3 faulty
1901020004	41010016	41010017	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 4 faulty
1901020005	41010018	41010019	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 5 faulty
1901030001	41010020	41010021	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 1 error
1901030002	41010022	41010023	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 2 error
1901030003	41010024	41010025	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 3 error
1901030004	41010026	41010027	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 4 error
1901030005	41010028	41010029	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 5 error
1901040001	41010030	41010031	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 1 error
1901040002	41010032	41010033	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 2 error
1901040003	41010034	41010035	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 3 error
1901040004	41010036	41010037	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 4 error
1901040005	41010038	41010039	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 5 error
2001010001	40000000	40000001	Yes	No	Yes	No	No	No	300	0	Compute module error: Internal system error

Alarm No	Operat.Log No. occurs	Operat.Log No. leaves	Active	De-faults Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	Meaning
102010001	100056	100057	Yes	No	Yes	No	No	No	300	0	Main program error: No memory file found
102010002	100058	100059	Yes	No	Yes	No	No	No	300	0	Main program error: Hardware and software are not compat.
102010003	100060	100061	Yes	No	Yes	Yes	No	No	300	0	Main program error: System time has not been updated for xxx days
102020001	100000	100001	Yes	No	Yes	No	No	No	300	0	Main program error: Task oplog could not be started
102020002	100002	100003	Yes	No	Yes	No	No	No	300	0	Main program error: Task memory could not be started

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
102020003	100004	100005	Yes	No	Yes	No	No	No	300	0	Main program error: Task erma could not be started
102020004	100006	100007	Yes	No	Yes	No	No	No	300	0	Main program error: Task iom could not be started
102020005	100008	100009	Yes	No	Yes	No	No	No	300	0	Main program error: Task shmif could not be started
102020006	100010	100011	Yes	No	Yes	No	No	No	300	0	Main program error: Task smail could not be started
102020007	100012	100013	Yes	No	Yes	No	No	No	300	0	Main program error: Task sif could not be started
102020008	100014	100015	Yes	No	Yes	No	No	No	300	0	Main program error: Task silog could not be started
102030001–102030020	100016	100017	Yes	No	Yes	No	No	No	300	0	Main program error: Task 1 could not be started
102030002	100018	100019	Yes	No	Yes	No	No	No	300	0	Main program error: Task 2 could not be started
102030003	100020	100021	Yes	No	Yes	No	No	No	300	0	Main program error: Task 3 could not be started
102030004	100022	100023	Yes	No	Yes	No	No	No	300	0	Main program error: Task 4 could not be started
102030005	100024	100025	Yes	No	Yes	No	No	No	300	0	Main program error: Task 5 could not be started
102030006	100026	100027	Yes	No	Yes	No	No	No	300	0	Main program error: Task 6 could not be started
102030007	100028	100029	Yes	No	Yes	No	No	No	300	0	Main program error: Task 7 could not be started
102030008	100030	100031	Yes	No	Yes	No	No	No	300	0	Main program error: Task 8 could not be started
102030009	100032	100033	Yes	No	Yes	No	No	No	300	0	Main program error: Task 9 could not be started
102030010	100034	100035	Yes	No	Yes	No	No	No	300	0	Main program error: Task 10 could not be started
102030011	100036	100037	Yes	No	Yes	No	No	No	300	0	Main program error: Task 11 could not be started
102030012	100038	100039	Yes	No	Yes	No	No	No	300	0	Main program error: Task 12 could not be started
102030013	100040	100041	Yes	No	Yes	No	No	No	300	0	Main program error: Task 13 could not be started
102030014	100042	100043	Yes	No	Yes	No	No	No	300	0	Main program error: Task 14 could not be started
102030015	100044	100045	Yes	No	Yes	No	No	No	300	0	Main program error: Task 15 could not be started
102030016	100046	100047	Yes	No	Yes	No	No	No	300	0	Main program error: Task 16 could not be started
102030017	100048	100049	Yes	No	Yes	No	No	No	300	0	Main program error: Task 17 could not be started
102030018	100050	100051	Yes	No	Yes	No	No	No	300	0	Main program error: Task 18 could not be started
102030019	100052	100053	Yes	No	Yes	No	No	No	300	0	Main program error: Task 19 could not be started
102030020	100054	100055	Yes	No	Yes	No	No	No	300	0	Main program error: Task 20 could not be started
201010001	1100000	1100001	Yes	No	Yes	No	No	No	300	0	Storage program error: Loading of the memory file failed

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
201010002	1100002	1100003	Yes	No	Yes	No	No	No	300	0	Storage program error: Saving the memory file failed
201010003	1100004	1100005	Yes	No	Yes	No	No	No	300	0	Storage program error: Memory file is invalid
201010004	1100006	1100007	Yes	No	Yes	No	No	No	300	0	Storage program error: File system or disk error
201010005	1100008	1100009	Yes	No	Yes	No	No	No	300	0	Storage program error: Contents of the memory file
301010001	2000000	2000001	Yes	No	Yes	No	No	No	300	0	Operation log error: File system or disk error
301010002	2000002	2000003	Yes	No	Yes	Yes	No	No	300	0	Operation log error: Writing an entry failed
301010003	2000004	2000005	Yes	No	Yes	Yes	No	No	300	0	Operation log error: Operating log buffer exceeded
302010001	3000000	3000001	Yes	No	Yes	No	No	No	300	0	Shadow impact log error File system or disk error
302010002	3000002	3000003	Yes	No	Yes	Yes	No	No	300	0	Shadow impact log error Writing an entry failed
302010003	3000004	3000005	Yes	No	Yes	Yes	No	No	300	0	Shadow impact log error Operating log buffer exceeded
303010001	38000000	38000001	Yes	No	Yes	No	No	No	300	0	Error in measured value recording: File system or disk error
303010002	38000002	38000003	Yes	No	Yes	Yes	No	No	300	0	Error in measured value recording: Writing an entry failed
303010003	38000004	38000005	Yes	No	Yes	Yes	No	No	300	0	Error in measured value recording: Operating log buffer exceeded
304010001	39000000	39000001	Yes	No	Yes	No	No	No	300	0	Special shutdowns log error File system or disk error
304010002	39000002	39000003	Yes	No	Yes	Yes	No	No	300	0	Special shutdowns log error Writing an entry failed
304010003	39000004	39000005	Yes	No	Yes	Yes	No	No	300	0	Special shutdowns log error Operating log buffer exceeded
501010001	4100000	4100001	Yes	No	Yes	No	No	Yes	300	60	Alarm management error: Watchdog feedback
501010002	4100002	4100003	Yes	No	Yes	No	No	No	300	0	Alarm management error: Test alarm
601010001	5000000	5000001	Yes	No	Yes	No	No	No	300	0	Hardware management error: Internal system error
601010002	5000002	5000003	Yes	No	Yes	No	No	No	300	0	Hardware management error: Unknown hardware was detected.
601010003	5000004	5000005	Yes	No	Yes	No	No	No	300	0	Hardware management error: Plugged in hardware and configured hardware are not identical
601020001	5000006	5000007	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 1 faulty o. not available
601020002	5000008	5000009	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 2 faulty o. not available
601020003	5000010	5000011	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 3 faulty o. not

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
											available
601020004	5000012	5000013	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 4 faulty o. not available
601020005	5000014	5000015	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 5 faulty o. not available
601020006	5000016	5000017	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 6 faulty o. not available
601020007	5000018	5000019	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 7 faulty o. not available
601020008	5000020	5000021	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 8 faulty o. not available
601020009	5000022	5000023	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 9 faulty o. not available
601020010	5000024	5000025	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 10 faulty o. not available
601020011	5000026	5000027	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 11 faulty o. not available
601020012	5000028	5000029	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 12 faulty o. not available
601020013	5000030	5000031	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 13 faulty o. not available
601020014	5000032	5000033	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 14 faulty o. not available
601020015	5000034	5000035	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 15 faulty o. not available
601020016	5000036	5000037	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 16 faulty o. not available
601020017	5000038	5000039	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 17 faulty o. not available
601020018	5000040	5000041	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 18 faulty o. not available
601020019	5000042	5000043	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 19 faulty o. not available
601020020	5000044	5000045	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 20 faulty o. not available
601020021	5000046	5000047	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 21 faulty o. not available
601020022	5000048	5000049	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 22 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020023	5000050	5000051	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 23 faulty o. not available
601020024	5000052	5000053	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 24 faulty o. not available
601020025	5000054	5000055	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 25 faulty o. not available
601020026	5000056	5000057	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 26 faulty o. not available
601020027	5000058	5000059	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 27 faulty o. not available
601020028	5000060	5000061	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 28 faulty o. not available
601020029	5000062	5000063	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 29 faulty o. not available
601020030	5000064	5000065	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 30 faulty o. not available
601020031	5000066	5000067	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 31 faulty o. not available
601020032	5000068	5000069	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 32 faulty o. not available
601020033	5000070	5000071	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 33 faulty o. not available
601020034	5000072	5000073	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 34 faulty o. not available
601020035	5000074	5000075	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 35 faulty o. not available
601020036	5000076	5000077	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 36 faulty o. not available
601020037	5000078	5000079	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 37 faulty o. not available
601020038	5000080	5000081	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 38 faulty o. not available
601020039	5000082	5000083	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 39 faulty o. not available
601020040	5000084	5000085	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 40 faulty o. not available
601020041	5000086	5000087	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 41 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020042	5000088	5000089	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 42 faulty o. not available
601020043	5000090	5000091	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 43 faulty o. not available
601020044	5000092	5000093	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 44 faulty o. not available
601020045	5000094	5000095	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 45 faulty o. not available
601020046	5000096	5000097	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 46 faulty o. not available
601020047	5000098	5000099	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 47 faulty o. not available
601020048	5000100	5000101	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 48 faulty o. not available
601020049	5000102	5000103	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 49 faulty o. not available
601020050	5000104	5000105	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 50 faulty o. not available
601020051	5000106	5000107	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 51 faulty o. not available
601020052	5000108	5000109	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 52 faulty o. not available
601020053	5000110	5000111	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 53 faulty o. not available
601020054	5000112	5000113	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 54 faulty o. not available
601020055	5000114	5000115	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 55 faulty o. not available
601020056	5000116	5000117	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 56 faulty o. not available
601020057	5000118	5000119	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 57 faulty o. not available
601020058	5000120	5000121	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 58 faulty o. not available
601020059	5000122	5000123	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 59 faulty o. not available
601020060	5000124	5000125	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 60 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020061	5000126	5000127	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 61 faulty o. not available
601020062	5000128	5000129	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 62 faulty o. not available
601020063	5000130	5000131	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 63 faulty o. not available
601020064	5000132	5000133	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 64 faulty o. not available
601020065	5000134	5000135	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 65 faulty o. not available
601020066	5000136	5000137	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 66 faulty o. not available
601020067	5000138	5000139	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 67 faulty o. not available
601020068	5000140	5000141	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 68 faulty o. not available
601020069	5000142	5000143	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 69 faulty o. not available
601020070	5000144	5000145	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 70 faulty o. not available
601020071	5000146	5000147	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 71 faulty o. not available
601020072	5000148	5000149	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 72 faulty o. not available
601020073	5000150	5000151	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 73 faulty o. not available
601020074	5000152	5000153	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 74 faulty o. not available
601020075	5000154	5000155	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 75 faulty o. not available
601020076	5000156	5000157	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 76 faulty o. not available
601020077	5000158	5000159	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 77 faulty o. not available
601020078	5000160	5000161	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 78 faulty o. not available
601020079	5000162	5000163	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 79 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020080	5000164	5000165	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 80 faulty o. not available
601020081	5000166	5000167	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 81 faulty o. not available
601020082	5000168	5000169	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 82 faulty o. not available
601020083	5000170	5000171	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 83 faulty o. not available
601020084	5000172	5000173	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 84 faulty o. not available
601020085	5000174	5000175	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 85 faulty o. not available
601020086	5000176	5000177	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 86 faulty o. not available
601020087	5000178	5000179	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 87 faulty o. not available
601020088	5000180	5000181	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 88 faulty o. not available
601020089	5000182	5000183	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 89 faulty o. not available
601020090	5000184	5000185	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 90 faulty o. not available
601020091	5000186	5000187	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 91 faulty o. not available
601020092	5000188	5000189	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 92 faulty o. not available
601020093	5000190	5000191	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 93 faulty o. not available
601020094	5000192	5000193	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 94 faulty o. not available
601020095	5000194	5000195	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 95 faulty o. not available
601020096	5000196	5000197	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 96 faulty o. not available
601020097	5000198	5000199	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 97 faulty o. not available
601020098	5000200	5000201	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 98 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020099	5000202	5000203	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 99 faulty o. not available
601020100	5000204	5000205	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 100 faulty o. not available
601020101	5000206	5000207	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 101 faulty o. not available
601020102	5000208	5000209	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 102 faulty o. not available
601020103	5000210	5000211	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 103 faulty o. not available
601020104	5000212	5000213	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 104 faulty o. not available
601020105	5000214	5000215	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 105 faulty o. not available
601020106	5000216	5000217	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 106 faulty o. not available
601020107	5000218	5000219	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 107 faulty o. not available
601020108	5000220	5000221	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 108 faulty o. not available
601020109	5000222	5000223	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 109 faulty o. not available
601020110	5000224	5000225	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 110 faulty o. not available
601020111	5000226	5000227	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 111 faulty o. not available
601020112	5000228	5000229	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 112 faulty o. not available
601020113	5000230	5000231	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 113 faulty o. not available
601020114	5000232	5000233	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 114 faulty o. not available
601020115	5000234	5000235	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 115 faulty o. not available
601020116	5000236	5000237	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 116 faulty o. not available
601020117	5000238	5000239	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 117 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020118	5000240	5000241	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 118 faulty o. not available
601020119	5000242	5000243	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 119 faulty o. not available
601020120	5000244	5000245	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 120 faulty o. not available
601020121	5000246	5000247	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 121 faulty o. not available
601020122	5000248	5000249	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 122 faulty o. not available
601020123	5000250	5000251	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 123 faulty o. not available
601020124	5000252	5000253	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 124 faulty o. not available
601020125	5000254	5000255	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 125 faulty o. not available
601020126	5000256	5000257	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 126 faulty o. not available
601020127	5000258	5000259	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 127 faulty o. not available
601020128	5000260	5000261	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 128 faulty o. not available
601020129	5000262	5000263	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 129 faulty o. not available
601020130	5000264	5000265	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 130 faulty o. not available
601020131	5000266	5000267	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 131 faulty o. not available
601020132	5000268	5000269	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 132 faulty o. not available
601020133	5000270	5000271	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 133 faulty o. not available
601020134	5000272	5000273	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 134 faulty o. not available
601020135	5000274	5000275	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 135 faulty o. not available
601020136	5000276	5000277	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 136 faulty o. not available

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601020137	5000278	5000279	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 137 faulty o. not available
601020138	5000280	5000281	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 138 faulty o. not available
601020139	5000282	5000283	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 139 faulty o. not available
601020140	5000284	5000285	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 140 faulty o. not available
601020141	5000286	5000287	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 141 faulty o. not available
601020142	5000288	5000289	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 142 faulty o. not available
601020143	5000290	5000291	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 143 faulty o. not available
601020144	5000292	5000293	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 144 faulty o. not available
601020145	5000294	5000295	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 145 faulty o. not available
601020146	5000296	5000297	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 146 faulty o. not available
601020147	5000298	5000299	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 147 faulty o. not available
601020148	5000300	5000301	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 148 faulty o. not available
601020149	5000302	5000303	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 149 faulty o. not available
601020150	5000304	5000305	Yes	No	Yes	No	No	No	300	0	Hardware management error: HW module 150 faulty o. not available
601030001	5000306	5000307	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 1 faulty
601030002	5000308	5000309	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 2 faulty
601030003	5000310	5000311	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 3 faulty
601030004	5000312	5000313	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 4 faulty
601030005	5000314	5000315	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 5 faulty
601030006	5000316	5000317	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 6 faulty
601030007	5000318	5000319	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 7 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030008	5000320	5000321	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 8 faulty
601030009	5000322	5000323	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 9 faulty
601030010	5000324	5000325	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 10 faulty
601030011	5000326	5000327	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 11 faulty
601030012	5000328	5000329	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 12 faulty
601030013	5000330	5000331	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 13 faulty
601030014	5000332	5000333	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 14 faulty
601030015	5000334	5000335	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 15 faulty
601030016	5000336	5000337	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 16 faulty
601030017	5000338	5000339	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 17 faulty
601030018	5000340	5000341	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 18 faulty
601030019	5000342	5000343	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 19 faulty
601030020	5000344	5000345	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 20 faulty
601030021	5000346	5000347	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 21 faulty
601030022	5000348	5000349	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 22 faulty
601030023	5000350	5000351	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 23 faulty
601030024	5000352	5000353	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 24 faulty
601030025	5000354	5000355	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 25 faulty
601030026	5000356	5000357	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 26 faulty
601030027	5000358	5000359	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 27 faulty
601030028	5000360	5000361	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 28 faulty
601030029	5000362	5000363	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 29 faulty
601030030	5000364	5000365	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 30 faulty
601030031	5000366	5000367	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 31 faulty
601030032	5000368	5000369	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 32 faulty
601030033	5000370	5000371	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 33 faulty
601030034	5000372	5000373	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 34 faulty

Alarm No	Operat.Log No.		Active	Defaults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030035	5000374	5000375	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 35 faulty
601030036	5000376	5000377	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 36 faulty
601030037	5000378	5000379	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 37 faulty
601030038	5000380	5000381	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 38 faulty
601030039	5000382	5000383	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 39 faulty
601030040	5000384	5000385	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 40 faulty
601030041	5000386	5000387	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 41 faulty
601030042	5000388	5000389	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 42 faulty
601030043	5000390	5000391	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 43 faulty
601030044	5000392	5000393	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 44 faulty
601030045	5000394	5000395	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 45 faulty
601030046	5000396	5000397	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 46 faulty
601030047	5000398	5000399	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 47 faulty
601030048	5000400	5000401	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 48 faulty
601030049	5000402	5000403	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 49 faulty
601030050	5000404	5000405	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 50 faulty
601030051	5000406	5000407	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 51 faulty
601030052	5000408	5000409	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 52 faulty
601030053	5000410	5000411	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 53 faulty
601030054	5000412	5000413	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 54 faulty
601030055	5000414	5000415	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 55 faulty
601030056	5000416	5000417	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 56 faulty
601030057	5000418	5000419	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 57 faulty
601030058	5000420	5000421	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 58 faulty
601030059	5000422	5000423	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 59 faulty
601030060	5000424	5000425	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 60 faulty
601030061	5000426	5000427	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 61 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030062	5000428	5000429	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 62 faulty
601030063	5000430	5000431	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 63 faulty
601030064	5000432	5000433	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 64 faulty
601030065	5000434	5000435	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 65 faulty
601030066	5000436	5000437	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 66 faulty
601030067	5000438	5000439	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 67 faulty
601030068	5000440	5000441	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 68 faulty
601030069	5000442	5000443	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 69 faulty
601030070	5000444	5000445	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 70 faulty
601030071	5000446	5000447	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 71 faulty
601030072	5000448	5000449	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 72 faulty
601030073	5000450	5000451	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 73 faulty
601030074	5000452	5000453	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 74 faulty
601030075	5000454	5000455	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 75 faulty
601030076	5000456	5000457	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 76 faulty
601030077	5000458	5000459	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 77 faulty
601030078	5000460	5000461	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 78 faulty
601030079	5000462	5000463	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 79 faulty
601030080	5000464	5000465	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 80 faulty
601030081	5000466	5000467	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 81 faulty
601030082	5000468	5000469	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 82 faulty
601030083	5000470	5000471	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 83 faulty
601030084	5000472	5000473	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 84 faulty
601030085	5000474	5000475	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 85 faulty
601030086	5000476	5000477	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 86 faulty
601030087	5000478	5000479	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 87 faulty
601030088	5000480	5000481	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 88 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030089	5000482	5000483	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 89 faulty
601030090	5000484	5000485	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 90 faulty
601030091	5000486	5000487	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 91 faulty
601030092	5000488	5000489	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 92 faulty
601030093	5000490	5000491	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 93 faulty
601030094	5000492	5000493	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 94 faulty
601030095	5000494	5000495	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 95 faulty
601030096	5000496	5000497	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 96 faulty
601030097	5000498	5000499	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 97 faulty
601030098	5000500	5000501	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 98 faulty
601030099	5000502	5000503	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 99 faulty
601030100	5000504	5000505	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 100 faulty
601030101	5000506	5000507	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 101 faulty
601030102	5000508	5000509	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 102 faulty
601030103	5000510	5000511	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 103 faulty
601030104	5000512	5000513	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 104 faulty
601030105	5000514	5000515	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 105 faulty
601030106	5000516	5000517	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 106 faulty
601030107	5000518	5000519	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 107 faulty
601030108	5000520	5000521	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 108 faulty
601030109	5000522	5000523	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 109 faulty
601030110	5000524	5000525	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 110 faulty
601030111	5000526	5000527	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 111 faulty
601030112	5000528	5000529	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 112 faulty
601030113	5000530	5000531	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 113 faulty
601030114	5000532	5000533	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 114 faulty
601030115	5000534	5000535	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 115 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030116	5000536	5000537	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 116 faulty
601030117	5000538	5000539	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 117 faulty
601030118	5000540	5000541	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 118 faulty
601030119	5000542	5000543	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 119 faulty
601030120	5000544	5000545	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 120 faulty
601030121	5000546	5000547	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 121 faulty
601030122	5000548	5000549	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 122 faulty
601030123	5000550	5000551	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 123 faulty
601030124	5000552	5000553	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 124 faulty
601030125	5000554	5000555	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 125 faulty
601030126	5000556	5000557	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 126 faulty
601030127	5000558	5000559	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 127 faulty
601030128	5000560	5000561	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 128 faulty
601030129	5000562	5000563	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 129 faulty
601030130	5000564	5000565	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 130 faulty
601030131	5000566	5000567	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 131 faulty
601030132	5000568	5000569	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 132 faulty
601030133	5000570	5000571	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 133 faulty
601030134	5000572	5000573	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 134 faulty
601030135	5000574	5000575	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 135 faulty
601030136	5000576	5000577	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 136 faulty
601030137	5000578	5000579	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 137 faulty
601030138	5000580	5000581	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 138 faulty
601030139	5000582	5000583	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 139 faulty
601030140	5000584	5000585	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 140 faulty
601030141	5000586	5000587	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 141 faulty
601030142	5000588	5000589	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 142 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030143	5000590	5000591	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 143 faulty
601030144	5000592	5000593	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 144 faulty
601030145	5000594	5000595	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 145 faulty
601030146	5000596	5000597	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 146 faulty
601030147	5000598	5000599	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 147 faulty
601030148	5000600	5000601	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 148 faulty
601030149	5000602	5000603	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 149 faulty
601030150	5000604	5000605	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 150 faulty
601030151	5000606	5000607	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 151 faulty
601030152	5000608	5000609	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 152 faulty
601030153	5000610	5000611	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 153 faulty
601030154	5000612	5000613	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 154 faulty
601030155	5000614	5000615	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 155 faulty
601030156	5000616	5000617	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 156 faulty
601030157	5000618	5000619	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 157 faulty
601030158	5000620	5000621	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 158 faulty
601030159	5000622	5000623	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 159 faulty
601030160	5000624	5000625	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 160 faulty
601030161	5000626	5000627	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 161 faulty
601030162	5000628	5000629	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 162 faulty
601030163	5000630	5000631	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 163 faulty
601030164	5000632	5000633	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 164 faulty
601030165	5000634	5000635	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 165 faulty
601030166	5000636	5000637	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 166 faulty
601030167	5000638	5000639	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 167 faulty
601030168	5000640	5000641	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 168 faulty
601030169	5000642	5000643	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 169 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030170	5000644	5000645	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 170 faulty
601030171	5000646	5000647	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 171 faulty
601030172	5000648	5000649	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 172 faulty
601030173	5000650	5000651	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 173 faulty
601030174	5000652	5000653	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 174 faulty
601030175	5000654	5000655	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 175 faulty
601030176	5000656	5000657	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 176 faulty
601030177	5000658	5000659	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 177 faulty
601030178	5000660	5000661	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 178 faulty
601030179	5000662	5000663	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 179 faulty
601030180	5000664	5000665	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 180 faulty
601030181	5000666	5000667	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 181 faulty
601030182	5000668	5000669	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 182 faulty
601030183	5000670	5000671	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 183 faulty
601030184	5000672	5000673	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 184 faulty
601030185	5000674	5000675	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 185 faulty
601030186	5000676	5000677	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 186 faulty
601030187	5000678	5000679	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 187 faulty
601030188	5000680	5000681	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 188 faulty
601030189	5000682	5000683	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 189 faulty
601030190	5000684	5000685	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 190 faulty
601030191	5000686	5000687	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 191 faulty
601030192	5000688	5000689	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 192 faulty
601030193	5000690	5000691	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 193 faulty
601030194	5000692	5000693	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 194 faulty
601030195	5000694	5000695	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 195 faulty
601030196	5000696	5000697	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 196 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601030197	5000698	5000699	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 197 faulty
601030198	5000700	5000701	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 198 faulty
601030199	5000702	5000703	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 199 faulty
601030200	5000704	5000705	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital input 200 faulty
601040001	5000706	5000707	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 1 faulty
601040002	5000708	5000709	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 2 faulty
601040003	5000710	5000711	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 3 faulty
601040004	5000712	5000713	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 4 faulty
601040005	5000714	5000715	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 5 faulty
601040006	5000716	5000717	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 6 faulty
601040007	5000718	5000719	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 7 faulty
601040008	5000720	5000721	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 8 faulty
601040009	5000722	5000723	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 9 faulty
601040010	5000724	5000725	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 10 faulty
601040011	5000726	5000727	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 11 faulty
601040012	5000728	5000729	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 12 faulty
601040013	5000730	5000731	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 13 faulty
601040014	5000732	5000733	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 14 faulty
601040015	5000734	5000735	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 15 faulty
601040016	5000736	5000737	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 16 faulty
601040017	5000738	5000739	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 17 faulty
601040018	5000740	5000741	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 18 faulty
601040019	5000742	5000743	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 19 faulty
601040020	5000744	5000745	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 20 faulty
601040021	5000746	5000747	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 21 faulty
601040022	5000748	5000749	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 22 faulty
601040023	5000750	5000751	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 23 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040024	5000752	5000753	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 24 faulty
601040025	5000754	5000755	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 25 faulty
601040026	5000756	5000757	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 26 faulty
601040027	5000758	5000759	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 27 faulty
601040028	5000760	5000761	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 28 faulty
601040029	5000762	5000763	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 29 faulty
601040030	5000764	5000765	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 30 faulty
601040031	5000766	5000767	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 31 faulty
601040032	5000768	5000769	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 32 faulty
601040033	5000770	5000771	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 33 faulty
601040034	5000772	5000773	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 34 faulty
601040035	5000774	5000775	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 35 faulty
601040036	5000776	5000777	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 36 faulty
601040037	5000778	5000779	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 37 faulty
601040038	5000780	5000781	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 38 faulty
601040039	5000782	5000783	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 39 faulty
601040040	5000784	5000785	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 40 faulty
601040041	5000786	5000787	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 41 faulty
601040042	5000788	5000789	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 42 faulty
601040043	5000790	5000791	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 43 faulty
601040044	5000792	5000793	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 44 faulty
601040045	5000794	5000795	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 45 faulty
601040046	5000796	5000797	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 46 faulty
601040047	5000798	5000799	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 47 faulty
601040048	5000800	5000801	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 48 faulty
601040049	5000802	5000803	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 49 faulty
601040050	5000804	5000805	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 50 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040051	5000806	5000807	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 51 faulty
601040052	5000808	5000809	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 52 faulty
601040053	5000810	5000811	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 53 faulty
601040054	5000812	5000813	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 54 faulty
601040055	5000814	5000815	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 55 faulty
601040056	5000816	5000817	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 56 faulty
601040057	5000818	5000819	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 57 faulty
601040058	5000820	5000821	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 58 faulty
601040059	5000822	5000823	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 59 faulty
601040060	5000824	5000825	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 60 faulty
601040061	5000826	5000827	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 61 faulty
601040062	5000828	5000829	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 62 faulty
601040063	5000830	5000831	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 63 faulty
601040064	5000832	5000833	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 64 faulty
601040065	5000834	5000835	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 65 faulty
601040066	5000836	5000837	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 66 faulty
601040067	5000838	5000839	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 67 faulty
601040068	5000840	5000841	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 68 faulty
601040069	5000842	5000843	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 69 faulty
601040070	5000844	5000845	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 70 faulty
601040071	5000846	5000847	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 71 faulty
601040072	5000848	5000849	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 72 faulty
601040073	5000850	5000851	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 73 faulty
601040074	5000852	5000853	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 74 faulty
601040075	5000854	5000855	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 75 faulty
601040076	5000856	5000857	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 76 faulty
601040077	5000858	5000859	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 77 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040078	5000860	5000861	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 78 faulty
601040079	5000862	5000863	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 79 faulty
601040080	5000864	5000865	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 80 faulty
601040081	5000866	5000867	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 81 faulty
601040082	5000868	5000869	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 82 faulty
601040083	5000870	5000871	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 83 faulty
601040084	5000872	5000873	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 84 faulty
601040085	5000874	5000875	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 85 faulty
601040086	5000876	5000877	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 86 faulty
601040087	5000878	5000879	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 87 faulty
601040088	5000880	5000881	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 88 faulty
601040089	5000882	5000883	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 89 faulty
601040090	5000884	5000885	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 90 faulty
601040091	5000886	5000887	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 91 faulty
601040092	5000888	5000889	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 92 faulty
601040093	5000890	5000891	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 93 faulty
601040094	5000892	5000893	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 94 faulty
601040095	5000894	5000895	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 95 faulty
601040096	5000896	5000897	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 96 faulty
601040097	5000898	5000899	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 97 faulty
601040098	5000900	5000901	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 98 faulty
601040099	5000902	5000903	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 99 faulty
601040100	5000904	5000905	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 100 faulty
601040101	5000906	5000907	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 101 faulty
601040102	5000908	5000909	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 102 faulty
601040103	5000910	5000911	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 103 faulty
601040104	5000912	5000913	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 104 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040105	5000914	5000915	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 105 faulty
601040106	5000916	5000917	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 106 faulty
601040107	5000918	5000919	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 107 faulty
601040108	5000920	5000921	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 108 faulty
601040109	5000922	5000923	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 109 faulty
601040110	5000924	5000925	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 110 faulty
601040111	5000926	5000927	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 111 faulty
601040112	5000928	5000929	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 112 faulty
601040113	5000930	5000931	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 113 faulty
601040114	5000932	5000933	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 114 faulty
601040115	5000934	5000935	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 115 faulty
601040116	5000936	5000937	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 116 faulty
601040117	5000938	5000939	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 117 faulty
601040118	5000940	5000941	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 118 faulty
601040119	5000942	5000943	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 119 faulty
601040120	5000944	5000945	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 120 faulty
601040121	5000946	5000947	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 121 faulty
601040122	5000948	5000949	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 122 faulty
601040123	5000950	5000951	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 123 faulty
601040124	5000952	5000953	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 124 faulty
601040125	5000954	5000955	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 125 faulty
601040126	5000956	5000957	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 126 faulty
601040127	5000958	5000959	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 127 faulty
601040128	5000960	5000961	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 128 faulty
601040129	5000962	5000963	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 129 faulty
601040130	5000964	5000965	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 130 faulty
601040131	5000966	5000967	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 131 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040132	5000968	5000969	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 132 faulty
601040133	5000970	5000971	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 133 faulty
601040134	5000972	5000973	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 134 faulty
601040135	5000974	5000975	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 135 faulty
601040136	5000976	5000977	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 136 faulty
601040137	5000978	5000979	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 137 faulty
601040138	5000980	5000981	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 138 faulty
601040139	5000982	5000983	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 139 faulty
601040140	5000984	5000985	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 140 faulty
601040141	5000986	5000987	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 141 faulty
601040142	5000988	5000989	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 142 faulty
601040143	5000990	5000991	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 143 faulty
601040144	5000992	5000993	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 144 faulty
601040145	5000994	5000995	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 145 faulty
601040146	5000996	5000997	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 146 faulty
601040147	5000998	5000999	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 147 faulty
601040148	5001000	5001001	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 148 faulty
601040149	5001002	5001003	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 149 faulty
601040150	5001004	5001005	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 150 faulty
601040151	5001006	5001007	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 151 faulty
601040152	5001008	5001009	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 152 faulty
601040153	5001010	5001011	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 153 faulty
601040154	5001012	5001013	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 154 faulty
601040155	5001014	5001015	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 155 faulty
601040156	5001016	5001017	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 156 faulty
601040157	5001018	5001019	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 157 faulty
601040158	5001020	5001021	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 158 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040159	5001022	5001023	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 159 faulty
601040160	5001024	5001025	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 160 faulty
601040161	5001026	5001027	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 161 faulty
601040162	5001028	5001029	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 162 faulty
601040163	5001030	5001031	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 163 faulty
601040164	5001032	5001033	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 164 faulty
601040165	5001034	5001035	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 165 faulty
601040166	5001036	5001037	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 166 faulty
601040167	5001038	5001039	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 167 faulty
601040168	5001040	5001041	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 168 faulty
601040169	5001042	5001043	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 169 faulty
601040170	5001044	5001045	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 170 faulty
601040171	5001046	5001047	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 171 faulty
601040172	5001048	5001049	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 172 faulty
601040173	5001050	5001051	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 173 faulty
601040174	5001052	5001053	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 174 faulty
601040175	5001054	5001055	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 175 faulty
601040176	5001056	5001057	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 176 faulty
601040177	5001058	5001059	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 177 faulty
601040178	5001060	5001061	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 178 faulty
601040179	5001062	5001063	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 179 faulty
601040180	5001064	5001065	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 180 faulty
601040181	5001066	5001067	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 181 faulty
601040182	5001068	5001069	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 182 faulty
601040183	5001070	5001071	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 183 faulty
601040184	5001072	5001073	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 184 faulty
601040185	5001074	5001075	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 185 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040186	5001076	5001077	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 186 faulty
601040187	5001078	5001079	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 187 faulty
601040188	5001080	5001081	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 188 faulty
601040189	5001082	5001083	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 189 faulty
601040190	5001084	5001085	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 190 faulty
601040191	5001086	5001087	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 191 faulty
601040192	5001088	5001089	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 192 faulty
601040193	5001090	5001091	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 193 faulty
601040194	5001092	5001093	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 194 faulty
601040195	5001094	5001095	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 195 faulty
601040196	5001096	5001097	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 196 faulty
601040197	5001098	5001099	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 197 faulty
601040198	5001100	5001101	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 198 faulty
601040199	5001102	5001103	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 199 faulty
601040200	5001104	5001105	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 200 faulty
601040201	5001106	5001107	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 201 faulty
601040202	5001108	5001109	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 202 faulty
601040203	5001110	5001111	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 203 faulty
601040204	5001112	5001113	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 204 faulty
601040205	5001114	5001115	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 205 faulty
601040206	5001116	5001117	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 206 faulty
601040207	5001118	5001119	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 207 faulty
601040208	5001120	5001121	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 208 faulty
601040209	5001122	5001123	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 209 faulty
601040210	5001124	5001125	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 210 faulty
601040211	5001126	5001127	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 211 faulty
601040212	5001128	5001129	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 212 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040213	5001130	5001131	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 213 faulty
601040214	5001132	5001133	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 214 faulty
601040215	5001134	5001135	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 215 faulty
601040216	5001136	5001137	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 216 faulty
601040217	5001138	5001139	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 217 faulty
601040218	5001140	5001141	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 218 faulty
601040219	5001142	5001143	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 219 faulty
601040220	5001144	5001145	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 220 faulty
601040221	5001146	5001147	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 221 faulty
601040222	5001148	5001149	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 222 faulty
601040223	5001150	5001151	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 223 faulty
601040224	5001152	5001153	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 224 faulty
601040225	5001154	5001155	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 225 faulty
601040226	5001156	5001157	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 226 faulty
601040227	5001158	5001159	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 227 faulty
601040228	5001160	5001161	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 228 faulty
601040229	5001162	5001163	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 229 faulty
601040230	5001164	5001165	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 230 faulty
601040231	5001166	5001167	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 231 faulty
601040232	5001168	5001169	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 232 faulty
601040233	5001170	5001171	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 233 faulty
601040234	5001172	5001173	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 234 faulty
601040235	5001174	5001175	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 235 faulty
601040236	5001176	5001177	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 236 faulty
601040237	5001178	5001179	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 237 faulty
601040238	5001180	5001181	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 238 faulty
601040239	5001182	5001183	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 239 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040240	5001184	5001185	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 240 faulty
601040241	5001186	5001187	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 241 faulty
601040242	5001188	5001189	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 242 faulty
601040243	5001190	5001191	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 243 faulty
601040244	5001192	5001193	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 244 faulty
601040245	5001194	5001195	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 245 faulty
601040246	5001196	5001197	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 246 faulty
601040247	5001198	5001199	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 247 faulty
601040248	5001200	5001201	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 248 faulty
601040249	5001202	5001203	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 249 faulty
601040250	5001204	5001205	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 250 faulty
601040251	5001206	5001207	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 251 faulty
601040252	5001208	5001209	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 252 faulty
601040253	5001210	5001211	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 253 faulty
601040254	5001212	5001213	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 254 faulty
601040255	5001214	5001215	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 255 faulty
601040256	5001216	5001217	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 256 faulty
601040257	5001218	5001219	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 257 faulty
601040258	5001220	5001221	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 258 faulty
601040259	5001222	5001223	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 259 faulty
601040260	5001224	5001225	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 260 faulty
601040261	5001226	5001227	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 261 faulty
601040262	5001228	5001229	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 262 faulty
601040263	5001230	5001231	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 263 faulty
601040264	5001232	5001233	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 264 faulty
601040265	5001234	5001235	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 265 faulty
601040266	5001236	5001237	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 266 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040267	5001238	5001239	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 267 faulty
601040268	5001240	5001241	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 268 faulty
601040269	5001242	5001243	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 269 faulty
601040270	5001244	5001245	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 270 faulty
601040271	5001246	5001247	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 271 faulty
601040272	5001248	5001249	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 272 faulty
601040273	5001250	5001251	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 273 faulty
601040274	5001252	5001253	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 274 faulty
601040275	5001254	5001255	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 275 faulty
601040276	5001256	5001257	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 276 faulty
601040277	5001258	5001259	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 277 faulty
601040278	5001260	5001261	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 278 faulty
601040279	5001262	5001263	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 279 faulty
601040280	5001264	5001265	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 280 faulty
601040281	5001266	5001267	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 281 faulty
601040282	5001268	5001269	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 282 faulty
601040283	5001270	5001271	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 283 faulty
601040284	5001272	5001273	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 284 faulty
601040285	5001274	5001275	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 285 faulty
601040286	5001276	5001277	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 286 faulty
601040287	5001278	5001279	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 287 faulty
601040288	5001280	5001281	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 288 faulty
601040289	5001282	5001283	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 289 faulty
601040290	5001284	5001285	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 290 faulty
601040291	5001286	5001287	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 291 faulty
601040292	5001288	5001289	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 292 faulty
601040293	5001290	5001291	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 293 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040294	5001292	5001293	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 294 faulty
601040295	5001294	5001295	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 295 faulty
601040296	5001296	5001297	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 296 faulty
601040297	5001298	5001299	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 297 faulty
601040298	5001300	5001301	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 298 faulty
601040299	5001302	5001303	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 299 faulty
601040300	5001304	5001305	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 300 faulty
601040301	5001306	5001307	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 301 faulty
601040302	5001308	5001309	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 302 faulty
601040303	5001310	5001311	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 303 faulty
601040304	5001312	5001313	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 304 faulty
601040305	5001314	5001315	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 305 faulty
601040306	5001316	5001317	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 306 faulty
601040307	5001318	5001319	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 307 faulty
601040308	5001320	5001321	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 308 faulty
601040309	5001322	5001323	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 309 faulty
601040310	5001324	5001325	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 310 faulty
601040311	5001326	5001327	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 311 faulty
601040312	5001328	5001329	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 312 faulty
601040313	5001330	5001331	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 313 faulty
601040314	5001332	5001333	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 314 faulty
601040315	5001334	5001335	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 315 faulty
601040316	5001336	5001337	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 316 faulty
601040317	5001338	5001339	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 317 faulty
601040318	5001340	5001341	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 318 faulty
601040319	5001342	5001343	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 319 faulty
601040320	5001344	5001345	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 320 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040321	5001346	5001347	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 321 faulty
601040322	5001348	5001349	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 322 faulty
601040323	5001350	5001351	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 323 faulty
601040324	5001352	5001353	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 324 faulty
601040325	5001354	5001355	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 325 faulty
601040326	5001356	5001357	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 326 faulty
601040327	5001358	5001359	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 327 faulty
601040328	5001360	5001361	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 328 faulty
601040329	5001362	5001363	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 329 faulty
601040330	5001364	5001365	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 330 faulty
601040331	5001366	5001367	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 331 faulty
601040332	5001368	5001369	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 332 faulty
601040333	5001370	5001371	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 333 faulty
601040334	5001372	5001373	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 334 faulty
601040335	5001374	5001375	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 335 faulty
601040336	5001376	5001377	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 336 faulty
601040337	5001378	5001379	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 337 faulty
601040338	5001380	5001381	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 338 faulty
601040339	5001382	5001383	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 339 faulty
601040340	5001384	5001385	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 340 faulty
601040341	5001386	5001387	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 341 faulty
601040342	5001388	5001389	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 342 faulty
601040343	5001390	5001391	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 343 faulty
601040344	5001392	5001393	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 344 faulty
601040345	5001394	5001395	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 345 faulty
601040346	5001396	5001397	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 346 faulty
601040347	5001398	5001399	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 347 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040348	5001400	5001401	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 348 faulty
601040349	5001402	5001403	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 349 faulty
601040350	5001404	5001405	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 350 faulty
601040351	5001406	5001407	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 351 faulty
601040352	5001408	5001409	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 352 faulty
601040353	5001410	5001411	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 353 faulty
601040354	5001412	5001413	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 354 faulty
601040355	5001414	5001415	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 355 faulty
601040356	5001416	5001417	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 356 faulty
601040357	5001418	5001419	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 357 faulty
601040358	5001420	5001421	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 358 faulty
601040359	5001422	5001423	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 359 faulty
601040360	5001424	5001425	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 360 faulty
601040361	5001426	5001427	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 361 faulty
601040362	5001428	5001429	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 362 faulty
601040363	5001430	5001431	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 363 faulty
601040364	5001432	5001433	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 364 faulty
601040365	5001434	5001435	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 365 faulty
601040366	5001436	5001437	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 366 faulty
601040367	5001438	5001439	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 367 faulty
601040368	5001440	5001441	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 368 faulty
601040369	5001442	5001443	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 369 faulty
601040370	5001444	5001445	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 370 faulty
601040371	5001446	5001447	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 371 faulty
601040372	5001448	5001449	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 372 faulty
601040373	5001450	5001451	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 373 faulty
601040374	5001452	5001453	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 374 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601040375	5001454	5001455	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 375 faulty
601040376	5001456	5001457	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 376 faulty
601040377	5001458	5001459	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 377 faulty
601040378	5001460	5001461	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 378 faulty
601040379	5001462	5001463	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 379 faulty
601040380	5001464	5001465	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 380 faulty
601040381	5001466	5001467	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 381 faulty
601040382	5001468	5001469	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 382 faulty
601040383	5001470	5001471	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 383 faulty
601040384	5001472	5001473	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 384 faulty
601040385	5001474	5001475	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 385 faulty
601040386	5001476	5001477	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 386 faulty
601040387	5001478	5001479	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 387 faulty
601040388	5001480	5001481	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 388 faulty
601040389	5001482	5001483	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 389 faulty
601040390	5001484	5001485	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 390 faulty
601040391	5001486	5001487	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 391 faulty
601040392	5001488	5001489	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 392 faulty
601040393	5001490	5001491	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 393 faulty
601040394	5001492	5001493	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 394 faulty
601040395	5001494	5001495	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 395 faulty
601040396	5001496	5001497	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 396 faulty
601040397	5001498	5001499	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 397 faulty
601040398	5001500	5001501	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 398 faulty
601040399	5001502	5001503	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 399 faulty
601040400	5001504	5001505	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Digital output 400 faulty
601050001	5001506	5001507	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 1 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050002	5001508	5001509	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 2 faulty
601050003	5001510	5001511	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 3 faulty
601050004	5001512	5001513	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 4 faulty
601050005	5001514	5001515	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 5 faulty
601050006	5001516	5001517	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 6 faulty
601050007	5001518	5001519	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 7 faulty
601050008	5001520	5001521	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 8 faulty
601050009	5001522	5001523	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 9 faulty
601050010	5001524	5001525	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 10 faulty
601050011	5001526	5001527	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 11 faulty
601050012	5001528	5001529	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 12 faulty
601050013	5001530	5001531	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 13 faulty
601050014	5001532	5001533	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 14 faulty
601050015	5001534	5001535	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 15 faulty
601050016	5001536	5001537	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 16 faulty
601050017	5001538	5001539	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 17 faulty
601050018	5001540	5001541	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 18 faulty
601050019	5001542	5001543	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 19 faulty
601050020	5001544	5001545	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 20 faulty
601050021	5001546	5001547	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 21 faulty
601050022	5001548	5001549	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 22 faulty
601050023	5001550	5001551	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 23 faulty
601050024	5001552	5001553	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 24 faulty
601050025	5001554	5001555	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 25 faulty
601050026	5001556	5001557	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 26 faulty
601050027	5001558	5001559	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 27 faulty
601050028	5001560	5001561	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 28 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050029	5001562	5001563	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 29 faulty
601050030	5001564	5001565	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 30 faulty
601050031	5001566	5001567	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 31 faulty
601050032	5001568	5001569	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 32 faulty
601050033	5001570	5001571	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 33 faulty
601050034	5001572	5001573	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 34 faulty
601050035	5001574	5001575	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 35 faulty
601050036	5001576	5001577	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 36 faulty
601050037	5001578	5001579	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 37 faulty
601050038	5001580	5001581	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 38 faulty
601050039	5001582	5001583	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 39 faulty
601050040	5001584	5001585	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 40 faulty
601050041	5001586	5001587	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 41 faulty
601050042	5001588	5001589	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 42 faulty
601050043	5001590	5001591	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 43 faulty
601050044	5001592	5001593	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 44 faulty
601050045	5001594	5001595	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 45 faulty
601050046	5001596	5001597	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 46 faulty
601050047	5001598	5001599	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 47 faulty
601050048	5001600	5001601	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 48 faulty
601050049	5001602	5001603	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 49 faulty
601050050	5001604	5001605	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 50 faulty
601050051	5001606	5001607	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 51 faulty
601050052	5001608	5001609	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 52 faulty
601050053	5001610	5001611	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 53 faulty
601050054	5001612	5001613	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 54 faulty
601050055	5001614	5001615	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 55 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050056	5001616	5001617	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 56 faulty
601050057	5001618	5001619	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 57 faulty
601050058	5001620	5001621	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 58 faulty
601050059	5001622	5001623	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 59 faulty
601050060	5001624	5001625	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 60 faulty
601050061	5001626	5001627	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 61 faulty
601050062	5001628	5001629	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 62 faulty
601050063	5001630	5001631	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 63 faulty
601050064	5001632	5001633	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 64 faulty
601050065	5001634	5001635	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 65 faulty
601050066	5001636	5001637	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 66 faulty
601050067	5001638	5001639	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 67 faulty
601050068	5001640	5001641	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 68 faulty
601050069	5001642	5001643	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 69 faulty
601050070	5001644	5001645	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 70 faulty
601050071	5001646	5001647	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 71 faulty
601050072	5001648	5001649	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 72 faulty
601050073	5001650	5001651	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 73 faulty
601050074	5001652	5001653	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 74 faulty
601050075	5001654	5001655	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 75 faulty
601050076	5001656	5001657	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 76 faulty
601050077	5001658	5001659	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 77 faulty
601050078	5001660	5001661	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 78 faulty
601050079	5001662	5001663	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 79 faulty
601050080	5001664	5001665	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 80 faulty
601050081	5001666	5001667	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 81 faulty
601050082	5001668	5001669	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 82 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050083	5001670	5001671	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 83 faulty
601050084	5001672	5001673	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 84 faulty
601050085	5001674	5001675	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 85 faulty
601050086	5001676	5001677	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 86 faulty
601050087	5001678	5001679	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 87 faulty
601050088	5001680	5001681	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 88 faulty
601050089	5001682	5001683	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 89 faulty
601050090	5001684	5001685	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 90 faulty
601050091	5001686	5001687	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 91 faulty
601050092	5001688	5001689	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 92 faulty
601050093	5001690	5001691	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 93 faulty
601050094	5001692	5001693	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 94 faulty
601050095	5001694	5001695	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 95 faulty
601050096	5001696	5001697	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 96 faulty
601050097	5001698	5001699	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 97 faulty
601050098	5001700	5001701	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 98 faulty
601050099	5001702	5001703	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 99 faulty
601050100	5001704	5001705	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 100 faulty
601050101	5001706	5001707	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 101 faulty
601050102	5001708	5001709	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 102 faulty
601050103	5001710	5001711	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 103 faulty
601050104	5001712	5001713	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 104 faulty
601050105	5001714	5001715	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 105 faulty
601050106	5001716	5001717	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 106 faulty
601050107	5001718	5001719	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 107 faulty
601050108	5001720	5001721	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 108 faulty
601050109	5001722	5001723	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 109 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050110	5001724	5001725	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 110 faulty
601050111	5001726	5001727	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 111 faulty
601050112	5001728	5001729	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 112 faulty
601050113	5001730	5001731	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 113 faulty
601050114	5001732	5001733	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 114 faulty
601050115	5001734	5001735	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 115 faulty
601050116	5001736	5001737	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 116 faulty
601050117	5001738	5001739	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 117 faulty
601050118	5001740	5001741	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 118 faulty
601050119	5001742	5001743	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 119 faulty
601050120	5001744	5001745	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 120 faulty
601050121	5001746	5001747	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 121 faulty
601050122	5001748	5001749	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 122 faulty
601050123	5001750	5001751	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 123 faulty
601050124	5001752	5001753	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 124 faulty
601050125	5001754	5001755	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 125 faulty
601050126	5001756	5001757	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 126 faulty
601050127	5001758	5001759	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 127 faulty
601050128	5001760	5001761	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 128 faulty
601050129	5001762	5001763	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 129 faulty
601050130	5001764	5001765	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 130 faulty
601050131	5001766	5001767	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 131 faulty
601050132	5001768	5001769	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 132 faulty
601050133	5001770	5001771	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 133 faulty
601050134	5001772	5001773	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 134 faulty
601050135	5001774	5001775	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 135 faulty
601050136	5001776	5001777	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 136 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050137	5001778	5001779	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 137 faulty
601050138	5001780	5001781	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 138 faulty
601050139	5001782	5001783	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 139 faulty
601050140	5001784	5001785	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 140 faulty
601050141	5001786	5001787	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 141 faulty
601050142	5001788	5001789	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 142 faulty
601050143	5001790	5001791	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 143 faulty
601050144	5001792	5001793	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 144 faulty
601050145	5001794	5001795	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 145 faulty
601050146	5001796	5001797	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 146 faulty
601050147	5001798	5001799	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 147 faulty
601050148	5001800	5001801	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 148 faulty
601050149	5001802	5001803	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 149 faulty
601050150	5001804	5001805	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 150 faulty
601050151	5001806	5001807	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 151 faulty
601050152	5001808	5001809	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 152 faulty
601050153	5001810	5001811	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 153 faulty
601050154	5001812	5001813	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 154 faulty
601050155	5001814	5001815	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 155 faulty
601050156	5001816	5001817	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 156 faulty
601050157	5001818	5001819	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 157 faulty
601050158	5001820	5001821	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 158 faulty
601050159	5001822	5001823	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 159 faulty
601050160	5001824	5001825	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 160 faulty
601050161	5001826	5001827	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 161 faulty
601050162	5001828	5001829	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 162 faulty
601050163	5001830	5001831	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 163 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050164	5001832	5001833	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 164 faulty
601050165	5001834	5001835	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 165 faulty
601050166	5001836	5001837	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 166 faulty
601050167	5001838	5001839	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 167 faulty
601050168	5001840	5001841	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 168 faulty
601050169	5001842	5001843	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 169 faulty
601050170	5001844	5001845	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 170 faulty
601050171	5001846	5001847	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 171 faulty
601050172	5001848	5001849	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 172 faulty
601050173	5001850	5001851	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 173 faulty
601050174	5001852	5001853	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 174 faulty
601050175	5001854	5001855	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 175 faulty
601050176	5001856	5001857	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 176 faulty
601050177	5001858	5001859	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 177 faulty
601050178	5001860	5001861	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 178 faulty
601050179	5001862	5001863	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 179 faulty
601050180	5001864	5001865	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 180 faulty
601050181	5001866	5001867	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 181 faulty
601050182	5001868	5001869	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 182 faulty
601050183	5001870	5001871	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 183 faulty
601050184	5001872	5001873	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 184 faulty
601050185	5001874	5001875	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 185 faulty
601050186	5001876	5001877	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 186 faulty
601050187	5001878	5001879	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 187 faulty
601050188	5001880	5001881	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 188 faulty
601050189	5001882	5001883	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 189 faulty
601050190	5001884	5001885	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 190 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050191	5001886	5001887	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 191 faulty
601050192	5001888	5001889	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 192 faulty
601050193	5001890	5001891	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 193 faulty
601050194	5001892	5001893	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 194 faulty
601050195	5001894	5001895	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 195 faulty
601050196	5001896	5001897	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 196 faulty
601050197	5001898	5001899	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 197 faulty
601050198	5001900	5001901	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 198 faulty
601050199	5001902	5001903	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 199 faulty
601050200	5001904	5001905	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 200 faulty
601050201	5001906	5001907	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 201 faulty
601050202	5001908	5001909	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 202 faulty
601050203	5001910	5001911	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 203 faulty
601050204	5001912	5001913	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 204 faulty
601050205	5001914	5001915	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 205 faulty
601050206	5001916	5001917	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 206 faulty
601050207	5001918	5001919	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 207 faulty
601050208	5001920	5001921	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 208 faulty
601050209	5001922	5001923	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 209 faulty
601050210	5001924	5001925	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 210 faulty
601050211	5001926	5001927	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 211 faulty
601050212	5001928	5001929	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 212 faulty
601050213	5001930	5001931	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 213 faulty
601050214	5001932	5001933	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 214 faulty
601050215	5001934	5001935	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 215 faulty
601050216	5001936	5001937	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 216 faulty
601050217	5001938	5001939	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 217 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050218	5001940	5001941	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 218 faulty
601050219	5001942	5001943	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 219 faulty
601050220	5001944	5001945	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 220 faulty
601050221	5001946	5001947	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 221 faulty
601050222	5001948	5001949	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 222 faulty
601050223	5001950	5001951	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 223 faulty
601050224	5001952	5001953	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 224 faulty
601050225	5001954	5001955	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 225 faulty
601050226	5001956	5001957	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 226 faulty
601050227	5001958	5001959	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 227 faulty
601050228	5001960	5001961	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 228 faulty
601050229	5001962	5001963	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 229 faulty
601050230	5001964	5001965	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 230 faulty
601050231	5001966	5001967	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 231 faulty
601050232	5001968	5001969	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 232 faulty
601050233	5001970	5001971	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 233 faulty
601050234	5001972	5001973	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 234 faulty
601050235	5001974	5001975	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 235 faulty
601050236	5001976	5001977	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 236 faulty
601050237	5001978	5001979	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 237 faulty
601050238	5001980	5001981	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 238 faulty
601050239	5001982	5001983	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 239 faulty
601050240	5001984	5001985	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 240 faulty
601050241	5001986	5001987	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 241 faulty
601050242	5001988	5001989	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 242 faulty
601050243	5001990	5001991	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 243 faulty
601050244	5001992	5001993	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 244 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050245	5001994	5001995	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 245 faulty
601050246	5001996	5001997	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 246 faulty
601050247	5001998	5001999	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 247 faulty
601050248	5002000	5002001	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 248 faulty
601050249	5002002	5002003	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 249 faulty
601050250	5002004	5002005	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 250 faulty
601050251	5002006	5002007	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 251 faulty
601050252	5002008	5002009	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 252 faulty
601050253	5002010	5002011	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 253 faulty
601050254	5002012	5002013	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 254 faulty
601050255	5002014	5002015	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 255 faulty
601050256	5002016	5002017	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 256 faulty
601050257	5002018	5002019	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 257 faulty
601050258	5002020	5002021	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 258 faulty
601050259	5002022	5002023	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 259 faulty
601050260	5002024	5002025	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 260 faulty
601050261	5002026	5002027	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 261 faulty
601050262	5002028	5002029	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 262 faulty
601050263	5002030	5002031	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 263 faulty
601050264	5002032	5002033	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 264 faulty
601050265	5002034	5002035	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 265 faulty
601050266	5002036	5002037	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 266 faulty
601050267	5002038	5002039	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 267 faulty
601050268	5002040	5002041	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 268 faulty
601050269	5002042	5002043	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 269 faulty
601050270	5002044	5002045	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 270 faulty
601050271	5002046	5002047	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 271 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050272	5002048	5002049	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 272 faulty
601050273	5002050	5002051	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 273 faulty
601050274	5002052	5002053	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 274 faulty
601050275	5002054	5002055	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 275 faulty
601050276	5002056	5002057	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 276 faulty
601050277	5002058	5002059	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 277 faulty
601050278	5002060	5002061	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 278 faulty
601050279	5002062	5002063	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 279 faulty
601050280	5002064	5002065	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 280 faulty
601050281	5002066	5002067	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 281 faulty
601050282	5002068	5002069	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 282 faulty
601050283	5002070	5002071	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 283 faulty
601050284	5002072	5002073	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 284 faulty
601050285	5002074	5002075	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 285 faulty
601050286	5002076	5002077	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 286 faulty
601050287	5002078	5002079	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 287 faulty
601050288	5002080	5002081	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 288 faulty
601050289	5002082	5002083	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 289 faulty
601050290	5002084	5002085	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 290 faulty
601050291	5002086	5002087	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 291 faulty
601050292	5002088	5002089	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 292 faulty
601050293	5002090	5002091	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 293 faulty
601050294	5002092	5002093	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 294 faulty
601050295	5002094	5002095	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 295 faulty
601050296	5002096	5002097	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 296 faulty
601050297	5002098	5002099	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 297 faulty
601050298	5002100	5002101	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 298 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050299	5002102	5002103	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 299 faulty
601050300	5002104	5002105	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 300 faulty
601050301	5002106	5002107	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 301 faulty
601050302	5002108	5002109	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 302 faulty
601050303	5002110	5002111	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 303 faulty
601050304	5002112	5002113	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 304 faulty
601050305	5002114	5002115	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 305 faulty
601050306	5002116	5002117	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 306 faulty
601050307	5002118	5002119	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 307 faulty
601050308	5002120	5002121	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 308 faulty
601050309	5002122	5002123	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 309 faulty
601050310	5002124	5002125	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 310 faulty
601050311	5002126	5002127	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 311 faulty
601050312	5002128	5002129	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 312 faulty
601050313	5002130	5002131	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 313 faulty
601050314	5002132	5002133	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 314 faulty
601050315	5002134	5002135	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 315 faulty
601050316	5002136	5002137	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 316 faulty
601050317	5002138	5002139	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 317 faulty
601050318	5002140	5002141	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 318 faulty
601050319	5002142	5002143	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 319 faulty
601050320	5002144	5002145	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 320 faulty
601050321	5002146	5002147	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 321 faulty
601050322	5002148	5002149	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 322 faulty
601050323	5002150	5002151	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 323 faulty
601050324	5002152	5002153	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 324 faulty
601050325	5002154	5002155	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 325 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050326	5002156	5002157	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 326 faulty
601050327	5002158	5002159	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 327 faulty
601050328	5002160	5002161	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 328 faulty
601050329	5002162	5002163	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 329 faulty
601050330	5002164	5002165	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 330 faulty
601050331	5002166	5002167	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 331 faulty
601050332	5002168	5002169	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 332 faulty
601050333	5002170	5002171	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 333 faulty
601050334	5002172	5002173	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 334 faulty
601050335	5002174	5002175	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 335 faulty
601050336	5002176	5002177	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 336 faulty
601050337	5002178	5002179	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 337 faulty
601050338	5002180	5002181	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 338 faulty
601050339	5002182	5002183	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 339 faulty
601050340	5002184	5002185	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 340 faulty
601050341	5002186	5002187	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 341 faulty
601050342	5002188	5002189	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 342 faulty
601050343	5002190	5002191	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 343 faulty
601050344	5002192	5002193	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 344 faulty
601050345	5002194	5002195	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 345 faulty
601050346	5002196	5002197	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 346 faulty
601050347	5002198	5002199	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 347 faulty
601050348	5002200	5002201	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 348 faulty
601050349	5002202	5002203	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 349 faulty
601050350	5002204	5002205	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 350 faulty
601050351	5002206	5002207	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 351 faulty
601050352	5002208	5002209	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 352 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050353	5002210	5002211	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 353 faulty
601050354	5002212	5002213	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 354 faulty
601050355	5002214	5002215	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 355 faulty
601050356	5002216	5002217	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 356 faulty
601050357	5002218	5002219	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 357 faulty
601050358	5002220	5002221	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 358 faulty
601050359	5002222	5002223	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 359 faulty
601050360	5002224	5002225	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 360 faulty
601050361	5002226	5002227	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 361 faulty
601050362	5002228	5002229	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 362 faulty
601050363	5002230	5002231	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 363 faulty
601050364	5002232	5002233	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 364 faulty
601050365	5002234	5002235	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 365 faulty
601050366	5002236	5002237	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 366 faulty
601050367	5002238	5002239	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 367 faulty
601050368	5002240	5002241	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 368 faulty
601050369	5002242	5002243	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 369 faulty
601050370	5002244	5002245	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 370 faulty
601050371	5002246	5002247	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 371 faulty
601050372	5002248	5002249	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 372 faulty
601050373	5002250	5002251	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 373 faulty
601050374	5002252	5002253	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 374 faulty
601050375	5002254	5002255	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 375 faulty
601050376	5002256	5002257	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 376 faulty
601050377	5002258	5002259	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 377 faulty
601050378	5002260	5002261	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 378 faulty
601050379	5002262	5002263	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 379 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050380	5002264	5002265	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 380 faulty
601050381	5002266	5002267	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 381 faulty
601050382	5002268	5002269	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 382 faulty
601050383	5002270	5002271	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 383 faulty
601050384	5002272	5002273	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 384 faulty
601050385	5002274	5002275	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 385 faulty
601050386	5002276	5002277	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 386 faulty
601050387	5002278	5002279	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 387 faulty
601050388	5002280	5002281	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 388 faulty
601050389	5002282	5002283	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 389 faulty
601050390	5002284	5002285	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 390 faulty
601050391	5002286	5002287	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 391 faulty
601050392	5002288	5002289	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 392 faulty
601050393	5002290	5002291	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 393 faulty
601050394	5002292	5002293	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 394 faulty
601050395	5002294	5002295	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 395 faulty
601050396	5002296	5002297	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 396 faulty
601050397	5002298	5002299	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 397 faulty
601050398	5002300	5002301	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 398 faulty
601050399	5002302	5002303	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 399 faulty
601050400	5002304	5002305	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 400 faulty
601050401	5002306	5002307	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 401 faulty
601050402	5002308	5002309	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 402 faulty
601050403	5002310	5002311	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 403 faulty
601050404	5002312	5002313	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 404 faulty
601050405	5002314	5002315	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 405 faulty
601050406	5002316	5002317	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 406 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050407	5002318	5002319	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 407 faulty
601050408	5002320	5002321	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 408 faulty
601050409	5002322	5002323	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 409 faulty
601050410	5002324	5002325	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 410 faulty
601050411	5002326	5002327	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 411 faulty
601050412	5002328	5002329	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 412 faulty
601050413	5002330	5002331	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 413 faulty
601050414	5002332	5002333	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 414 faulty
601050415	5002334	5002335	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 415 faulty
601050416	5002336	5002337	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 416 faulty
601050417	5002338	5002339	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 417 faulty
601050418	5002340	5002341	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 418 faulty
601050419	5002342	5002343	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 419 faulty
601050420	5002344	5002345	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 420 faulty
601050421	5002346	5002347	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 421 faulty
601050422	5002348	5002349	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 422 faulty
601050423	5002350	5002351	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 423 faulty
601050424	5002352	5002353	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 424 faulty
601050425	5002354	5002355	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 425 faulty
601050426	5002356	5002357	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 426 faulty
601050427	5002358	5002359	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 427 faulty
601050428	5002360	5002361	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 428 faulty
601050429	5002362	5002363	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 429 faulty
601050430	5002364	5002365	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 430 faulty
601050431	5002366	5002367	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 431 faulty
601050432	5002368	5002369	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 432 faulty
601050433	5002370	5002371	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 433 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050434	5002372	5002373	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 434 faulty
601050435	5002374	5002375	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 435 faulty
601050436	5002376	5002377	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 436 faulty
601050437	5002378	5002379	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 437 faulty
601050438	5002380	5002381	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 438 faulty
601050439	5002382	5002383	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 439 faulty
601050440	5002384	5002385	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 440 faulty
601050441	5002386	5002387	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 441 faulty
601050442	5002388	5002389	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 442 faulty
601050443	5002390	5002391	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 443 faulty
601050444	5002392	5002393	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 444 faulty
601050445	5002394	5002395	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 445 faulty
601050446	5002396	5002397	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 446 faulty
601050447	5002398	5002399	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 447 faulty
601050448	5002400	5002401	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 448 faulty
601050449	5002402	5002403	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 449 faulty
601050450	5002404	5002405	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 450 faulty
601050451	5002406	5002407	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 451 faulty
601050452	5002408	5002409	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 452 faulty
601050453	5002410	5002411	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 453 faulty
601050454	5002412	5002413	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 454 faulty
601050455	5002414	5002415	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 455 faulty
601050456	5002416	5002417	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 456 faulty
601050457	5002418	5002419	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 457 faulty
601050458	5002420	5002421	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 458 faulty
601050459	5002422	5002423	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 459 faulty
601050460	5002424	5002425	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 460 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050461	5002426	5002427	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 461 faulty
601050462	5002428	5002429	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 462 faulty
601050463	5002430	5002431	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 463 faulty
601050464	5002432	5002433	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 464 faulty
601050465	5002434	5002435	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 465 faulty
601050466	5002436	5002437	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 466 faulty
601050467	5002438	5002439	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 467 faulty
601050468	5002440	5002441	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 468 faulty
601050469	5002442	5002443	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 469 faulty
601050470	5002444	5002445	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 470 faulty
601050471	5002446	5002447	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 471 faulty
601050472	5002448	5002449	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 472 faulty
601050473	5002450	5002451	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 473 faulty
601050474	5002452	5002453	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 474 faulty
601050475	5002454	5002455	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 475 faulty
601050476	5002456	5002457	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 476 faulty
601050477	5002458	5002459	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 477 faulty
601050478	5002460	5002461	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 478 faulty
601050479	5002462	5002463	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 479 faulty
601050480	5002464	5002465	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 480 faulty
601050481	5002466	5002467	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 481 faulty
601050482	5002468	5002469	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 482 faulty
601050483	5002470	5002471	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 483 faulty
601050484	5002472	5002473	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 484 faulty
601050485	5002474	5002475	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 485 faulty
601050486	5002476	5002477	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 486 faulty
601050487	5002478	5002479	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 487 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601050488	5002480	5002481	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 488 faulty
601050489	5002482	5002483	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 489 faulty
601050490	5002484	5002485	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 490 faulty
601050491	5002486	5002487	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 491 faulty
601050492	5002488	5002489	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 492 faulty
601050493	5002490	5002491	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 493 faulty
601050494	5002492	5002493	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 494 faulty
601050495	5002494	5002495	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 495 faulty
601050496	5002496	5002497	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 496 faulty
601050497	5002498	5002499	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 497 faulty
601050498	5002500	5002501	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 498 faulty
601050499	5002502	5002503	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 499 faulty
601050500	5002504	5002505	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog input 500 faulty
601060001	5002506	5002507	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 1 faulty
601060002	5002508	5002509	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 2 faulty
601060003	5002510	5002511	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 3 faulty
601060004	5002512	5002513	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 4 faulty
601060005	5002514	5002515	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 5 faulty
601060006	5002516	5002517	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 6 faulty
601060007	5002518	5002519	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 7 faulty
601060008	5002520	5002521	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 8 faulty
601060009	5002522	5002523	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 9 faulty
601060010	5002524	5002525	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 10 faulty
601060011	5002526	5002527	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 11 faulty
601060012	5002528	5002529	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 12 faulty
601060013	5002530	5002531	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 13 faulty
601060014	5002532	5002533	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 14 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060015	5002534	5002535	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 15 faulty
601060016	5002536	5002537	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 16 faulty
601060017	5002538	5002539	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 17 faulty
601060018	5002540	5002541	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 18 faulty
601060019	5002542	5002543	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 19 faulty
601060020	5002544	5002545	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 20 faulty
601060021	5002546	5002547	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 21 faulty
601060022	5002548	5002549	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 22 faulty
601060023	5002550	5002551	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 23 faulty
601060024	5002552	5002553	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 24 faulty
601060025	5002554	5002555	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 25 faulty
601060026	5002556	5002557	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 26 faulty
601060027	5002558	5002559	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 27 faulty
601060028	5002560	5002561	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 28 faulty
601060029	5002562	5002563	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 29 faulty
601060030	5002564	5002565	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 30 faulty
601060031	5002566	5002567	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 31 faulty
601060032	5002568	5002569	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 32 faulty
601060033	5002570	5002571	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 33 faulty
601060034	5002572	5002573	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 34 faulty
601060035	5002574	5002575	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 35 faulty
601060036	5002576	5002577	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 36 faulty
601060037	5002578	5002579	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 37 faulty
601060038	5002580	5002581	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 38 faulty
601060039	5002582	5002583	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 39 faulty
601060040	5002584	5002585	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 40 faulty
601060041	5002586	5002587	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 41 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060042	5002588	5002589	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 42 faulty
601060043	5002590	5002591	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 43 faulty
601060044	5002592	5002593	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 44 faulty
601060045	5002594	5002595	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 45 faulty
601060046	5002596	5002597	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 46 faulty
601060047	5002598	5002599	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 47 faulty
601060048	5002600	5002601	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 48 faulty
601060049	5002602	5002603	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 49 faulty
601060050	5002604	5002605	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 50 faulty
601060051	5002606	5002607	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 51 faulty
601060052	5002608	5002609	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 52 faulty
601060053	5002610	5002611	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 53 faulty
601060054	5002612	5002613	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 54 faulty
601060055	5002614	5002615	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 55 faulty
601060056	5002616	5002617	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 56 faulty
601060057	5002618	5002619	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 57 faulty
601060058	5002620	5002621	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 58 faulty
601060059	5002622	5002623	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 59 faulty
601060060	5002624	5002625	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 60 faulty
601060061	5002626	5002627	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 61 faulty
601060062	5002628	5002629	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 62 faulty
601060063	5002630	5002631	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 63 faulty
601060064	5002632	5002633	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 64 faulty
601060065	5002634	5002635	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 65 faulty
601060066	5002636	5002637	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 66 faulty
601060067	5002638	5002639	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 67 faulty
601060068	5002640	5002641	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 68 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060069	5002642	5002643	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 69 faulty
601060070	5002644	5002645	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 70 faulty
601060071	5002646	5002647	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 71 faulty
601060072	5002648	5002649	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 72 faulty
601060073	5002650	5002651	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 73 faulty
601060074	5002652	5002653	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 74 faulty
601060075	5002654	5002655	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 75 faulty
601060076	5002656	5002657	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 76 faulty
601060077	5002658	5002659	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 77 faulty
601060078	5002660	5002661	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 78 faulty
601060079	5002662	5002663	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 79 faulty
601060080	5002664	5002665	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 80 faulty
601060081	5002666	5002667	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 81 faulty
601060082	5002668	5002669	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 82 faulty
601060083	5002670	5002671	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 83 faulty
601060084	5002672	5002673	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 84 faulty
601060085	5002674	5002675	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 85 faulty
601060086	5002676	5002677	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 86 faulty
601060087	5002678	5002679	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 87 faulty
601060088	5002680	5002681	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 88 faulty
601060089	5002682	5002683	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 89 faulty
601060090	5002684	5002685	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 90 faulty
601060091	5002686	5002687	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 91 faulty
601060092	5002688	5002689	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 92 faulty
601060093	5002690	5002691	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 93 faulty
601060094	5002692	5002693	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 94 faulty
601060095	5002694	5002695	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 95 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601060096	5002696	5002697	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 96 faulty
601060097	5002698	5002699	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 97 faulty
601060098	5002700	5002701	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 98 faulty
601060099	5002702	5002703	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 99 faulty
601060100	5002704	5002705	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: Analog output 100 faulty
601070001	5002706	5002707	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 1 faulty
601070002	5002708	5002709	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 2 faulty
601070003	5002710	5002711	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 3 faulty
601070004	5002712	5002713	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 4 faulty
601070005	5002714	5002715	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 5 faulty
601070006	5002716	5002717	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 6 faulty
601070007	5002718	5002719	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 7 faulty
601070008	5002720	5002721	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 8 faulty
601070009	5002722	5002723	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 9 faulty
601070010	5002724	5002725	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 10 faulty
601070011	5002726	5002727	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 11 faulty
601070012	5002728	5002729	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 12 faulty
601070013	5002730	5002731	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 13 faulty
601070014	5002732	5002733	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 14 faulty
601070015	5002734	5002735	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 15 faulty
601070016	5002736	5002737	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 16 faulty
601070017	5002738	5002739	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 17 faulty
601070018	5002740	5002741	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 18 faulty
601070019	5002742	5002743	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 19 faulty
601070020	5002744	5002745	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 20 faulty
601070021	5002746	5002747	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 21 faulty
601070022	5002748	5002749	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 22 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601070023	5002750	5002751	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 23 faulty
601070024	5002752	5002753	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 24 faulty
601070025	5002754	5002755	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 25 faulty
601070026	5002756	5002757	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 26 faulty
601070027	5002758	5002759	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 27 faulty
601070028	5002760	5002761	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 28 faulty
601070029	5002762	5002763	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 29 faulty
601070030	5002764	5002765	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS232 interface 30 faulty
601080001	5002766	5002767	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 1 faulty
601080002	5002768	5002769	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 2 faulty
601080003	5002770	5002771	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 3 faulty
601080004	5002772	5002773	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 4 faulty
601080005	5002774	5002775	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 5 faulty
601080006	5002776	5002777	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 6 faulty
601080007	5002778	5002779	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 7 faulty
601080008	5002780	5002781	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 8 faulty
601080009	5002782	5002783	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 9 faulty
601080010	5002784	5002785	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 10 faulty
601080011	5002786	5002787	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 11 faulty
601080012	5002788	5002789	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 12 faulty
601080013	5002790	5002791	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 13 faulty
601080014	5002792	5002793	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 14 faulty
601080015	5002794	5002795	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 15 faulty
601080016	5002796	5002797	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 16 faulty
601080017	5002798	5002799	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 17 faulty
601080018	5002800	5002801	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 18 faulty
601080019	5002802	5002803	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 19 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601080020	5002804	5002805	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 20 faulty
601080021	5002806	5002807	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 21 faulty
601080022	5002808	5002809	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 22 faulty
601080023	5002810	5002811	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 23 faulty
601080024	5002812	5002813	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 24 faulty
601080025	5002814	5002815	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 25 faulty
601080026	5002816	5002817	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 26 faulty
601080027	5002818	5002819	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 27 faulty
601080028	5002820	5002821	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 28 faulty
601080029	5002822	5002823	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 29 faulty
601080030	5002824	5002825	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 30 faulty
601080031	5002826	5002827	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 31 faulty
601080032	5002828	5002829	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 32 faulty
601080033	5002830	5002831	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 33 faulty
601080034	5002832	5002833	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 34 faulty
601080035	5002834	5002835	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 35 faulty
601080036	5002836	5002837	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 36 faulty
601080037	5002838	5002839	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 37 faulty
601080038	5002840	5002841	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 38 faulty
601080039	5002842	5002843	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 39 faulty
601080040	5002844	5002845	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 40 faulty
601080041	5002846	5002847	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 41 faulty
601080042	5002848	5002849	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 42 faulty
601080043	5002850	5002851	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 43 faulty
601080044	5002852	5002853	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 44 faulty
601080045	5002854	5002855	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 45 faulty
601080046	5002856	5002857	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 46 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
601080047	5002858	5002859	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 47 faulty
601080048	5002860	5002861	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 48 faulty
601080049	5002862	5002863	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 49 faulty
601080050	5002864	5002865	Yes	No	Yes	No	No	Yes	300	60	Hardware management error: RS485 interface 50 faulty
602010001	36000000	36000001	No	No	Yes	No	No	No	300	0	Identification program error Internal system error
701010001	6000001	6000002	Yes	No	Yes	No	No	No	300	0	Email program error: The host name could not be resolved.
701010002	6000003	6000004	Yes	No	Yes	Yes	No	No	300	0	Email program error: The attachment could not be processed.
701010003	6000005	6000006	Yes	No	Yes	Yes	No	No	300	0	Email program error: Sending the email failed
801010001	7000107	7000108	Yes	No	Yes	No	No	No	300	0	Shadow Manager communication error: Internal system error
901010001	8010000	8010001	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 1
901010002	8010002	8010003	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 2
901010003	8010004	8010005	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 3
901010004	8010006	8010007	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 4
901010005	8010008	8010009	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 5
901010006	8010010	8010011	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 6
901010007	8010012	8010013	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 7
901010008	8010014	8010015	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 8
901010009	8010016	8010017	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 9
901010010	8010018	8010019	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 10
901010011	8010020	8010021	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Communication with Light sensor 11
901010012	8010022	8010023	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 12

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901010013	8010024	8010025	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 13
901010014	8010026	8010027	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 14
901010015	8010028	8010029	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 15
901010016	8010030	8010031	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 16
901010017	8010032	8010033	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 17
901010018	8010034	8010035	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 18
901010019	8010036	8010037	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 19
901010020	8010038	8010039	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 20
901010021	8010040	8010041	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 21
901010022	8010042	8010043	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 22
901010023	8010044	8010045	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 23
901010024	8010046	8010047	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 24
901010025	8010048	8010049	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 25
901010026	8010050	8010051	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 26
901010027	8010052	8010053	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 27
901010028	8010054	8010055	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 28
901010029	8010056	8010057	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 29
901010030	8010058	8010059	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 30
901010031	8010060	8010061	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 31

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901010032	8010062	8010063	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 32
901010033	8010064	8010065	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 33
901010034	8010066	8010067	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 34
901010035	8010068	8010069	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 35
901010036	8010070	8010071	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 36
901010037	8010072	8010073	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 37
901010038	8010074	8010075	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 38
901010039	8010076	8010077	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 39
901010040	8010078	8010079	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Error in communication with Light sensor 40
901020001	8010080	8010081	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 1 faulty
901020002	8010082	8010083	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 2 faulty
901020003	8010084	8010085	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 3 faulty
901020004	8010086	8010087	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 4 faulty
901020005	8010088	8010089	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 5 faulty
901020006	8010090	8010091	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 6 faulty
901020007	8010092	8010093	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 7 faulty
901020008	8010094	8010095	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 8 faulty
901020009	8010096	8010097	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 9 faulty
901020010	8010098	8010099	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 10 faulty
901020011	8010100	8010101	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 11 faulty
901020012	8010102	8010103	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 12 faulty
901020013	8010104	8010105	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 13 faulty
901020014	8010106	8010107	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 14 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901020015	8010108	8010109	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 15 faulty
901020016	8010110	8010111	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 16 faulty
901020017	8010112	8010113	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 17 faulty
901020018	8010114	8010115	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 18 faulty
901020019	8010116	8010117	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 19 faulty
901020020	8010118	8010119	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 20 faulty
901020021	8010120	8010121	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 21 faulty
901020022	8010122	8010123	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 22 faulty
901020023	8010124	8010125	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 23 faulty
901020024	8010126	8010127	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 24 faulty
901020025	8010128	8010129	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 25 faulty
901020026	8010130	8010131	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 26 faulty
901020027	8010132	8010133	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 27 faulty
901020028	8010134	8010135	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 28 faulty
901020029	8010136	8010137	Yes	No	Yes	No	No	Yes	300	60	Error Lichtsensor: Lichts. 29 faulty
901020030	8010138	8010139	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 30 faulty
901020031	8010140	8010141	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 31 faulty
901020032	8010142	8010143	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 32 faulty
901020033	8010144	8010145	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 33 faulty
901020034	8010146	8010147	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 34 faulty
901020035	8010148	8010149	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 35 faulty
901020036	8010150	8010151	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 36 faulty
901020037	8010152	8010153	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 37 faulty
901020038	8010154	8010155	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 38 faulty
901020039	8010156	8010157	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 39 faulty
901020040	8010158	8010159	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: Light s. 40 faulty
901030001	8010160	8010161	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 1 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901030002	8010162	8010163	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 2 faulty
901030003	8010164	8010165	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 3 faulty
901030004	8010166	8010167	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 4 faulty
901030005	8010168	8010169	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 5 faulty
901030006	8010170	8010171	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 6 faulty
901030007	8010172	8010173	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 7 faulty
901030008	8010174	8010175	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 8 faulty
901030009	8010176	8010177	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 9 faulty
901030010	8010178	8010179	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 10 faulty
901030011	8010180	8010181	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 11 faulty
901030012	8010182	8010183	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 12 faulty
901030013	8010184	8010185	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 13 faulty
901030014	8010186	8010187	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 14 faulty
901030015	8010188	8010189	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 15 faulty
901030016	8010190	8010191	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 16 faulty
901030017	8010192	8010193	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 17 faulty
901030018	8010194	8010195	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 18 faulty
901030019	8010196	8010197	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 19 faulty
901030020	8010198	8010199	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: RS485 interface 20 faulty
901040001	8010200	8010201	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 1 faulty
901040002	8010202	8010203	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 2 faulty
901040003	8010204	8010205	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 3 faulty
901040004	8010206	8010207	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 4 faulty
901040005	8010208	8010209	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 5 faulty
901040006	8010210	8010211	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 6 faulty
901040007	8010212	8010213	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 7 faulty
901040008	8010214	8010215	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 8 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901040009	8010216	8010217	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 9 faulty
901040010	8010218	8010219	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 10 faulty
901040011	8010220	8010221	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 11 faulty
901040012	8010222	8010223	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 12 faulty
901040013	8010224	8010225	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 13 faulty
901040014	8010226	8010227	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 14 faulty
901040015	8010228	8010229	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 15 faulty
901040016	8010230	8010231	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 16 faulty
901040017	8010232	8010233	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 17 faulty
901040018	8010234	8010235	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 18 faulty
901040019	8010236	8010237	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 19 faulty
901040020	8010238	8010239	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 20 faulty
901040021	8010240	8010241	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 21 faulty
901040022	8010242	8010243	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 22 faulty
901040023	8010244	8010245	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 23 faulty
901040024	8010246	8010247	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 24 faulty
901040025	8010248	8010249	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 25 faulty
901040026	8010250	8010251	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 26 faulty
901040027	8010252	8010253	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 27 faulty
901040028	8010254	8010255	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 28 faulty
901040029	8010256	8010257	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 29 faulty
901040030	8010258	8010259	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 30 faulty
901040031	8010260	8010261	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 31 faulty
901040032	8010262	8010263	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 32 faulty
901040033	8010264	8010265	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 33 faulty
901040034	8010266	8010267	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 34 faulty
901040035	8010268	8010269	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 35 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
901040036	8010270	8010271	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 36 faulty
901040037	8010272	8010273	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 37 faulty
901040038	8010274	8010275	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 38 faulty
901040039	8010276	8010277	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 39 faulty
901040040	8010278	8010279	Yes	No	Yes	No	No	Yes	300	60	Light sensor error: TCP interface 40 faulty
1001010001	9010000	9010001	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 1
1001010002	9010002	9010003	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 2
1001010003	9010004	9010005	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 3
1001010004	9010006	9010007	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 4
1001010005	9010008	9010009	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Error in communication with precipitation sensor 5
1001020001	9010010	9010011	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 1 is dirty or faulty
1001020002	9010012	9010013	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 2 is dirty or faulty
1001020003	9010014	9010015	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 3 is dirty or faulty
1001020004	9010016	9010017	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 4 is dirty or faulty
1001020005	9010018	9010019	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: Precipitation gauge 5 is dirty or faulty
1001030001	9010020	9010021	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 1 faulty
1001030002	9010022	9010023	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 2 faulty
1001030003	9010024	9010025	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 3 faulty
1001030004	9010026	9010027	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 4 faulty
1001030005	9010028	9010029	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: RS485 interface 5 faulty
1001040001	9010030	9010031	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 1 faulty
1001040002	9010032	9010033	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 2 faulty
1001040003	9010034	9010035	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 3 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1001040004	9010036	9010037	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 4 faulty
1001040005	9010038	9010039	Yes	No	Yes	No	No	Yes	300	60	Precipitation gauge error: TCP interface 5 faulty
1101010001	10010000	10010001	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with temperature sensor 1
1101010002	10010002	10010003	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with temperature sensor 2
1101010003	10010004	10010005	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with temperature sensor 3
1101010004	10010006	10010007	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communic. with temperature sensor 4
1101010005	10010008	10010009	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Error in communication with Temperature 5
1101020001	10010010	10010011	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 1 faulty
1101020002	10010012	10010013	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 2 faulty
1101020003	10010014	10010015	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 3 faulty
1101020004	10010016	10010017	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 4 faulty
1101020005	10010018	10010019	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: Temperature sensor 5 faulty
1101030001	10010020	10010021	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 1 faulty
1101030002	10010022	10010023	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 2 faulty
1101030003	10010024	10010025	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 3 faulty
1101030004	10010026	10010027	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 4 faulty
1101030005	10010028	10010029	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: RS485 interface 5 faulty
1101040001	10010030	10010031	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 1 faulty
1101040002	10010032	10010033	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 2 faulty
1101040003	10010034	10010035	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 3 faulty
1101040004	10010036	10010037	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 4 faulty
1101040005	10010038	10010039	Yes	No	Yes	No	No	Yes	300	60	Temperature sensor error: TCP interface 5 faulty
1201020001	11100000	11100001	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 1
1201020002	11100002	11100003	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 2

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020003	11100004	11100005	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 3
1201020004	11100006	11100007	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 4
1201020005	11100008	11100009	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 5
1201020006	11100010	11100011	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 6
1201020007	11100012	11100013	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 7
1201020008	11100014	11100015	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 8
1201020009	11100016	11100017	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 9
1201020010	11100018	11100019	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 10
1201020011	11100020	11100021	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 11
1201020012	11100022	11100023	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 12
1201020013	11100024	11100025	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 13
1201020014	11100026	11100027	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 14
1201020015	11100028	11100029	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 15
1201020016	11100030	11100031	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 16
1201020017	11100032	11100033	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 17
1201020018	11100034	11100035	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 18
1201020019	11100036	11100037	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 19
1201020020	11100038	11100039	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 20
1201020021	11100040	11100041	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 21

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020022	11100042	11100043	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 22
1201020023	11100044	11100045	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 23
1201020024	11100046	11100047	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 24
1201020025	11100048	11100049	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 25
1201020026	11100050	11100051	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 26
1201020027	11100052	11100053	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 27
1201020028	11100054	11100055	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 28
1201020029	11100056	11100057	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 29
1201020030	11100058	11100059	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 30
1201020031	11100060	11100061	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 31
1201020032	11100062	11100063	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 32
1201020033	11100064	11100065	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 33
1201020034	11100066	11100067	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 34
1201020035	11100068	11100069	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 35
1201020036	11100070	11100071	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 36
1201020037	11100072	11100073	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 37
1201020038	11100074	11100075	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 38
1201020039	11100076	11100077	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 39
1201020040	11100078	11100079	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 40

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020041	11100080	11100081	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 41
1201020042	11100082	11100083	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 42
1201020043	11100084	11100085	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 43
1201020044	11100086	11100087	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 44
1201020045	11100088	11100089	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 45
1201020046	11100090	11100091	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 46
1201020047	11100092	11100093	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 47
1201020048	11100094	11100095	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 48
1201020049	11100096	11100097	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 49
1201020050	11100098	11100099	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 50
1201020051	11100100	11100101	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 51
1201020052	11100102	11100103	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 52
1201020053	11100104	11100105	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 53
1201020054	11100106	11100107	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 54
1201020055	11100108	11100109	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 55
1201020056	11100110	11100111	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 56
1201020057	11100112	11100113	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 57
1201020058	11100114	11100115	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 58
1201020059	11100116	11100117	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 59

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020060	11100118	11100119	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 60
1201020061	11100120	11100121	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 61
1201020062	11100122	11100123	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 62
1201020063	11100124	11100125	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 63
1201020064	11100126	11100127	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 64
1201020065	11100128	11100129	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 65
1201020066	11100130	11100131	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 66
1201020067	11100132	11100133	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 67
1201020068	11100134	11100135	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 68
1201020069	11100136	11100137	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 69
1201020070	11100138	11100139	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 70
1201020071	11100140	11100141	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 71
1201020072	11100142	11100143	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 72
1201020073	11100144	11100145	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTG 73
1201020074	11100146	11100147	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 74
1201020075	11100148	11100149	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 75
1201020076	11100150	11100151	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 76
1201020077	11100152	11100153	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 77
1201020078	11100154	11100155	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 78

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020079	11100156	11100157	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 79
1201020080	11100158	11100159	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 80
1201020081	11100160	11100161	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 81
1201020082	11100162	11100163	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 82
1201020083	11100164	11100165	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 83
1201020084	11100166	11100167	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 84
1201020085	11100168	11100169	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 85
1201020086	11100170	11100171	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 86
1201020087	11100172	11100173	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 87
1201020088	11100174	11100175	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 88
1201020089	11100176	11100177	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 89
1201020090	11100178	11100179	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 90
1201020091	11100180	11100181	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 91
1201020092	11100182	11100183	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 92
1201020093	11100184	11100185	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 93
1201020094	11100186	11100187	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 94
1201020095	11100188	11100189	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 95
1201020096	11100190	11100191	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 96
1201020097	11100192	11100193	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 97

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201020098	11100194	11100195	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 98
1201020099	11100196	11100197	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 99
1201020100	11100198	11100199	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: Error in communication with WTGs 100
1201030001	11100200	11100201	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 1 does not respond to stop command
1201030002	11100202	11100203	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 2 does not respond to stop command
1201030003	11100204	11100205	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 3 does not respond to stop command
1201030004	11100206	11100207	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 4 does not respond to stop command
1201030005	11100208	11100209	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 5 does not respond to stop command
1201030006	11100210	11100211	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 6 does not respond to stop command
1201030007	11100212	11100213	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 7 does not respond to stop command
1201030008	11100214	11100215	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 8 does not respond to stop command
1201030009	11100216	11100217	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 9 does not respond to stop command
1201030010	11100218	11100219	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 10 does not respond to stop command
1201030011	11100220	11100221	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 11 does not respond to stop command
1201030012	11100222	11100223	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 12 does not respond to stop command
1201030013	11100224	11100225	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 13 does not respond to stop command
1201030014	11100226	11100227	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 14 does not respond to stop command
1201030015	11100228	11100229	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 15 does not respond to stop command
1201030016	11100230	11100231	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 16 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030017	11100232	11100233	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 17 does not respond to stop command
1201030018	11100234	11100235	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 18 does not respond to stop command
1201030019	11100236	11100237	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 19 does not respond to stop command
1201030020	11100238	11100239	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 20 does not respond to stop command
1201030021	11100240	11100241	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 21 does not respond to stop command
1201030022	11100242	11100243	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 22 does not respond to stop command
1201030023	11100244	11100245	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 23 does not respond to stop command
1201030024	11100246	11100247	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 24 does not respond to stop command
1201030025	11100248	11100249	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 25 does not respond to stop command
1201030026	11100250	11100251	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 26 does not respond to stop command
1201030027	11100252	11100253	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 27 does not respond to stop command
1201030028	11100254	11100255	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 28 does not respond to stop command
1201030029	11100256	11100257	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 29 does not respond to stop command
1201030030	11100258	11100259	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 30 does not respond to stop command
1201030031	11100260	11100261	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 31 does not respond to stop command
1201030032	11100262	11100263	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 32 does not respond to stop command
1201030033	11100264	11100265	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 33 does not respond to stop command
1201030034	11100266	11100267	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 34 does not respond to stop command
1201030035	11100268	11100269	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 35 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030036	11100270	11100271	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 36 does not respond to stop command
1201030037	11100272	11100273	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 37 does not respond to stop command
1201030038	11100274	11100275	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 38 does not respond to stop command
1201030039	11100276	11100277	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 39 does not respond to stop command
1201030040	11100278	11100279	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 40 does not respond to stop command
1201030041	11100280	11100281	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 41 does not respond to stop command
1201030042	11100282	11100283	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 42 does not respond to stop command
1201030043	11100284	11100285	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 43 does not respond to stop command
1201030044	11100286	11100287	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 44 does not respond to stop command
1201030045	11100288	11100289	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 45 does not respond to stop command
1201030046	11100290	11100291	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 46 does not respond to stop command
1201030047	11100292	11100293	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 47 does not respond to stop command
1201030048	11100294	11100295	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 48 does not respond to stop command
1201030049	11100296	11100297	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 49 does not respond to stop command
1201030050	11100298	11100299	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 50 does not respond to stop command
1201030051	11100300	11100301	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 51 does not respond to stop command
1201030052	11100302	11100303	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 52 does not respond to stop command
1201030053	11100304	11100305	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 53 does not respond to stop command
1201030054	11100306	11100307	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 54 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030055	11100308	11100309	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 55 does not respond to stop command
1201030056	11100310	11100311	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 56 does not respond to stop command
1201030057	11100312	11100313	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 57 does not respond to stop command
1201030058	11100314	11100315	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 58 does not respond to stop command
1201030059	11100316	11100317	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 59 does not respond to stop command
1201030060	11100318	11100319	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 60 does not respond to stop command
1201030061	11100320	11100321	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 61 does not respond to stop command
1201030062	11100322	11100323	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 62 does not respond to stop command
1201030063	11100324	11100325	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 63 does not respond to stop command
1201030064	11100326	11100327	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 64 does not respond to stop command
1201030065	11100328	11100329	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 65 does not respond to stop command
1201030066	11100330	11100331	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 66 does not respond to stop command
1201030067	11100332	11100333	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 67 does not respond to stop command
1201030068	11100334	11100335	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 68 does not respond to stop command
1201030069	11100336	11100337	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 69 does not respond to stop command
1201030070	11100338	11100339	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 70 does not respond to stop command
1201030071	11100340	11100341	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 71 does not respond to stop command
1201030072	11100342	11100343	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 72 does not respond to stop command
1201030073	11100344	11100345	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 73 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030074	11100346	11100347	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 74 does not respond to stop command
1201030075	11100348	11100349	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 75 does not respond to stop command
1201030076	11100350	11100351	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 76 does not respond to stop command
1201030077	11100352	11100353	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 77 does not respond to stop command
1201030078	11100354	11100355	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 78 does not respond to stop command
1201030079	11100356	11100357	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 79 does not respond to stop command
1201030080	11100358	11100359	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 80 does not respond to stop command
1201030081	11100360	11100361	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 81 does not respond to stop command
1201030082	11100362	11100363	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 82 does not respond to stop command
1201030083	11100364	11100365	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 83 does not respond to stop command
1201030084	11100366	11100367	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 84 does not respond to stop command
1201030085	11100368	11100369	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 85 does not respond to stop command
1201030086	11100370	11100371	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 86 does not respond to stop command
1201030087	11100372	11100373	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 87 does not respond to stop command
1201030088	11100374	11100375	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 88 does not respond to stop command
1201030089	11100376	11100377	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 89 does not respond to stop command
1201030090	11100378	11100379	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 90 does not respond to stop command
1201030091	11100380	11100381	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 91 does not respond to stop command
1201030092	11100382	11100383	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 92 does not respond to stop command

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1201030093	11100384	11100385	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 93 does not respond to stop command
1201030094	11100386	11100387	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 94 does not respond to stop command
1201030095	11100388	11100389	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 95 does not respond to stop command
1201030096	11100390	11100391	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 96 does not respond to stop command
1201030097	11100392	11100393	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 97 does not respond to stop command
1201030098	11100394	11100395	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 98 does not respond to stop command
1201030099	11100396	11100397	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 99 does not respond to stop command
1201030100	11100398	11100399	Yes	No	Yes	No	No	Yes	300	60	WTG communication error: WTG 100 does not respond to stop command
1401010001	32100000	32100001	Yes	No	Yes	No	No	No	300	0	Special shutdowns error Internal system error
1501010001	33100000	33100001	Yes	No	Yes	No	No	No	300	0	Shutdown calendar error: Internal system error
1601010001	34100000	34100001	Yes	No	Yes	No	No	No	300	0	Web interface error: Internal system error
1801010001	37002000	37002001	Yes	No	Yes	No	No	No	300	0	Phone option error: Internal system error
1801010002	37002002	37002003	Yes	No	Yes	No	No	No	300	0	Phone option error: Modem malfunction
1901010001	41010000	41010001	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 01
1901010002	41010002	41010003	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 02
1901010003	41010004	41010005	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 03
1901010004	41010006	41010007	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 04
1901010005	41010008	41010009	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Error in communic. with Climate sensor 05
1901020001	41010010	41010011	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 1 faulty
1901020002	41010012	41010013	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 2 faulty
1901020003	41010014	41010015	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 3 faulty
1901020004	41010016	41010017	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 4 faulty

Alarm No	Operat.Log No.		Active	De-faults							Meaning
	occurs	leaves		Email	Auto ackn.	Warng.	Suppr.	Delay	Time reset[5]	Time Delay[s]	
1901020005	41010018	41010019	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: Measuring device 5 faulty
1901030001	41010020	41010021	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 1 error
1901030002	41010022	41010023	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 2 error
1901030003	41010024	41010025	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 3 error
1901030004	41010026	41010027	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 4 error
1901030005	41010028	41010029	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: RS485 interface 5 error
1901040001	41010030	41010031	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 1 error
1901040002	41010032	41010033	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 2 error
1901040003	41010034	41010035	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 3 error
1901040004	41010036	41010037	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 4 error
1901040005	41010038	41010039	Yes	No	Yes	No	No	Yes	300	60	Multisensor error: TCP interface 5 error
2001010001	40000000	40000001	Yes	No	Yes	No	No	No	300	0	Compute module error: Internal system error

- A -

- C -

- D -

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- F -

- H -

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- O -

- P -

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- V -

- W -