Operating instructions

ENERCON SCADA Remote 3

Software version 3.11.1

ENERCON
ENERGY FOR THE WORLD

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Applicable documents

The titles of the documents listed are the titles of the original language versions, with translations of these titles in brackets where applicable. The titles of superordinate standards and guidelines are indicated in the original language or as an English translation. Document IDs always refer to the original language versions. If the document ID does not contain a revision, the most recent revision of the document applies. This list contains documents concerning optional components if necessary.

Document ID	Document
D02161348	Technische Beschreibung ENERCON SCADA Sollwertliste (Technical description of the ENERCON SCADA system setpoint list)
D0296618	Technische Beschreibung ENERCON SCADA Power Consumption Management (Technical Description of ENERCON SCADA Power Consumption Management)

Table of Contents

List of abbreviations

DNS	Domain Name System
DSL	Digital subscriber line
ESLD	ENERCON SCADA Linux Distribution
FCU	Farm Control Unit (power generating system control unit)
GPS	Global Positioning System
LAN	Local area network
NCP	Network connection point
RAID	Redundant array of independent disks
RTU	Remote Terminal Unit (power generating system control unit)
TCP/IP	Transmission Control Protocol/Internet Protocol
UMTS	Universal Mobile Telecommunications System
UPS	Uninterruptible power supply
WEC	Wind energy converter

1 General information

1.1 Text and layout conventions

Representation of additional notes

Additional notes for better understanding have a background with grey lines and are identified by this symbol.

✓ Identifies a prerequisite for the subsequent work steps.

1. (Numbering) indicates lists or work steps, depending on context.

⇨ Identifies instructions in safety instructions.

↪ Identifies the expected result of an action.

Italics

Identifies names of objects and messages where a literal reproduction is required, as well as quoted headings.

‘Quotation marks’

These identify text portions that are meant to stand out from the body text, such as quotations, special technical terms and document titles.

`Code` typeface

Denotes textual messages on displays generated by the software; example:

- The status message `Turbine operational` is displayed.

2 Installation and configuration

2.1 Scope of use

This document contains information on the standard scope of supply and on optional components. The information and data included in this document that can be called up and utilised by each user depends on the following factors:

- The systems/components installed in the farm
- The system/component data provided
- The selected options/functions of the ENERCON SCADA system
- The user rights

If no data is available for a wind energy converter, a system or an option/function, the corresponding dialogue elements on the user interface are shown with no content or are hidden.

2.2 Scope of supply

The scope of supply includes:

- ENERCON SCADA Remote 3 software and licence
- Copy protection dongle (Dongle) incl. password(1)
- Software user guide on CD-ROM

(1) The password is sent in a separate letter.

2.3 Hardware and software requirements

- Computer running on Microsoft Windows 7 or higher operating system
- Microsoft .NET 4.7.1(1) or higher
- Microsoft Visual C++ 2012 Redistributable Package(1)
- At least 250 MB of free disk space
- A free USB port on the computer
- Optical drive (CD/DVD/Blu-ray)
- Dongle, driver(1) and password
- At least one connection type such as:
  - Hayes-compatible modem (at least 14,400 Baud transmission network)
  - Internet access (e.g. DSL, UMTS, satellites)
- PDF viewer for display of documentation
- Minimum screen resolution of 1280 x 1024 pixels (horizontal/vertical)

(1) Included in the installation package.

2.4 Security

Data security

For analyses using external spreadsheet applications, a copy of the SCADA data can be downloaded from the ENERCON SCADA Server. This prevents any accidental modification of the data as the original files remain on the ENERCON SCADA Server.

Password and dongle

The access password cannot be easily changed. If you have forgotten your password or suspect that third parties have gained knowledge of the password, contact ENERCON Support for assistance (ch. 7, p. 110). The dongle is bound to the user name used for logging into the software.

Password request with control operations

Registered users must confirm control operations for WECs using the password for ENERCON SCADA Remote 3. If no control operations take place during connection for a period of 15 minutes, the password will need to be re-entered.

It is not possible to guarantee fault-free, complete data transfer to the wind energy converters in every case.

2.5 Installation

If the dongle is connected to the computer before the installation, the plug-and-play process will run automatically and the *Add New Hardware Wizard* dialogue box will appear. Click on *Cancel* to abort this process. Next, insert the CD-ROM that is included with the package into the optical drive to start the installation process. After the CD has been inserted into the CD drive, the installation program launches automatically.

If the installation program does not launch automatically after the CD has been inserted, go to Windows Explorer and run *setup.exe* from the CD.

The installation of ENERCON SCADA Remote 3 includes the installation of the dongle driver.

2.6 Configuration

The software automatically configures all the required settings when connecting to a location (ch. 4.1, p. 16).

Changing regional settings

The software applies the operating system settings for formatting numbers, times, and dates. If you wish to use different regional settings, these can be changed as follows in Windows 7:

1. Exit ENERCON SCADA Remote 3.
2. Go to *Start* button > *Control Panel* > *Clock, Language, and Region*.
3. Select *Regional and Language Options*.
4. In the *Regional and Language Settings* dialogue box, use the *Formats* tab to modify the formats used for date and time.

The user interface language of ENERCON SCADA Remote 3 can be changed as described in ch. 4.5.1.1, p. 28.

2.7 Dongle

The ENERCON SCADA Remote 3 application can only run if the dedicated copy protection dongle is present; the software is also password protected. The dongle driver is installed automatically during the installation of ENERCON SCADA Remote 3. After this, the dongle is ready to use and can be plugged into a USB port. If the dongle is removed while ENERCON SCADA Remote 3 is running, the user is logged out.

The dongle is bound to the same user name and passwords used for logging into the software.

Lost or defective dongle

If the dongle is lost or appears to be defective, contact ENERCON Support for assistance (ch. 7, p. 110).

Losing the dongle is equivalent to losing the software. The dongle can be re-supplied at the price of a second software licence.

Additional licences

If you wish to run ENERCON SCADA Remote 3 on multiple computers, additional licences can be purchased from ENERCON.

2.8 Uninstalling the software

To remove ENERCON SCADA Remote 3 from your computer, use the Control Panel as follows:

1. Go to *Start* button > *Control Panel* > *Programs*.
2. Select *Uninstall a program*.
3. Select list item *ENERCON SCADA Remote 3*.
4. Click the *Uninstall* button above the list.

3 ENERCON SCADA Remote 3 within the SCADA system

Components

The ENERCON SCADA system comprises the following components:

- ENERCON SCADA Server with software for monitoring the connected devices (e.g. wind energy converters (WECs), solar plants) and recording various data
- Client PC running ENERCON SCADA Remote 3 software for connecting to the location (e.g. to wind farm)

The following illustration describes the principle of the data communication within the ENERCON SCADA system:

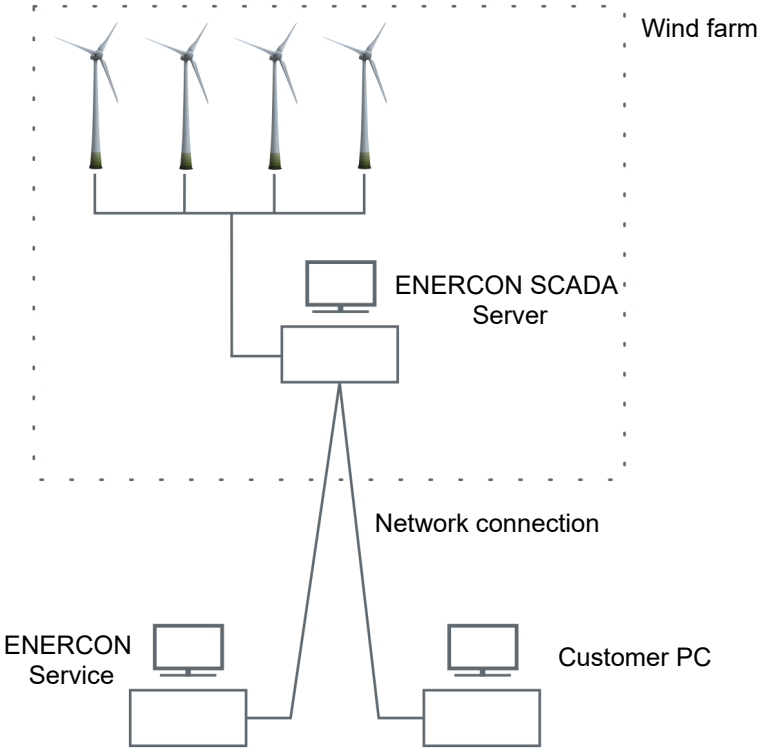


Fig. 1: Schematic structure of ENERCON SCADA system

Description

At a location, a data bus connects the wind energy converters and any SCADA devices such as the ENERCON SCADA RTU to the closed-loop wind farm control to the ENERCON SCADA server via databus.

The ENERCON SCADA Server is responsible for a number of functions in relation to communication, open-loop control and closed-loop control at the site and acts as the central repository for the current and archived operating data from wind energy converters and SCADA components.

It is equipped with a telecommunications or internet connection (phone line with modem, mobile phone connection, DSL, satellite, UMTS) that enables both the client PC and ENERCON Service to remotely access the system.

4 Program description

Sites (such as ENERCON wind energy converters and wind farms) are equipped with the SCADA (**S**upervisory **C**ontrol **A**nd **D**ata **A**cquisition) remote monitoring and control system. All relevant data, e.g. operating data, grid data and nacelle data, are saved on the ENERCON SCADA Server located at the site of the wind energy converters.

The ENERCON SCADA Remote 3 program as part of the ENERCON SCADA program package can be used to establish a connection to a specific site to view current and historical data online.

For offline analysis, historical data can be downloaded in dBASE IV format, which provides for flexible data processing.

The reporting function can be used to generate a data or status report from the downloaded data.

Users with the relevant access rights can control the wind energy converters (start/stop) via ENERCON SCADA Remote 3.

Note

The elements shown in this documentation, such as menus, tabs, buttons and the values they show, vary according to the relevant user rights and are therefore only available with the relevant user authorisation.

4.1 Launching the program

During installation of the software, a desktop icon and a link in the Windows start menu are created. These can be used to launch the application.

The dongle must be connected to the computer's USB port while the software is running, otherwise the program will be terminated.

User login

After ENERCON SCADA Remote 3 has been launched, the *User login* dialogue box appears (ch. 4.5.3, p. 32). If the copy protection dongle is plugged into the computer's USB port, the *Dongle* list box shows the name of the user assigned to the dongle. Enter the associated password to log in to the application.

Wrong user name

If the *Dongle* list box in the *User login* dialogue box shows a user name that is different from the requested name, ENERCON Support may be contacted for assistance (ch. 7, p. 110).

Connecting to a location

If no location data has yet been specified, the *Add location* dialogue box appears next (ch. 4.5.4.2, p. 36). Enter the IP address, DNS or phone number to establish a connection to the location. This step automatically applies configuration data needed for the application features.

If at least one location has been configured, the *Connect location* dialogue box (ch. 4.5.4.1, p. 34) containing a list of locations available for selection appears.

Certificate expiry warning

Fig. 2: *Warning* dialogue box

1	*Ignore warning for the next 30 days* check box

If the ENERCON SCADA Server certificate has expired, a warning will be displayed when establishing a connection to the site. It is possible to continue establishing the connection by acknowledging the message. The warning can be ignored for 30 days by ticking the check box.

If the message appears, contact ENERCON Service.

4.2 Exiting program

Before exiting SCADA Remote 3, the user may be asked to confirm the operation (default setting).

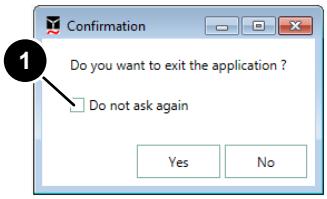


Fig. 3: *Confirm* dialogue window

1	*Do not ask again* check box

If the *Do not ask again* check box is checked and ENERCON SCADA Remote 3 is closed with one click on the *Yes* button, this setting will be saved and the question will not appear again.

The setting can be undone again with the *End application* check box under *Application* > *Change settings* (ch. 4.5.1.1, p. 28).

4.3 Special operating controls and features

4.3.1 Viewlets

The program window of ENERCON SCADA Remote 3 is subdivided into viewlets. Viewlets allow users to customise the layout of the program window. To do this, viewlets can be pinned to specific anchor points and displayed in the form of windows or as tabs with auto-hide contents.

The display area contained in the program window appears only if the *Navigation* viewlet is open.

For a description of the viewlets mentioned above, refer to ch. 4.4, p. 26.

Changes to viewlets are saved and, when the program is restarted, the most recent modifications of viewlets are shown.

Viewlet layout

Viewlets are structured as follows:

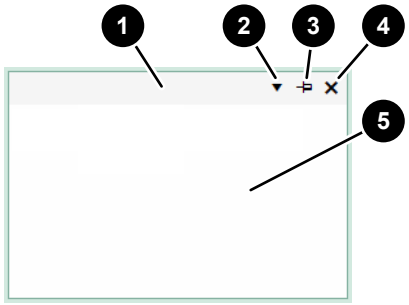


Fig. 4: Layout of an anchored viewlet

1	Title bar	2	Button for opening the context menu
3	Button for automatic hiding and unhiding	4	Button for hiding the viewlet
5	Display area		

Viewlets displayed as windows only have the button for hiding the viewlet.

Viewlet context menu

The viewlet context menu can be opened using the button for opening the context menu or alternatively by right clicking on the title bar.

The context menu enables the following functions:

- *Unanchored*
  The viewlet is released from the anchoring and shown as a window. Anchoring using the anchor points is not possible again until the *Dockable* function has been activated.
- *Dockable*
  The viewlet can be pinned to the anchor points.
- *Hide automatically*
  The viewlet is shown as a tab and is automatically hidden when not being used.
- *Hide*
  The viewlet is totally hidden. Hiding is equivalent to closing the viewlet.

Anchoring viewlets

1. Drag the viewlet to any anchor point by keeping the left mouse button pressed. Anchor points are not displayed until the viewlet is being dragged.

↪ The viewlet is anchored and the presentation of the desktop changes accordingly.

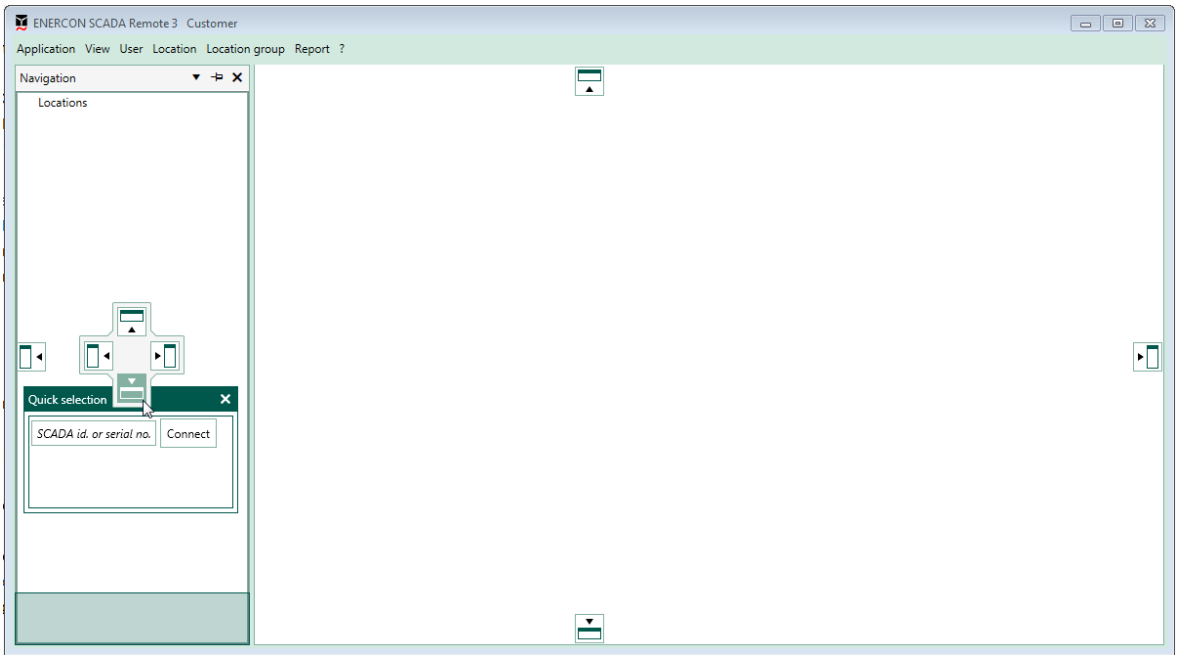


Fig. 5: Anchoring viewlet

The precise position the viewlet will have after anchoring is indicated by a green area when the viewlet is dragged to an anchor.

Displaying viewlets as windows

1. Drag the viewlet to any position (not an anchor point) by keeping the left mouse button pressed.

↪ The viewlet is released from the anchor and displayed on the desktop as a stand-alone window.

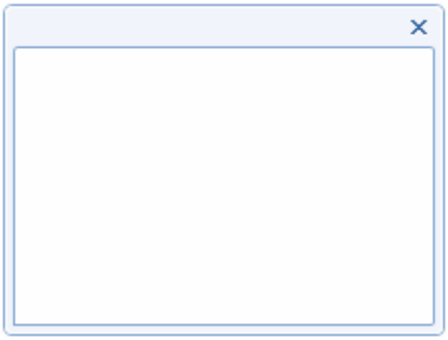


Fig. 6: Viewlet as window

Auto-hiding viewlets

Viewlets can be displayed as tabs with auto-hide content.

1. Right-click on the title bar to open the viewlet context menu. Alternatively, use the symbol button for opening the context menu.
   ↪ The context menu is displayed.
2. Select the *Hide automatically* entry in the context menu.

↪ The viewlet is created on the left-hand edge of the program window as a tab and the content is automatically hidden.

Move the mouse pointer over one of the tabs to display the functions and information contained in the viewlet. If the mouse pointer is moved away from the viewlet display area, the viewlet is automatically hidden again.

Auto-hide is only available for anchored viewlets.

Hiding viewlets

Viewlets can be hidden by pressing the button for hiding the viewlet or via the context menu. Hiding is equivalent to closing the viewlet.

Unhiding viewlets

Hidden viewlets can be unhidden by using the *View* menu, see ch. 4.5.2, p. 31.

4.3.2 Dialogue box functions

Fields that require specific entries appear with a red border if the entry is incorrect or missing.

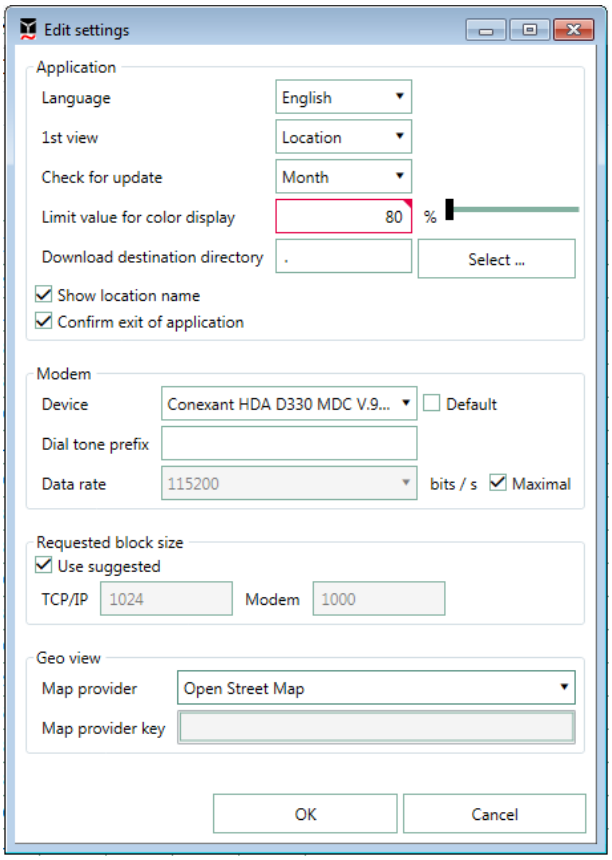


Fig. 7: Incorrect entry in the *Edit settings* dialogue box

In this example the value permitted for the *Limit value for color display* is between 90 and 100. Since the input value is smaller, the relevant field is highlighted in red.

In this case, the relevant dialogue box can only be exited by clicking *Cancel* or by entering a correct value and then clicking *OK*.

To save changes and settings inside a dialogue box click *OK*. The desired function is then carried out. To cancel changes and settings, click *Cancel*. In both cases the dialogue box is closed.

4.3.3 Table functions

Freezing table columns

To freeze columns, drag the coloured dividing line (here: between *Status* and the untitled column) using the mouse button; the columns will then stay in place while other columns are being scrolled.

Status ▲		Sum count	1	2	3	4	5
0		252	7	10	7	4	
2	Lack of wind	61	2	1	2	1	
8	Maintenance	5					
20	Wind measurement fault	5		2			
21	Cable twisted	19					
31	Tower oscillation	7					
42	Pitch control error	1					
240	Remote control PC	2					

Fig. 8: Coloured dividing line

1. Hold down the left mouse button and drag the coloured dividing line between two other table columns.

↪ The table columns to the left of the coloured dividing line will not move anymore when scrolling.

Moving table columns

To change the order of the table columns, drag and drop the individual columns as desired. Left-click on the column header and hold the mouse button while moving the table column between two other table columns to change the order.

1. Hold down the left mouse button and drag the column header between two other table columns.

↪ The order of the table columns changes.

Sorting table columns

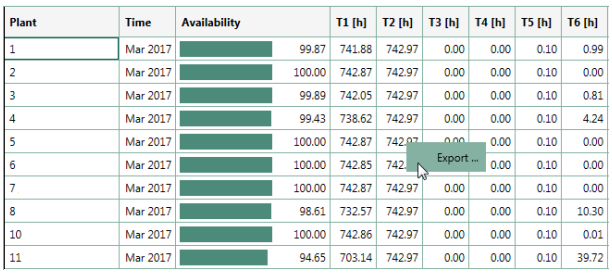
The column content can be sorted in ascending or descending order. Clicking on a column header sorts the column content in ascending order. The background of the column header turns orange. Click again on the same column header to sort the table in descending order.

1. Left-click on a column header.
   ↪ The data are sorted in ascending order.
2. Left-click on the same column header again.

↪ The data are sorted in descending order.

Exporting table data

To process table data using a spreadsheet application, export them to an XML file.



Plant	Time	Availability	T1 [h]	T2 [h]	T3 [h]	T4 [h]	T5 [h]	T6 [h]
1	Mar 2017	99.87	741.88	742.97	0.00	0.00	0.10	0.99
2	Mar 2017	100.00	742.87	742.97	0.00	0.00	0.10	0.00
3	Mar 2017	99.89	742.05	742.97	0.00	0.00	0.10	0.81
4	Mar 2017	99.43	738.62	742.97	0.00	0.00	0.10	4.24
5	Mar 2017	100.00	742.87	742.97	0.00	0.00	0.10	0.00
6	Mar 2017	100.00	742.85	742...	0.00	0.00	0.10	0.00
7	Mar 2017	100.00	742.87	742.97	0.00	0.00	0.10	0.00
8	Mar 2017	98.61	732.57	742.97	0.00	0.00	0.10	10.30
10	Mar 2017	100.00	742.86	742.97	0.00	0.00	0.10	0.01
11	Mar 2017	94.65	703.14	742.97	0.00	0.00	0.10	39.72

Fig. 9: *Export...* context menu in table

1. Right-click in the table.
   ↪ The context menu opens with *Export…*.
2. Click *Export…*.
   ↪ The *Save As* dialogue box appears.
3. Specify the storage location and the file name.
4. Click the *Save* button.

↪ The table is exported as an xml file.

Hiding and unhiding table columns

In various tables, it is possible to hide and unhide table columns. Use the button for hiding and unhiding table columns for this purpose.

Fig. 10: Button for hiding and unhiding table columns

This button appears in the respective tables to the right above the table.

1. Press the button.
   ↪ A context menu appears. The context menu is used to select the table columns to be unhidden.
2. Select the check boxes of the table columns to be unhidden.
   ↪ The marked table columns are then shown in the table.
3. Deselect the check boxes of the table columns to be hidden.
   ↪ The deselected table columns then no longer appear in the table.

4.3.4 Filter options

Filter dialogue box

If a filter symbol is displayed in the table view, the list that appears can be reduced to the desired details.

Click on the filter symbol to open a filter selection dialogue box:

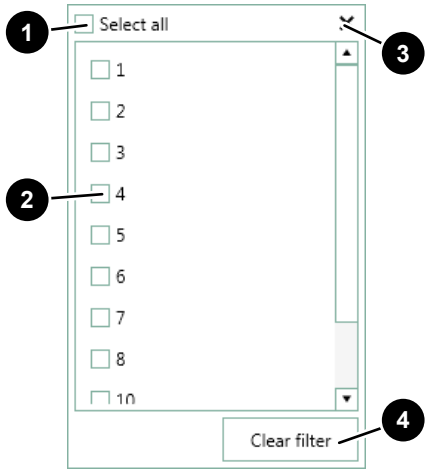


Fig. 11: Filter dialogue box

1	*Select all* check box	2	Check boxes for individual selection
3	Close button	4	*Clear filter* button

Select all check box

All checkmarks are marked in the list if this check box is activated. All values found in the view are then displayed.

All checkmarks are removed from the list if the check box is deactivated.

Check box for individual selection

When the check box is activated, only the values for this check box are displayed.

If all the check boxes are deactivated, the table is displayed unfiltered.

Clear filter button

As a result all checkmarks inserted are removed and the unfiltered list displayed.

Close button

Closes the dialogue box.

Filtering

After a check box is clicked on for individual selection, the view is updated immediately. Once the necessary filters are set, the dialogue box can be closed by clicking on the close button.

The filter settings made are saved and automatically used when the program is restarted or when the respective tab is opened again. Any filter settings not required must be deleted.

4.3.5 Chart functions

Selecting the data to be displayed

Right-click on a chart to open the context menu listing the data that can be selected for display. Data currently used in the chart is marked with a check. Clicking on the data once will hide or show the data.

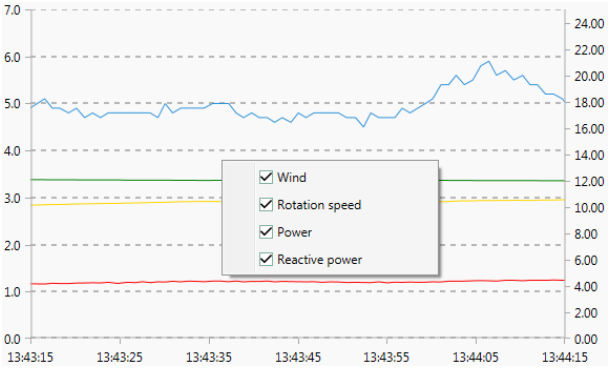


Fig. 12: Context menu in chart

Coloured lines are assigned to the data automatically; the colours cannot be modified.

Adjusting chart axes

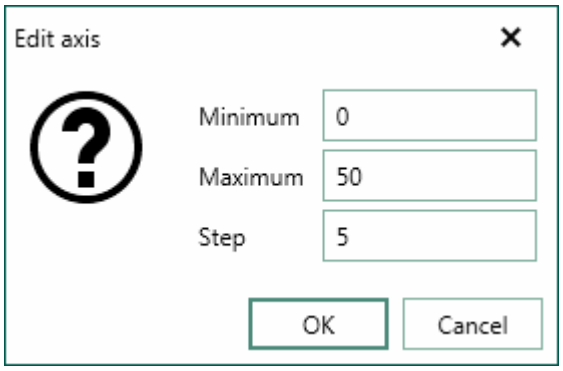


Fig. 13: *Edit axis* dialogue box

Double left-click on an axis label to open the *Edit axis* dialogue box. The following settings can be changed in this dialogue box:

- Minimum value
- Maximum value
- Step

4.4 Program window

ENERCON SCADA Remote 3 consists of a menu bar, viewlet *Navigation*, viewlet *Quick selection* and the display area.

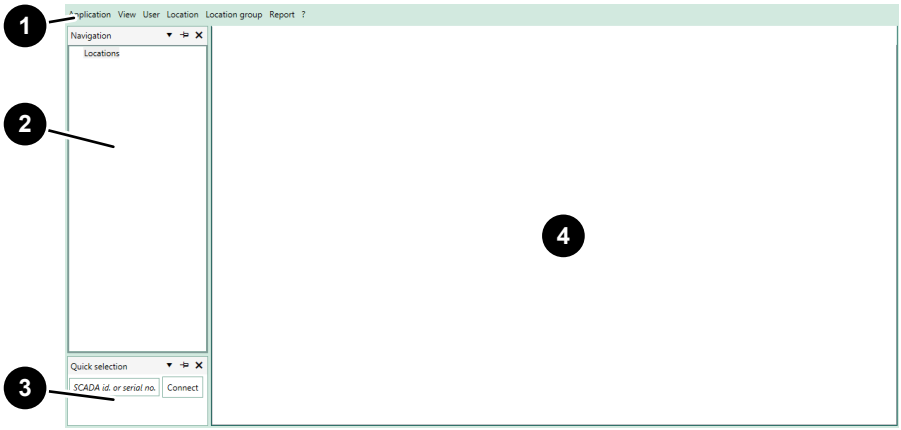


Fig. 14: Program window

1	Menu bar	2	Viewlet *Navigation*
3	Viewlet *Quick selection*	4	Display area

Menu bar

Displays the menus for which the user has rights.

Viewlet *Navigation*

The connection progress is shown in viewlet *Navigation* while a connection is being made.

The navigation levels are then shown.

Viewlet *Quick selection*

Viewlet *Quick selection* enables users to connect to a location using the keyed-in SCADA or serial number (device or plant in the desired location).

The connection can only be made to sites already set up (ch. 4.5.4, p. 33).

Display area

After selecting a level in the viewlet *Navigation*, the corresponding data is displayed in the respective tabs.

4.5 Menu bar

4.5.1 Application menu

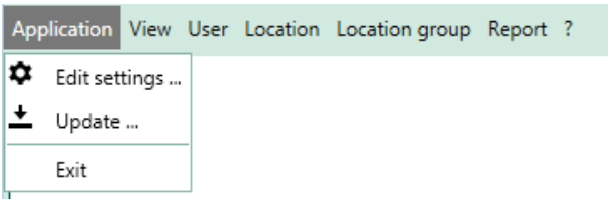


Fig. 15: *Application* menu

***Edit settings*... menu item**

Enabled when user is logged in.

Opens the *Edit settings* dialogue box (ch. 4.5.1.1, p. 28).

***Update*... menu item**

Enabled when user is logged in.

ENERCON SCADA Remote 3 is updated if a new version is available.

***Exit* menu item**

Closes the application window and exits the program.

4.5.1.1 Edit settings menu item

In this dialogue box, various settings can be made for the ENERCON SCADA Remote 3 program.

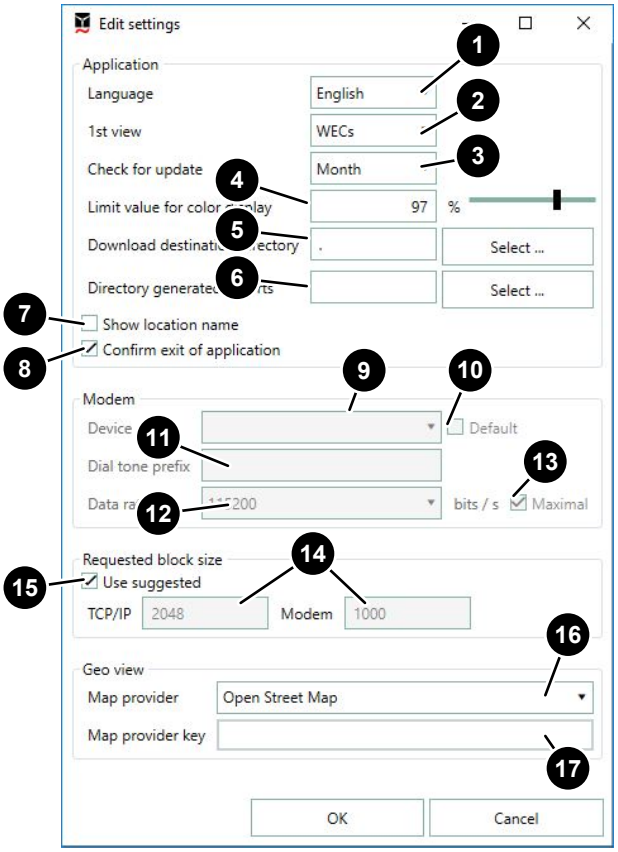


Fig. 16: *Edit settings* dialogue box

1	*Language* list box	2	*1st View* list box
3	*Check for update* list box	4	*Limit value for color display* input field and slider
5	*Download destination directory* input field and *Select* button	6	*Directory generated reports* input field and *Select* button
7	*Show location name* check box	8	*Confirm exit of application* check box
9	*Device* list box	10	*Default* check box
11	*Dial tone prefix* input field	12	*Data rate* list box
13	*Maximal* check box	14	*TCP/IP* and *modem* input fields
15	*Use suggested* check box	16	*Map provider* list box
17	*Map provider key* list box		

***Language* list box**

Shows the language used for the user interface, and allows for the language to be selected.

Select from the following languages:

- *English*
- *German*

- *French*
- *Spanish*
- *Portuguese*
- *Italian*

1st view list box

Shows the first view used after connection to a site and enables this view to be fixed.

Select from the following views:

- *WECs*
  Shows the *Online* tab at *plant type* level after connection to a site (ch. 4.9.1, p. 84).
- *Geo view*
  Shows the *Geo view* tab at *Locations* level after connection to a site (ch. 4.7, p. 47).
- *Location*
  Shows the *SCADA overview* tab at *Locations* level after connection to a site (ch. 4.8.1, p. 57).

Check for update list box

Shows how often the ENERCON SCADA Remote 3 program should search for an update on starting the software.

A time interval for checking the software update can be selected here.

Select from the following options:

- *Day*
  A search is made for a software update once per day.
- *Month*
  A search is made for a software update once per month.
- *Never*
  The search for a software update is switched off.

If a software update is available, the user can decide whether the update should be downloaded and installed.

Limit for colour display

Use this slider and the input field to specify the limit value (between 90 % and 100 %) for the signal colour in the graphic display of availabilities (ch. 4.9.4, p. 89).

If the value is less than the specified limit value, the graphic bar appears in red; if the value is greater than the limit value, the bar will be green (default value: 97 %).

Download destination directory input field and *Select* button

The path to the destination folder on the local PC where the files downloaded from the ENERCON SCADA Server are to be saved can be entered in the input field. Alternatively a directory can be selected by clicking the *Select* button.

If a dot (.) is entered in the input field (default), the files will be downloaded to the *LOC_#* folder of the ENERCON SCADA Remote 3 program folder.

Use the reporting functionality (ch. 4.7.3, p. 50) to generate a data or status report via data request for analysis.

***Directory generated reports* input field**

Use this input field to enter the path to the destination folder on the local PC in which the status and data reports are to be saved. Alternatively a directory can be selected by clicking the *Select* button.

The directory can also be separately modified in the relevant dialogue box whenever a status and data report is created.

***Show location name* check box**

The check box can be used to define the name of the wind farm to be displayed at the location level.

If this check box is activated, the name displayed is the name of the location entered in the wind farm site data.

If this check box is deactivated, the name displayed is the name entered in the wind farm site data.

The wind farm master data and the plants can be defined using the *Location* > *Edit* menu (ch. 4.5.4.3, p. 38).

***Confirm exit of application* check box**

If the check box is activated, confirmation will be requested that the user wishes to exit ENERCON SCADA Remote 3 (ch. 4.2, p. 17).

***Device* list box**

Displays the installed modem to be used for the local computer. An installed modem from the local computer can be selected from the list here. A selection can only be made if a modem is installed.

***Default* check box**

If the check box is activated, the modem selected from the *Device* list box is used as the default. If the check box remains deactivated, the first modem initialised is used.

***Dial tone prefix* input field**

Enter a prefix to be dialled to obtain an outside line (typically zero). This may be necessary for telephone systems that differentiate between internal and external calls. This field can also be used to enter any prefix code that may be required for a particular network provider.

This input field can remain blank if no dialling prefixes are used.

***Data rate* list box**

Shows the data rate used for the modem connection.

Use this to select the data rate for the modem connection.

***Maximal* check box**

If the check box is activated, the maximum possible data rate is used. No further selection of the data rate can then be made. If the check box is deactivated, a data rate can be selected from the *Data rate* list box.

***TCP/IP and Modem* input fields**

Can be used to enter the size of the data blocks to be transmitted via the TCP/IP and modem connections.

The data block size is selected according to the quality of the connection:

- Good connection: high value
- Poor connection: low value

***Use suggested* check box**

If the check box is activated, the size defined on the ENERCON SCADA Server is used. If this is deactivated, the value for the size of the data blocks for transmission can be entered in the *Requested block size* input field.

***Map provider* list box**

Shows the map provider for the map view (e.g. Open Street Map).

Use this to select the map provider for the map view.

An active internet connection is required for maps to be displayed. To display the plant icons on the map, the plant coordinates (longitude and latitude) need to be entered (ch. 4.5.4.3, p. 38).

***Map provider key* input field**

The provider key can be entered here for using the map view.

The use of *Bing Maps* comes with a charge.

For further information, see the following website:

http://www.bingmapsportal.com.

4.5.2 View menu

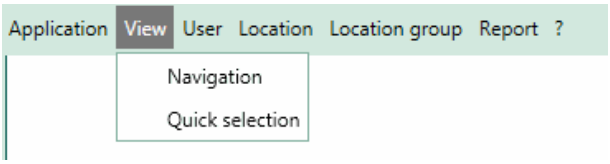


Fig. 17: *View* menu

***Navigation* menu item**

Opens the viewlet *Navigation* (ch. 4.4, p. 26).

***Quick selection* menu item**

Opens the viewlet *Quick selection* (ch. 4.4, p. 26).

4.5.3 User menu

User logon and logoff is via the *user* menu.

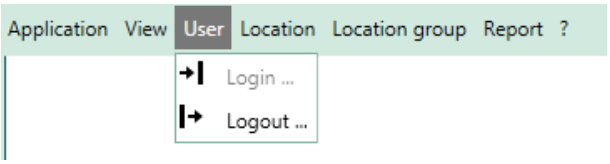


Fig. 18: *User* menu

Login menu item

Only enabled if no user is logged in.

Opens the *User login* dialogue box (ch. 4.5.3.1, p. 32).

Logout menu item

Only enabled if a user is logged in.

Logs the user out of the application.

4.5.3.1 Login menu item

To prevent unauthorised access, a dongle and matching password are required to log in to the application.

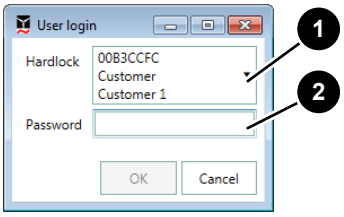


Fig. 19: *User login* dialogue box

1	*Hardlock* list box	2	*Password* input field

Dongle list box

Displays the dongle number and the user name assigned to the dongle, as well as the available level (e.g. Customer 1).

If other dongles are connected, they can be selected here to log on to the software.

If the Dongle list box in the User login dialogue box shows a user name different from the name requested by the user, contact ENERCON Support, who will advise you on how to proceed, see ch. 7, p. 110

Password input field

Enter the correct password for the displayed user name.

4.5.4 Location menu

The *Location* menu is only enabled if a user is logged in.

Use this menu to establish or disconnect one or multiple connections to different locations as well as to add and edit locations.

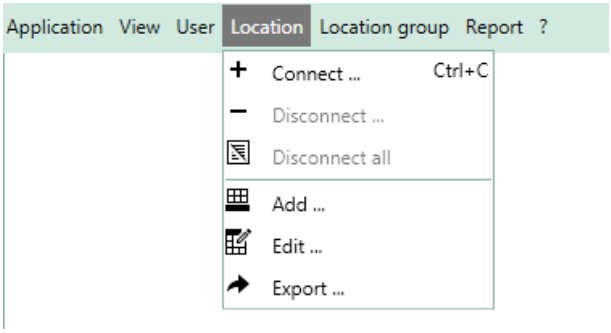


Fig. 20: *Location* menu

Connect... menu item

Only enabled if a user is logged in.

Opens the *Connect location* dialogue box (ch. 4.5.4.1, p. 34), which contains a list of locations available for selection.

Disconnect... menu item

Only enabled if a connection has been established.

If a connection has been established to only one location, this will be disconnected without asking.

If there are connections to several sites, the *Disconnect location* dialogue box is opened for selecting the location to be disconnected.

Disconnect all menu item

Only enabled if there is at least one connection.

After this selection has been made, all active connections to the location are disconnected without asking.

Add menu

Opens the *Add location* dialogue box.

Use this menu item to add location data (ch. 4.5.4.2, p. 36).

Edit... menu item

Opens the *Edit location* dialogue box.

Use this menu item to edit existing location details (ch. 4.5.4.3, p. 38).

Export... menu item

Opens the *Export location data* dialogue box.

Use this menu item to export the configured location data (ch. 4.5.4.4, p. 41).

4.5.4.1 Connect menu item

This dialogue box can be used to connect to a location, filter the list of locations by certain criteria (country) (ch. 4.3.4, p. 24), and select the connection.

If no locations are listed, add the configuration details first (ch. 4.5.4.2, p. 36).

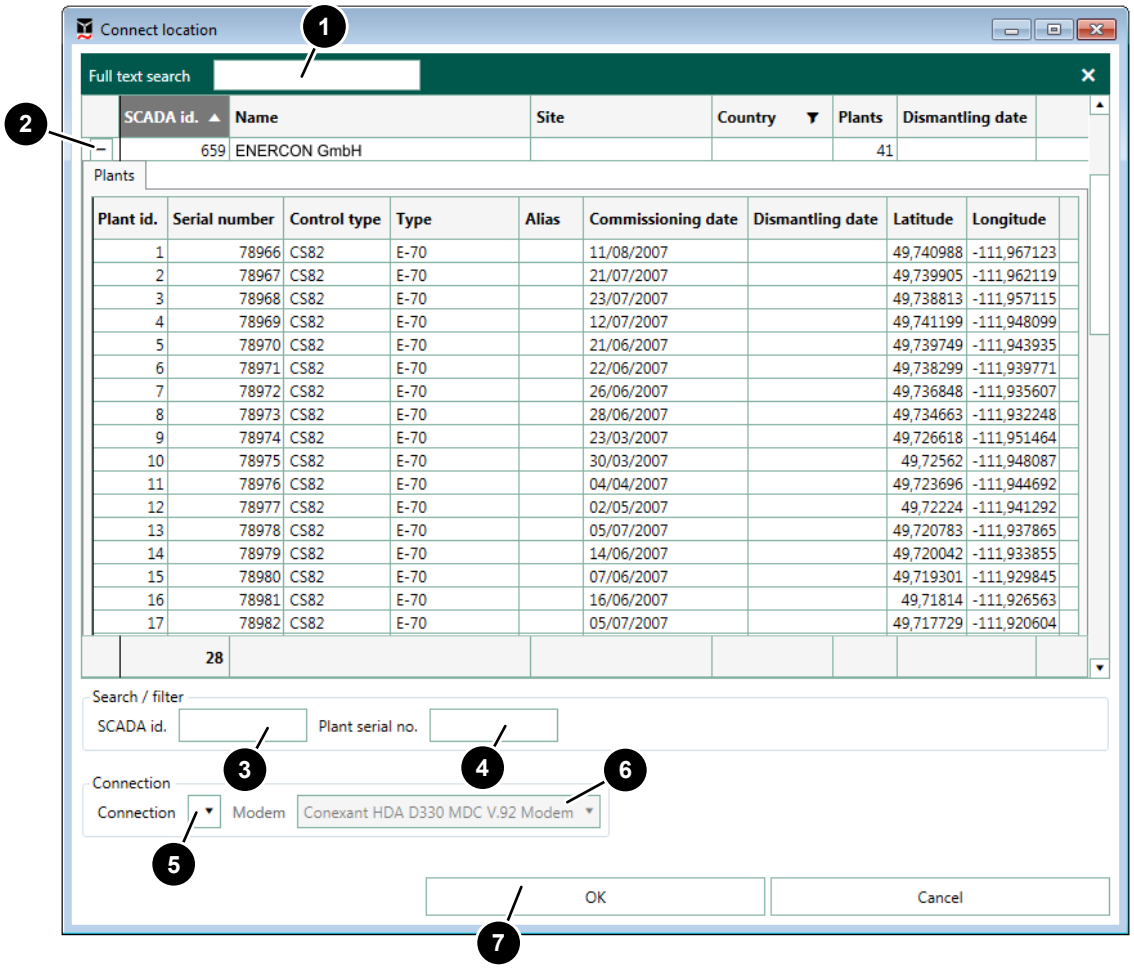


Fig. 21: *Connect location* dialogue box

1	*Full text search* input field	2	Buttons for reducing and expanding
3	*SCADA id.* input field	4	*Plant serial number* input field
5	*Connection* list box	6	*Modem* list box
7	*OK* button		

Full text search input field

Enter free text (text or numbers) with which the table can be searched and all columns can be filtered, here. Searching and filtering are done at the same time as the entry and do not have to be specially confirmed.

Buttons for reducing and expanding (+/-)

Expands and collapses the location detail view.

In the diagram (*Connect location* dialogue box) the detailed view (*12 ENERCON GmbH 4*) is opened.

OK button

Starts the connection to a selected site and closes the dialogue box.

This process can take a while.

If the connection has been made, the location's data and information is shown.

SCADA id. input field

The SCADA ID number of the location to which you wish to connect can be entered here.

If the specified number matches the SCADA number in the list, the corresponding row for the location is highlighted.

Plant serial number input field

As an alternative to the SCADA ID, the serial number of a plant at the location to which you wish to connect can be entered here.

If the specified number matches a serial number, the corresponding row for the location is highlighted.

Connection list box

Shows the connection type used for the location.

The following connection types are available:

- *TCP/IP* (with LAN connection)
- *Modem* (if available on local computer)

Modem list box

A selection can only be made if a modem is installed.

Shows the modem installed on the local computer that is used.

An installed modem from the local computer can be selected for the modem connection type.

4.5.4.2 Add menu

By entering the connection data for the connection type *TCP/IP* or *Modem* a location can be added. After a connection has been established, all required location data are retrieved automatically by the ENERCON SCADA Server. Additional details for the location may be added later (ch. 4.5.4.3, p. 38).

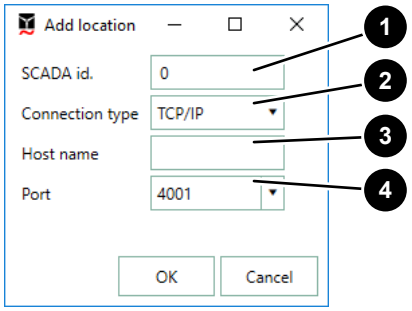


Fig. 22: *Add location* dialogue box – *TCP/IP* connection type

1	*SCADA id.* input field	2	*Connection type* list box
3	*Host name* input field	4	*Port* list box

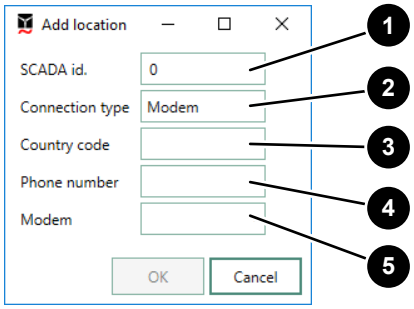


Fig. 23: *Add location* dialogue box – *Modem* connection type

1	*SCADA id.* input field	2	*Connection type* list box
3	*Country code* input field	4	*Phone number* input field
5	*Modem* list box		

SCADA id. input field

The SCADA ID number of the location needs to be entered here.

Connection type list box

Shows the connection type used and enables this to be defined.

Select from the following options:

- *TCP/IP* (with LAN connection)
- *Modem* (if available on local computer)

Depending on the selected connection type (TCP/IP or modem), the dialogue box enables the relevant connection to be configured.

Host name input field

This will only appear if the connection type *TCP/IP* is selected.

Shows the IP address used or the DNS name.

The IP address can be entered here in the form xxx.xxx.xxx.xxx or DNS name for the connection to the location.

***Port* list box**

This will only appear if the connection type *TCP/IP* is selected.

Shows the port number (default: 4001).

The port number for connecting to the location can be selected here.

***Country code* input field**

This will only appear if the connection type *Modem* is selected.

Shows the country code used.

Enter the country code (e.g. +49 for Germany) to be used for connecting to the location.

***Phone number* input field**

This will only appear if the connection type *Modem* is selected.

Shows the area code and phone number used for connecting to the location. When using the country code, the first figure (zero) of the area code is omitted.

***Modem* list box**

This will only appear if the connection type *Modem* is selected.

Shows the modem installed on the local computer that is used.

The modem used for connecting to the location can be selected here.

4.5.4.3 Edit menu item

The wind farm site data displayed in ENERCON SCADA Remote 3 and the plants can be edited and defined here. For example, the longitudes and latitudes required for the visualisation of the plants in the *GEO view* tab, can be entered here.

Plants tab

Details such as *SCADA id.*, *Name*, *Plant id.*, *Serial number* and *Control type* are automatically applied when connecting to the location for the first time; these details cannot be modified except for the name.

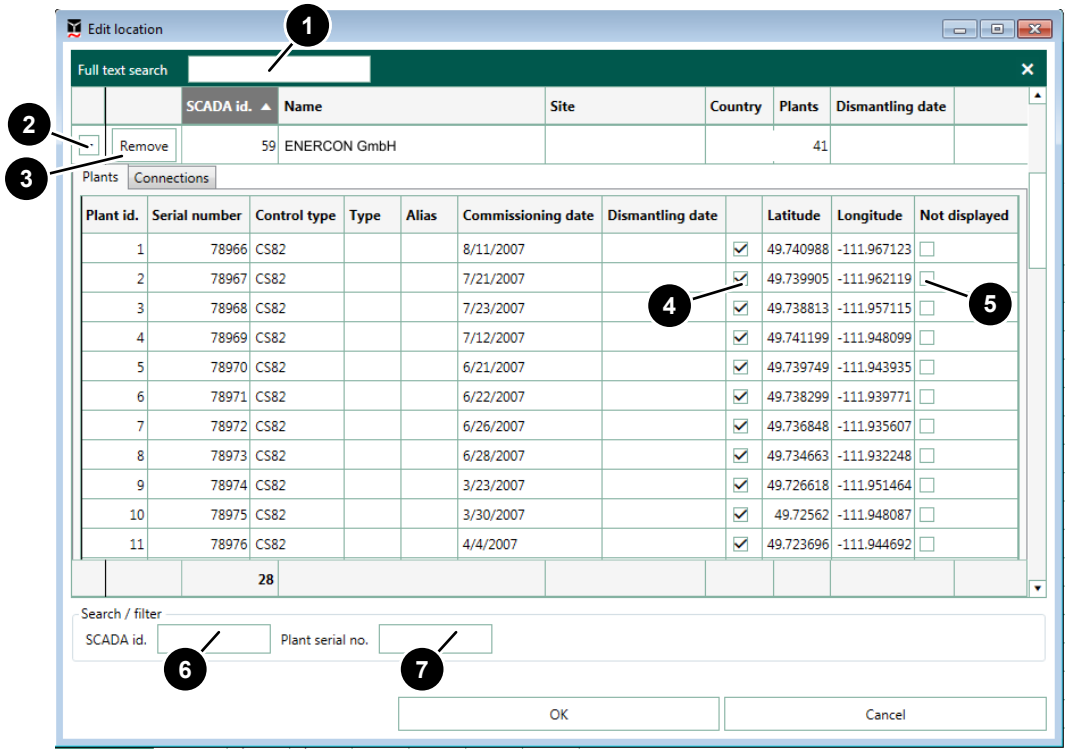


Fig. 24: *Edit location* dialogue box - *plants* tab

1	*Full text search* input field	2	Buttons for reducing and expanding
3	*Remove* button	4	*Latitude* and *longitude* check box
5	*Not displayed* check box	6	*SCADA id.* input field
7	*Plant serial number* input field		

Full text search input field

Enter free text (text or numbers) with which the table can be searched and all columns can be filtered, here. Searching and filtering are done at the same time as the entry and do not have to be specially confirmed.

Buttons for reducing and expanding (+/-)

Expands and collapses the drill-down view of the selected location.

Remove button

Removes the site data from the local computer after the dialogue box has been exited with the *OK* button.

Latitude and *longitude* check box

If the check box is activated, the geographical coordinates of the plantss can be entered in the input fields so that they can be displayed as icons in the *Geo view* tab.

Not displayed check box

If this check box is activated, the plant icons are not shown on the *Geo View* tab.

SCADA id. input field

The SCADA ID number of the location to which you wish to connect can be entered here.

If the specified number matches the SCADA number in the list, the corresponding row for the location is highlighted.

Plant serial number input field

As an alternative to the SCADA ID, the serial number of a plant at the location to which you wish to connect can be entered here.

If the specified number matches a serial number, the corresponding row for the location is highlighted.

Information on table contents

The following site data can be edited by double-clicking in the relevant field:

- *Name* column
  Input field: Enter any name for the wind farm here.
- *Site* column
  Input field: Enter any name for the site here.
- *Country* column
  List box: Select the country in which the site is located here.
- *Type* column
  List box: Select the plant type here.
- *Alias* column
  Input field: Enter a pseudonym for the plant here.
- *Commissioning date* column
  Input field: The date can be entered here in the form DD/MM/YYYY or selected using a calendar with the associated button.
- *Dismantling date* column
  Input field: The date can be entered here in the form DD/MM/YYYY or selected using a calendar with the associated button.
  Wind farms and plants that have reached and exceeded the entered dismantling date are indicated in grey font in the *Connect location* dialogue box.
- *Latitude* and *longitude* columns
  Input field: The geographical longitude and latitude of the plant's location can be entered as a decimal value here (in the form 1.2345). The plant position is subsequently displayed as an icon on the map under the *Geo view* tab.

Connections tab

Use the *Connections* tab to add alternative connections to the location and to remove existing connections. The connections are stored locally on the user's computer. No changes are made to the wind farm's SCADA System.

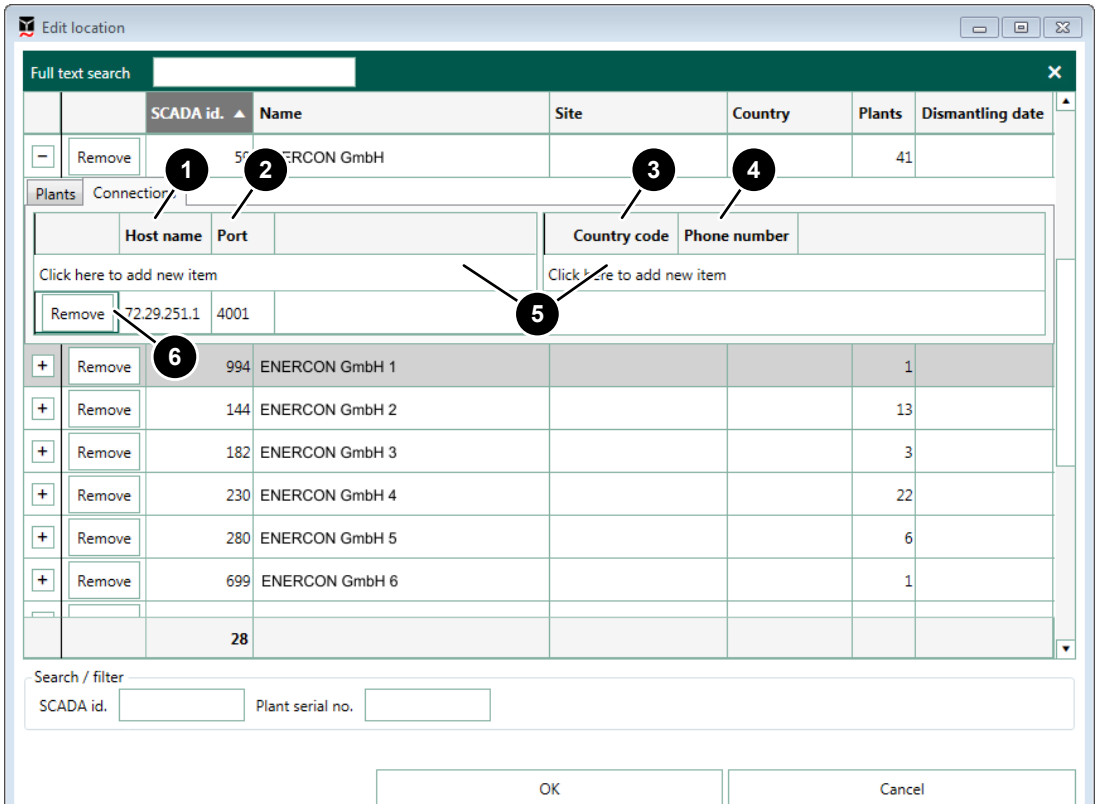


Fig. 25: *Edit location* dialogue box - *Connections* tab - *TCP/IP* connection type

1	*Host name* table column	2	*Port* table column
3	*Country code* table column	4	*Phone no.* table column
5	Area for adding a new connection	6	*Remove* button

Adding a new connection

A new connection can created by left clicking on the area for adding a new connection. Depending on the area, either a TCP/IP connection is added (left area) or a modem connection (right area).

After left clicking on an area, text fields matching the table columns are displayed for entering the required connection data.

The following data must be entered for a TCP/IP connection:

- Host name
- Country code

The following data must be entered for modem connection:

- Port
- Telephone no.

Information entered is added after the dialogue box has been exited by pressing the *OK* button.

Remove button

Removes the connection setting listed (for TCP/IP or modem) from the local computer after the dialogue box has been exited by pressing the *OK* button.

4.5.4.4 Export menu item

The location data (ch. 4.5.4, p. 33) can be exported to an encrypted *.lcp file for backup or forwarding.

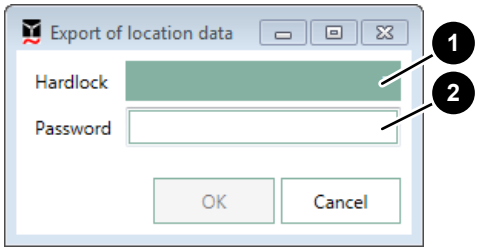


Fig. 26: *Export of location data* dialogue box

1	*Hardlock* list box	2	*Password* input field

Hardlock list box

Select a dongle connected to the computer and with it also the user for which to export the location data.

Password input field

This is where you have to enter the appropriate password for the selected user name. This ties the *.lcp file to that user's name and the corresponding password.

OK button

Creates the file #.lcp and saves it to the ENERCON SCADA Remote 3 root directory (C:\Program files\ENERCON SCADA Remote 3).

is a placeholder for the selected user name.

Using the lcp file

If the lcp file is copied to the ENERCON SCADA Remote 3 root directory, the user will be offered a selection of the locations contained after logging on to ENERCON SCADA Remote 3 (ch. 4.5.4.1, p. 34).

Connections to the locations contained in the lcp file can only be established if the user has the required authorisation.

4.5.5 Location group menu

Use the *Location group* menu to create location groups and save them locally as files on the computer. Note that location group files always need to be saved to the ENERCON SCADA Remote installation directory. A location group allows for establishing simultaneous connections to the locations it contains.

Each location group contains a variable number of configured locations. Each location group that has been created is saved to a separate file on the local computer.

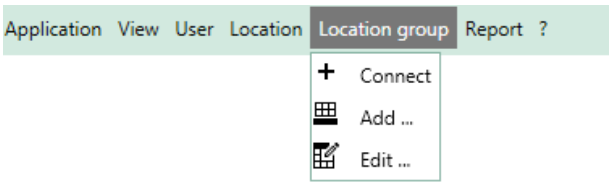


Fig. 27: *Location group* menu

Creating location group

1. Open the *Location group* menu and click on *Add*.
   ↪ The *Add location group* dialogue box appears.

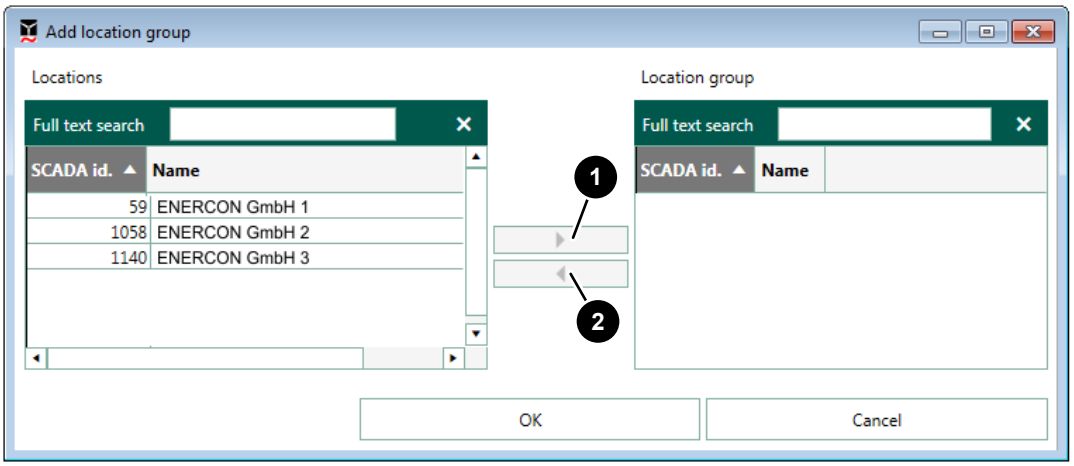


Fig. 28: *Add location group* dialogue box.

1	Add button	2	Remove button

2. Select a location in the list on the left.
3. Click the add button.
   ↪ The selected location is assigned to the location group and appears in the list on the right.
4. Repeat steps 2 and 3 until the desired locations have been assigned to the location group.
5. Click *OK* to close the dialogue box.
   ↪ The *Save As* dialogue box opens.
6. Enter a file name for the location group in the *File name* text box.
7. Click on *Save* to save the location group to the specified directory.

↪ The location group is saved

Editing location group

1. Open the *Location group* menu and click on *Edit*.
   ↪ The *Open* dialogue box appears.
2. Select the file of a location group.
3. Click the *Open* button.
   ↪ The *Edit location group* dialogue box appears.

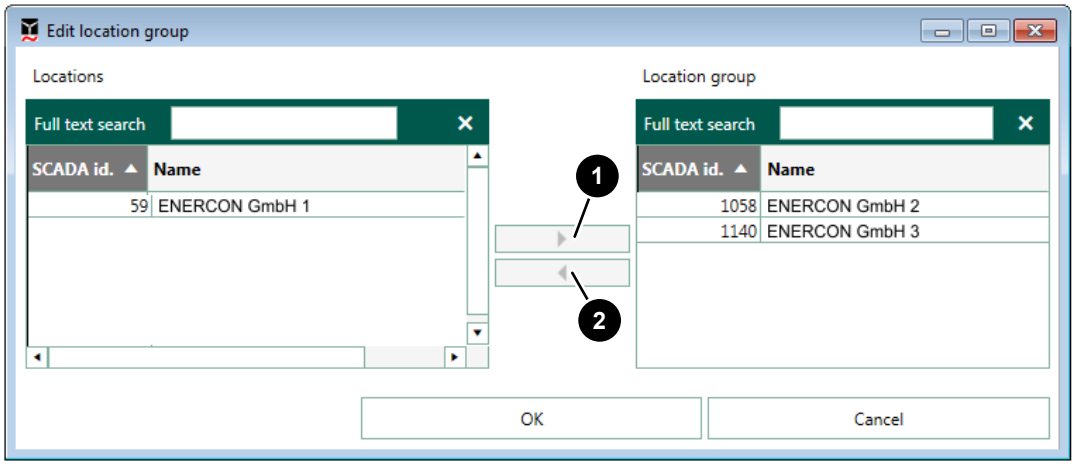


Fig. 29: *Edit location group* dialogue box

1	Add button	2	Remove button

4. To add a location to the location group: Select the location from the Locations list and click the add button.
5. To remove a location from the location group: Select the location from the Location group list and click the remove button.
6. Click *OK* to close the dialogue box.

↪ The changes to the location group are saved.

Establishing connection to location group

1. Open the *Location group* menu.
2. Move the mouse pointer over *Connect*.
   ↪ The saved location groups are listed in an expanded menu.
3. Select the desired location group.

↪ A connection to the locations contained in the locations group is established.

4.5.6 Report menu

In the *Report* menu a data or status report can be generated.

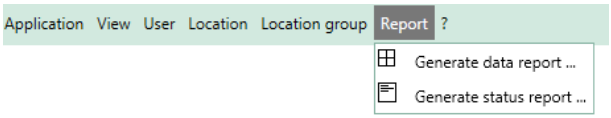


Fig. 30: *Report* menu

Generate data report... menu item

This opens the *Generate data report* dialogue box (ch. 4.7.3.1, p. 51).

Generate status report... menu item

This opens the *Generate status report* dialogue box (ch. 4.7.3.1, p. 51).

4.5.7 ? menu (Help)

The *?* menu shows information on the ENERCON SCADA Remote 3 program.

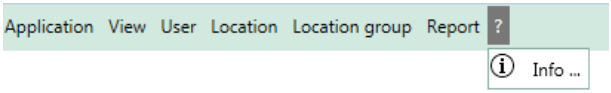


Fig. 31: *?* menu (Help)

Info… menu item

This opens the *Information* dialogue box showing details on the application and its manufacturer.

4.6 Description of levels in viewlet navigation

The levels shown depend on the components installed at the location.

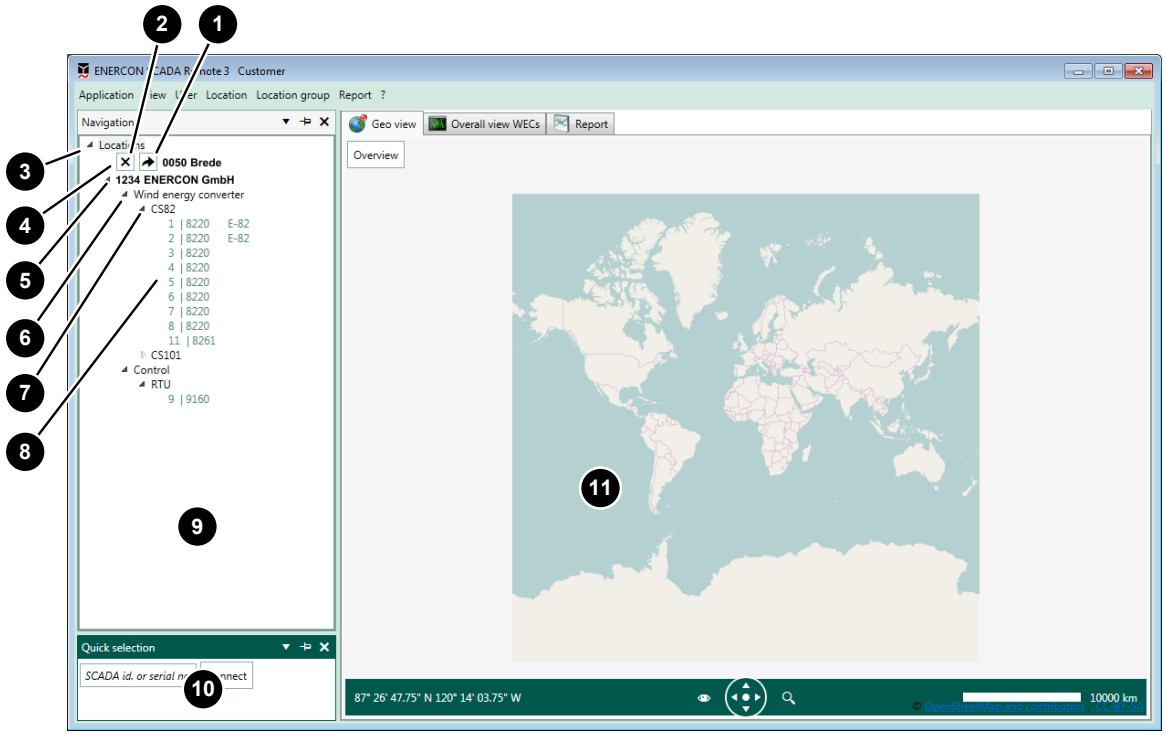


Fig. 32: Overview of levels

1	Remove button	2	Connect button
3	*Locations* level	4	Location level (if disconnected)
5	Location level (if connected)	6	Plant type level
7	Control system type level	8	Plant level
9	Viewlet *Navigation*	10	Viewlet *Quick selection*
11	Display area (tabs)		

Using the symbol button at the header of each level, the levels below this can be hidden or shown again.

Locations level

Display of connected locations (number and name of locations).

After this level has been selected, additional tabs will be available in the display area (ch. 4.7.1, p. 47, ch. 4.7.2, p. 50, ch. 4.7.3, p. 50).

Location level (if disconnected)

If the connection to a site is disconnected for technical reasons (e.g. network problems), the location will continue to be listed in the viewlet *Navigation* and a hint will appear in a speech bubble in the Microsoft Windows info area.

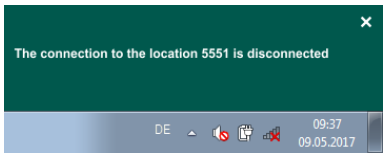


Fig. 33: Info area: Hint (connection disconnected)

The location can then be removed from viewlet *Navigation* (location level (if disconnected); Remove button) or connected again (location level (if disconnected); Connect button).

Location level (if connected)

Displays the number and name of the associated location e.g. *0040 WP GmbH*.

After this level has been selected, additional tabs will be available in the display area (ch. 4.8, p. 56).

Plant type level

Display of plant type e.g. *Wind energy converter*, *Control system*, *METEO*.

After this level has been selected, additional tabs will be available in the display area (ch. 4.9, p. 84).

This level can be expanded or reduced to display the other levels.

Control system type level

Display of control system type e.g. *CS66*, *RTU*, *FCU*.

After this level has been selected, additional tabs will be available in the display area (ch. 4.10, p. 90).

This level can be expanded or reduced to display the other levels.

Plant level

Display of plant number, serial number and device type such as *E-82*, *E-66, RTU, FCU*.

After this level has been selected, additional tabs will be available in the display area (ch. 4.11, p. 94).

Viewlet *Navigation*

The connection progress is shown in viewlet *Navigation* while a connection is being made.

The navigation levels are then shown.

Viewlet *Quick selection*

Viewlet *Quick selection* enables users to connect to a location using the keyed-in SCADA or serial number (device or plant in the desired location).

The connection can only be made to sites already set up (ch. 4.5.4, p. 33).

Tool tip

Hover with the mouse pointer over any serial number to display a tool tip indicating the plant's current status.

Maintenance symbol

The symbol is only shown if maintenance is performed on the plant.

4.7 Locations level

If the *Locations* level is selected in viewlet *Navigation*, further tabs such as *Geo view* or *Report* will be shown in the application window's display area.

4.7.1 Geo view tab

Representation of locations

The connected locations are shown on the map either as green dots (plant running) or red dots (active fault message for at least one plant), depending on the status of the plant in the wind farm.

The totals for active and reactive power from the average plant data and the average wind speed as well as wind direction as an arrow are shown for each location (dot symbol).

In addition, the total values for active power and reactive power, the average wind speed and the plant availability for all displayed locations are shown in the top right-hand corner of the screen. The ESLD (ENERCON SCADA Linux Distribution) operating system V2.17 or higher must be installed on the ENERCON SCADA Server for this.

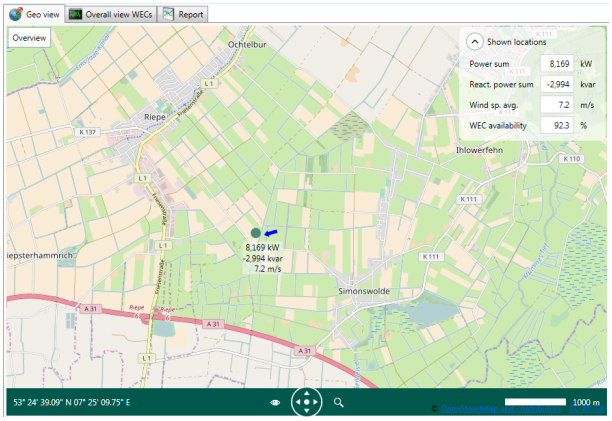


Fig. 34: Displaying a location

Colour coding

The most important plant statuses are indicated by the colour coding applied to the serial numbers. The refresh interval of the statuses is about 1 minute and also depends on the connection quality.

Tab. 1: Meaning of colour coding

Colour	Meaning
Grey	Status not yet retrieved.
Green	Plant in operation.
Green with icon	Plant is being serviced.
Orange	An info message is available for the plant.
Red	A fault message is available for the plant.
Blue	Reception timeout. No status message available for the plant.

Magnified view

By clicking on a location (dot symbol) the plants for this location are displayed optimally on the screen as plant symbols (the zoom level is set automatically).

The zoom level can also be set with the scroll wheel on the mouse or on the navigation bar at the bottom.

Clicking once on the *Overview* button will adjust the zoom automatically so that all connected locations are shown on the map.

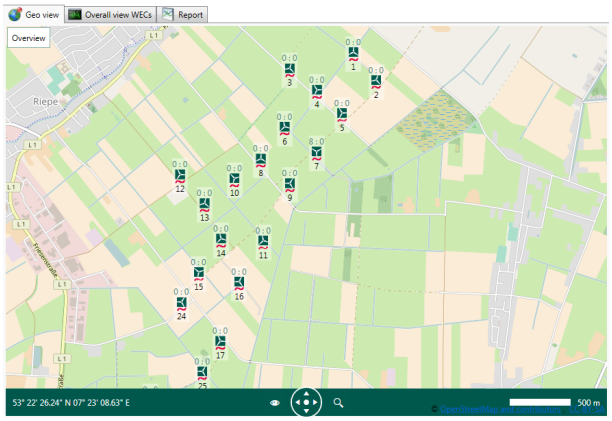


Fig. 35: Display of plant positions for a location

Plant icon of the wind energy converter

The current status is shown as a coloured numeric code above each plant icon.

The plant icon itself is used to show the current rotational speed of the wind energy converter's rotor in real time (rotor is turning).

The plant number is located below each plant icon.

Detailed view of the wind energy converter

If the mouse pointer moves over a plant icon for a wind energy converter or the view is enlarged further, a detailed view of the wind energy converter's information is shown.

The following information is shown, among other things: Main and substatus, rotor speed and wind direction at the wind energy converter (blue arrow).

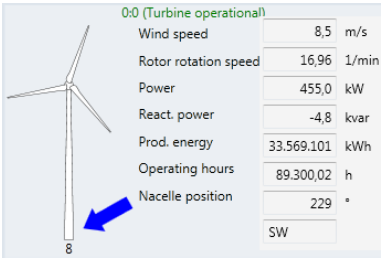


Fig. 36: Detailed information for a plant

Navigation bar at bottom

On the lower edge the coordinates for the current position of the mouse pointer are shown, the current map scale for the view and other operating controls.

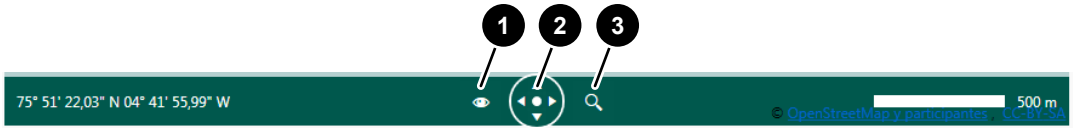


Fig. 37: Navigation bar

1	Choice of display button	2	Navigation buttons
3	Button for enlarging/reducing the map view		

4.7.2 Overall view of WECs tab

All site data set up in the program for the wind energy converters are shown in this tab (ch. 4.5.4.3, p. 38). If there is also a connection to the sites, the current operating data for the wind energy converters are shown.

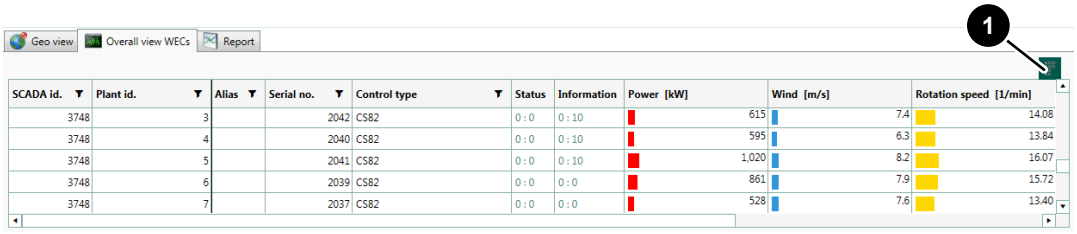


Fig. 38: *Overall view WECs* tab

1	Button for hiding and unhiding table columns

Negative powers are not taken into account in this overall view.

Button for hiding and unhiding table columns

This button opens a context menu which can be used to hide and unhide columns by means of check boxes.

If this check box is activated, the respective column is displayed.

If this check box is deactivated, the respective column is hidden.

4.7.3 Report tab

A data or status report can be generated on this tab and displayed on an XPS viewer (integrated into the display area) (ch. 4.7.3.2, p. 54).

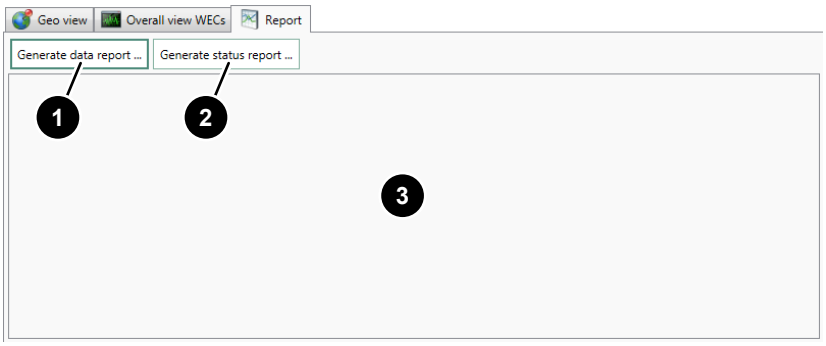


Fig. 39: *Report* tab

1	*Generate data report* button	2	*Generate status report* button
3	Display area		

Generate data report button

This opens the *Generate data report* dialogue box (ch. 4.7.3.1, p. 51).

Generate status report button

This opens the *Generate status report* dialogue box (ch. 4.7.3.1, p. 51).

4.7.3.1 Generate data/status report

Data reports provide information on yield, availability, temperature or master data on the basis of raw data downloaded from ENERCON SCADA Server to the client PC. Reports can be generated for wind energy converters as well as for all SCADA devices (RTU, FCU, etc.).

A status/information report on the other hand provides information on the frequency of a specific status for instance.

Once generated, this report is saved and displayed in an XPS viewer (integrated into the display area). The XPS viewer offers the option to save the generated report in PDF format (ch. 4.7.3.2, p. 54).

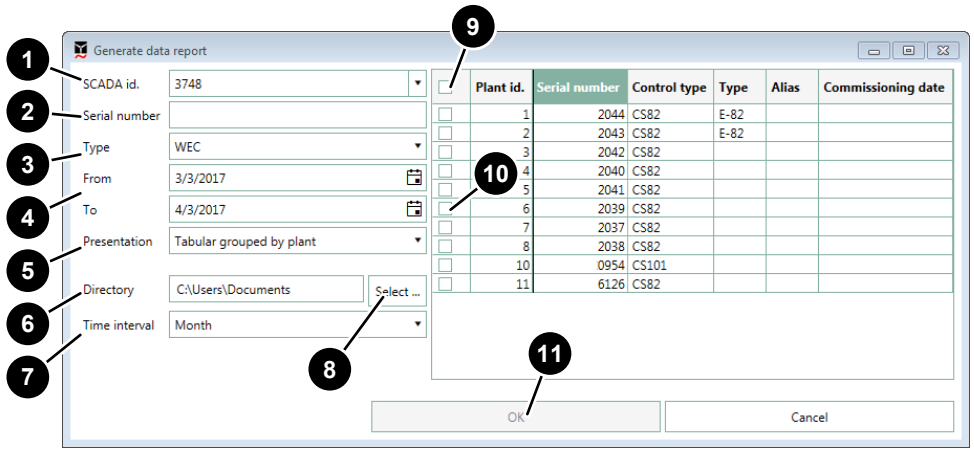


Fig. 40: *Generate data report* dialogue box

1	*SCADA id.* input field/list box	2	*Serial no.* input field
3	*Type* list box	4	*From/to* input fields
5	*Presentation* list box	6	*Directory* input field
7	*Time interval* list box	8	*Select* button
9	Check box for selecting all plants	10	Check boxes for individual selection
11	*OK* button		

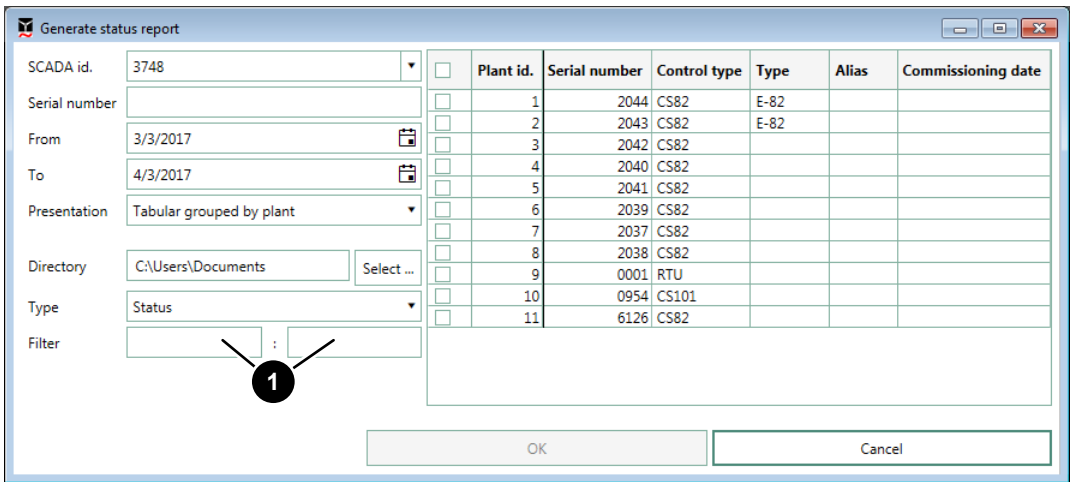


Fig. 41: *Generate status report* dialogue box

1	*Filter* input fields

SCADA id. input field/list box

The number of a location that is set can be entered here or selected via the associated button (arrow), for the systems/components of which a report is to be generated.

If no location is shown or a location is missing, first add the configuration details (ch. 4.5.4.2, p. 36).

Serial no. input field

The serial number of a wind energy converter or that of a SCADA device (e.g. that of an RTU) can be entered here.

The associated location is then used for the report, and the plants are shown for selection.

Type list box

A report type can be selected here.

- *Generate data report*
  Select from the following options:
  - *WEC, RTU, FCU*
  - *Farm control, transmission substation*
  - *Wind measurement, weather measurement*

After entering or selecting the location number (*SCADA no.* input field) the systems for the selected data report type are shown on the right.

If type *WEC* is selected, for instance, the wind energy converters of the location will be listed.

- *Generate status report*
  Select from the following options:
  - *Status*
  - *Information*

After entering or selecting the location number (*SCADA no.* input field) the systems for the selected data report type are shown on the right.

Filter input field

This will only appear if *Generate status report* is selected.

The relevant number codes can be input here for filtering the status data.

From/to input fields

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

Presentation list box

Shows the report display used.

Select from the following options:

- *Grouped in a table by time*
  Only available if *Generate data report* is selected.
  The report data is grouped in chronological order, depending on the time interval selected.

- *Grouped in a table by plant*
  The report data is grouped by plant number in ascending order.
  Starting with the earliest entry, the data for a particular plant is shown for each time period.
- *CSV*
  The report is saved in CSV format and can be opened and processed using a spreadsheet application, for instance.
  No XPS file is generated.

Directory input field

Shows the folder path to which to the report generated is to be saved.

The path to the folder to which the generated report is to be saved can be entered here.

Select button

Opens the *Search folder* dialogue box

A folder to which to save the generated report can be saved here.

Time interval list box

This will only appear if *Generate data report* is selected.

Shows the time interval for the report.

Select from the following options:

- *10 minutes*
- *Day*
- *Month*

If, for instance, *10 Minutes* is selected as a time interval, the report will show only the 10 minute data.

Check box for selecting all plants

If the check box is activated, all check marks are inserted and all plants therefore included in the report.

If the checkmark is deactivated, all check marks are reset.

Check box for individual selection

If the check box is activated, the selected plant is included in the report.

If the check box is deactivated, the selected plant is not included in the report.

_OK_ button

Generates a report from data that has already been downloaded and shows it in an XPS viewer (ch. 4.7.3.2, p. 54). A connection to the location is not absolutely necessary for this.

If the destination directory (ch. 4.5.1.1, p. 28) contains no data for a selected period, a relevant message will appear. The data has to be downloaded in this case via a data request.

4.7.3.2 Generated report

Each generated report is displayed in a separate tab. Each tab page is an instance of an XPS viewer and offers the option to save a report generated as an XPS document in PDF format.

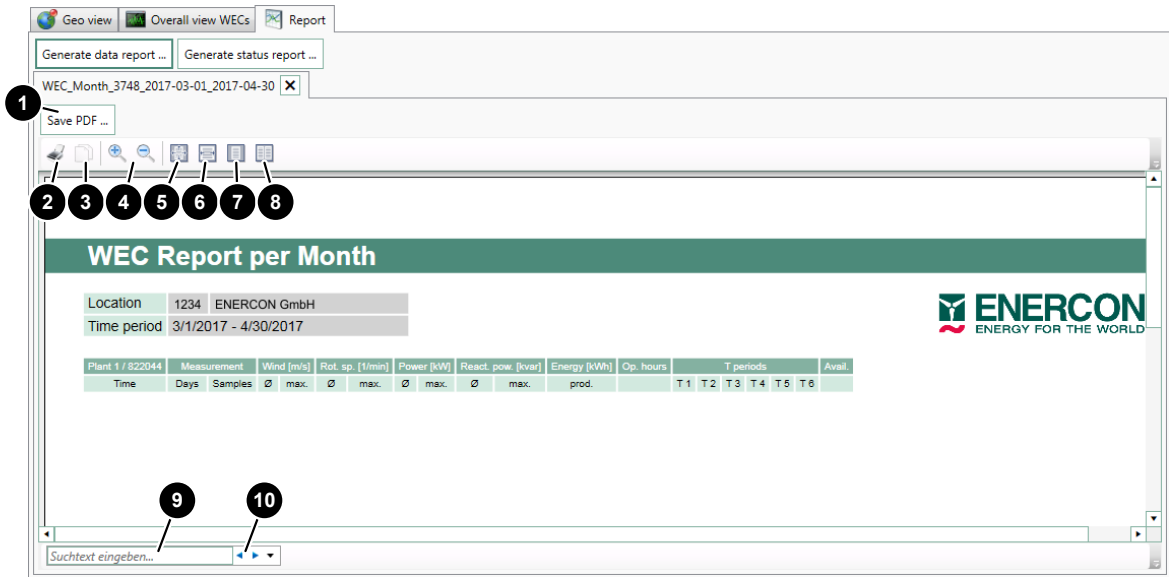


Fig. 42: Report in XPS viewer

1	Save PDF button	2	Print button
3	Copy button	4	Buttons for enlarging and reducing the screen area
5	Buttons for normal display of screen area	6	Page width button
7	Button for whole page	8	Button for two pages
9	Search function	10	Search buttons (up and down)

Print button

Opens a dialogue box for selecting a printer for printing out the report.

Copy button

Only enabled after a text has been highlighted beforehand in XPS viewer. Copies a text highlighted in XPS viewer into the clipboard.

Button for enlarging and reducing the screen area

Using these buttons the screen area can be increased or reduced.

Button for normal display of screen area

The screen area that was enlarged or reduced previously is now displayed in its normal size.

Page width button

Adjusts the page to the window size and activates scrolling.

Button for whole page

Adjusts the display so that an entire page of the report is shown.

Button for two pages

Adjusts the display so that two pages of the report are shown simultaneously.

Search function

Using the search function the report generated can be searched through for a search term. The report generated can be searched from top to bottom for a search term via the associated buttons.

Save report as PDF

1. Click on the *Save PDF* button.
   ↪ The *Save As* dialogue box opens.
2. Specify the storage location and the file name.

The default file name syntax is as follows:

- For a data report
  Type_time period_SCADA no._from_to
  (e.g. *WEC_Month_0059_2015-05-01_2015-05-31)*
- For a status report
  Status_SCADA no._from_to
  (e.g. *status_0059_2015-05-01_2015-05-08)*

3. Click on the *Save* button.

↪ The file is saved in PDF format.

4.8 Location level

If a linked location is selected in viewlet *Navigation*, further tabs such as *SCADA overview*, *Data request* etc. are shown in the application window's display area.

If a linked location is selected by right-clicking the Location level (number and name of site), a context menu opens up in which the connection to the site can be disconnected or a data or status report generated.

For information on rights, see ch. 8.2.3, p. 114.

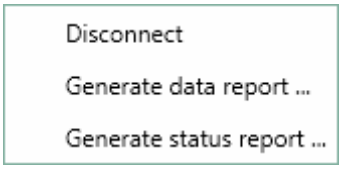


Fig. 43: *Location level* context menu

Disconnect menu item

Closes the connection to the selected location.

Generate data report... menu item

This opens the *Generate data report* dialogue box (ch. 4.7.3.1, p. 51).

Generate status report... menu item

This opens the *Generate status report* dialogue box (ch. 4.7.3.1, p. 51).

4.8.1 SCADA overview tab

This tab displays information on the SCADA system at the selected location.

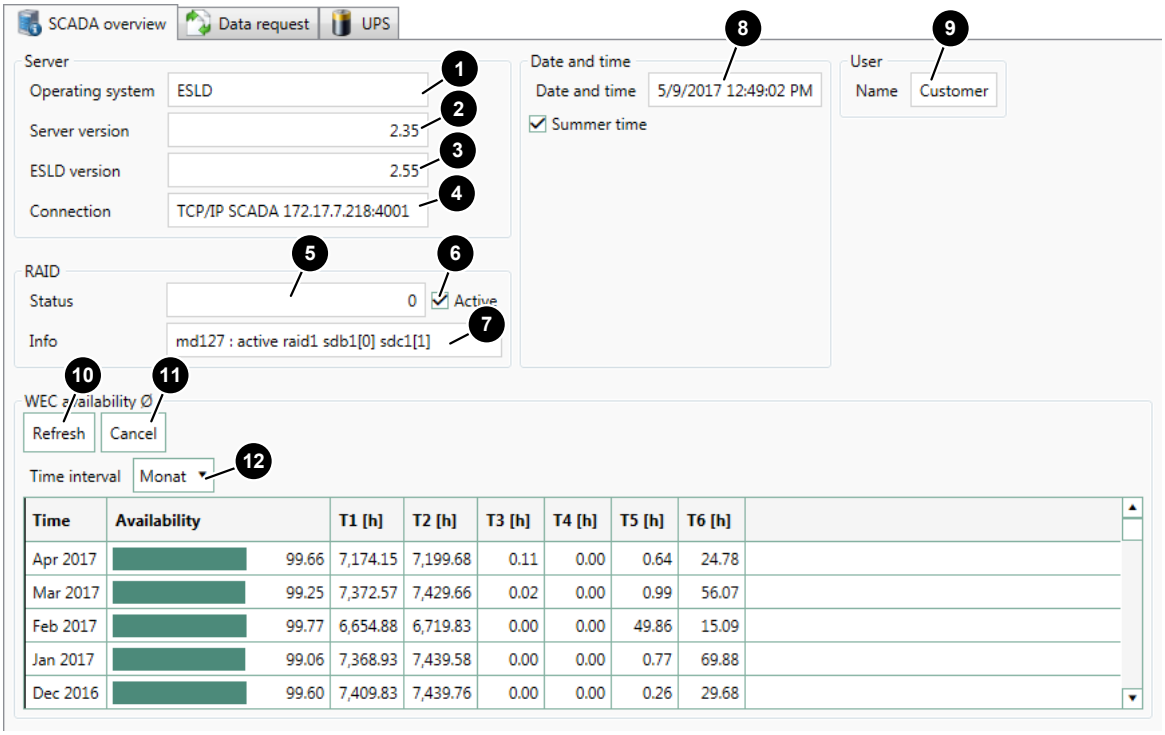


Fig. 44: *SCADA overview* tab

1	*Operating system* display field	2	*Server version* display field
3	*ELSD version* display field	4	*Connection* display field
5	*Status* display field	6	*Active* check box
7	*Info* display field	8	*Date and time* display field
9	*Name* display field	10	*Refresh* button
11	*Cancel* button	12	*Time interval* list box

Operating system display field

Specifies the operating system used on the ENERCON SCADA Server.

Server version display field

Specifies the SCADA version on the ENERCON SCADA Server.

ELSD version display field

Specifies the ESLD (ENERCON SCADA Linux Distribution) version on the ENERCON SCADA Server.

Connection display field

Specifies the TCP/IP address of the connection to the ENERCON SCADA Server.

Status display field

Indicates the status of the RAID as a numerical code.

Active check box

If the check box is activated, a RAID is installed on the SCADA Server and configured.

Info display field

Indicates information on the current status of the RAID.

Tab. 2: Status messages and RAID info

Status	Information	Cause
0	md127:active raid1 sdb1[0] sdc1[1]	No error is present.
229	-	No RAID set up.
162	-	Service not started or not installed.
144	md127:active raid 1 sdc[1]	RAID link configured with just one storage medium.
144	md127:active raid1 sdb[1](F) sdc[1]	RAID link with two storage media. One storage medium is defective.

The dialogue elements of the RAID are only displayed if a RAID is installed in the ENERCON SCADA Server and configured accordingly.

Date and time display field

The current date and time of the location appears here.

Summer time check box

If the check box is activated, summer time is used.

Name display field

The name of the user is displayed here.

Time interval list box

Shows the selected time period for the report data.

Select from the following options:

- *Day*
  report data for the day completed.
- *Week*
  report data for the week completed (start: Sunday).
- *Month*
  report data for the month completed (start: 01st of month).
- *Year*
  report data for the year completed (start: 01st January).

Refresh button

Refreshes the table view to reflect the specified parameters.

Cancel button

Allows the update to be cancelled.

4.8.2 Data Request tab

Use the Data Request functionality to download historical data for the location in dBASE IV format from the ENERCON SCADA Server to the client PC for subsequent analysis.

Use the *Application>Edit settings* menu to specify the destination directory for the download (ch. 4.5.1.1, p. 28).

See ch. 8.3, p. 120 in the appendix for details on file and field name designations (names of created files and their content/structure).

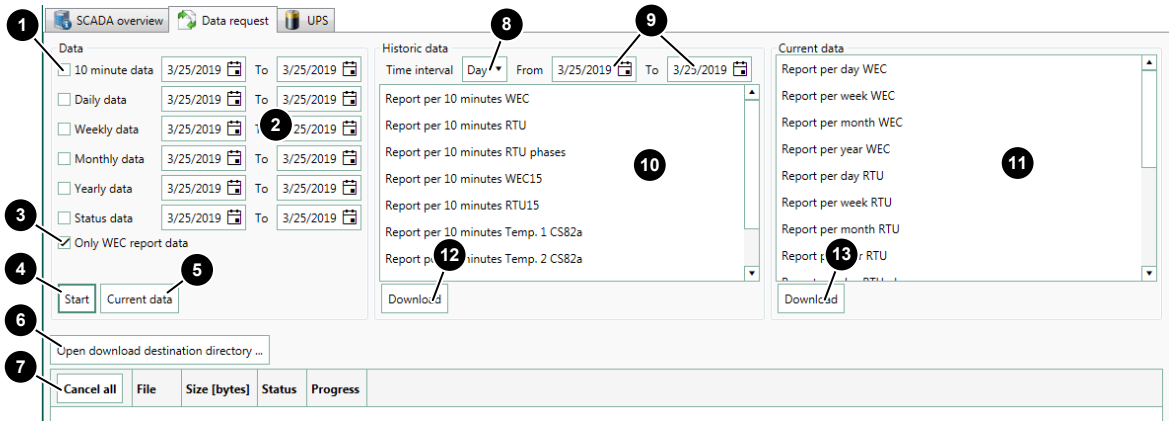


Fig. 45: *Data request* tab

1	Check boxes for individual selection	2	Date input fields
3	*Only WEC report data* check box	4	*Start* button
5	*Current data* button	6	*Open download destination directory* button
7	*Cancel all* button	8	*Time interval* list box
9	*From/To* input fields	10	List box for historical data
11	List box for current data	12	Download historical data button
13	Download current data button		

Check box for individual selection

If the check box is activated, the selected data is used for the download. The information data is also downloaded with the status data.

Date input fields

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

Only WEC report data check box

If this check box is selected (default), only wind energy converter data are included for download. No data from additional devices such as the RTU will be downloaded.

Start button

Copies data selected beforehand from the ENERCON SCADA Server to the destination directory of the local computer.

***Current data* button**

Makes the following settings:

- Activates all check boxes.
- Sets time period for daily, weekly, monthly, year and status data requested to the current month (1st day of current month up to the current date).
- Sets time period for 10-minute data requested to the current date.

***Time interval* list box**

Shows the selected time period for the report data.

Select from the following options:

- *Day*
- *Month*
- *Year*

***From/to* input fields**

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

List box for historical data

Historical data can be selected for download here.

Left-click to select the data. Click on selected data again to deselect it.

Download historical data button

Starts download of selected data.

List box for current data

Current data can be selected for download here.

Left-click to select the data. Click on selected data again to deselect it.

Download current data button

Starts download of selected data.

***Open download destination directory* button**

Opens the download destination directory for the relevant location. This folder is added in the directory specified in the *Edit settings* dialogue box (ch. 4.5.1.1, p. 28) with the naming convention *Loc_#*. The string # represents the location number. Use this button to navigate to data downloaded via ENERCON SCADA Remote 3 with this button.

***Cancel all* button**

This cancels the download of all files.

***Cancel* button**

Only available during a download.

Cancels download of the relevant file and, if applicable, continues with download of the next file.

4.8.3 UPS tab

This tab is only available if a UPS is installed in the location and configured correctly in the ENERCON SCADA software.

This tab shows details on the status and measured values for the uninterruptible power supply (UPS).

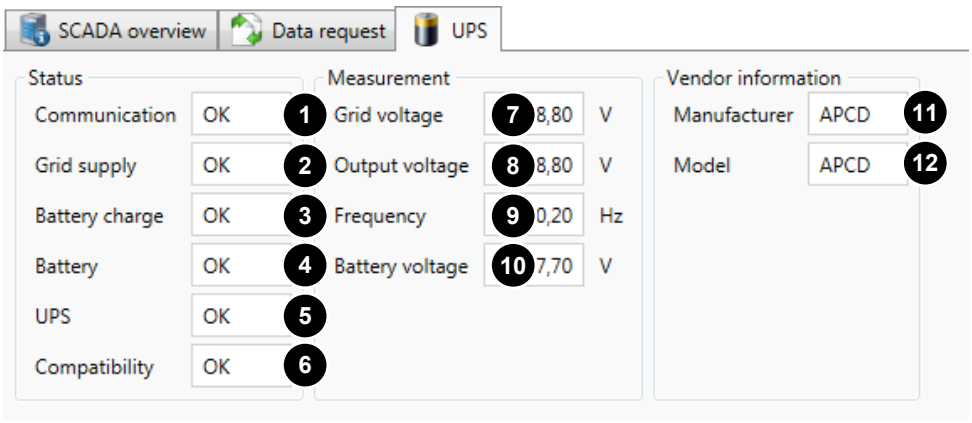


Fig. 46: *UPS* tab

1	*Communication* display field	2	*Grid supply* display field
3	*Battery charge* display field	4	*Battery* display field
5	*UPS* display field	6	*Compatibility* display field
7	*Grid voltage* display field	8	*Output voltage* display field
9	*Frequency* display field	10	*Battery voltage* display field
11	*Manufacturer* display field	12	*Model* display field

Communication display field

Indicates if communication between the ENERCON SCADA Server and the UPS is interrupted.

Grid supply display field

Indicates whether the power supply is interrupted. In case of an error, the UPS will supply the ENERCON SCADA server with power.

Battery charge display field

Indicates whether the battery is sufficiently charged.

Battery display field

Indicates whether the battery's replacement date has been reached, whether it is defective or not connected.

UPS display field

Indicates whether there is an internal fault with the UPS.

Compatibility display field

Indicates whether the UPS used is supported by the ENERCON SCADA software.

***Grid voltage* display field**

Indicates the current UPS grid voltage in V.

***Output voltage* display field**

Indicates the output voltage of the UPS in V.

***Frequency* display field**

Indicates the output voltage of the UPS grid voltage in Hz.

***Battery voltage* display field**

Indicates the current UPS battery voltage in V.

***Manufacturer* display field**

Indicates the UPS manufacturer.

***Model* display field**

Indicates the UPS model.

Display of information on manufacturer and model are only possible with ENERCON SCADA version 2.32 or above. With versions < 2.32 "APCD" is shown.

4.8.4 GPS tab

This tab is only available if a GPS kit (**G**lobal **P**ositioning **S**ystem) is installed at the location. Use this tab to view details about the GPS. The GPS is used for time synchronisation between the ENERCON SCADA system and the UTC time provided by the GPS signal.

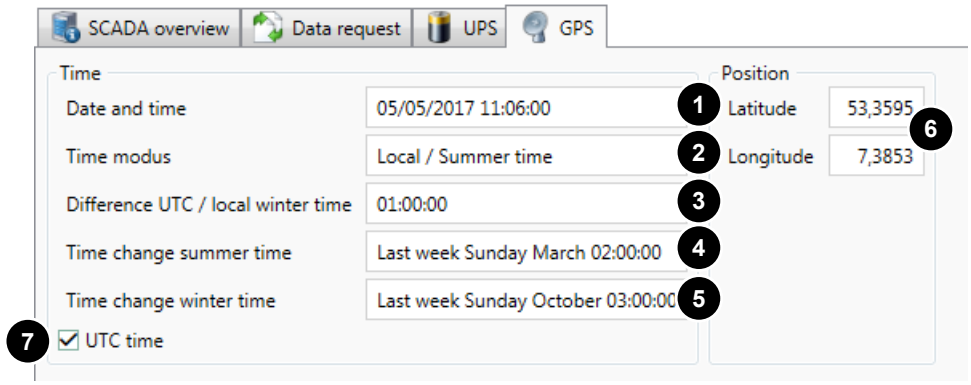


Fig. 47: *GPS* tab

1	*Date and time* display field	2	*Time modus* display field
3	*Difference UTC / local winter time* display field	4	*Time change summer time* display field
5	*Time change winter time* display field	6	*Latitude* and *longitude* display fields
7	*UTC time* check box		

Date and time display field

Shows the current date and calculated local time.

Time modus display field

Indicates the time mode: Local/daylight saving time or standard time.

Difference UTC / local winter time display field

Specifies the time difference between UTC and local standard time.

Time change summer time display field

Specifies the time for clock change to daylight saving time.

Time change winter time display field

Specifies the time for clock change to standard time.

UTC time check box

If this check box is activated, UTC time is used. UTC = Universal Time, Coordinated (Germany = UTC + 1 hour).

Latitude and *longitude* display fields

The current location coordinates of the GPS satellite receiver (longitude and latitude as a decimal) are displayed here.

4.8.5 Power Consumption tab

Use this tab to view or configure Power Consumption Management (PCM) for the location.

For more detailed information, refer to document D0296618 ‘Technische Beschreibung ENERCON SCADA Power Consumption Management’ (Technical Description of ENERCON SCADA Power Consumption Management).

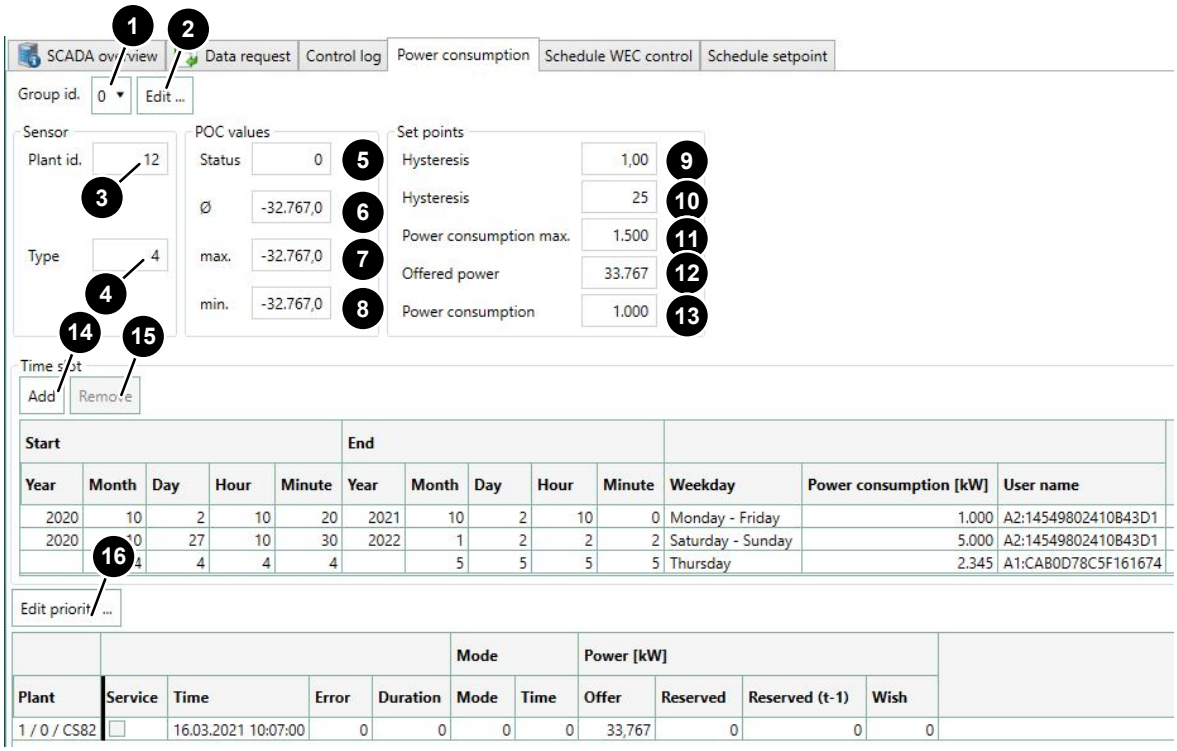


Fig. 48: *Power consumption* tab

1	*Group id.* list box	2	*Edit ...* button
3	*Plant id.* display field	4	*Type* display field
5	*Status* display field	6	*Ø* display field
7	*max.* display field	8	*min.* display field
9	*Hysteresis* display field (percentage)	10	*Hysteresis* display field (absolute)
11	*Power consumption max.* display field	12	*Offered power* display field
13	*Power consumption* display field	14	*Add* button
15	*Remove* button	16	*Edit priority* button

Group id. list box

Shows the selected group no.

The group of wind energy converters to be configured can be selected here.

*Edit...*button

Opens the *Edit* dialogue box, see ch. 4.8.5.1, p. 67.

In the *Edit* dialogue box, values can be input for specification of the power consumption setpoint *(max. power consumption*) and hysteresis for filtering the calculated available power consumption *(hysteresis)*.

Add button

Opens the *Add* dialogue box to create a peak-load time window, see ch. 4.8.5.4, p. 69.

Remove button

Removes the selected peak-load time window, see ch. 4.8.5.4, p. 69.

Edit priority... button

Opens the *Edit* dialogue box, see ch. 4.8.5.2, p. 67 for defining the priority of the wind energy converters.

Changing the operating mode

Double-clicking a table row opens the *Edit* dialogue box where manual operation of the wind energy converter can be configured, see ch. 4.8.5.3, p. 68.

Plant id. display field

Specifies the SCADA number for the device used to determine the power consumed, e.g. measured data acquisition system (FCU, FCU E2 or RTU-C).

A 0 (SCADA number) is entered if the power consumed is to be calculated by adding up the power drawn by the individual wind energy converters (virtual NCP).

Type display field

Specifies the calculation method for the power procured. The following versions can be distinguished here:

- Summation of the power reserved by the wind energy converters (virtual NCP)
- Measurement of consumed power at the NCP using a measured data acquisition system (FCU, FCU E2 or RTU-C)

Status display field

Indicates the current Power Consumption Management status of the group as a numerical code.

Ø display field

Indicates the average power of the group measured at the NCP in kW.

Max. display field

Indicates the maximum power of the group measured at the NCP in kW.

Min. display field

Indicates the minimum measured power of the group at the NCP in kW.

Hysteresis display field (percentage)

Indicates the hysteresis as a percentage based on the nominal wind energy converter power at the location.

Hysteresis display field (absolute)

Indicates the hysteresis in kW.

Power consumption max. display field

Indicates the maximum permissible power consumption measured in kW.

Offered power display field

Indicates the currently offered power consumption in kW. This value is the power consumption setpoint or the power consumption setpoint of the active peak load time window.

Power consumption display field

Indicates the setpoint of the active peak-load time window in kW.

Information on table contents (group *Time slot*)

The table displays the peak-load time windows created. The following information is displayed:

- Column *Start Year*, *Start Month*, *Start Day* and *Start Minute*
  Indicates the start date of the peak-load time window.
- Column *End Year*, *End Month*, *End Day* and *End Minute*
  Indicates the end date of the peak-load time window.
- Column *Weekday*
  Indicates the days of the week within the indicated time period for which the peak-load time window is valid.
- Column *Power consumption*
  Indicates the valid power consumption value for the duration of the peak-load time window.
- Column *User name*
  Indicates the user who created the respective peak-load time window. Names of ENERCON employees are indicated in encrypted form.

Tab. 3: Information on table content

Column	Description
Service	Indicates whether the wind energy converter is being serviced (maintenance).
Time	Indicates the time of the last data exchange between Power Consumption Management and the wind energy converter.
Error	Indicates an error as a numerical code.
Duration	Indicates the duration of the wind energy converter power draw.
Mode	Indicates the current Power Consumption Management operating mode of the respective wind energy converter: ■ 0: Automatic mode ■ 1 to 252: Manual mode; value corresponds to configured duration in h ■ Deactivated: Wind energy converter has signed out of Power Consumption Management ■ Sync: Synchronisation, e.g. after a wind energy converter restart ■ Error: Communication fault
Mode Time	Indicates the remaining time for manual mode.
Power Offer	Indicates the power that is currently being offered.
Power Reserved	Indicates the power currently reserved by the wind energy converter.

Column	Description
Power Reserved (t-1)	Indicates the power reserved by the wind energy converter in the preceding cycle.
Power Wish	Indicates the power needed by the wind energy converter.

4.8.5.1 Specification of power consumption setpoint and hysteresis

The power consumption setpoint and the hysteresis in the selected group can be specified in this dialogue box.

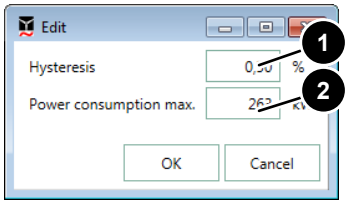


Fig. 49: Opens the *Edit* dialogue box where power consumption setpoint and hysteresis can be defined

1	*Hysteresis* input field	2	*Power consumption max.* input field

Hysteresis input field

The hysteresis for filtering the calculated available power consumption can be defined here.

Power consumption max. input field

Key in the power consumption setpoint of the currently selected group here.

4.8.5.2 Defining the priority of the wind energy converters

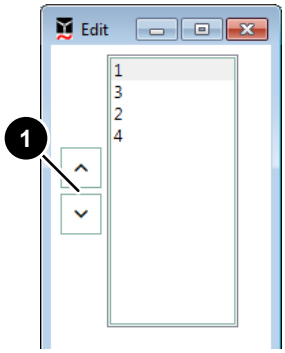


Fig. 50: *Edit* dialogue box for defining the priority

1	Navigation buttons

The priority of the wind energy converters (1 to n) can be defined in the *Edit* dialogue box. The wind energy converters are shown with their plant number.

Using the navigation buttons, the relevant plant number selected can be moved up (higher priority) or down (lower priority).

One click on the *OK* button saves the defined priority of the wind energy converters and closes the dialogue box.

Already reserved power is not taken back if the priority is changed.

4.8.5.3 Configuring manual mode

Use this dialogue box to configure manual mode for Power Consumption Management in a particular wind energy converter.

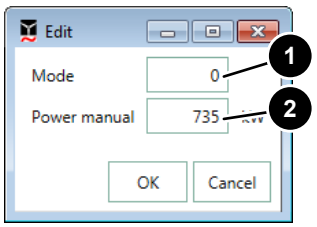


Fig. 51: *Edit* dialogue box for configuring manual mode

1	*Mode* input field	2	*Power manual* input field

Mode input field

The duration of manual mode can be specified here in hours.

Power manual input field

The maximum power consumption for manual mode can be specified here.

OK button

Saves the settings and closes the dialogue box. Power Consumption Management of the wind energy converter switches to manual mode.

Cancel button

Closes the dialogue box without saving the settings. The Power Consumption Management manual mode for the wind energy converter does not start.

4.8.5.4 Peak-load time windows

A maximum of 20 peak-load time windows can be defined for atypical grid usage, during which time the power consumption of a group of wind energy converters can be restricted to a setpoint other than the power consumption setpoint.

Create peak-load time window

1. Press the *Add* button on the *Power consumption* tab.
   ↪ The *Add* dialogue box appears.
2. Enter the following information in the *Add* dialogue box:
   - *Start Year* input field: Year of the start date of the peak-load time window. Value range: 1 to 9998; 9999 = Peak-load time window is valid all year round and every year.
   - *Start Month* input field: Month of the start date of the peak-load time window. Value range: 1 to 12; 99 = Peak-load time window is valid for every month.
   - *Start Day* input field: Day of the start date of the peak-load time window. Value range: 1 to 31; 99 = Peak-load time window is valid for every day.
   - *Start Hour* input field: Hour of the start time of the peak-load time window. Value range: 1 to 23; 99 = Peak-load time window is valid for every hour.
   - *Start Minute* input field: Minute of the start time of the peak-load time window. Value range: 1 to 59; 99 = Peak-load time window is valid for every minute.
   - *End Year* input field: Year of the end date of the peak-load time window. Value range: 1 to 9998; 9999 = Peak-load time window is valid all year round and every year.
   - *End Month* input field: Month of the end date of the peak-load time window. Value range: 1 to 12; 99 = Peak-load time window is valid for every month.
   - *End Day* input field: Day of the end date of the peak-load time window. Value range: 1 to 31; 99 = Peak-load time window is valid for every day.
   - *End Hour* input field: Hour of the end time of the peak-load time window. Value range: 1 to 23; 99 = Peak-load time window is valid for every hour.
   - *End Minute* input field: Minute of the end time of the peak-load time window. Value range: 1 to 59; 99 = Peak-load time window is valid for every minute.
   - *Weekday* list box: Weekday of the peak-load time window.
   - *Power consumption* input field: Power consumption value in kW.
3. Stop the entry process by pressing *OK*.
   ↪ The *Add* dialogue box closes and the *Confirmation* dialogue box appears.
4. Enter the password, if necessary, and press the *OK* button to save the peak-load time window.

↪ The *Confirmation* dialogue box closes and the peak-load time window is created. The peak-load time window is displayed in the table.

Remove peak-load time window

1. Select the peak-load time window to be removed in the table on the *Power consumption* tab.
2. Press the *Remove* button.
   ↪ The *Confirmation* dialogue box appears.

3. Enter the password, if necessary, and press the *OK* button to delete the peak-load time window.

↪ The *Confirmation* dialogue box closes and the peak-load time window is removed.

4.8.6 Schedule WEC control tab

The *Schedule WEC control* tab can be used to create control actions for the wind energy converters on the ENERCON SCADA Server in the form of a control table.

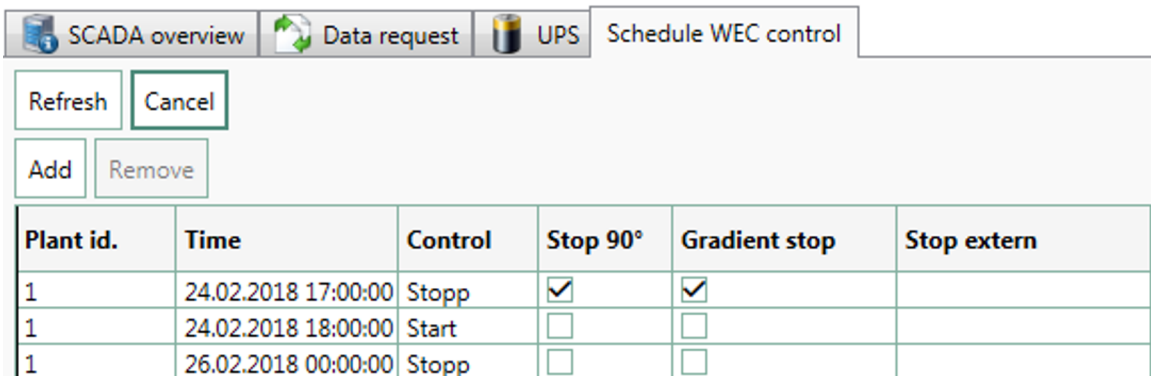


Fig. 52: *Schedule WEC control* tab

The control actions created in the control table can range from actions planned for the short term to actions to be performed up to 7 days in the future. Up to 40 control actions can be created for each wind energy converter. There must be at least 6 minutes between the times set for the control actions on a wind energy converter.

The following control actions are possible:

- Starting of the wind energy converter
- Stopping of the wind energy converter at blade angles of 60° and 90°
- Gradient stopping of the wind energy converter at blade angles of 60° and 90°

Changes to the control table are initially saved temporarily by the ENERCON SCADA Server. They are saved permanently when the ENERCON SCADA Server is restarted properly, or 8 hours after the last change.

Control actions that have been performed are recorded in the status history with corresponding status messages and are removed from the control table.

Interaction between control actions

When a number of functions and systems authorised to start or stop the wind energy converter are operating in parallel, interactions between these control actions can occur.

The status resulting from a start and stop of the wind energy converter must be monitored. Responsibility for monitoring the status lies with the customer or the operator/owner.

Information on table contents

The table displays the configured control actions. The following information is displayed:

- *Plant id.* column
  Indicates the wind energy converter to be controlled.
- *Time* column
  Indicates the time of the planned control action.
- *Control* column
  Indicates the control action to be performed.
- *Stop 90°* column
  Indicates whether the stop concerned is for a 60° or 90° blade angle. Check box selected: Stop at 90° blade angle. Check box deselected: Stop at 60° blade angle.
- *Gradient stop* column
  Indicates whether the stop is a gradient stop by selecting or deselecting the check box.

- *Stop external* column
  Indicates the reason for an external stop. The reason is selected when configuring a stop.

Creating a control action

1. Press the *Add* button on the *Schedule WEC control* tab.
   ↪ The *Add* dialogue box appears.
2. Enter the following information in the *Add* dialogue box:
   - *Time* input field: Enter or select the date and time of the control action.
   - *Plant id.* list box: Select the wind energy converter to be controlled.
   - *Control* list box: Select the control action. The *Stop* entry here equates to a stop at a 60° blade angle.
   - *Stop 90°* check box: Select this box if a stop at a 90° blade angle is to be performed. The check box can only be edited if the control action *Stop* has been selected.
   - *Gradient stop* check box: Select this box if a gradient stop is to be performed. The check box can only be edited if the control action *Stop* has been selected.
3. Stop the entry process by pressing the *OK* button.
   ↪ The *Add* dialogue box closes and the *Confirmation* dialogue box appears.
4. Press the *Yes* button to save the control action.
   ↪ The *Confirmation* dialogue box closes, the control action is created and the creation of the control action is confirmed by the *Information* dialogue box.
5. Close the *Information* dialogue box by pressing the *OK* button.

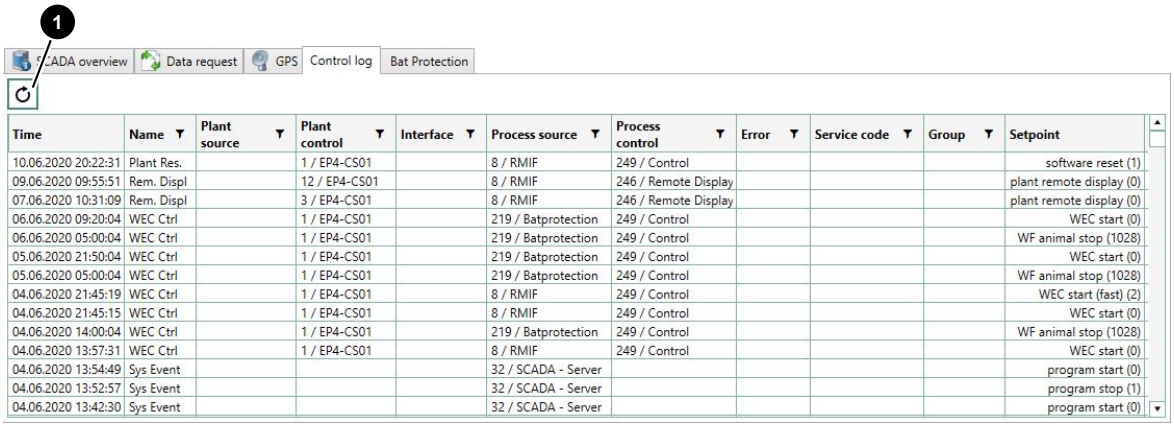
↪ The control action is displayed in the control table.

Deleting a control action

1. Select the control action to be deleted from the table in the *Schedule WEC control* tab.
2. Press the *Remove* button.
   ↪ The *Confirmation* dialogue box appears.
3. Press the *Yes* button to delete the control action.
   ↪ The *Confirmation* dialogue box closes, the selected control action is deleted and the deletion of the control action is confirmed by the *Information* dialogue box.
4. Close the *Information* dialogue box by pressing the *OK* button.

↪ The control action is no longer displayed in the control table.

4.8.7 Control log tab



Time	Name	Plant source	Plant control	Interface	Process source	Process control	Error	Service code	Group	Setpoint
10.06.2020 20:22:31	Plant Res.		1 / EP4-CS01		8 / RMIF	249 / Control				software reset (1)
09.06.2020 09:55:51	Rem. Displ		12 / EP4-CS01		8 / RMIF	246 / Remote Display				plant remote display (0)
07.06.2020 10:31:09	Rem. Displ		3 / EP4-CS01		8 / RMIF	246 / Remote Display				plant remote display (0)
06.06.2020 09:20:04	WEC Ctrl		1 / EP4-CS01		219 / Batprotection	249 / Control				WEC start (0)
06.06.2020 05:00:04	WEC Ctrl		1 / EP4-CS01		219 / Batprotection	249 / Control				WF animal stop (1028)
05.06.2020 21:50:04	WEC Ctrl		1 / EP4-CS01		219 / Batprotection	249 / Control				WEC start (0)
05.06.2020 05:00:04	WEC Ctrl		1 / EP4-CS01		219 / Batprotection	249 / Control				WF animal stop (1028)
04.06.2020 21:45:19	WEC Ctrl		1 / EP4-CS01		8 / RMIF	249 / Control				WEC start (fast) (2)
04.06.2020 21:45:15	WEC Ctrl		1 / EP4-CS01		8 / RMIF	249 / Control				WEC start (0)
04.06.2020 14:00:04	WEC Ctrl		1 / EP4-CS01		219 / Batprotection	249 / Control				WF animal stop (1028)
04.06.2020 13:57:31	WEC Ctrl		1 / EP4-CS01		8 / RMIF	249 / Control				WEC start (0)
04.06.2020 13:54:49	Sys Event				32 / SCADA - Server					program start (0)
04.06.2020 13:52:57	Sys Event				32 / SCADA - Server					program stop (1)
04.06.2020 13:42:30	Sys Event				32 / SCADA - Server					program start (0)

Fig. 53: *Control log* tab

1	Refresh button

The *Control log* tab allows the central setpoint documentation of the ENERCON SCADA system site to be viewed.

The following activities are logged in the central setpoint documentation:

- Setpoints
- Control actions
- System events

Information on table contents

The table displays the activities that have been recorded. The following information is indicated:

- *Time* column
  Indicates the time at which the activity occurred.
- *Name* column
  Indicates the activity, see tab. 4, p. 74.
- *Plant source* column
  Indicates the trigger for the activity.
- *Plant control* column
  Indicates the target of the activity.
- *Interface* column
  Indicates the interface for transmission of the setpoint or control action.
- *Process source* column
  Indicates the trigger for the activity.
- *Process control* column
  Indicates the process for transmission of the setpoint or control action.
- *Error* column
  Indicates an error code.
- *Service code* column
  Indicates the service code used for executing the activity.
- *Group* column
  Indicates which activities have been executed/transmitted simultaneously. Activities with the same number are assigned to the same group. The groups are numbered consecutively.

- *Setpoint* column
  Indicates which setpoint, which control value or which system event has been specified or executed.

Tab. 4: Description of the activities

Name	Description
P indiv.	Relative individual active power setpoint to a wind energy converter
P WfCrtl	Active power setpoint to the wind farm controller
Q WfCrtl	Reactive power setpoint to the wind farm controller
QP WfCrtl	Q/P setpoint to the wind farm controller
U WfCrtl	Voltage setpoint to the wind farm controller
P(f) WfCrt	Setpoint P(f) to the wind farm controller
PM WfCrtl	Mode of active power to the wind farm controller
QM WfCrtl	Mode of reactive power to the wind farm controller
Pl WfCrtl	Active power setpoint from the setpoint list to the wind farm controller
Ql WfCrtl	Reactive power setpoint from the setpoint list to the wind farm controller
QPl WfCrtl	Q/P setpoint from the setpoint list to the wind farm controller
Ul WfCrtl	Voltage setpoint from the setpoint list to the wind farm controller
Pl(f) WfCr	Setpoint P(f) from the setpoint list to the wind farm controller
PMl WfCrtl	Mode of the active power controller from the setpoint list to the wind farm controller
QMl WfCrtl	Mode of reactive power controller from the setpoint list to the wind farm controller
PCM G0 TP	Power consumption setpoint of the peak-load time window of power consumption management group 0
PCM G1 TP	Power consumption setpoint of the peak-load time window of power consumption management group 1
PCM G2 TP	Power consumption setpoint of the peak-load time window of power consumption management group 2
PCM G3 TP	Power consumption setpoint of the peak-load time window of power consumption management group 3
PCM P	PCM Power
PCM Mode	Change of operating mode of power consumption management
PCM G0 P	Power consumption setpoint of power consumption management group 0
PCM G1 P	Power consumption setpoint of power consumption management group 1
PCM G2 P	Power consumption setpoint of power consumption management group 2

Name	Description
PCM G3 P	Power consumption setpoint of power consumption management group 3
PCM G0 Hys	Hysteresis of power consumption management group 0
PCM G1 Hys	Hysteresis of power consumption management group 1
PCM G2 Hys	Hysteresis of power consumption management group 2
PCM G3 Hys	Hysteresis of power consumption management group 3
PCM Prio	Priority of the wind energy converters in power consumption management
Plant Res.	Plant reset (SW,HW,QE)
Ice Res.	Ice detection reset
RBH	Blade heating system control
Ice Det.	Ice detection (external)
Rem. Displ	Access to remote display of the plant via ENERCON SCADA Remote 3
WEC Ctrl	Control of a wind energy converter (e.g. start, stop)
Cron Task	Control of a wind energy converter through scheduled WEC control (e.g. start, stop)
Sys Event	ENERCON SCADA Server system events (e.g. program start)
P Mode	Change of/information on mode of the wind farm controller active power controller
P Set Rel	Change of/information on the currently used relative active power setpoint of the wind farm controller (only when controller is active)
P Set Abs	Change of/information on the currently used absolute active power setpoint of the wind farm controller (only when controller is active)
P1 Set Rel	Change of/information on relative active power setpoint P1 of the wind farm controller
P1 Set Abs	Change of/information on absolute active power setpoint P1 of the wind farm controller
P2 Set Rel	Change of/information on relative active power setpoint P2 of the wind farm controller
P2 Set Abs	Change of/information on absolute active power setpoint P2 of the wind farm controller
P3 Set Rel	Change of/information on relative active power setpoint P3 of the wind farm controller
P3 Set Abs	Change of/information on absolute active power setpoint P3 of the wind farm controller
P4 Set Rel	Change of/information on relative active power setpoint P4 of the wind farm controller
P4 Set Abs	Change of/information on absolute active power setpoint P4 of the wind farm controller

Name	Description
P Exc Rel	Change of/information on the relative exceptional active power setpoint of the wind farm controller
P Exc Abs	Change of/information on the absolute exceptional active power setpoint of the wind farm controller
Q Mode	Change of/information on mode of the wind farm controller reactive power controller
Q Set Rel	Change of/information on the relative reactive power setpoint of the wind farm controller (only when reactive power controller is active)
Q Set Abs	Change of/information on the absolute reactive power setpoint of the wind farm controller (only when reactive power controller is active)
Q1 Set Rel	Change of/information on relative reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
Q1 Set Abs	Change of/information on absolute reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
Q Exc Rel	Change of/information on the relative exceptional reactive power setpoint of the wind farm controller
Q Exc Abs	Change of/information on the absolute exceptional reactive power setpoint of the wind farm controller
Phi Set	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is active)
PF Set	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is active)
Phi1 Set	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
PF1 Set	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
Phi Exc	Change of/information on the exceptional Phi setpoint of the wind farm controller
PF Exc	Change of/information on the exceptional cos Phi setpoint of the wind farm controller
U Set Rel	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is active)
U Set Abs	Change of/information on the absolute voltage setpoint of the wind farm controller (only when voltage controller is active)
CtrResRel	Change of/information on the relative control reserve setpoint of the wind farm controller (only when control reserve function is active)
CtrResAbs	Change of/information on the absolute control reserve setpoint of the wind farm controller (only when control reserve function is active)

Name	Description
F Mode	Change of/information on mode of grid frequency simulation
F Sim	Change of/information on level of grid frequency simulation
WF Stop	Change/triggering of wind farm stop by the wind farm controller
WF Block	Change/triggering of restart lock of the wind farm controller
FRC SetRel	Change of/information on the frequency reserved power setpoint of the wind farm controller
P Load Rel	Change of/information on the relative load-power setpoint of the wind farm controller
P Load Abs	Change of/information on the absolute load-power setpoint of the wind farm controller
U1 Set Rel	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is deactivated)
U1 Set Abs	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is deactivated)
Ctrl State	Change of/information on the status of the wind farm controller ■ 0 = Wind farm controller offline ■ 1 = Wind farm controller online

4.8.8 Bat Protection tab

The *Bat Protection* tab can be used to view the control actions configured for the wind energy converters using ENERCON SCADA Bat Protection.

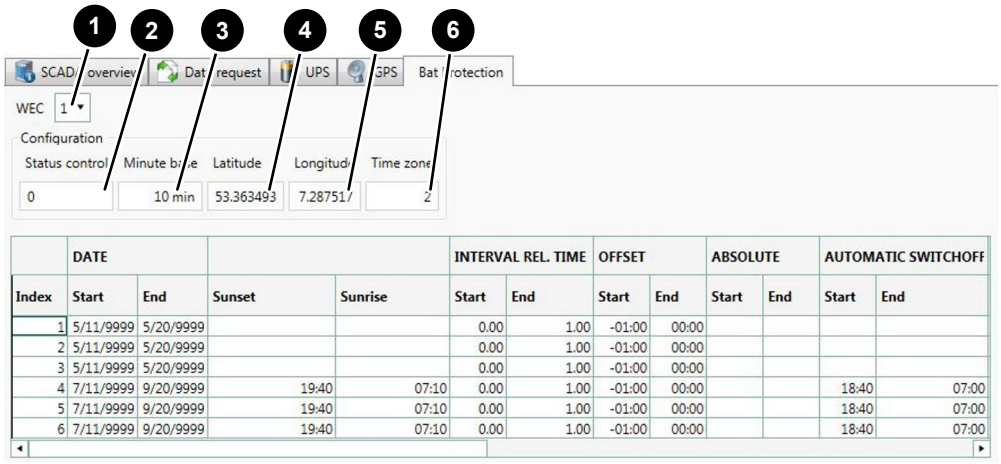


Fig. 54: *Bat Protection* tab (1)

1	*WEC* list box	2	*Status control* display field
3	*Minute base* display field	4	*Latitude* display field
5	*Longitude* display field	6	*Time zone* display field

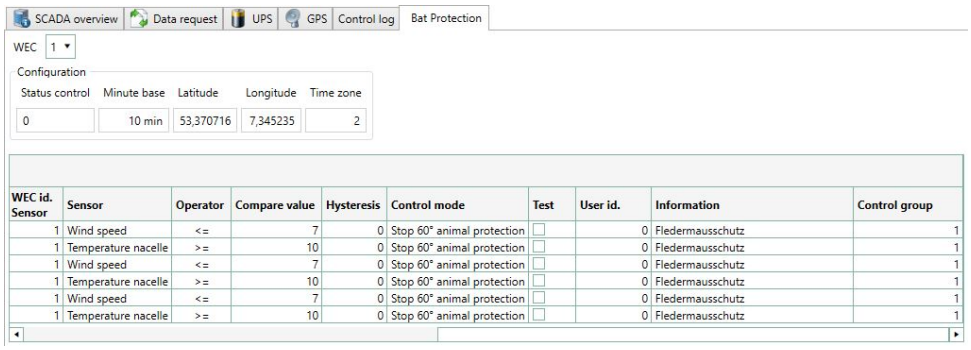


Fig. 55: *Bat Protection* tab (2)

WEC list box

The wind energy converter can be selected here.

Status control display field

Indicates the control value currently output by ENERCON SCADA Bat Protection to the selected wind energy converter.

- 0: Start
- 1: Stop 60°
- 2: Stop 90°
- 3: Gradient stop 60°
- 4: Gradient stop 90°
- 5: Stop 60° animal protection
- 6: Stop 90° animal protection

Minute base display field

Indicates the time period used for averaging the minute data provided by the sensors.

Latitude display field

Indicates the latitude entered in the configuration.

Longitude display field

Indicates the longitude entered in the configuration.

Time zone display field

Indicates the time zone entered in the configuration.

Tab. 5: Information on table contents

Column	Description
Index	Indicates the row within the configuration file.
Date Start/End	Indicates the time period during which Bat Protection control is active. Only during this defined time period does the system evaluate conditions and support Bat Protection control.
Sunset	Indicates the calculated sunset. During the defined time period only.
Sunrise	Indicates the calculated sunrise. During the defined time period only.
Interval Rel. Time Start/End	Indicates the selected interval for the night (0.00 = sunset; 1.00 = sunrise). The interval can start before the defined sunset (< 0.00) and end after the defined sunrise (> 1.00).
Offset Start/End	An absolute time value (offset) can be added to or subtracted from relative time values. The relative *Sunset* time value can, for example, be preceded by the absolute time value of 1 hour. This makes it possible, for example, to define starting times for bat protection that are 1 hour before sunset. This applies analogously to sunrise.
Absolute Start	Indicates the configured absolute start time.
Absolute End	Indicates the configured absolute end time.
Automatic Switchoff Start/End	Indicates the resulting time period for the control action.
WEC id. Sensor	Indicates the wind energy converter whose sensor data is to be used for control.
Sensor	Indicates the sensor whose data is to be used for control.
Operator	Indicates the operator (e.g. ≥) for comparing the measured value with the control system comparison value.
Compare value	Indicates the control system comparison value with which the measured sensor value is compared.
Hysteresis	Indicates the hysteresis of the control system comparison value.
Control mode	Indicates the control action (if the condition is satisfied).
Test	Indicates whether test mode is activated (check box activated) or deactivated (check box deactivated).

Column	Description
User id.	Indicates whether the control system is a farm control system (User id. = 0) or a customer control system (User id. = customer id.).
Information	Indicates the free text stored in the configuration for information purposes.
Control group	Indicates the control group.

4.8.9 Schedule setpoint tab

The *Schedule setpoint* tab can be used to create setpoint changes for the ENERCON wind farm controllers on the ENERCON SCADA Server in the form of a setpoint list.

For more detailed information, refer to document D02161348 ‘Technische Beschreibung ENERCON SCADA Sollwertliste’ (Technical description of the ENERCON SCADA system setpoint list).

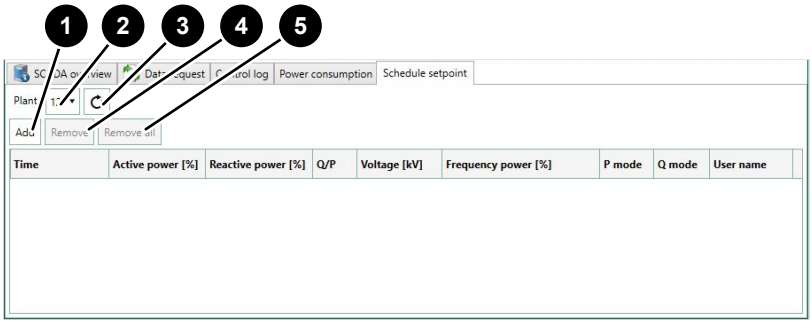


Fig. 56: *Schedule setpoint* tab

1	*Add* button	2	*Plant* list box
3	Refresh button	4	*Remove* button
5	*Remove all* button		

The tab is only available when the ENERCON SCADA setpoint list is active. The ENERCON SCADA setpoint list is an optional function of the ENERCON SCADA system. The function must be activated by ENERCON.

The ENERCON SCADA setpoint list enables the creation of up to 20 planned setpoint changes for the ENERCON wind farm controller. The planned setpoint changes are created in a setpoint list and can be scheduled several years in the future.

Setpoint changes carried out are recorded with the corresponding confirmation in the central setpoint documentation and removed from the setpoint list.

Information on table contents

The table displays the planned setpoint changes. The following information is displayed:

- Column *Time*
  Indicates the time of the planned setpoint change.
- Column *Active power [%]*
  Indicates the active power setpoint.
- Column *Reactive power [%]*
  Indicates the reactive power setpoint.
- Column *Q/P*
  Indicates the power factor setpoint.
- Column *Voltage [kV]*
  Indicates the voltage setpoint.
- Column *Frequency power [%]*
  Indicates the setpoint for the frequency reserve capacity.
- Column *P mode*
  Indicates the mode of active power control.
- Column *Q mode*
  Indicates the mode of reactive power control.

- Column *User name*
  indicates the name of the user who created the planned setpoint change. Names of ENERCON employees are displayed in encrypted form.

Create setpoint changes

1. Select the ENERCON wind farm controller for which the setpoint change is to be created from the *Plant* list box. The ENERCON wind farm controller is displayed with its plant number.
   ↪ The *Add* dialogue box appears.

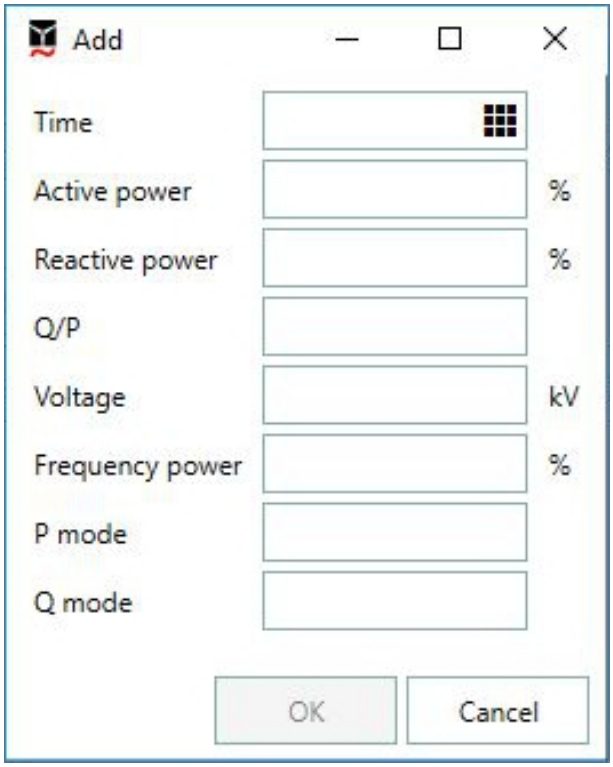


Fig. 57: *Add* dialogue box

2. Enter the date and time of the setpoint change in the *Time* input field or select date and time using the graphic symbol in the input field.
3. Enter the new setpoint(s) in the corresponding input field(s).
4. Stop the entry process by pressing *OK*.
   ↪ The *Add* dialogue box closes and the *Confirmation* dialogue box appears.
5. Enter the password, if necessary, and press the *OK* button to save the setpoint change.

↪ The *Confirmation* dialogue box closes and the setpoint change is created. The setpoint change is displayed in the setpoint list.

Remove a single setpoint change

1. Select the ENERCON wind farm controller for which a setpoint change is to be removed from the *Plant* list box. The ENERCON wind farm controller is displayed with its plant number.
2. Select the setpoint change to be deleted from the setpoint list.
3. Press the *Remove* button.
   ↪ The *Confirmation* dialogue box appears.

4. Press the *Yes* button to delete the setpoint change.

↪ The *Confirmation* dialogue box closes and the selected setpoint change is removed from the setpoint list.

Remove all setpoint changes

1. Select the ENERCON wind farm controller for which all the setpoint changes are to be removed from the *Plant* list box. The ENERCON wind farm controller is displayed with its plant number.
2. Press the *Remove all* button.

   ↪ The *Confirmation* dialogue box appears.
3. Press the *Yes* button to delete all the setpoint changes.

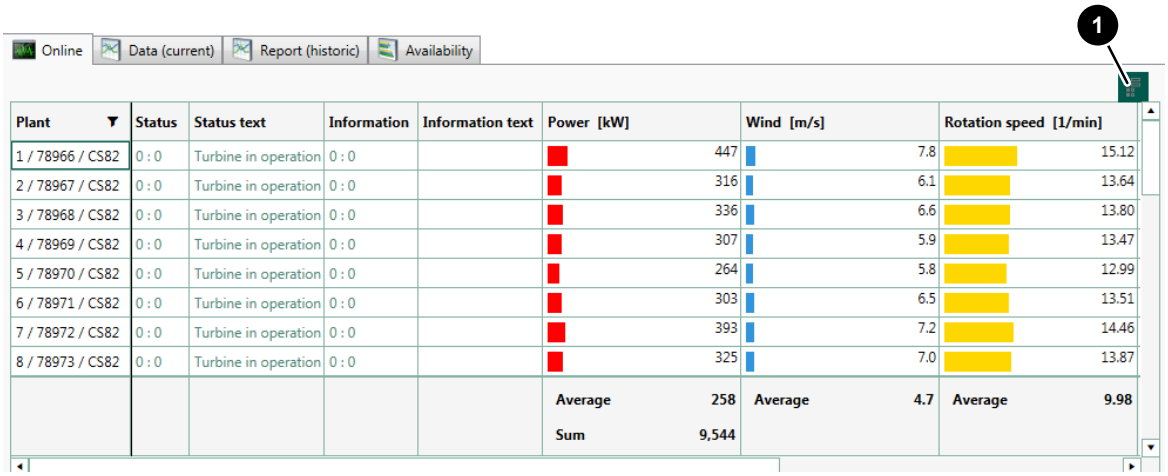
↪ The *Confirmation* dialogue box closes and all the setpoint changes are removed from the setpoint list.

4.9 Plant type level

If plant type (name of plant type) level is selected in viewlet *Navigation*, additional tabs such as *Online*, *Data (current)* etc. are shown in the application window's display area.

4.9.1 Online tab

This tab displays the current online data for the installed plants as a chart and table.



Plant	Status	Status text	Information	Information text	Power [kW]	Wind [m/s]	Rotation speed [1/min]
1 / 78966 / CS82	0 : 0	Turbine in operation	0 : 0		447	7.8	15.12
2 / 78967 / CS82	0 : 0	Turbine in operation	0 : 0		316	6.1	13.64
3 / 78968 / CS82	0 : 0	Turbine in operation	0 : 0		336	6.6	13.80
4 / 78969 / CS82	0 : 0	Turbine in operation	0 : 0		307	5.9	13.47
5 / 78970 / CS82	0 : 0	Turbine in operation	0 : 0		264	5.8	12.99
6 / 78971 / CS82	0 : 0	Turbine in operation	0 : 0		303	6.5	13.51
7 / 78972 / CS82	0 : 0	Turbine in operation	0 : 0		393	7.2	14.46
8 / 78973 / CS82	0 : 0	Turbine in operation	0 : 0		325	7.0	13.87
					Average 258 Sum 9,544	Average 4.7	Average 9.98

Fig. 58: *Online* tab

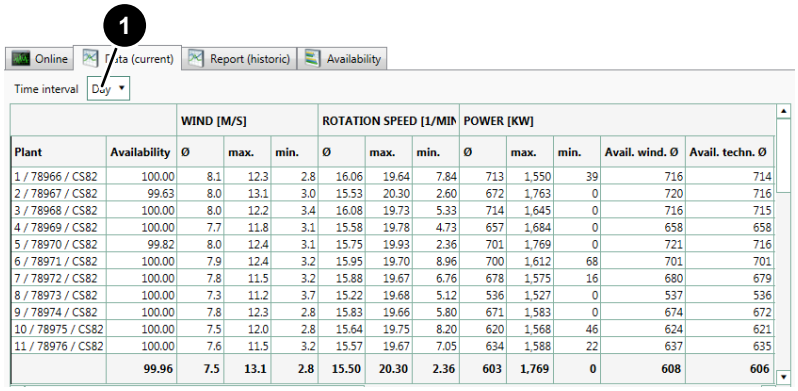
1	Button for hiding and unhiding columns

Notes on table

The table footer shows the totals/averages.

4.9.2 Data (current) tab

This tab shows the current report data for the installed plants during the time periods as a table e.g. day, week, month or year.



		WIND [M/S]			ROTATION SPEED [1/MIN			POWER [KW]				
Plant	Availability	Ø	max.	min.	Ø	max.	min.	Ø	max.	min.	Avail. wind. Ø	Avail. techn. Ø
1 / 78966 / CS82	100.00	8.1	12.3	2.8	16.06	19.64	7.84	713	1,550	39	716	714
2 / 78967 / CS82	99.63	8.0	13.1	3.0	15.53	20.30	2.60	672	1,763	0	720	716
3 / 78968 / CS82	100.00	8.0	12.2	3.4	16.08	19.73	5.33	714	1,645	0	716	715
4 / 78969 / CS82	100.00	7.7	11.8	3.1	15.58	19.78	4.73	657	1,684	0	658	658
5 / 78970 / CS82	99.82	8.0	12.4	3.1	15.75	19.93	2.36	701	1,769	0	721	716
6 / 78971 / CS82	100.00	7.9	12.4	3.2	15.95	19.70	8.96	700	1,612	68	701	701
7 / 78972 / CS82	100.00	7.8	11.5	3.2	15.88	19.67	6.76	678	1,575	16	680	679
8 / 78973 / CS82	100.00	7.3	11.2	3.7	15.22	19.68	5.12	536	1,527	0	537	536
9 / 78974 / CS82	100.00	7.8	12.3	2.8	15.83	19.66	5.80	671	1,583	0	674	672
10 / 78975 / CS82	100.00	7.5	12.0	2.8	15.64	19.75	8.20	620	1,568	46	624	621
11 / 78976 / CS82	100.00	7.6	11.5	3.2	15.57	19.67	7.05	634	1,588	22	637	635
	99.96	**7.5**	**13.1**	**2.8**	**15.50**	**20.30**	**2.36**	**603**	**1,769**	**0**	**608**	**606**

Fig. 59: *Data (current)* tab

1	*Time interval* list box

Time interval list box

Shows the selected time period for the report data. Select from the following options:

- *Day*
  shows the report data for the current date until the report was generated.
- *Week*
  shows the report data for the current week unit the report was generated (start: Sunday).
- *Month*
  shows the report data for the current month until the report was generated (start: 01st of month).
- *Year*
  shows the report data for the current year until the report was generated (start: 01st January).

Notes on table

Hover the mouse pointer over a cell value in the table to display the timestamp of the data record.

The table footer shows the totals/averages.

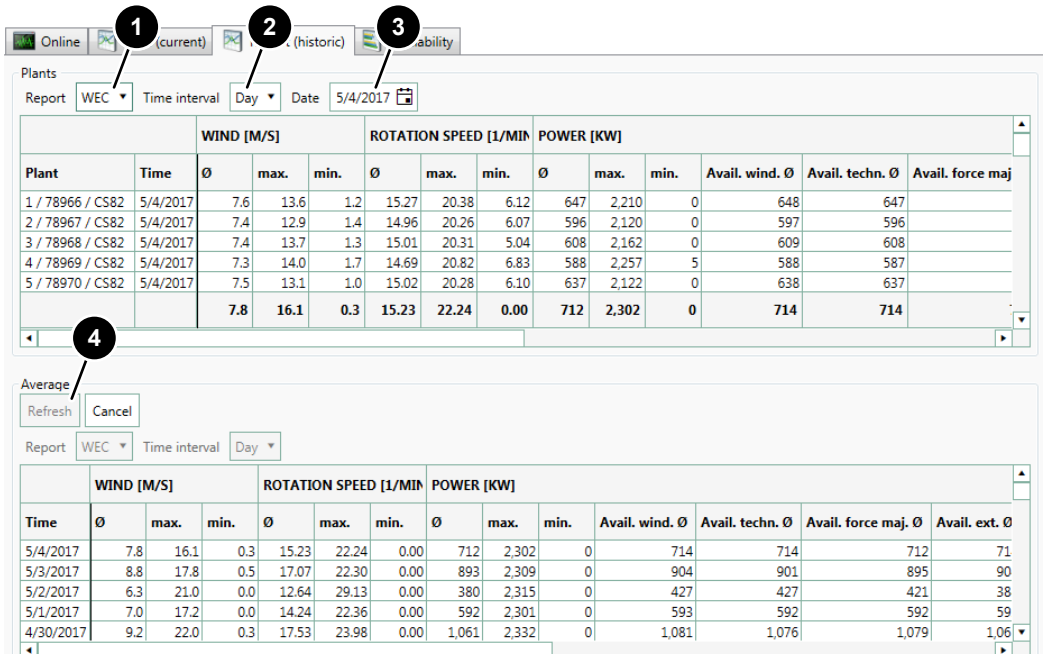
Information on table content

- *Avail. wind Ø* column
  Total average theoretically available active power of the wind energy converters contained in the wind in kW. This value corresponds to the power the wind energy converters could theoretically feed into the grid in the current wind conditions, assuming the technical availability of all internal and external equipment and the absence of power limitations through external setpoints.
- *Avail. techn. Ø* column
  Total average technically available active power of the wind energy converters in kW. This value corresponds to the power the wind energy converters can feed into the grid in spite of technical problems (generator overtemperature; defective converter, etc.). If there is no power limitation for technical reasons, this value equals the theoretically available active power *Avail. wind*.

- *Avail. force maj. Ø*
  Total average maximum available active power of the wind energy converters limited by force majeure in kW. This value corresponds to the power the wind energy converters can feed into the grid in case of power limitations due to force majeure (storm control, grid overvoltage, etc.). If there is no power limitation due to force majeure, this value equals the theoretically available active power *Avail. wind*.
- *Avail. ext. Ø*
  Total available active power of the wind energy converters limited by external setpoints in kW. This value corresponds to the power the wind energy converters can feed into the grid in case of power limitations due to external setpoints. If there is no power limitation due to external setpoints, this value equals the theoretically available active power *Avail. wind*.

4.9.3 Report tab (historic)

This tab shows the historical report data of the installed plants and the average values for the location as a table for a specified period of time.



Plant	Time	WIND [M/S] Ø	max.	min.	ROTATION SPEED [1/MIN] Ø	max.	min.	POWER [KW] Ø	max.	min.	Avail. wind. Ø	Avail. techn. Ø	Avail. force maj
1 / 78966 / CS82	5/4/2017	7.6	13.6	1.2	15.27	20.38	6.12	647	2,210	0	648	647	
2 / 78967 / CS82	5/4/2017	7.4	12.9	1.4	14.96	20.26	6.07	596	2,120	0	597	596	
3 / 78968 / CS82	5/4/2017	7.4	13.7	1.3	15.01	20.31	5.04	608	2,162	0	609	608	
4 / 78969 / CS82	5/4/2017	7.3	14.0	1.7	14.69	20.82	6.83	588	2,257	5	588	587	
5 / 78970 / CS82	5/4/2017	7.5	13.1	1.0	15.02	20.28	6.10	637	2,122	0	638	637	
		7.8	**16.1**	**0.3**	**15.23**	**22.24**	**0.00**	**712**	**2,302**	**0**	**714**	**714**	

Time	WIND [M/S] Ø	max.	min.	ROTATION SPEED [1/MIN] Ø	max.	min.	POWER [KW] Ø	max.	min.	Avail. wind. Ø	Avail. techn. Ø	Avail. force maj. Ø	Avail. ext. Ø
5/4/2017	7.8	16.1	0.3	15.23	22.24	0.00	712	2,302	0	714	714	712	71
5/3/2017	8.8	17.8	0.5	17.07	22.30	0.00	893	2,309	0	904	901	895	90
5/2/2017	6.3	21.0	0.0	12.64	29.13	0.00	380	2,315	0	427	427	421	38
5/1/2017	7.0	17.2	0.0	14.24	22.36	0.00	592	2,301	0	593	592	592	59
4/30/2017	9.2	22.0	0.3	17.53	23.98	0.00	1,061	2,332	0	1,081	1,076	1,079	1,06

Fig. 60: *Report* tab (historic)

1	*Report* list box	2	*Time interval* list box
3	*Date* input field	4	*Refresh* button

In the *Plants* group the historical report data for the individual plantss is shown for the chosen period. In the *Average* group the historical average values for all plants is shown for the chosen time period.

Report list box

Shows the plant group for the date view.

A group of plants can be selected here if necessary.

Time interval list box

Shows the time period for the report data.

Select from the following options:

- *Day*
  report data for the day completed.
- *Week*
  report data for the week completed (start: Sunday).
- *Month*
  report data for the month completed (start: 01st of month).
- *Year*
  report data for the year completed (start: 01st January).

Date input field

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

When selecting the *Week* time period, any week day can be selected for the calculation period of one week. At the start of the calculation, the date is automatically set to the first week day (Sunday).

Refresh button

Refreshes the table data to reflect the specified parameters.

Notes on table

If you hover over a cell value in the table with the pointer, the timestamp of the data record is displayed.

The table footer shows the totals/averages.

Information on table content

- *Avail. wind Ø* column
  Total average theoretically available active power of the wind energy converters contained in the wind in kW. This value corresponds to the power the wind energy converters could theoretically feed into the grid in the current wind conditions, assuming the technical availability of all internal and external equipment and the absence of power limitations through external setpoints.
- *Avail. techn. Ø* column
  Total average technically available active power of the wind energy converters in kW. This value corresponds to the power the wind energy converters can feed into the grid in spite of technical problems (generator overtemperature; defective converter, etc.). If there is no power limitation for technical reasons, this value equals the theoretically available active power *Avail. wind*.
- *Avail. force maj. Ø*
  Total average maximum available active power of the wind energy converters limited by force majeure in kW. This value corresponds to the power the wind energy converters can feed into the grid in case of power limitations due to force majeure (storm control, grid overvoltage, etc.). If there is no power limitation due to force majeure, this value equals the theoretically available active power *Avail. wind*.
- *Avail. ext. Ø*
  Total available active power of the wind energy converters limited by external setpoints in kW. This value corresponds to the power the wind energy converters can feed into the grid in case of power limitations due to external setpoints. If there is no power limitation due to external setpoints, this value equals the theoretically available active power *Avail. wind*.

4.9.4 Availability tab

This tab shows the technical availability data and the time categories (ch. 8.1, p. 111) of the installed plants for a given period of time as a chart and table.

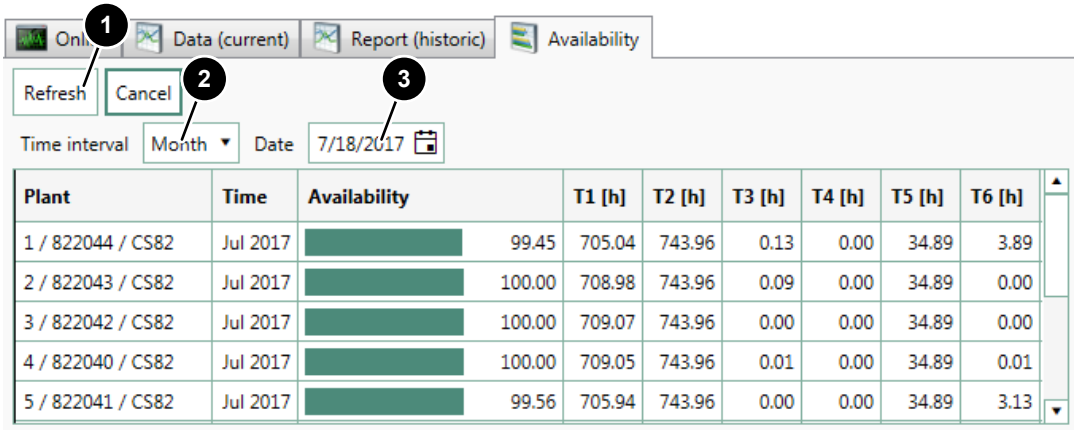


Fig. 61: *Availability* tab

1	*Refresh* button	2	*Time interval* list box
3	*Date* input field		

Time interval list box

Shows the selected time period for the report data.

Select from the following options:

- *Day*
  report data for the day completed.
- *Week*
  report data for the week completed (start: Sunday).
- *Month*
  report data for the month completed (start: 01st of month).
- *Year*
  report data for the year completed (start: 01st January).

Date input field

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

Refresh button

Refreshes the table view to reflect the specified parameters.

4.10 Control system type level

If the control system type (name of control system type) level is selected in viewlet *Navigation*, additional tabs such as *Statistic*, *Temperatures*, etc. are shown in the application window's display area.

4.10.1 Statistic tab

This tab shows how frequently a status occurred at the installed plants during a specified period of time as a table.

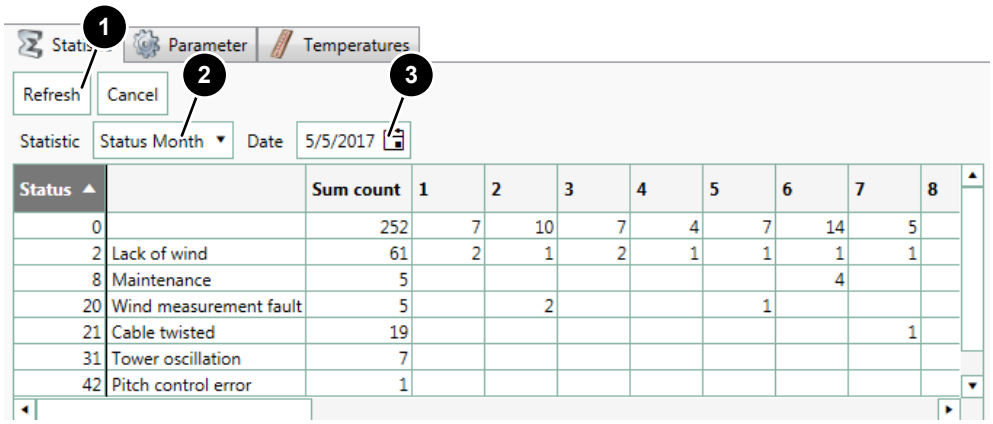


Fig. 62: *Statistics* tab

1	*Refresh* button	2	*Statistic* list box
3	*Date* input field		

Refresh button

Refreshes the table data to reflect the specified parameters.

Statistic list box

Shows the time period (*month status*) for the statistics.

Indicates all statuses of all plants for the selected month in the table.

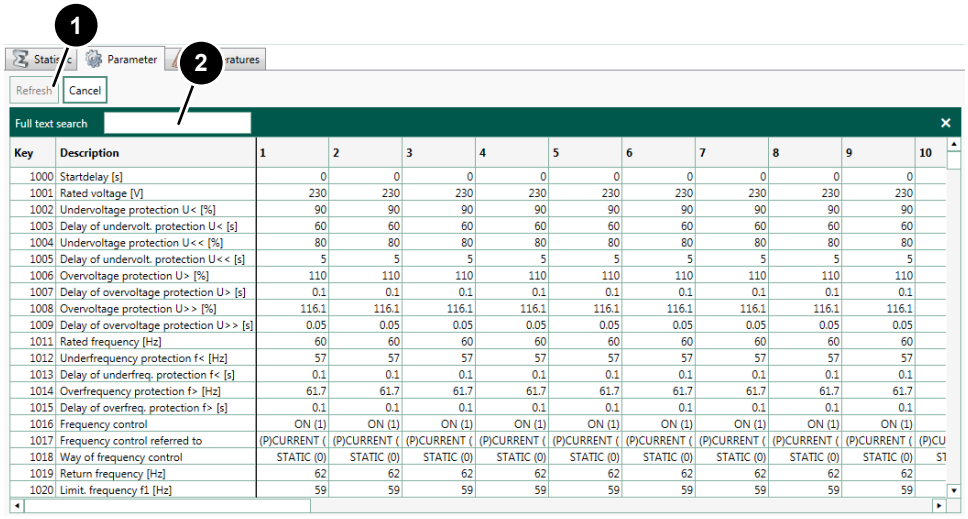
Date input field

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

4.10.2 Parameter tab

The tab can be used to display and compare the parameter settings for the respective plant control system type. If only one plant is equipped with the selected plant control system type, only the parameters of this plant are shown.



Key	Description	1	2	3	4	5	6	7	8	9	10
1000	Startdelay [s]	0	0	0	0	0	0	0	0	0	
1001	Rated voltage [V]	230	230	230	230	230	230	230	230	230	
1002	Undervoltage protection U< [%]	90	90	90	90	90	90	90	90	90	
1003	Delay of undervolt. protection U< [s]	60	60	60	60	60	60	60	60	60	
1004	Undervoltage protection U<< [%]	80	80	80	80	80	80	80	80	80	
1005	Delay of undervolt. protection U<< [s]	5	5	5	5	5	5	5	5	5	
1006	Overvoltage protection U> [%]	110	110	110	110	110	110	110	110	110	
1007	Delay of overvoltage protection U> [s]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
1008	Overvoltage protection U>> [%]	116.1	116.1	116.1	116.1	116.1	116.1	116.1	116.1	116.1	
1009	Delay of overvoltage protection U>> [s]	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
1011	Rated frequency [Hz]	60	60	60	60	60	60	60	60	60	
1012	Underfrequency protection f< [Hz]	57	57	57	57	57	57	57	57	57	
1013	Delay of underfreq. protection f< [s]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
1014	Overfrequency protection f> [Hz]	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	
1015	Delay of overfreq. protection f> [s]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
1016	Frequency control	ON (1)	ON (1)	ON (1)	ON (1)	ON (1)	ON (1)	ON (1)	ON (1)	ON (1)	
1017	Frequency control referred to	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CURRENT (	(P)CU
1018	Way of frequency control	STATIC (0)	STATIC (0)	STATIC (0)	STATIC (0)	STATIC (0)	STATIC (0)	STATIC (0)	STATIC (0)	STATIC (0)	ST
1019	Return frequency [Hz]	62	62	62	62	62	62	62	62	62	
1020	Limit. frequency f1 [Hz]	59	59	59	59	59	59	59	59	59	

Fig. 63: *Parameter* tab - plant control system type level

1	*Refresh* button	2	*Full text search* input field

Refresh button

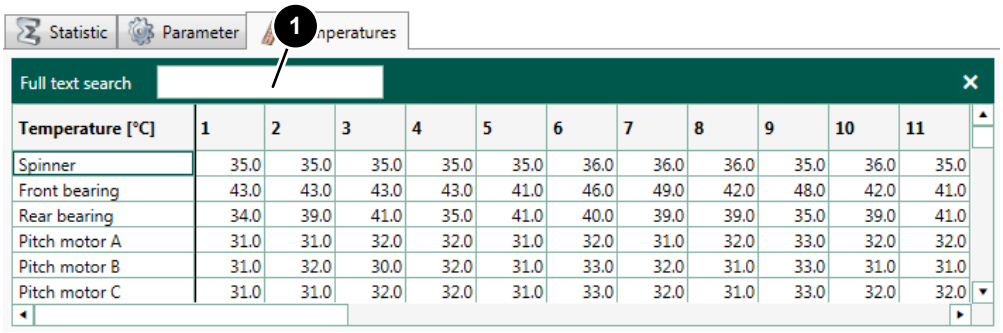
Refreshes the table view.

Full text search input field

Enter free text (text or numbers) with which the table can be searched and all columns can be filtered, here. Searching and filtering are done at the same time as the entry and do not have to be specially confirmed.

4.10.3 Temperatures tab

This tab displays the current temperatures of various components in the installed plants as a table.



Temperature [°C]	1	2	3	4	5	6	7	8	9	10	11
Spinner	35.0	35.0	35.0	35.0	35.0	36.0	36.0	36.0	35.0	36.0	35.0
Front bearing	43.0	43.0	43.0	43.0	41.0	46.0	49.0	42.0	48.0	42.0	41.0
Rear bearing	34.0	39.0	41.0	35.0	41.0	40.0	39.0	39.0	35.0	39.0	41.0
Pitch motor A	31.0	31.0	32.0	32.0	31.0	32.0	31.0	32.0	33.0	32.0	32.0
Pitch motor B	31.0	32.0	30.0	32.0	31.0	33.0	32.0	31.0	33.0	31.0	31.0
Pitch motor C	31.0	31.0	32.0	32.0	31.0	33.0	32.0	31.0	33.0	32.0	32.0

Fig. 64: *Temperatures* tab

1	*Full text search* input field

Full text search input field

Enter free text (text or numbers) with which the table can be searched and all columns can be filtered, here. Searching and filtering are done at the same time as the entry and do not have to be specially confirmed.

4.10.4 Data (current) tab

This tab shows the current report data for the installed power-generating-system controller (RTU, FCU or FCU E2) during the time periods as a table (e.g. day, week, month or year).

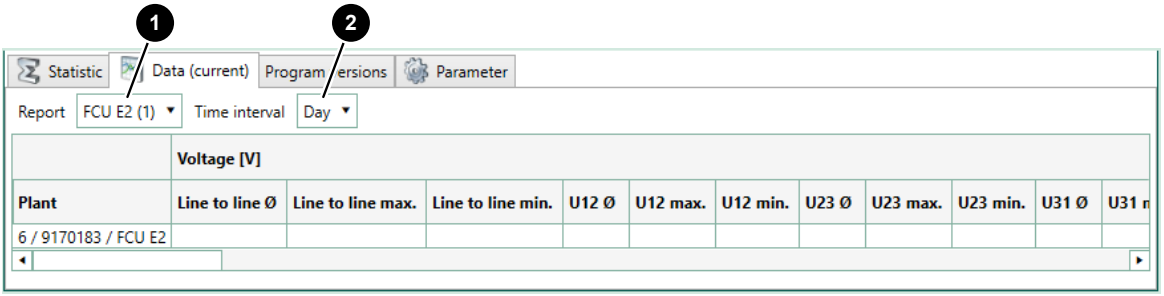


Fig. 65: *Data (current)* tab

1	*Report* list box	2	*Time interval* list box

Report list box

Shows the selected data logger for the report data.

Various data loggers are available depending on the wind-farm controller installed.

Time interval list box

Shows the selected time period for the report data. Select from the following options:

- *Day*
  shows the report data for the current date until the report was generated.
- *Week*
  shows the report data for the current week unit the report was generated (start: Sunday).

- *Month*
  shows the report data for the current month until the report was generated (start: 01st of month).
- *Year*
  shows the report data for the current year until the report was generated (start: 01st January).

4.11 Plant level

If the Plant level (serial number of WEC) is selected in viewlet *Navigation*, additional tabs such as *Online*, *Report, Availability* etc. are shown in the application window's display area.

4.11.1 Online tab

This tab displays the current online data for the selected plant (wind energy converter, RTU, FCU, etc.) as a chart and as numerical values. The type of online data displayed depends on the control system type.

Below, the tab is described using the example of a wind energy converter.

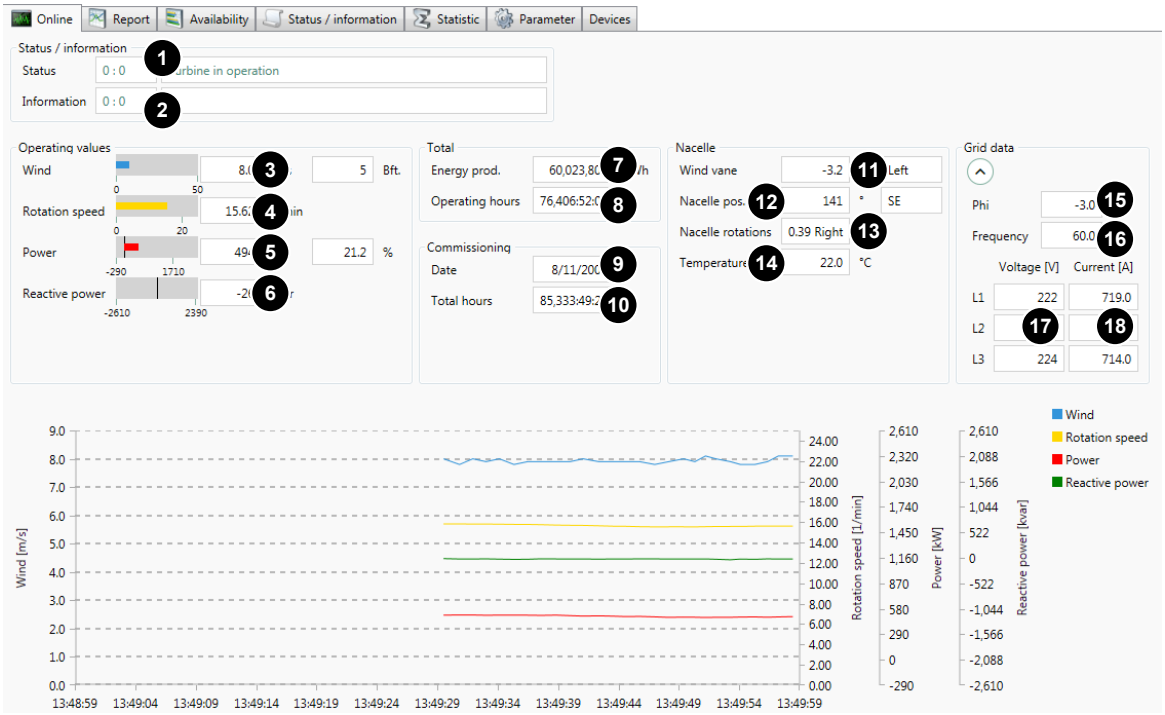


Fig. 66: *Online* tab

1	*Status* display fields	2	*Information* display fields
3	*Wind* display fields	4	*Rotation speed* display field
5	*Power* display fields	6	*Reactive power* display field
7	*Energy prod.* display field	8	*Operating hours* display field
9	*Date* display field	10	*Total hours* display field
11	*Wind vane* display fields	12	*Nacelle pos.* display fields
13	*Nacelle rotations* display field	14	*Temperature* display field
15	*Phase angle* display field	16	*Frequency* display field
17	*Voltage [V]* display fields	18	*Current [A]* display fields

Status display fields

Shows the main and substatus for the fault as a numerical code with a description.

***Information* display fields**

Shows the main information and additional information as a numerical code with a description.

***Wind* display fields**

Shows the current wind speed in m/s and Bft.

***Rotation speed* display field**

Shows the current rotor speed in r.p.m.

***Power* display fields**

Shows the current active power in kW and in %.

***Reactive power* display field**

Displays the current reactive power in kvar.

***Energy prod.* display field**

Indicates the energy produced by the wind energy converter since commissioning.

***Operating hours* display field**

Indicates the time (hour:minute:00) since commissioning of the wind energy converter during which it was ready for operation.

***Date* display field**

Indicates the commissioning date. If the date is missing here, it can be entered via the menu bar in the program window under *Site* > Menu *Edit* (ch. 4.5.4.3, p. 38).

***Total hours* display field**

Specifies the total hours (hours:minutes:seconds) since the commissioning date.

***Wind vane* display fields**

Indicates the current direction of the wind vane in °.

***Nacelle pos.* display fields**

Indicates the current position of the nacelle in ° and the compass direction (0° corresponds to the north).

***Temperature* display field**

Indicates the current temperature in the nacelle in °C.

***Nacelle rotations* display field**

Indicates the number of rotations by the nacelle around its own axis and the direction of rotation.

***Phase angle* display field**

Indicates the current phase angle in °.

***Frequency* display field**

Indicates the current grid frequency in Hz.

Voltage [V] L1 to *L3* display fields

Indicates the current voltages at the outer wires in V.

Current [A] L1 to *L3* display fields

Indicates the currents in the outer wires in A.

Dialogue elements for controlling a wind energy converter

Only available after the relevant access rights have been granted by ENERCON.

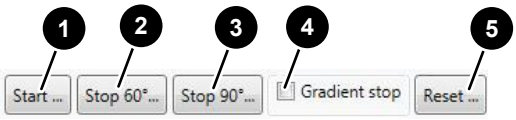


Fig. 67: Dialogue elements for controlling a wind energy converter

1	*Start* button	2	*Stop 60°* button
3	*Stop 90°* button	4	*Gradient stop* check box
5	*Reset* button		

Can be used to start and stop a wind energy converter and reset its control system.

Information on control actions can be found under ch. 2.4, p. 12.

Interaction between control actions

When a number of functions and systems authorised to start or stop the wind energy converter are operating in parallel, interactions between these control actions can occur.

The status resulting from a start and stop of the wind energy converter must be monitored. Responsibility for monitoring the status lies with the customer or the operator/owner.

Start button

Starts the wind energy converter.

Stop 60° and *Stop 90°* buttons

Stops the wind energy converter with the corresponding blade angle.

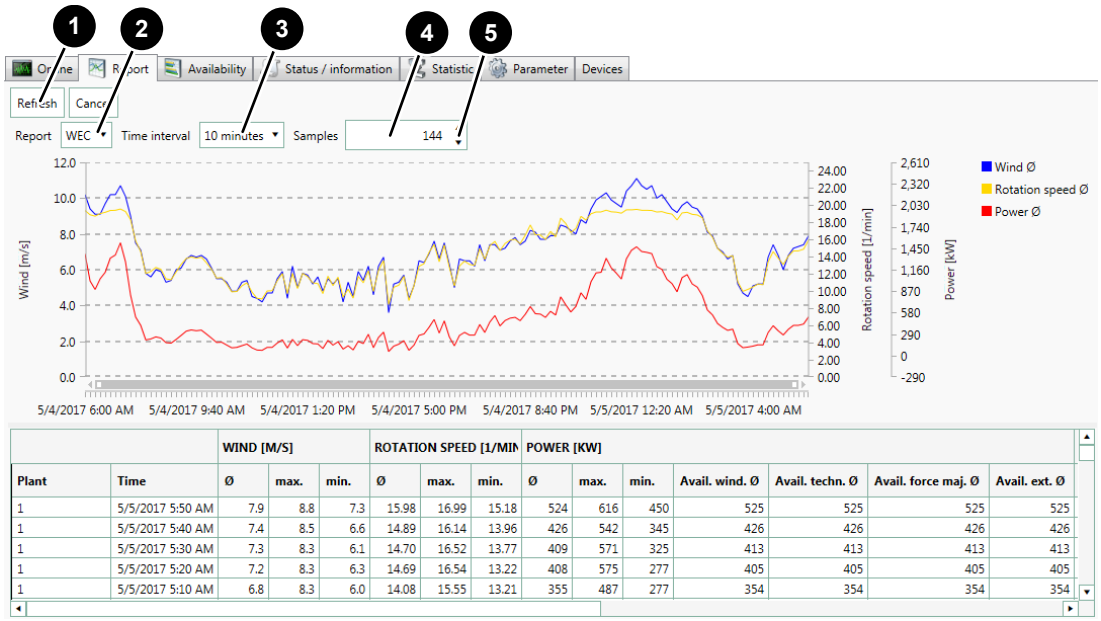
If the *Gradient stop* check box is activated, a gradient stop can be performed.

Gradient stop check box

If this check box is activated and the *Stop 60°* or *Stop 90°* button is pressed, the wind energy converter's generated power output is gradually reduced by means of fixed gradient parameters (wind energy converter parameters) until the wind energy converter stops feeding power. The wind energy converter then switches to the selected stop function (*Stop 60°* or *Stop 90°*).

4.11.2 Report tab

This tab shows the report data of the selected plant (WEC, RTU, FCU, ice detection system, etc.) for a specified period of time as a chart and in table format.



		WIND [M/S]			ROTATION SPEED [1/MIN			POWER [KW]						
Plant	Time	Ø	max.	min.	Ø	max.	min.	Ø	max.	min.	Avail. wind. Ø	Avail. techn. Ø	Avail. force maj. Ø	Avail. ext. Ø
1	5/5/2017 5:50 AM	7.9	8.8	7.3	15.98	16.99	15.18	524	616	450	525	525	525	525
1	5/5/2017 5:40 AM	7.4	8.5	6.6	14.89	16.14	13.96	426	542	345	426	426	426	426
1	5/5/2017 5:30 AM	7.3	8.3	6.1	14.70	16.52	13.77	409	571	325	413	413	413	413
1	5/5/2017 5:20 AM	7.2	8.3	6.3	14.69	16.54	13.22	408	575	277	405	405	405	405
1	5/5/2017 5:10 AM	6.8	8.3	6.0	14.08	15.55	13.21	355	487	277	354	354	354	354

Fig. 68: *Report* tab

1	*Refresh* button	2	*Report* list box
3	*Time interval* list box	4	*Samples* input field
5	Add and remove sample button		

The settings made (report and time interval) are retained if the view is changed to another plant. A precondition for this is that the selected report is also available for the plant to which you switch.

Refresh button

Refreshes the chart and table data to reflect the specified parameters (report, time period, samples).

Report list box

Shows the selected WEC group for the report data.

Depending on the components installed, relevant options are available.

Time interval list box

Shows the time interval used for the report data.

Select from the following options:

- *Minute*
  report data for minutes completed.
- 10 *Minute*
  report data for every 10 minutes completed.
- *Day*
  report data for the day completed.

- *Week*
  report data for the week completed (start: Sunday).
- *Month*
  report data for the month completed (start: 01st of month).
- *Year*
  report data for the year completed (start: 01st January).

Samples input field

Use this to key in the number of data records to be included in the data view.

Tab. 6: Defined samples for time intervals

Time interval	Samples
Minute	144
10 minutes	144
Day	31
Week	52
Month	12
Year	1 (to n)

If for example *Day* is selected as the time interval, the number of days to be considered can be entered in the *Samples* input box.

The number of data records can be entered by keying in values or by using the associated buttons.

Notes on the line chart

To increase or reduce the time period shown in the line chart, use the scroll buttons to the left and right of the scroll bar (below the graphic), or highlight an area of the chart; to change the period charted, move the scroll bar slider.

Data presented in the table can be displayed or hidden in the line chart (ch. 4.3.5, p. 25).

Notes on the table gaps

If you hover over a cell value in the table with the pointer, the timestamp of the data record is displayed.

Information on table content

- *Avail. wind Ø* column
  Total average theoretically available active power of the wind energy converters contained in the wind in kW. This value corresponds to the power the wind energy converters could theoretically feed into the grid in the current wind conditions, assuming the technical availability of all internal and external equipment and the absence of power limitations through external setpoints.
- *Avail. techn. Ø* column
  Total average technically available active power of the wind energy converters in kW. This value corresponds to the power the wind energy converters can feed into the grid in spite of technical problems (generator overtemperature; defective converter, etc.). If there is no power limitation for technical reasons, this value equals the theoretically available active power *Avail. wind*.

- *Avail. force maj. Ø*
  Total average maximum available active power of the wind energy converters limited by force majeure in kW. This value corresponds to the power the wind energy converters can feed into the grid in case of power limitations due to force majeure (storm control, grid overvoltage, etc.). If there is no power limitation due to force majeure, this value equals the theoretically available active power *Avail. wind*.
- *Avail. ext. Ø*
  Total available active power of the wind energy converters limited by external setpoints in kW. This value corresponds to the power the wind energy converters can feed into the grid in case of power limitations due to external setpoints. If there is no power limitation due to external setpoints, this value equals the theoretically available active power *Avail. wind*.

4.11.3 Availability tab

This tab shows the technical availability data (ch. 8.1, p. 111) for the selected plant (WEC, RTU, FCU, etc.) for a specified period of time as a chart and in table format.

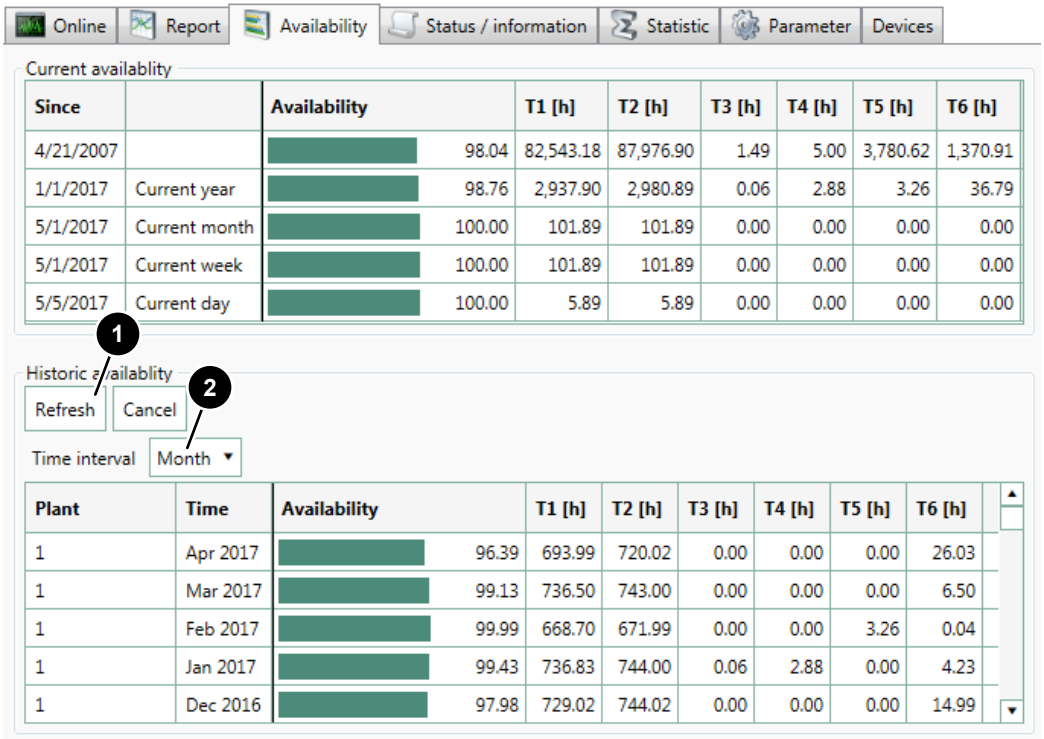


Fig. 69: *Availability* tab

1	*Refresh* button	2	*Time interval* list box

Refresh button

Updates the data in the table.

Time interval list box

Shows the time period for the report data.

Select from the following options:

- *Day*
  report data for the day completed.
- *Week*
  report data for the week completed (start: Sunday).
- *Month*
  report data for the month completed (start: 01st of month).
- *Year*
  report data for the year completed (start: 01st January).

4.11.4 Status/information tab

This tab shows the status and information details for the selected plant (WEC, RTU, FCU, etc.) going back up to 180 days but limited to a maximum number of 1000 entries.

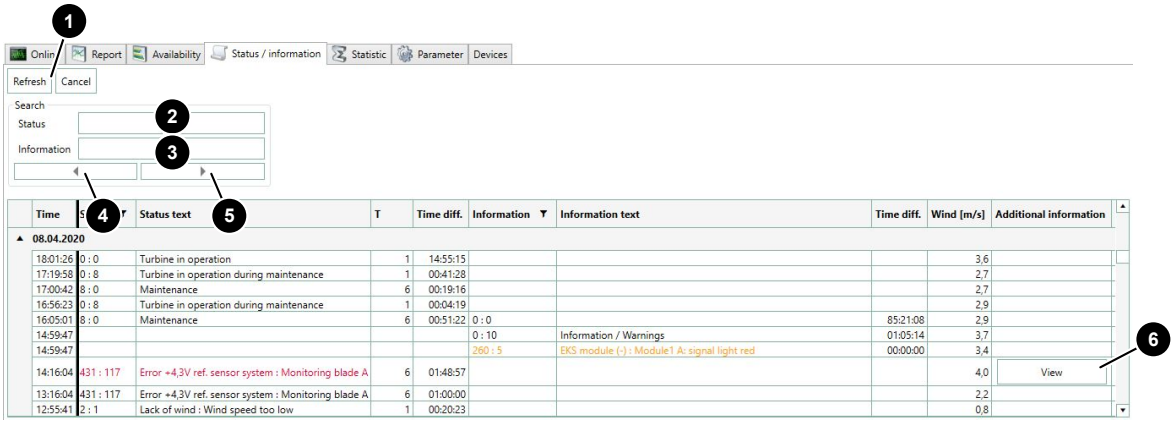


Fig. 70: *Status/information* tab

1	*Refresh* button	2	*Status* input fields
3	*Information* input fields	4	Search (up) button
5	Search (down) button	6	*View* button

Refresh button

Refreshes the table data to reflect the specified parameters.

Status input fields

You can enter the numerical code for main and substatus here.

All matching rows are then highlighted in colour in the table view.

The **status** describes the current operating state or an event in the operational process of a wind energy converter. Status messages continuously track the status of the wind energy converter and, where applicable, the reason that has caused the current status.

Status messages include for example:

- *Turbine in operation*
- *Lack of wind*

Information input fields

You can enter the numerical code for the main information and additional information here.

All matching rows are then highlighted in colour in the table view.

Search buttons (up and down)

Using the buttons, an up/down search can be made of the list of statuses and information according to the numerical codes input in the *Status* and/or *Information* input fields.

View button

Opens a dialogue box containing additional information that was entered together with the status message or information event.

Information on table contents

- *Status* column
  The content of the column can be filtered (ch. 4.3.4, p. 24).
- *Time diff.* column
  Indicates the time difference between the timestamps of two status messages.
- *Information* column
  The content of the column can be filtered (ch. 4.3.4, p. 24).
- *Wind speed* column
  Indicates the wind speed at the time of the status event.
- *Additional information* column
  If additional information is recorded along with a status message or information event, the *View* button is displayed here.

For information about the duration and frequency of status and information messages, refer to the *Statistic* tab (ch. 4.11.5, p. 103).

Example: Time setting

ENERCON SCADA Remote 3 computes the time difference based on the status message / information timestamps.

Computation does not take into account setting of the server time between status / information messages. Negative differences may be displayed.

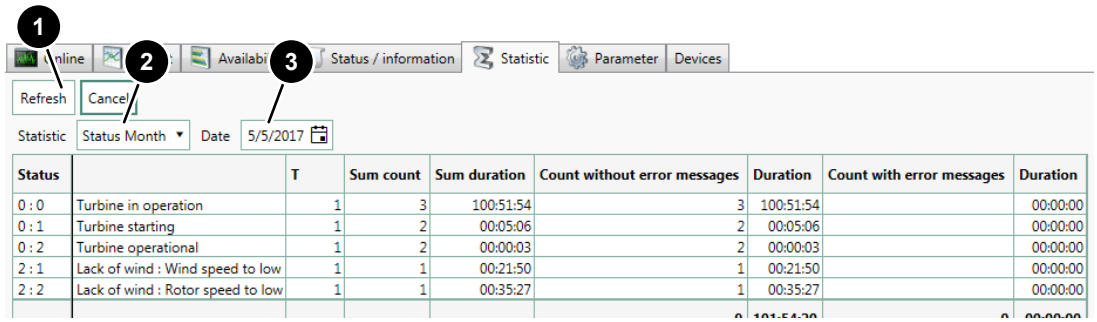
By changing the server time from 12:01:00 to 11:00:00 between the receipt of status message 1 and status message 2, the computed time difference is –00:30:00.

Tab. 7: Time setting

Server time	Time	Status	Time diff.
11:30:00	11:30:00	Status message 2	
11:00:00			
12:01:00		Setting server time to 11:00:00	
12:00:00	12:00:00	Status message 1	-00:30:00

4.11.5 Statistic tab

This tab shows the duration and frequency of status and information messages of the selected plant (WEC, RTU, FCU, etc.) for a specified period of time as a chart and in tabular format.



Status		T	Sum count	Sum duration	Count without error messages	Duration	Count with error messages	Duration
0 : 0	Turbine in operation	1	3	100:51:54	3	100:51:54		00:00:00
0 : 1	Turbine starting	1	2	00:05:06	2	00:05:06		00:00:00
0 : 2	Turbine operational	1	2	00:00:03	2	00:00:03		00:00:00
2 : 1	Lack of wind : Wind speed to low	1	1	00:21:50	1	00:21:50		00:00:00
2 : 2	Lack of wind : Rotor speed to low	1	1	00:35:27	1	00:35:27		00:00:00

Fig. 71: *Statistic* tab

1	*Refresh* button	2	*Statistic* list box
3	*Date* input field		

Refresh button

Refreshes the table data to reflect the specified parameters.

Date input field

Shows the current date (default).

The date for the data time period can be entered here in the form DD.MM.YYYY or be selected using a calendar with the associated button.

Statistic list box

Shows the time period (*Status Month*) for the statistics.

Shows all statuses of the plant for the selected *month* time period in the table.

4.11.6 Parameter tab (plant)

This tab displays the parameters for the selected plant (WEC, RTU, FCU, etc.) as a table.

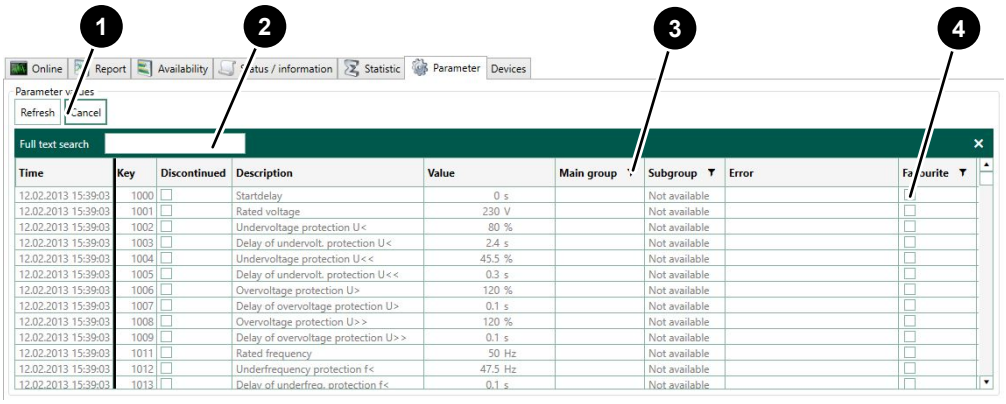


Fig. 72: *Parameter* tab

1	*Refresh* button	2	Input field for filtering
3	Button for filtering	4	Check box for defining favourites

Refresh button

Refreshes the table view.

Input field for filtering

Word fragments can be entered here for filtering the *description* column.

Button for filtering

Various search criteria can be selected via the button for filtering.

Further information on filter functions can be found under ch. 4.3.4, p. 24.

Information on table contents

- *Time* column
  Indicates the time when the parameter was changed. This is specified using local time. If no time is displayed for a particular parameter, that parameter has not been set.
- *Key* column
  In combination with the control software (e.g. CS82) provides unique identification of the parameter.
- *Discontinued* column
  Highlights parameters that are no longer supported by the wind energy converter control software.
- *Description* column
  Gives a brief description of the parameter in English.
- *Value* column
  Indicates the parameter value. ‘Zero’ also counts as a value.
- *Main group* column
  Indicates the main group of the parameter. Can be used to filter parameters by main group.
- *Subgroup* column
  Indicates the subgroup of the parameter. Can be used to filter parameters by subgroup.

- *Error* column
  Indicates whether an error occurred during the parameter change.
- *Favourite* column
  Parameters can be marked here as favourites.

Error codes

The following error codes are defined:

Tab. 8: Error codes of parameters

Error code	Comment
246	Communication error
219	Value outside the permissible range
162	Parameter not available
144	Writing error
139	Parameter discontinued
137	The parameter is not yet supported by the plant
121	General error
118	Parameter not initialised
137	The parameter is not yet supported by the plant

4.11.7 Devices tab

This tab will only be displayed if at least one wind energy converter system (blade heating system or ice warning light) has been installed and the control system of the wind energy converter supports this function.

This tab is used to actively control the blade heating system and the ice warning light. When the blade heating system is activated manually, a warning message appears. Activation is not performed until the message has been confirmed.

The statuses of the blade heating system and the ice detection system are specified using the check boxes shown.

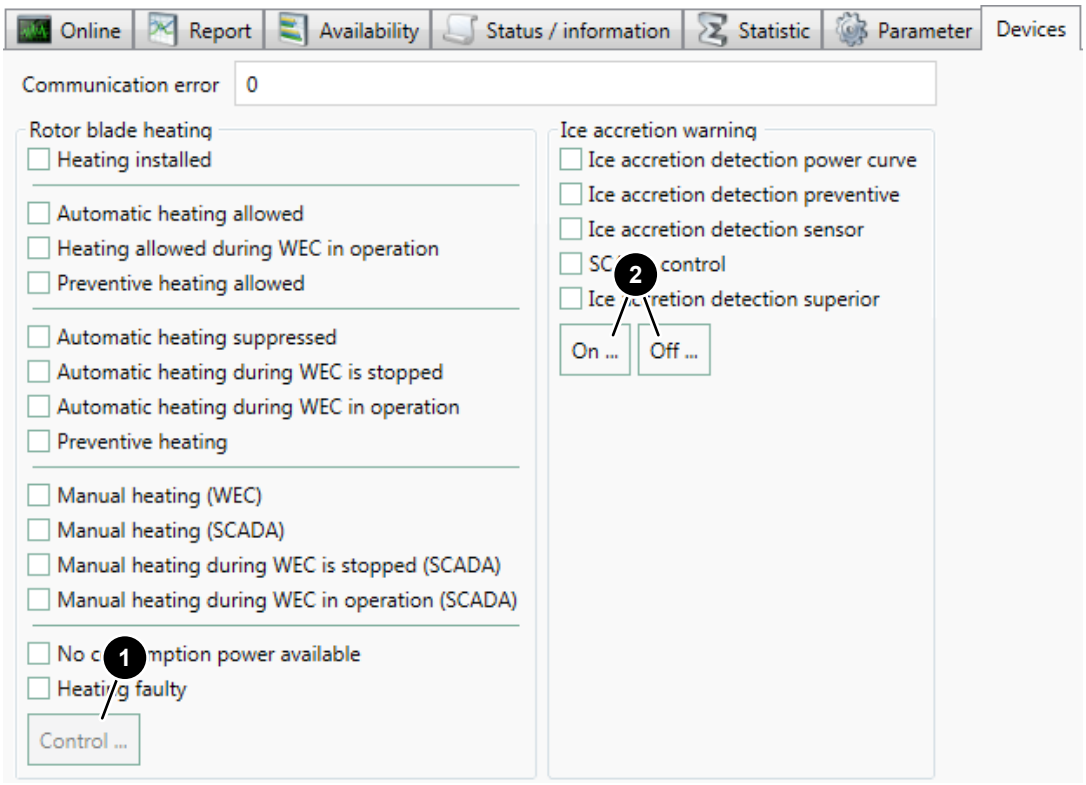


Fig. 73: *Devices* tab

1	*Control* button	2	*On* and *Off* buttons

The check boxes for the ice build-up warning specifies where ice build-up has been detected and by which system. The wind energy converter does not provide the status of the ice warning light. The status of the ice detection system only is transmitted.

Control button

Opens the *Control* dialogue box.

On and *Off* button

Switches the ice warning light on and off.

After switching on the ice warning light, regardless of the controlling system, this remains switched on for at least 20 minutes. The ice warning light can only be switched off if no other wind energy converter system (e.g. ice detection system) is generating a signal for switching on the ice warning light.

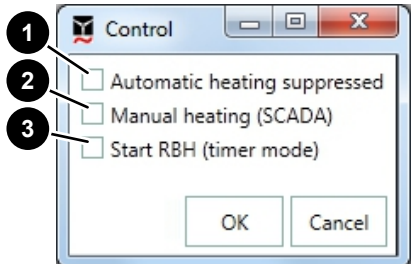


Fig. 74: *Control system* dialogue box

1	*Automatic heating suppressed* check box	2	*Manual heating (SCADA)* check box
3	*Start RBH (timer mode)* check box		

Automatic heating suppressed check box

Switches automatic activation of the rotor blade de-icing system off.

Manual heating (SCADA) check box

When automatic mode is suppressed, the rotor blade de-icing system is activated by SCADA.

Start RBH (timer mode) check box

The blade heating system is started for a specified time period.

5 User data and management

A dongle and the associated password are required to log in to ENERCON SCADA Remote 3.

Please bear in mind that the login field is case sensitive.

If the Dongle list box in the User login dialogue box shows a user name different from the name requested by the user, ENERCON Support may be contacted. They will advise you on how to proceed, see ch. 7, p. 110.

If the *Dongle* list box in the *User login* dialogue box shows a user name that is different from the requested name, ENERCON Support may be contacted for assistance (ch. 7, p. 110).

If additional login accounts are needed, please contact ENERCON to obtain an extension to your license.

6 Troubleshooting

In the event that the software does not function as expected, consult the list below for possible explanations and solutions:

Tab. 9: Problems and possible solutions

Problem/error message	Possible cause/solution
Logon has failed.	Password or user name incorrect.
Installed modem does not dial any number.	Remove the checkmark from the *Wait for dial tone before dialling* option in the Windows Control Panel Modem Settings.
Dial-up problems	If the phone line is busy, try dialling again later.
The connection to the location is unstable or frequently interrupted.	From the *Application* menu, select *Change Settings* and adjust the quality of the connection by reducing the requested data block size (ch. 4.5.1.1, p. 28).
While the connection is active, the real-time data appears with a time delay.	Since the refresh interval of the displayed data is about 1 second, delays can occur if the connection quality is poor.
The map view is missing at *locations* level.	No internet access.
No locations are shown on the map view.	The plant coordinates are missing in the *Edit location* menu.
No commissioning date at *plant/online* tab level.	The date is missing in the *Edit location* menu.

7 Updates/Support

Updates

If automatic update checks are enabled, ENERCON SCADA Remote 3 checks whether software updates are available whenever it connects to a location. If an update is available, the user can decide whether to download and install it.

If this function is not enabled, check for updates manually by means of the *Application/Update* menu.

Support by e-mail

A support request can be sent to ENERCON by e-mail.

scada.wfc@enercon.de

8 Appendix

8.1 Time classes (technical availability)

Technical availability is calculated by the ENERCON SCADA system. For this purpose, specific time categories are defined and assigned to the status messages from a plant.

Tab. 10: Time categories and their description

Time category	Description
T1	■ Time period during which the plant is in operation or ready for operation. ■ Time period during which the plant connections (utility grid, etc.) are available. ■ Time period during which no faults are displayed at the plant. ■ Time period during which the remote monitoring system for the location (e.g. wind farm) is operating.
T2	■ Total time since the start of data recording/start of the time period under consideration.
T3	■ Time during which the grid connection is not available. The grid connection is not available if the connection parameters are out of range (grid voltage/grid frequency at the plant's electrical reference point).
T4	■ Time during which the plant is not ready for operation due to customer request.
T5	■ Period of time for which no SCADA data are available because remote monitoring of the plant has been interrupted.
T6	■ Period of time for which the remote monitoring system detects a fault condition. The periods of time classified in time category T6 represent the times during which the plant is not operational; they are therefore not included in the formula for calculating technical availability.

Technical availability

The plant is technically available if one of the following conditions applies:

- The plant displays status 0 (Turbine operational) and is running.
- The plant is stopped and its maintenance switch has not been activated.
- Shadow shutdown or the blade heating system is active.
- The wind energy converter displays status 21 (Cable twisted) and is running.
- The wind energy converter displays status 2 (Lack of wind) and is running.
- The wind energy converter displays status 3 (Storm) and is running.
- The plant has been stopped by the utility due to a grid fault.
- The wind energy converter displays status 14 (Ice detection) and is not running.

The plant is not technically available if one of the following conditions applies:

- The plant is in a fault condition.
- The plant is out of operation.
- The maintenance switch is on.

Calculation of technical availability

Technical availability (%) = T1/(T2-T3-T4-T5)x100

8.2 Rights in ENERCON SCADA Remote 3

Tab. 11: Codes for levels of rights

Name	Code	Level of rights
Customer 1	CUST1	High
Customer 2	CUST2	Medium
Customer 3	CUST3	Low

Tab. 12: Description of levels

Level	Description
Locations	Overview of all connected locations and plants on a world map (OpenStreetMap)[1]
Location	Number and name of location
Plant type[2]	Wind energy converter, converter, control system, meteorological measurement, actuator, sensor
Control system type[2]	CS type, photovoltaic system, hydropower, transmission substation, farm control system, RTU, FCU, FCU E2, weather measurement, interface
Plant/serial number	Plant number, plant serial number, plant type

[1] Only visible if the plant coordinates have been entered in the *Edit location* menu.

[2] The elements displayed depend on the systems installed in the farm.

8.2.1 Overview of rights – menu bar

Tab. 13: Overview of rights – menu bar

Menu bar	Menu	CUST 1	CUST 2	CUST 3
Application	■ Edit settings ■ Update	X	X	X
View	■ Navigation ■ Quick selection	X	X	X
User	■ Login ■ Logout	X	X	X
Location	■ Connect ■ Disconnect ■ Disconnect all ■ Add ■ Edit ■ Export	X	X	X

Menu bar	Menu	CUST 1	CUST 2	CUST 3
Location group	■ Connect ■ Add ■ Edit	X	X	X
Report	■ Data report ■ Status report	X	X	X

8.2.2 Overview of rights at locations level

Tab. 14: Overview of rights at locations level

Tab	Group	Description	CUST 1	CUST 2	CUST 3
GEO view		■ Graphics showing plant operating state ■ Map view	X[1]	X[1]	X[1]
Overall view of WECs		Table of current online data	X	X	X
Report		■ Data report ■ Status report	X	X	X

[1] Only visible if the plant coordinates have been entered in the *Edit location* menu.

8.2.3 Overview of rights at location level

Tab. 15: Overview of rights at location level

Tab	Group	Description	CUST 1	CUST 2	CUST 3
SCADA overview	Server	■ Operating system ■ Server version ■ ESLD version ■ Server connection type	X	X	X
	Date/Time	■ Date and time ■ DST/standard time indicator	X	X	X
	User	Name of current user	X	X	X
	RAID	■ RAID status ■ Info about RAID status	X[2]		
	WEC Ø Availability	Table of availability data	X	X	X

Tab	Group	Description	CUST 1	CUST 2	CUST 3
Data request	Data	Download of the following data: ■ 10-minute data ■ Daily data ■ Weekly data ■ Monthly data ■ Yearly data ■ Status data	X	X	
		Restriction of download to report data from wind energy converters	X	X	
	Historical data	Selection: Reports	X	X	
		Download	X	X	
	Current data	Selection: Reports	X	X	
		Download	X	X	
GPS	Time	■ Date and time ■ Time mode ■ UTC/local time difference ■ Switch between DST and standard time	X		
	Position	Position of GPS receiver (geographical longitude and latitude)	X		
UPS	Status	UPS status: ■ Communication ■ Grid supply ■ Battery charge level ■ Battery ■ UPS ■ Compatibility	X		
	Measurement	UPS measured values: ■ Grid voltage ■ Output voltage ■ Frequency ■ Battery voltage	X		
	Manufacturer information	■ UPS manufacturer ■ UPS model	X		
Power consumption[1]	Sensor	Information on power value measuring point	X		

Tab	Group	Description	CUST 1	CUST 2	CUST 3
	NCP values	■ Status of power consumption management ■ Power values	X		
	Setpoints	■ Hysteresis ■ Power consumption ■ Offered power	X		
		Button to edit priority	X[1]		
	WEC table	Table of current power values	X		
		Edit wind energy converter mode (double-click in table cell)	X[1]		
		Edit priority (double-click in table cell)	X[1]		
	Peak-load time windows	Operating controls for adding and removing peak-load time windows	X[1]		
		Table with the created peak-load time windows	X		
Schedule WEC control		■ Add a control action ■ Delete a control action ■ Table of created control actions	X[1]		
Control log		Table showing logged set-points, control actions and system events	X	X	
Bat protection[1]	Configuration	■ Control system status ■ Minute basis ■ Latitude ■ Longitude ■ Time zone	X	X	X
	Table	Table of configured control actions	X	X	X
Setpoint schedule[1]		Operating controls for adding and removing planned setpoint changes	X		
	Table	Table with the planned set-point changes	X		

[1] Must be enabled by ENERCON. This function may be an optional product.

[2] Only available with RAID system installed.

8.2.4 Overview of rights at plant type level

Tab. 16: Overview of rights at plant type level

Tab	Group	Description	CUST 1	CUST 2	CUST 3
Online		Table of current operating data	X	X	X
Data (current)		Table of maximum, minimum and average values	X	X	
Report	Plants	Table of historical data for selected period	X	X	
	Average	Table of historical maximum, minimum and average values for selected period	X	X	
Availability		Table of availability data	X	X	

8.2.5 Overview of rights at control system type level

Tab. 17: Overview of rights at control system type level

Tab	Group	Description	CUST 1	CUST 2	CUST 3
Statistics		Status statistics for current month	X	X	
Parameter		Table of parameters	X		
Temperatures[1]		Table of temperatures	X		
Data (current)		Table of maximum, minimum and mean values	X	X	

[1] The temperature data displayed are dependent on the rights and the sensors installed in the plants.

8.2.6 Overview of rights at plant/serial number level

Tab. 18: Overview of rights at plant/serial number level

Tab	Group	Description	CUST 1	CUST 2	CUST 3
Online	Status/ Information	Current status and information	X	X	X
	Operating values	Current operating data	X	X	X
	Total	Energy produced and operating hours	X	X	X
	Commissioning	Commissioning date and total hours	X[1]	X[1]	X[1]
	Nacelle	Current nacelle data	X	X	X
	Mains data	Current mains data	X	X	X
		Button for starting the wind energy converter	X[2]		
		Button for stopping the wind energy converter with a 60° blade angle	X[2]		
		Button for stopping the wind energy converter with a 90° blade angle	X[2]		
		Button for resetting the control system	X[2]		
		Check box for activating/deactivating the gradient stop	X[2]		
Report		Table of report data	X	X	
Availability	Current/ Historical	Table of availability data	X	X	
Status/Information	Search	Search for status and information	X	X	
		Table with status and information	X	X	
		Table column showing wind speed at the time the status or information was generated	X		
		Table column showing additional information	X	X	
Statistics		Status statistics for current month	X	X	

Tab	Group	Description	CUST 1	CUST 2	CUST 3
Parameters	Parameter values	Table of parameters	X		
Devices	Blade heating system	■ Status of blade heating system ■ Buttons for controlling the blade heating system	X[2]		
	Ice build-up warning	■ Status of ice detection ■ Buttons for controlling the ice warning light	X[2]		

[1] Only visible if the data has been entered in the *Edit location* menu.

[2] Must be enabled by ENERCON.

8.3 Description of files and field names

Which files are present and which data is contained in these files depends on the installed components and the measurement values they supply.

Folder and file structure

By default, ENERCON SCADA Remote 3 is installed into folder *C:\Program files\ENERCON SCADA Remote 3*. Any data downloaded from the ENERCON SCADA Server is also stored in the *LOC_#* subfolder of this folder. The string **#** represents the location number. The storage location for the data is freely configurable and can be specified in ENERCON SCADA Remote 3 (ch. 4.5.1.1, p. 28).

Example

The following example illustrates the folder and file structure, using the 10-minute data from 21 May 2010 in file *20100521.wsd*, which was saved to the following folder:

D:\ENERCON\LOC_1234\2010\05\20100521.wsd

Tab. 19: Folder structure of data request

	Structure	Example
Target folder	Drive\folder\	*D:\ENERCON*
File path	LOC_#\yyyy\mm\	*LOC_1234\2010\05*
File name	yyyymmdd.xxx	*20100521.wsd*

Tab. 20: Data request abbreviations

Placeholder	Meaning
#	Location number
yyyy	Year (4 digits)
mm	Month (2 digits)
dd	Day (2 digits)
xxx	File name extension

8.3.1 WEC operating data

Tab. 21: WEC operating data (file *.ws*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.wsr	Current daily report
LOC_#\00000000.wsw	Current weekly report
LOC_#\00000000.wsm	Current monthly report
LOC_#\00000000.wsy	Current annual report
LOC_#\yyyy\mm\yyyymmdd.wss	1-minute report
LOC_#\yyyy\mm\yyyymmdd.wsd	10-minute report
LOC_#\yyyy\mm\yyyymmdd.wfd	15-minute report
LOC_#\yyyy\yyyymm00.wsr	Daily report
LOC_#\yyyy\yyyymm00.wsw	Weekly report
LOC_#\yyyy0000.wsm	Monthly report
LOC_#\yyyy0000.wsy	Annual report

Tab. 22: WEC operating data (file *.ws*) – field names

Field name	**Description (WEC operating data, *.ws*)**	**Unit**
arwAbW	Energy (production)	kWh
arwAbWorkH	Production time	h
arwAbWrkM	Production time	min
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record creation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lrwSmpNRot	Minimum value for rotor speed	rpm
lrwSmpP	Minimum value for power	kW
lrwSmpQ	Minimum value for reactive power	kvar
lrwSmpRai	Minimum value for precipitation	mm/min
lrwSmpVisR	Minimum value for visibility	km
lrwSmpVWi	Minimum value for wind speed	m/s
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrwAbGoPos	Mean value for nacelle position	°
mrwSmpAng	Mean value for blade angle A, B, C	°
mrwSmpAirH	Mean value for air humidity	%

Field name	Description (WEC operating data, *.ws*)	Unit
mrwSmpAirP	Mean value for atmospheric pressure	mbar
mrwSmpBriN	Mean value for ambient brightness	lux
mrwSmpCIce	Mean value for ice build-up timer	°/min
mrwSmpLIcA	Mean value for Labko ice amplitude	%
mrwSmpNRot	Mean value for rotor speed	rpm
mrwSmpP	Mean value for power	kW
mrwSmpPext	Mean value for available active power, limited by external set-points	kW
mrwSmpPfm	Mean value for maximum available active power, limited by force majeure	kW
mrwSmpPte	Mean value for technically available active power	kW
mrwSmpPwin	Mean value for theoretically available active power in the wind	kW
mrwSmpQ	Mean value for reactive power	kvar
mrwSmpRai	Mean value for precipitation	mm/min
mrwSmpVisR	Mean value for visibility	km
mrwSmpVWi	Mean value for wind speed	m/s
PlantNo	Plant number	
prwSmpNRot	Maximum value for rotor speed	rpm
prwSmpP	Maximum value for power	kW
prwSmpQ	Maximum value for reactive power	kvar
prwSmpRai	Maximum value for precipitation	mm/min
prwSmpVisR	Maximum value for visibility	km
prwSmpVWi	Maximum value for wind speed	m/s
Sample	Number of samples	
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.2 WEC availabilities

Tab. 23: WEC availabilities (file *.av*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.avr	Current daily WEC availability
LOC_#\00000000.avw	Current weekly WEC availability
LOC_#\00000000.avm	Current monthly WEC availability
LOC_#\00000000.avy	Current annual WEC availability

LOC_#\yyyy0000.avy	Annual WEC availability
LOC_#\yyyy\yyyymm00.avr	Daily WEC availability
LOC_#\yyyy\yyyymm00.avw	Weekly WEC availability
LOC_#\yyyy\yyyymm00.avm	Monthly WEC availability

Tab. 24: WEC availabilities (file *.av*) – field names

Field name	Description (WEC availabilities, *.av*)
AvailDate	Availability date (start date of SCADA measurement)
Date	Date (data record generation)
PlantNo	Plant number
T1	Time code T1
T2	Time code T2
T3	Time code T3
T4	Time code T4
T5	Time code T5
T6	Time code T6

8.3.3 Photovoltaics

Tab. 25: Photovoltaics (file *.so*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.sor	Current daily report
LOC_#\00000000.sow	Current weekly report
LOC_#\00000000.som	Current monthly report
LOC_#\00000000.soy	Current annual report
LOC_#\yyyy0000.som	Monthly report
LOC_#\yyyy0000.soy	Annual report
LOC_#\yyyy\yyyymm00.sor	Daily report
LOC_#\yyyy\yyyymm00.sow	Weekly report
LOC_#\yyyy\mm\yyyymmdd.sod	10-minute report

Tab. 26: Photovoltaics (file *.so*) – field names

Field name	Description (photovoltaics, *.so*)	Unit
arsoW	Energy produced	kWh
arsoWorkH	Production time	h
Date	Date (data record generation)	

Field name	Description (photovoltaics, *.so*)	Unit
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Error percentage	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
IrsoFreq	Minimum value for frequency	Hz
IrsoI	Minimum value for current	A
IrsoIntens	Minimum value for solar intensity	W/m²
IrsoL1I	Minimum value for current L1	A
IrsoL1U	Minimum value for voltage level U12	V
IrsoL2I	Minimum value for current L2	A
IrsoL2U	Minimum value for voltage level U23	V
IrsoL3I	Minimum value for current L3	A
IrsoL3U	Minimum value for voltage level U31	V
IrsoP	Minimum value for power	kW
IrsoU1	Minimum value for voltage level 1	V
IrsoU2	Minimum value for voltage level 2	V
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrsoFreq	Mean value for frequency	Hz
mrsoI	Mean value for current	A
mrsoIntens	Mean value for solar intensity	W/m²
mrsoL1I	Mean value for current L1	A
mrsoL1U	Mean value for voltage level U12	V
mrsoL2I	Mean value for current L2	A
mrsoL2U	Mean value for voltage level U23	V
mrsoL3I	Mean value for current L3	A
mrsoL3U	Mean value for voltage level U31	V
mrsoP	Mean value for power	kW
mrsoU1	Mean value for voltage level 1	V
mrsoU2	Mean value for voltage level 2	V
PlantNo	Plant number	
prsoFreq	Maximum value for frequency	Hz
prsoI	Maximum value for current	A
prsoIntens	Maximum value for solar intensity	W/m²
prsoL1I	Maximum value for current L1	A

Field name	Description (photovoltaics, *.so*)	Unit
prsoL1U	Maximum value for voltage level U12	V
prsoL2I	Maximum value for current L2	A
prsoL2U	Maximum value for voltage level U23	V
prsoL3I	Maximum value for current L3	A
prsoL3U	Maximum value for voltage level U31	V
prsoP	Maximum value for power	kW
prsoU1	Maximum value for voltage level 1	V
prsoU2	Maximum value for voltage level 2	V
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.4 Farm control

Tab. 27: Farm control (file *.uc*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.ucr	Current daily report
LOC_#\00000000.ucw	Current weekly report
LOC_#\00000000.ucm	Current monthly report
LOC_#\00000000.ucy	Current annual report
LOC_#\yyyy0000.ucm	Monthly report
LOC_#\yyyy0000.ucy	Annual report
LOC_#\yyyy\yyyymm00.ucr	Daily report
LOC_#\yyyy\yyyymm00.ucw	Weekly report
LOC_#\yyyy\mm\yyyymmdd.ucd	10-minute report

Tab. 28: Farm control (file *.uc*) – field names

Field name	Description (farm control, *.uc*)	Unit
arucAbQc2	Reactive power measurement, capacitive (active power generation)	kvarh
arucAbQcp	Reactive power meter, capacitive	var
arucAbQi2	Reactive energy meter, inductive 2	var
arucAbQin	Reactive power measurement, inductive (active power generation)	kvarh
arucAbWcm	Energy metering, consumption	kWh

Field name	Description (farm control, *.uc*)	Unit
arucAbWpr	Energy metering, production	kWh
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lrucSmpCos	Minimum cosφ	
lrucSmpFre	Minimum frequency	Hz
lrucSmpI1	Minimum current L1	A
lrucSmpI2	Minimum current L2	A
lrucSmpI3	Minimum current L3	A
lrucSmpP	Minimum power	kW
lrucSmpQ	Minimum reactive power	kvar
lrucSmpV1	Minimum voltage U12	V
lrucSmpV2	Minimum voltage U23	V
lrucSmpV3	Minimum voltage U31	V
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrucSmpCos	Average cosφ	
mrucSmpFre	Average frequency	Hz
mrucSmpI1	Average current L1	A
mrucSmpI2	Average current L2	A
mrucSmpI3	Average current L3	A
mrucSmpP	Average power	kW
mrucSmpQ	Average reactive power	kvar
mrucSmpV1	Average voltage U12	V
mrucSmpV2	Average voltage U23	V
mrucSmpV3	Average voltage U31	V
PlantNo	Plant number	
prucSmpCos	Maximum cosφ	
prucSmpFre	Maximum frequency	Hz
prucSmpI1	Maximum current L1	A
prucSmpI2	Maximum current L2	A
prucSmpI3	Maximum current L3	A
prucSmpP	Maximum power	kW

Field name	Description (farm control, *.uc*)	Unit
prucSmpQ	Maximum reactive power	kvar
prucSmpV1	Maximum voltage U12	V
prucSmpV2	Maximum voltage U23	V
prucSmpV3	Maximum voltage U31	V
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.5 METEO weather

Tab. 29: METEO weather (file *.md*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.mdr	Current daily report
LOC_#\00000000.mdw	Current weekly report
LOC_#\00000000.mdm	Current monthly report
LOC_#\00000000.mdy	Current annual report
LOC_#\yyyy0000.mdm	Monthly report
LOC_#\yyyy0000.mdy	Annual report
LOC_#\yyyy\yyyymm00.mdr	Daily report
LOC_#\yyyy\yyyymm00.mdw	Weekly report
LOC_#\yyyy\mm\yyyymmdd.mdd	10-minute report

Tab. 30: METEO weather (file *.md*) – field names

Field name	Description (METEO weather, *.md*)	Unit
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrmtSmpPr2	Average air pressure	hPa
mrmtSmpRa2	Average precipitation	mm/min
mrmtSmpSu2	Average sunlight	W/m^2
mrmtSmpTm2	Average temperature	°C
mrmtSmpWe2	Average air humidity	%

Field name	Description (METEO weather, *.md*)	Unit
PlantNo	Plant number	
Sample	Number of samples	
Second0	Second with suffixed index *0-n* (second at which event occurred)	s
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
Second	Second (data record generation)	s

8.3.6 METEO wind

Tab. 31: METEO wind (file *.mw*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.mwr	Current daily report
LOC_#\00000000.mww	Current weekly report
LOC_#\00000000.mwm	Current monthly report
LOC_#\00000000.mwy	Current annual report
LOC_#\yyyy0000.mwm	Monthly report
LOC_#\yyyy0000.mwy	Annual report
LOC_#\yyyy\yyyymm00.mwr	Daily report
LOC_#\yyyy\yyyymm00.mww	Weekly report
LOC_#\yyyy\mm\yyyymmdd.mwd	10-minute report

Tab. 32: METEO wind (file *.mw*) – field names

Field name	Description (METEO wind, *.mw*)	Unit
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
IrmSmpV1	Minimum wind speed 1	m/s
IrmSmpV2	Minimum wind speed 2	m/s
IrmSmpV3	Minimum wind speed 3	m/s
IrmSmpV4	Minimum wind speed 4	m/s
IrmSmpV51	Minimum horizontal wind speed	m/s

Field name	Description (METEO wind, *.mw*)	Unit
lrmSmpV52	Minimum vertical wind speed	m/s
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrmSmpPo1	Average wind direction 1	°
mrmSmpPo2	Average wind direction 2	°
mrmSmpPx1	Average X wind direction 1	°
mrmSmpPx2	Average X wind direction 2	°
mrmSmpPx5	Average X wind direction 5	°
mrmSmpPy1	Average Y wind direction 1	°
mrmSmpPy2	Average Y wind direction 2	°
mrmSmpPy5	Average Y wind direction 5	°
mrmSmpV1	Average wind speed 1	m/s
mrmSmpV2	Average wind speed 2	m/s
mrmSmpV3	Average wind speed 3	m/s
mrmSmpV4	Average wind speed 4	m/s
mrmSmpV51	Average horizontal wind speed	m/s
mrmSmpV52	Average vertical wind speed	m/s
PlantNo	Plant number	
prmSmpV1	Maximum wind speed 1	m/s
prmSmpV2	Maximum wind speed 2	m/s
prmSmpV3	Maximum wind speed 3	m/s
prmSmpV4	Maximum wind speed 4	m/s
prmSmpV51	Maximum horizontal wind speed	m/s
prmSmpV52	Maximum vertical wind speed	m/s
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.7 Status/information statistics

Tab. 33: Status/information statistics (file *.sw*, *.ss*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\yyyymm00.swm	Monthly plant information statistics
LOC_#\yyyy\yyyymm00.ssm	Monthly plant status statistics

Tab. 34: Status/information statistics (file *.sw*, *.ss*) – field names

Field name	Description (status/information statistics *.sw*, *.ss*)	Unit
Date	Date (data record generation)	
Duration	Total duration of status	s
FaultMsg	Value is set to *1*, if the error message is to be sent directly to ENERCON Service.	
Frequency	Number of occurrences	
PlantNo	Plant number	
State	Main status	
SubState	Substatus	
SubWarn	Additional information	
Warn	Main information	
WarnMsg	Value is set to *1*, if the information is to be sent directly to ENERCON Service.	

8.3.8 Status/information status report

Tab. 35: Status/information status report (file *.pe*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\yyyymm00.pew	Monthly plant information
LOC_#\yyyy\yyyymm00.pes	Monthly plant status

Tab. 36: Status/information status report (file *.pe*) – field names

Field name	Description (status/information status report, *.pe*)	Unit
Date	Date (data record generation)	
FaultMsg	Value is set to *1*, if the error message is to be sent directly to ENERCON Service.	
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
PlantNo	Plant number	
Second	Second (data record generation)	s
Service	Maintenance switch activated	
State	Main status	
SubState	Substatus	
SubWarn	Additional information	
Value0	Wind speed (wind speed measured at plant)	m/s
Warn	Main information	

Field name	Description (status/information status report, *.pe*)	Unit
WarnMsg	Value is set to *1*, if the information is to be sent directly to ENERCON Service.	

8.3.9 Plant trigger

Tab. 37: Plant trigger (file *.pet) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\yyyymm00.pet	Current monthly report

Tab. 38: Plant trigger (file *.pet) – field names

Field name	Description (plant trigger, *.pet)
Date	Date (data record generation)
Hour	Hour (data record generation)
Info	Recorded additional information on a status message or information event
Minute	Minute (data record generation)
PlantNo	Plant number
Second	Second (data record generation)

8.3.10 Central setpoint documentation

Tab. 39: Central setpoint documentation (file *.zsd) – file path

Place	Data request in ENERCON SCADA Remote 3
Group	Data
File path	**Name/Content**
LOC_#\yyyy\yyyymm00.zsd	Monthly report

Tab. 40: Central setpoint documentation (file *.zsd) – field names

Field name	Description
Date	Date
Hour	Hour
Minute	Minute
Second	Second
MilSec	Indicates the millisecond of the point in time when the setpoint is changed or the control action is specified.
Error	Indicates an error code.

Field name	Description
WhenceProc	Indicates the server-internal process address of the process via which the setpoint or the control action is specified.
WhencePId	Indicates the process by which the setpoint or control action is specified.
CtrlProc	Indicates the server-internal process address of the process executing the setpoint or control action.
CtrlPId	Indicates the process that executed the setpoint or control action.
WhencPlant	Indicates the plant number of the system that specified the setpoint or control action.
WhenceType	Indicates the control system type of the system that specified the setpoint or control action, see tab. 41, p. 132.
WhenceIF	Indicates the interface for specifying the setpoint or control action. The interface can only be uniquely identified in conjunction with the respective control system type, see tab. 42, p. 133.
CtrlPlant	Indicates the plant number of the system that is controlled by the activity or has received a new setpoint.
CtrlType	Indicates the control system type of the system that has received a new setpoint or is controlled.
UserID	Indicates the ID of the user or the service code that executed the setpoint change or the control action.
Group	Indicates which setpoint changes or control actions were simultaneously executed/transmitted. Activities with the same number are assigned to the same group. The groups are numbered consecutively.
ValTyp	Indicates the control system type of the system that has received a new setpoint or is controlled, see tab. 41, p. 132.
ValId	Indicates the setpoint ID of the type of setpoint change or control action. The setpoint ID can only be uniquely identified in conjunction with the respective control system type of the controlling system, see tab. 43, p. 135.
Value	Indicates the enumerator of the setpoint or control action. The value corresponds to the actual setpoint or control action. Each combination of control system type of the controlling system and setpoint ID has its own enumerators, see tab. 44, p. 148.
User	Indicates encrypted user data.

Tab. 41: Control system types

Control system ID	Control system type
17	CS82
18	EP4-CS-01
21	GDA
23	PDI
33	CS31a
34	EP3-CS-02

Control system ID	Control system type
39	SAI
49	CS30
52	Solar
53	CLC
65	CS32
69	ENERCON SCADA FCU
81	CS40
84	CS_BCSa
85	ENERCON SCADA RTU
97	CS66
101	ENERCON SCADA FCU E2
113	CS44a
129	CS58a
145	CS70a
161	CS126
177	CS44b
193	CS58b
209	CS70b
225	CS48
241	CS101
242	EP5-CS-03
255	ENERCON SCADA

Tab. 42: Control system types and interfaces

Specification	Control system type	Interface
0	39	Default Error
1	39	Default
2	39	Internal
3	39	Hardware
4	39	Modbus RTU
5	39	Modbus TCP
6	39	IEC-101 analog
7	39	IEC-104 analog
8	39	SCADA OPC
9	39	DNP3 serial
10	39	DNP3 TCP

Specification	Control system type	Interface
11	39	IEC-61850
13	39	HNZ
16	39	IEC-101 digital
17	39	IEC-104 digital
12	39	Parameter
19	39	DNP3 serial digital
20	39	DNP3 TCP digital
0	53	Default Error
1	53	Default
2	53	Internal
3	53	Hardware
4	53	Modbus RTU
5	53	Modbus TCP
6	53	IEC-101 analog
7	53	IEC-104 analog
8	53	SCADA OPC
9	53	DNP3 serial
10	53	DNP3 TCP
11	53	IEC-61850
13	53	HNZ
16	53	IEC-101 digital
17	53	IEC-104 digital
12	53	Parameter
19	53	DNP3 serial digital
20	53	DNP3 TCP digital
0	85	Default Error
1	85	Default
2	85	Internal
3	85	Hardware
4	85	Modbus RTU
5	85	Modbus TCP
6	85	IEC-101 analog
7	85	IEC-104 analog
8	85	SCADA OPC
9	85	DNP3 serial
16	85	IEC-101 digital

Specification	Control system type	Interface
17	85	IEC-104 digital
12	85	Parameter
19	85	DNP3 serial digital
0	101	Default Error
1	101	Default
2	101	Internal
3	101	Hardware
4	101	Modbus RTU
5	101	Modbus TCP
6	101	IEC-101 analog
7	101	IEC-104 analog
8	101	SCADA OPC
9	101	DNP3 serial
16	101	IEC-101 digital
17	101	IEC-104 digital
19	101	DNP3 serial digital
20	101	FCU E2 Master
12	101	Parameter
255	-	No interface

Tab. 43: Setpoint ID of the control system types

Setpoint ID	Control system type	Description
1	255	Relative individual active power setpoint to a wind energy converter
2	255	Active power setpoint to the wind farm controller
3	255	Active power setpoint from the setpoint list to the wind farm controller
10	255	Reactive power setpoint to the wind farm controller
11	255	Q/P setpoint to the wind farm controller
12	255	Reactive power setpoint from the setpoint list to the wind farm controller
13	255	Q/P setpoint from the setpoint list to the wind farm controller
20	255	Voltage setpoint to the wind farm controller

Setpoint ID	Control system type	Description
21	255	Voltage setpoint from the setpoint list to the wind farm controller
30	255	Setpoint P(f) to the wind farm controller
31	255	Setpoint P(f) from the setpoint list to the wind farm controller
80	255	Mode of active power to the wind farm controller
81	255	Mode of reactive power to the wind farm controller
82	255	Mode of the active power controller from the setpoint list to the wind farm controller
83	255	Mode of reactive power controller from the setpoint list to the wind farm controller
84	255	Power consumption setpoint of the peak-load time window of power consumption management group 0
85	255	Power consumption setpoint of the peak-load time window of power consumption management group 1
86	255	Power consumption setpoint of the peak-load time window of power consumption management group 2
87	255	Power consumption setpoint of the peak-load time window of power consumption management group 3
88	255	PCM Power
89	255	Change of operating mode of power consumption management
90	255	Power consumption setpoint of power consumption management group 0
91	255	Power consumption setpoint of power consumption management group 1
92	255	Power consumption setpoint of power consumption management group 2
93	255	Power consumption setpoint of power consumption management group 3
94	255	Hysteresis of power consumption management group 0

Setpoint ID	Control system type	Description
95	255	Hysteresis of power consumption management group 1
96	255	Hysteresis of power consumption management group 2
97	255	Hysteresis of power consumption management group 3
98	255	Priority of the wind energy converters in power consumption management
100	255	Wind energy converter reset (SW,HW,QE)
101	255	Ice detection reset
102	255	Blade heating system control
103	255	Ice detection (external)
105	255	Access to remote display of the wind energy converter via ENERCON SCADA Remote 3
110	255	Control of a wind energy converter (e.g. start, stop)
111	255	Control of a wind energy converter through scheduled WEC control (e.g. start, stop)
240	255	ENERCON SCADA Server system events (e.g. program start)
1	39	Change of/information on mode of the wind farm controller active power controller
2	39	Change of the currently used relative active power setpoint of the wind farm controller (only when controller is active)
3	39	Change of the currently used absolute active power setpoint of the wind farm controller (only when controller is active)
4	39	Change of/information on relative active power setpoint P1 of the wind farm controller
5	39	Change of/information on absolute active power setpoint P1 of the wind farm controller
6	39	Change of/information on relative active power setpoint P2 of the wind farm controller

Setpoint ID	Control system type	Description
7	39	Change of/information on absolute active power setpoint P2 of the wind farm controller
8	39	Change of/information on relative active power setpoint P3 of the wind farm controller
9	39	Change of/information on absolute active power setpoint P3 of the wind farm controller
10	39	Change of/information on relative active power setpoint P4 of the wind farm controller
11	39	Change of/information on absolute active power setpoint P4 of the wind farm controller
12	39	Change of the relative exceptional active power setpoint of the wind farm controller
13	39	Change of the absolute exceptional active power setpoint of the wind farm controller
14	39	Change of/information on mode of the wind farm controller reactive power controller
15	39	Change of/information on the relative reactive power setpoint of the wind farm controller (only when reactive power controller is active)
16	39	Change of/information on the absolute reactive power setpoint of the wind farm controller (only when reactive power controller is active)
17	39	Change of/information on relative reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
18	39	Change of/information on absolute reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
19	39	Change of/information on the relative exceptional reactive power setpoint of the wind farm controller

Setpoint ID	Control system type	Description
20	39	Change of/information on the absolute exceptional reactive power setpoint of the wind farm controller
21	39	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is active)
22	39	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is active)
23	39	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
24	39	Change of the cos Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
25	39	Change of/information on the exceptional Phi setpoint of the wind farm controller
26	39	Change of/information on the exceptional cos Phi setpoint of the wind farm controller
27	39	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is active)
28	39	Change of/information on the absolute voltage setpoint of the wind farm controller (only when voltage controller is active)
29	39	Change of/information on the relative control reserve setpoint of the wind farm controller (only when control reserve function is active)
30	39	Change of/information on the absolute control reserve setpoint of the wind farm controller (only when control reserve function is active)
31	39	Change of mode of grid frequency simulation
32	39	Change of level of grid frequency simulation
33	39	Change/triggering of wind farm stop by the wind farm controller
34	39	Change/triggering of restart lock of the wind farm controller

Setpoint ID	Control system type	Description
35	39	Change of/information on the frequency reserved power setpoint of the wind farm controller
1	53	Change of/information on mode of the wind farm controller active power controller
2	53	Change of/information on the currently used relative active power setpoint of the wind farm controller (only when controller is active)
3	53	Change of/information on the currently used absolute active power setpoint of the wind farm controller (only when controller is active)
4	53	Change of/information on relative active power setpoint P1 of the wind farm controller
5	53	Change of/information on absolute active power setpoint P1 of the wind farm controller
6	53	Change of/information on relative active power setpoint P2 of the wind farm controller
7	53	Change of/information on absolute active power setpoint P2 of the wind farm controller
8	53	Change of/information on relative active power setpoint P3 of the wind farm controller
9	53	Change of/information on absolute active power setpoint P3 of the wind farm controller
10	53	Change of/information on relative active power setpoint P4 of the wind farm controller
11	53	Change of/information on absolute active power setpoint P4 of the wind farm controller
12	53	Change of the relative exceptional active power setpoint of the wind farm controller
13	53	Change of/information on the absolute exceptional active power setpoint of the wind farm controller
14	53	Change of/information on mode of the wind farm controller reactive power controller

Setpoint ID	Control system type	Description
15	53	Change of/information on the relative reactive power setpoint of the wind farm controller (only when reactive power controller is active)
16	53	Change of/information on the absolute reactive power setpoint of the wind farm controller (only when reactive power controller is active)
17	53	Change of/information on relative reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
18	53	Change of/information on absolute reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
19	53	Change of/information on the relative exceptional reactive power setpoint of the wind farm controller
20	53	Change of/information on the absolute exceptional reactive power setpoint of the wind farm controller
21	53	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is active)
22	53	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is active)
23	53	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
24	53	Change of the cos Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
25	53	Change of/information on the exceptional Phi setpoint of the wind farm controller
26	53	Change of/information on the exceptional cos Phi setpoint of the wind farm controller
27	53	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is active)

Setpoint ID	Control system type	Description
28	53	Change of/information on the absolute voltage setpoint of the wind farm controller (only when voltage controller is active)
29	53	Change of/information on the relative control reserve setpoint of the wind farm controller (only when control reserve function is active)
30	53	Change of/information on the absolute control reserve setpoint of the wind farm controller (only when control reserve function is active)
31	53	Change of/information on mode of grid frequency simulation
32	53	Change of/information on level of grid frequency simulation
33	53	Change/triggering of wind farm stop by the wind farm controller
34	53	Change/triggering of restart lock of the wind farm controller
35	53	Change of/information on the frequency reserved power setpoint of the wind farm controller
1	85	Change of/information on mode of the wind farm controller active power controller
2	85	Change of/information on the currently used relative active power setpoint of the wind farm controller (only when controller is active)
3	85	Change of/information on the currently used absolute active power setpoint of the wind farm controller (only when controller is active)
4	85	Change of/information on relative active power setpoint P1 of the wind farm controller
5	85	Change of/information on absolute active power setpoint P1 of the wind farm controller
6	85	Change of/information on relative active power setpoint P2 of the wind farm controller
7	85	Change of/information on absolute active power setpoint P2 of the wind farm controller

Setpoint ID	Control system type	Description
8	85	Change of/information on relative active power setpoint P3 of the wind farm controller
9	85	Change of/information on absolute active power setpoint P3 of the wind farm controller
10	85	Change of/information on relative active power setpoint P4 of the wind farm controller
11	85	Change of/information on absolute active power setpoint P4 of the wind farm controller
12	85	Change of/information on the relative exceptional active power setpoint of the wind farm controller
13	85	Change of/information on the absolute exceptional active power setpoint of the wind farm controller
14	85	Change of/information on mode of the wind farm controller reactive power controller
15	85	Change of/information on the relative reactive power setpoint of the wind farm controller (only when reactive power controller is active)
16	85	Change of/information on the absolute reactive power setpoint of the wind farm controller (only when reactive power controller is active)
17	85	Change of/information on relative reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
18	85	Change of/information on absolute reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
19	85	Change of/information on the relative exceptional reactive power setpoint of the wind farm controller
20	85	Change of/information on the absolute exceptional reactive power setpoint of the wind farm controller

Setpoint ID	Control system type	Description
21	85	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is active)
22	85	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is active)
23	85	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
24	85	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
25	85	Change of/information on the exceptional Phi setpoint of the wind farm controller
26	85	Change of/information on the exceptional cos Phi setpoint of the wind farm controller
27	85	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is active)
28	85	Change of/information on the absolute voltage setpoint of the wind farm controller (only when voltage controller is active)
29	85	Change of/information on the relative control reserve setpoint of the wind farm controller (only when control reserve function is active)
30	85	Change of/information on the absolute control reserve setpoint of the wind farm controller (only when control reserve function is active)
31	85	Change of/information on mode of grid frequency simulation
32	85	Change of/information on level of grid frequency simulation
33	85	Change/triggering of wind farm stop by the wind farm controller
34	85	Change/triggering of restart lock of the wind farm controller

Setpoint ID	Control system type	Description
35	85	Change of/information on the frequency reserved power setpoint of the wind farm controller
1	101	Change of/information on mode of the wind farm controller active power controller
2	101	Change of the currently used relative active power setpoint of the wind farm controller (only when controller is active)
3	101	Change of/information on the currently used absolute active power setpoint of the wind farm controller (only when controller is active)
4	101	Change of/information on relative active power setpoint P1 of the wind farm controller
5	101	Change of/information on absolute active power setpoint P1 of the wind farm controller
6	101	Change of/information on relative active power setpoint P2 of the wind farm controller
7	101	Change of/information on absolute active power setpoint P2 of the wind farm controller
8	101	Change of/information on relative active power setpoint P3 of the wind farm controller
9	101	Change of/information on absolute active power setpoint P3 of the wind farm controller
10	101	Change of/information on relative active power setpoint P4 of the wind farm controller
11	101	Change of/information on absolute active power setpoint P4 of the wind farm controller
12	101	Change of the relative exceptional active power setpoint of the wind farm controller
13	101	Change of/information on the absolute exceptional active power setpoint of the wind farm controller
14	101	Change of/information on mode of the wind farm controller reactive power controller

Setpoint ID	Control system type	Description
15	101	Change of/information on the relative reactive power setpoint of the wind farm controller (only when reactive power controller is active)
16	101	Change of/information on the absolute reactive power setpoint of the wind farm controller (only when reactive power controller is active)
17	101	Change of/information on relative reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
18	101	Change of/information on absolute reactive power setpoint Q1 of the wind farm controller (only when reactive power controller is deactivated)
19	101	Change of/information on the relative exceptional reactive power setpoint of the wind farm controller
20	101	Change of/information on the absolute exceptional reactive power setpoint of the wind farm controller
21	101	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is active)
22	101	Change of/information on the cos Phi setpoint of the wind farm controller (only when Phi controller is active)
23	101	Change of/information on the Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
24	101	Change of the cos Phi setpoint of the wind farm controller (only when Phi controller is deactivated)
25	101	Change of/information on the exceptional Phi setpoint of the wind farm controller
26	101	Change of/information on the exceptional cos Phi setpoint of the wind farm controller
27	101	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is active)

Setpoint ID	Control system type	Description
28	101	Change of/information on the absolute voltage setpoint of the wind farm controller (only when voltage controller is active)
29	101	Change of/information on the relative control reserve setpoint of the wind farm controller (only when control reserve function is active)
30	101	Change of/information on the absolute control reserve setpoint of the wind farm controller (only when control reserve function is active)
31	101	Change of mode of grid frequency simulation
32	101	Change of/information on level of grid frequency simulation
33	101	Change/triggering of wind farm stop by the wind farm controller
34	101	Change/triggering of restart lock of the wind farm controller
35	101	Change of/information on the frequency reserved power setpoint of the wind farm controller
36	101	Change of/information on the relative load-power setpoint of the wind farm controller
37	101	Change of/information on the absolute load-power setpoint of the wind farm controller
38	101	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is deactivated)
39	101	Change of/information on the relative voltage setpoint of the wind farm controller (only when voltage controller is deactivated)
40	101	Change of/information on the status of the wind farm controller ■ 0 = Wind farm controller offline ■ 1 = Wind farm controller online

Tab. 44: Enumerators of control system types and setpoint ID

Enumerator	Control system type	Setpoint ID	Description
0	85	1	Inactiv
1	85	1	P Open Loop
2	85	1	P Closed Loop
3	85	1	P(U) Open Loop
4	85	1	P(U) Closed Loop
0	85	14	Inactive
1	85	14	Cos Phi OL
2	85	14	Q Open Loop
3	85	14	Cos Phi CL
4	85	14	Q Closed Loop
5	85	14	Q Phi(P) CL
6	85	14	Q(U) CL
7	85	14	Cos Phi(U) CL
8	85	14	Cos Phi(P) OL
9	85	14	Q(U) OL
10	85	14	Cos Phi(U) OL
11	85	14	Q(P) OL
12	85	14	Q(P) CL
13	85	14	Cos Phi + Q OL
14	85	14	Q/P OL (Q OL)
15	85	14	Q default
16	85	14	Q(U) CL Type 2
1	101	1	No Control: P=100 %
2	101	1	P Closed Loop
4	101	1	P(f) Control Type 1
5	101	1	P(f) Control Type 2
6	101	1	P(f) Control Type 3
7	101	1	P(f) Control Type 3b
8	101	1	P(f) Control Type 4
16	101	1	P Open Loop
31	101	1	Developer P Control 1
32	101	1	Developer P Control 2
1	101	14	Voltage Control
2	101	14	VC with LDC

Enumerator	Control system type	Setpoint ID	Description
3	101	14	Voltage Droop Control 1 (U)
4	101	14	VC Additional Q
5	101	14	Q Closed Loop
6	101	14	Phi Closed Loop
7	101	14	Voltage Droop Control 2 (Q)
8	101	14	Voltage Droop Control 3 (U)
9	101	14	Voltage Control - Automatic Q
13	101	14	Hysterisis Controller
14	101	14	Q(P) Curve Control
15	101	14	Phi Open Loop
16	101	14	Q Open Loop
17	101	14	Cos Phi(P) Curve Control
18	101	14	Cos Phi(U) Curve Control
19	101	14	Q(U) Curve Control
20	101	14	Q Control with Q(U) Slope
31	101	14	Developer Q Control 1
32	101	14	Developer Q Control 2
0	255	89	PCM automatic mode
253	255	89	PCM deactivated
1	255	100	Software reset
2	255	100	Hardware reset
4	255	100	Quit fault
254	255	100	Plant reset response error
0	255	101	Icedetection reset
0	255	102	Automatic de-icing on and manual scada heating off
2	255	102	Automatic de-icing switched off
8	255	102	Automatic de-icing and manual scada heating on

Enumerator	Control system type	Setpoint ID	Description
10	255	102	Automatic de-icing off and manual scada heating on
0	255	103	Icedetection: warning light switched off
8	255	103	Icedetection: warning light switched on
0	255	105	Plant remote display
0	255	110	WEC start
2	255	110	WEC start (fast)
1	255	110	WEC stop
64	255	110	WEC stop (fast)
17	255	110	WEC stop 90
129	255	110	WEC gradient
145	255	110	WEC gradient 90
257	255	110	WEC Ice stop
513	255	110	WEC shadow stop
1025	255	110	WEC animal stop
1041	255	110	WEC animal stop 90
32768	255	110	WEC start force
32770	255	110	WEC start (fast) force
32769	255	110	WEC stop force
32832	255	110	WEC stop (fast) force
32785	255	110	WEC stop 90 force
32897	255	110	WEC gradient force
32913	255	110	WEC gradient 90 force
33025	255	110	WEC Ice stop force
33281	255	110	WEC shadow stop force
33793	255	110	WEC animal stop force
33809	255	110	WEC animal stop 90 force
16384	255	110	WEC start force 2
16386	255	110	WEC start (fast) force 2
16385	255	110	WEC stop force 2
16448	255	110	WEC stop (fast) force 2
16401	255	110	WEC stop 90 force 2
16513	255	110	WEC gradient force 2

Enumerator	Control system type	Setpoint ID	Description
16529	255	110	WEC gradient 90 force 2
16641	255	110	WEC Ice stop force 2
16897	255	110	WEC shadow stop force 2
17409	255	110	WEC animal stop force 2
17425	255	110	WEC animal stop 90 force 2
8192	255	110	WEC start reset force
8194	255	110	WEC start (fast) reset force
8193	255	110	WEC stop reset force
8256	255	110	WEC stop (fast) reset force
8209	255	110	WEC stop 90 reset force
8321	255	110	WEC gradient reset force
8337	255	110	WEC gradient 90 reset force
8449	255	110	WEC Ice stop reset force
8705	255	110	WEC shadow stop reset force
9217	255	110	WEC animal stop reset force
9233	255	110	WEC animal stop 90 reset force
8	255	110	WEC stop customer
24	255	110	WEC stop customer 90
136	255	110	WEC stop customer gradient
152	255	110	WEC stop customer gradient 90
264	255	110	WEC ice stop customer
520	255	110	WEC shadow stop customer
1032	255	110	WEC animal stop customer

Enumerator	Control system type	Setpoint ID	Description
1048	255	110	WEC animal stop customer 90
32776	255	110	WEC stop customer force
32792	255	110	WEC stop customer 90 force
32904	255	110	WEC stop customer gradient force
32920	255	110	WEC stop customer gradient 90 force
33032	255	110	WEC ice stop customer force
33288	255	110	WEC shadow stop customer force
33800	255	110	WEC animal stop customer force
33816	255	110	WEC animal stop customer 90 force
16392	255	110	WEC stop customer force 2
16408	255	110	WEC stop customer 90 force 2
16520	255	110	WEC stop customer gradient force 2
16536	255	110	WEC stop customer gradient 90 force 2
16648	255	110	WEC ice stop customer force 2
16904	255	110	WEC shadow stop customer force 2
17416	255	110	WEC animal stop customer force 2
17432	255	110	WEC animal stop customer 90 force 2
8200	255	110	WEC stop customer reset force
8216	255	110	WEC stop customer 90 reset force
8328	255	110	WEC stop customer gradient reset force
8344	255	110	WEC stop customer gradient 90 reset force

Enumerator	Control system type	Setpoint ID	Description
8456	255	110	WEC ice stop customer reset force
8712	255	110	WEC shadow stop customer reset force
9224	255	110	WEC animal stop customer reset force
9240	255	110	WEC animal stop customer 90 reset force
4	255	110	WF stop
20	255	110	WF stop 90
132	255	110	WF stop gradient
148	255	110	WF stop gradient 90
260	255	110	WF ice stop
516	255	110	WF shadow stop
1028	255	110	WF animal stop
1044	255	110	WF animal stop 90
32772	255	110	WF stop force
32788	255	110	WF stop 90 force
32900	255	110	WF stop gradient force
32916	255	110	WF stop gradient 90 force
33028	255	110	WF ice stop force
33284	255	110	WF shadow stop force
33792	255	110	WF animal stop force
33812	255	110	WF animal stop 90 force
16388	255	110	WF stop force 2
16404	255	110	WF stop 90 force 2
16516	255	110	WF stop gradient force 2
16532	255	110	WF stop gradient 90 force 2
16644	255	110	WF ice stop force 2
16900	255	110	WF shadow stop force 2
17408	255	110	WF animal stop force 2
17428	255	110	WF animal stop 90 force 2
8196	255	110	WF stop reset force

Enumerator	Control system type	Setpoint ID	Description
8212	255	110	WF stop 90 reset force
8324	255	110	WF stop gradient reset force
8340	255	110	WF stop gradient 90 reset force
8452	255	110	WF ice stop reset force
8708	255	110	WF shadow stop reset force
9216	255	110	WF animal stop reset force
9236	255	110	WF animal stop 90 reset force
65534	255	110	WEC control response error
0	255	111	Cron: WEC start
2	255	111	Cron: WEC start (fast)
1	255	111	Cron: WEC stop
64	255	111	Cron: WEC stop (fast)
17	255	111	Cron: WEC stop 90
129	255	111	Cron: WEC gradient
145	255	111	Cron: WEC gradient 90
257	255	111	Cron: WEC Ice stop
513	255	111	Cron: WEC shadow stop
1025	255	111	Cron: WEC animal stop
1041	255	111	Cron: WEC animal stop 90
8	255	111	Cron: WEC stop customer
24	255	111	Cron: WEC stop customer 90
136	255	111	Cron: WEC stop customer gradient
152	255	111	Cron: WEC stop customer gradient 90
264	255	111	Cron: WEC ice stop customer
520	255	111	Cron: WEC shadow stop customer

Enumerator	Control system type	Setpoint ID	Description
1032	255	111	Cron: WEC animal stop customer
1048	255	111	Cron: WEC animal stop customer 90
0	255	240	Program start
1	255	240	Program stop

8.3.11 FCU operating data

Tab. 45: FCU operating data (file *.fc*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.fcr	Current daily report
LOC_#\00000000.fcw	Current weekly report
LOC_#\00000000.fcm	Current monthly report
LOC_#\00000000.fcy	Current annual report
LOC_#\yyyy\mm\yyyymmdd.fcd	10-minute report
LOC_#\yyyy\yyyymm00.fcr	Daily report
LOC_#\yyyy\yyyymm00.fcw	Weekly report
LOC_#\yyyy0000.fcm	Monthly report
LOC_#\yyyy0000.fcy	Annual report

Tab. 46: FCU operating data (file *.fc*) – field names

Field name	Description (FCU operating data, *.fc*)	Unit
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lrfcSmpCos	Minimum value for cosφ	
lrfcSmpFre	Minimum value for frequency	Hz
lrfcSmpI1	Minimum value for current L1	A
lrfcSmpI2	Minimum value for current L2	A
lrfcSmpI3	Minimum value for current L3	A
lrfcSmpP	Minimum value for power	kW
lrfcSmpQ	Minimum value for reactive power	kvar

Field name	Description (FCU operating data, *.fc*)	Unit
lrfcSmpV1	Minimum value for voltage U1N	V
lrfcSmpV2	Minimum value for voltage U2N	V
lrfcSmpV3	Minimum value for voltage U3N	V
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrfcSmpCos	Average value for cosφ	
mrfcSmpFre	Average value for frequency	Hz
mrfcSmpI1	Average value for current L1	A
mrfcSmpI2	Average value for current L2	A
mrfcSmpI3	Average value for current L3	A
mrfcSmpP	Average value for power	kW
mrfcSmpQ	Average value for reactive power	kvar
mrfcSmpS1	Average value for power setpoint 1	kW
mrfcSmpS2	Average value for power setpoint 2	kW
mrfcSmpS3	Average value for power setpoint 3	kW
mrfcSmpV1	Average value for voltage U1N	V
mrfcSmpV2	Average value for voltage U2N	V
mrfcSmpV3	Average value for voltage U3N	V
PlantNo	Plant number	
prfcSmpCos	Maximum value for cosφ	
prfcSmpFre	Maximum value for frequency	Hz
prfcSmpI1	Maximum value for current L1	A
prfcSmpI2	Maximum value for current L2	A
prfcSmpI3	Maximum value for current L3	A
prfcSmpP	Maximum value for power	kW
prfcSmpQ	Maximum value for reactive power	kvar
prfcSmpV1	Maximum value for voltage U1N	V
prfcSmpV2	Maximum value for voltage U2N	V
prfcSmpV3	Maximum value for voltage U3N	V
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.12 RTU operating data

Tab. 47: RTU operating data (files *.ui*, *.ufd) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.uir	Current daily report
LOC_#\00000000.uiw	Current weekly report
LOC_#\00000000.uim	Current monthly report
LOC_#\00000000.uiy	Current annual report
LOC_#\yyyy0000.uim	Monthly report
LOC_#\yyyy0000.uiy	Annual report
LOC_#\yyyy\yyyymm00.uir	Daily report
LOC_#\yyyy\yyyymm00.uiw	Weekly report
LOC_#\yyyy\mm\yyyymmdd.uid	10-minute report
LOC_#\yyyy\mm\yyyymmdd.ufd	15-minute report

Tab. 48: RTU operating data (file *.ui*, *.ufd) – field names

Field name	**Description (RTU, *.ui*, *.ufd)**	**Unit**
aruiAbQcap	Reactive-power measurement, capacitive (active-power production)	kvar
aruiAbQin	Reactive-power measurement, inductive (active-power production)	kvar
aruiAbWcm	Energy consumption (reference)	kWh
aruiAbWkH	Production time	h
aruiAbWpr	Energy production	kWh
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lruiSmpCos	Minimum value for power factor cosφ	
lruiSmpFre	Minimum value for frequency	Hz
lruiSmpI1	Minimum value for current L1	A
lruiSmpI2	Minimum value for current L2	A
lruiSmpI3	Minimum value for current L3	A
lruiSmpP	Minimum value for power	kW
lruiSmpQ	Minimum value for reactive power	kvar
lruiSmpS	Minimum value for apparent power	kVA

Field name	Description (RTU, *.ui*, *.ufd)	Unit
lruiSmpU1	Minimum value for voltage U12	V
lruiSmpU2	Minimum value for voltage U23	V
lruiSmpU3	Minimum value for voltage U31	V
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mruiSmpCos	Average value for power factor cosφ	
mruiSmpFre	Average value for frequency	Hz
mruiSmpI1	Average value for current L1	A
mruiSmpI2	Average value for current L2	A
mruiSmpI3	Average value for current L3	A
mruiSmpP	Average value for power	kW
mruiSmpQ	Average value for reactive power	kvar
mruiSmpS	Average value for apparent power	kVA
mruiSmpS1	Active-power setpoint P1	kW
mruiSmpS2	Active-power setpoint P2	kW
mruiSmpS3	Active-power setpoint P3	kW
mruiSmpU1	Average value for voltage U12	V
mruiSmpU2	Average value for voltage U23	V
mruiSmpU3	Average value for voltage U31	V
PlantNo	Plant number	
pruiSmpCos	Maximum value for power factor cosφ	
pruiSmpFre	Maximum value for frequency	Hz
pruiSmpI1	Maximum value for current L1	A
pruiSmpI2	Maximum value for current L2	A
pruiSmpI3	Maximum value for current L3	A
pruiSmpP	Maximum value for power	kW
pruiSmpQ	Maximum value for reactive power	kvar
pruiSmpS	Maximum value for apparent power	kVA
pruiSmpU1	Maximum value for voltage U12	V
pruiSmpU2	Maximum value for voltage U23	V
pruiSmpU3	Maximum value for voltage U31	V
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.13 RTU phases

Tab. 49: RTU phases (file *.uq*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.uqr	Current daily report
LOC_#\00000000.uqw	Current weekly report
LOC_#\00000000.uqm	Current monthly report
LOC_#\00000000.uqy	Current annual report
LOC_#\yyyy0000.uqm	Monthly report
LOC_#\yyyy0000.uqy	Annual report
LOC_#\yyyy\yyyymm00.uqr	Daily report
LOC_#\yyyy\yyyymm00.uqw	Weekly report
LOC_#\yyyy\mm\yyyymmdd.uqd	10-minute report

Tab. 50: RTU phases (file *.uq*) – field names

Field name	**Description (RTU phases, *.uq*)**	**Unit**
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lruiSmpP1	Minimum power L1	kW
lruiSmpP2	Minimum power L2	kW
lruiSmpP3	Minimum power L3	kW
lruiSmpQ1	Minimum reactive power L1	kvar
lruiSmpQ2	Minimum reactive power L2	kvar
lruiSmpQ3	Minimum reactive power L3	kvar
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mruiSmpP1	Average power L1	kW
mruiSmpP2	Average power L2	kW
mruiSmpP3	Average power L3	kW
mruiSmpQ1	Average reactive power L1	kvar
mruiSmpQ2	Average reactive power L2	kvar
mruiSmpQ3	Average reactive power L3	kvar
PlantNo	Plant number	

Field name	Description (RTU phases, *.uq*)	Unit
pruiSmpP1	Maximum power L1	kW
pruiSmpP2	Maximum power L2	kW
pruiSmpP3	Maximum power L3	kW
pruiSmpQ1	Maximum reactive power L1	kvar
pruiSmpQ2	Maximum reactive power L2	kvar
pruiSmpQ3	Maximum reactive power L3	kvar
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.14 FCU E2 operating data

Tab. 51: FCU E2 operating data (measurement 1; file *.fu*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.fur	Current daily report
LOC_#\00000000.fuw	Current weekly report
LOC_#\00000000.fum	Current monthly report
LOC_#\00000000.fuy	Current annual report
LOC_#\yyyy\mm\yyyymmdd.fud	10-minute report
LOC_#\yyyy\yyyymm00.fur	Daily report
LOC_#\yyyy\yyyymm00.fuw	Weekly report
LOC_#\yyyy0000.fum	Monthly report
LOC_#\yyyy0000.fuy	Annual report

Tab. 52: FCU E2 operating data (measurement 1; file *.fu*) – field names

Field name	Description (FCU E2 operating data, *.fu*)	Unit
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
Second	Second (data record generation)	s

Field name	Description (FCU E2 operating data, *.fu*)	Unit
Second0	Second with suffixed index *0-n* (second at which event occurred)	s
PlantNo	Plant number	
Sample	Number of samples	
Error	Error percentage	%
mrfuUv1	Mean voltage	V
prfuUv1	Maximum voltage	V
lrfuUv1	Minimum voltage	V
mrfuP1	Average power	kW
prfuP1	Maximum power	kW
lrfuP1	Minimum power	kW
mrfuQ1	Mean reactive power	kvar
prfuQ1	Maximum reactive power	kvar
lrfuQ1	Minimum reactive power	kvar
mrfuS1	Mean apparent power	VA
prfuS1	Maximum apparent power	VA
lrfuS1	Minimum apparent power	VA
mrfuPh1	Mean Phi	°
prfuPh1	Maximum Phi	°
lrfuPh1	Minimum Phi	°
mrfuFr1	Mean frequency	Hz
prfuFr1	Maximum frequency	Hz
lrfuFr1	Minimum frequency	Hz
mrfuU1L12	Mean voltage U12	V
prfuU1L12	Maximum voltage U12	V
lrfuU1L12	Minimum voltage U12	V
mrfuU1L23	Mean voltage U23	V
prfuU1L23	Maximum voltage U23	V
lrfuU1L23	Minimum voltage U23	V
mrfuU1L31	Mean voltage U21	V
prfuU1L31	Maximum voltage U31	V
lrfuU1L31	Minimum voltage U31	V
mrfuU1L1N	Mean voltage U1	V
prfuU1L1N	Maximum voltage U1	V
lrfuU1L1N	Minimum voltage U1	V
mrfuU1L2N	Mean voltage U2	V

Field name	Description (FCU E2 operating data, *.fu*)	Unit
prfuU1L2N	Maximum voltage U2	V
lrfuU1L2N	Minimum voltage U2	V
mrfuU1L3N	Mean voltage U3	V
prfuU1L3N	Maximum voltage U3	V
lrfuU1L3N	Minimum voltage U3	V
mrfuI1L1	Mean current L1	A
prfuI1L1	Maximum current L1	A
lrfuI1L1	Minimum current L1	A
mrfuI1L2	Mean current L2	A
prfuI1L2	Maximum current L2	A
lrfuI1L2	Minimum current L2	A
mrfuI1L3	Mean current L3	A
prfuI1L3	Maximum current L3	A
lrfuI1L3	Minimum current L3	A
mrfuP1L1	Average power L1	kW
prfuP1L1	Maximum power L1	kW
lrfuP1L1	Minimum power L1	kW
mrfuP1L2	Average power L2	kW
prfuP1L2	Maximum power L2	kW
lrfuP1L2	Minimum power L2	kW
mrfuP1L3	Average power L3	kW
prfuP1L3	Maximum power L3	kW
lrfuP1L3	Minimum power L3	kW
mrfuS1L1	Mean apparent power L1	VA
prfuS1L1	Maximum apparent power L1	VA
lrfuS1L1	Minimum apparent power L1	VA
mrfuS1L2	Mean apparent power L2	VA
prfuS1L2	Maximum apparent power L2	VA
lrfuS1L2	Minimum apparent power L2	VA
mrfuS1L3	Mean apparent power L3	VA
prfuS1L3	Maximum apparent power L3	VA
lrfuS1L3	Minimum apparent power L3	VA
mrfuQ1L1	Mean reactive power L1	kvar
prfuQ1L1	Maximum reactive power L1	kvar
lrfuQ1L1	Minimum reactive power L1	kvar
mrfuQ1L2	Mean reactive power L2	kvar

Field name	Description (FCU E2 operating data, *.fu*)	Unit
prfuQ1L2	Maximum reactive power L2	kvar
lrfuQ1L2	Minimum reactive power L2	kvar
mrfuQ1L3	Mean reactive power L3	kvar
prfuQ1L3	Maximum reactive power L3	kvar
lrfuQ1L3	Minimum reactive power L3	kvar
mrfuPh1L1	Mean phase angle L1	°
prfuPh1L1	Maximum phase angle L1	°
lrfuPh1L1	Minimum phase angle L1	°
mrfuPh1L2	Mean phase angle L2	°
prfuPh1L2	Maximum phase angle L2	°
lrfuPh1L2	Minimum phase angle L2	°
mrfuPh1L3	Mean phase angle L3	°
prfuPh1L3	Maximum phase angle L3	°
lrfuPh1L3	Minimum phase angle L3	°
arfuWpro	Energy meter, production	kWh
arfuWcon	Energy meter, reference	kWh
arfuQind	Reactive power meter (inductive)	kvar
arfuQcap	Reactive power meter (capacitive)	kvar
arfuH	Operating hours	h

Tab. 53: FCU E2 operating data (measurement 2; file *.fv*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.fvr	Current daily report
LOC_#\00000000.fvw	Current weekly report
LOC_#\00000000.fvm	Current monthly report
LOC_#\00000000.fvy	Current annual report
LOC_#\yyyy\mm\yyyymmdd.fvd	10-minute report
LOC_#\yyyy\yyyymm00.fvr	Daily report
LOC_#\yyyy\yyyymm00.fvw	Weekly report
LOC_#\yyyy0000.fvm	Monthly report
LOC_#\yyyy0000.fvy	Annual report

Tab. 54: FCU E2 operating data (measurement 2; file *.fv*) – field names

Field name	Description (FCU E2 operating data, *.fv*)	Unit
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s
PlantNo	Plant number	
Sample	Number of samples	
Error	Error percentage	%
mrfuUv2	Mean voltage	V
prfuUv2	Maximum voltage	V
lrfuUv2	Minimum voltage	V
mrfuP2	Average power	kW
prfuP2	Maximum power	kW
lrfuP2	Minimum power	kW
mrfuQ2	Mean reactive power	kvar
prfuQ2	Maximum reactive power	kvar
lrfuQ2	Minimum reactive power	kvar
mrfuS2	Mean apparent power	VA
prfuS2	Maximum apparent power	VA
lrfuS2	Minimum apparent power	VA
mrfuPh2	Mean Phi	°
prfuPh2	Maximum Phi	°
lrfuPh2	Minimum Phi	°
mrfuFr2	Mean frequency	Hz
prfuFr2	Maximum frequency	Hz
lrfuFr2	Minimum frequency	Hz
mrfuU2L12	Mean voltage U12	V
prfuU2L12	Maximum voltage U12	V
lrfuU2L12	Minimum voltage U12	V
mrfuU2L23	Mean voltage U23	V

Field name	Description (FCU E2 operating data, *.fv*)	Unit
prfuU2L23	Maximum voltage U23	V
lrfuU2L23	Minimum voltage U23	V
mrfuU2L31	Mean voltage U21	V
prfuU2L31	Maximum voltage U31	V
lrfuU2L31	Minimum voltage U31	V
mrfuU2L1N	Mean voltage U1	V
prfuU2L1N	Maximum voltage U1	V
lrfuU2L1N	Minimum voltage U1	V
mrfuU2L2N	Mean voltage U2	V
prfuU2L2N	Maximum voltage U2	V
lrfuU2L2N	Minimum voltage U2	V
mrfuU2L3N	Mean voltage U3	V
prfuU2L3N	Maximum voltage U3	V
lrfuU2L3N	Minimum voltage U3	V
mrfuI2L1	Mean current L1	A
prfuI2L1	Maximum current L1	A
lrfuI2L1	Minimum current L1	A
mrfuI2L2	Mean current L2	A
prfuI2L2	Maximum current L2	A
lrfuI2L2	Minimum current L2	A
mrfuI2L3	Mean current L3	A
prfuI2L3	Maximum current L3	A
lrfuI2L3	Minimum current L3	A
mrfuP2L1	Average power L1	kW
prfuP2L1	Maximum power L1	kW
lrfuP2L1	Minimum power L1	kW
mrfuP2L2	Average power L2	kW
prfuP2L2	Maximum power L2	kW
lrfuP2L2	Minimum power L2	kW
mrfuP2L3	Average power L3	kW
prfuP2L3	Maximum power L3	kW
lrfuP2L3	Minimum power L3	kW
mrfuS2L1	Mean apparent power L1	VA
prfuS2L1	Maximum apparent power L1	VA
lrfuS2L1	Minimum apparent power L1	VA
mrfuS2L2	Mean apparent power L2	VA

Field name	Description (FCU E2 operating data, *.fv*)	Unit
prfuS2L2	Maximum apparent power L2	VA
lrfuS2L2	Minimum apparent power L2	VA
mrfuS2L3	Mean apparent power L3	VA
prfuS2L3	Maximum apparent power L3	VA
lrfuS2L3	Minimum apparent power L3	VA
mrfuQ2L1	Mean reactive power L1	kvar
prfuQ2L1	Maximum reactive power L1	kvar
lrfuQ2L1	Minimum reactive power L1	kvar
mrfuQ2L2	Mean reactive power L2	kvar
prfuQ2L2	Maximum reactive power L2	kvar
lrfuQ2L2	Minimum reactive power L2	kvar
mrfuQ2L3	Mean reactive power L3	kvar
prfuQ2L3	Maximum reactive power L3	kvar
lrfuQ2L3	Minimum reactive power L3	kvar
mrfuPh2L1	Mean phase angle L1	°
prfuPh2L1	Maximum phase angle L1	°
lrfuPh2L1	Minimum phase angle L1	°
mrfuPh2L2	Mean phase angle L2	°
prfuPh2L2	Maximum phase angle L2	°
lrfuPh2L2	Minimum phase angle L2	°
mrfuPh2L3	Mean phase angle L3	°
prfuPh2L3	Maximum phase angle L3	°
lrfuPh2L3	Minimum phase angle L3	°

8.3.15 Transmission substation

Tab. 55: Transmission substation (file *.uu, *.uw) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.uur LOC_#\00000000.uwr	Current daily report
LOC_#\00000000.uuw LOC_#\00000000.uww	Current weekly report
LOC_#\00000000.uum LOC_#\00000000.uwm	Current monthly report

LOC_#\00000000.uuy LOC_#\00000000.uwy	Current annual report
LOC_#\yyyy0000.uum LOC_#\yyyy0000.uwm	Monthly report
LOC_#\yyyy0000.uuy LOC_#\yyyy0000.uwy	Annual report
LOC_#\yyyy\yyyymm00.uur LOC_#\yyyy\yyyymm00.uwr	Daily report
LOC_#\yyyy\yyyymm00.uuw LOC_#\yyyy\yyyymm00.uww	Weekly report
LOC_#\yyyy\mm\yyyymmdd.uud LOC_#\yyyy\mm\yyyymmdd.uwd	10-minute report

Tab. 56: Transmission substation (file *.uu, *.uw) – field names

Field name	Description (transmission substation, *.uu*, *.uw*)	Unit
aruwAbQcp	Reactive power measurement, capacitive (active power generation)	kvarh
aruwAbQin	Reactive power measurement, inductive (active power generation)	kvarh
aruwAbWcm	Energy consumption	kWh
aruwAbWkH	Production time	h
aruwAbWpr	Energy production	kWh
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lruwSmpCos	Minimum cosφ	
lruwSmpFre	Minimum frequency	Hz
lruwSmpHI1	Minimum current L1 (high-voltage side)	V
lruwSmpHI2	Minimum current L2 (high-voltage side)	V
lruwSmpHI3	Minimum current L3 (high-voltage side)	V
lruwSmpHV1	Minimum high voltage U12	V
lruwSmpHV2	Minimum high voltage U23	V
lruwSmpHV3	Minimum high voltage U31	V
lruwSmpMI1	Minimum current L1 (medium-voltage side)	A
lruwSmpMI2	Minimum current L2 (medium-voltage side)	A
lruwSmpMI3	Minimum current L3 (medium-voltage side)	A
lruwSmpMV1	Minimum medium voltage U12	V

Field name	Description (transmission substation, *.uu*, *.uw*)	Unit
lruwSmpMV2	Minimum medium voltage U23	V
lruwSmpMV3	Minimum medium voltage U31	V
lruwSmpP	Minimum power	kW
lruwSmpQ	Minimum reactive power	kvar
lruwSmpS	Minimum apparent power	kVA
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mruwSmpCos	Average cosφ	
mruwSmpFre	Average frequency	Hz
mruwSmpHI1	Average current L1 (high-voltage side)	A
mruwSmpHI2	Average current L2 (high-voltage side)	A
mruwSmpHI3	Average current L3 (high-voltage side)	A
mruwSmpHV1	Average high voltage U12	V
mruwSmpHV2	Average high voltage U23	V
mruwSmpHV3	Average high voltage U31	V
mruwSmpMI1	Average current L1 (medium-voltage side)	A
mruwSmpMI2	Average current L2 (medium-voltage side)	A
mruwSmpMI3	Average current L3 (medium-voltage side)	A
mruwSmpMV1	Average medium voltage U12	V
mruwSmpMV2	Average medium voltage U23	V
mruwSmpMV3	Average medium voltage U31	V
mruwSmpP	Average power	kW
mruwSmpQ	Average reactive power	kvar
mruwSmpS	Average apparent power	kVA
PlantNo	Plant number	
pruwSmpCos	Maximum cosφ	
pruwSmpFre	Maximum frequency	Hz
pruwSmpHI1	Maximum current L1 (high-voltage side)	A
pruwSmpHI2	Maximum current L2 (high-voltage side)	A
pruwSmpHI3	Maximum current L3 (high-voltage side)	A
pruwSmpHV1	Maximum high voltage U12	V
pruwSmpHV2	Maximum high voltage U23	V
pruwSmpHV3	Maximum high voltage U31	V
pruwSmpMI1	Maximum current L1 (medium-voltage side)	A
pruwSmpMI2	Maximum current L2 (medium-voltage side)	A

Field name	Description (transmission substation, *.uu*, *.uw*)	Unit
pruwSmpMI3	Maximum current L3 (medium-voltage side)	A
pruwSmpMV1	Maximum medium voltage U12	V
pruwSmpMV2	Maximum medium voltage U23	V
pruwSmpMV3	Maximum medium voltage U31	V
pruwSmpP	Maximum power	kW
pruwSmpQ	Maximum reactive power	kvar
pruwSmpS	Maximum apparent power	kVA
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.16 Medium-voltage acquisition

Tab. 57: Medium-voltage acquisition (file *.sm*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.smr	Current daily report
LOC_#\00000000.smw	Current weekly report
LOC_#\00000000.smm	Current monthly report
LOC_#\00000000.smy	Current annual report
LOC_#\yyyy0000.smm	Monthly report
LOC_#\yyyy0000.smy	Annual report
LOC_#\yyyy\yyyymm00.smr	Daily report
LOC_#\yyyy\yyyymm00.smw	Weekly report
LOC_#\yyyy\mm\yyyymmdd.smd	10-minute report

Tab. 58: Medium-voltage acquisition (file *.sm*) – field names

Field name	Description (medium-voltage acquisition, *.sm*)	Unit
Date	Date	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lrsmSmpFre	Minimum frequency	Hz
lrsmSmpU1	Minimum voltage U12	V
lrsmSmpU2	Minimum voltage U23	V
lrsmSmpU3	Minimum voltage U31	V
Minute	Minute (data record generation)	min
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mrsmSmpFre	Average frequency	Hz
mrsmSmpU1	Average voltage U12	V
mrsmSmpU2	Average voltage U23	V
mrsmSmpU3	Average voltage U31	V
prsmSmpFre	Maximum frequency	Hz
prsmSmpU1	Maximum voltage U12	V
prsmSmpU2	Maximum voltage U23	V
prsmSmpU3	Maximum voltage U31	V

Field name	Description (medium-voltage acquisition, *.sm*)	Unit
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.17 Temperatures (WEC)

8.3.17.1 Temperatures CS40

Tab. 59: CS40 temperatures (file *.41d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.41d	10-minute report

Tab. 60: CS40 temperatures (file *.41d) – field names

Field name	Description (CS40 temperatures, *.41d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr40A0	Stator temperature	°C
mr40A1	Rotor temperature	°C
mr40A2	Nacelle outside temperature	°C
mr40A3	Front bearing temperature	°C
mr40A4	Rear bearing temperature	°C
mr40A8	Tower temperature	°C
mr40A9	Control cabinet temperature	°C
mr40A10	Power cabinet 1 temperature	°C
mr40A11	Power cabinet 2 temperature	°C
mr40A19	Blade A temperature	°C
mr40A20	Blade B temperature	°C
mr40A21	Blade C temperature	°C
Second	Second (data record generation)	s

8.3.17.2 Temperatures CS44

Tab. 61: CS44a temperatures (file *.46d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.46d	10-minute report

Tab. 62: CS44a temperatures (file *.46d) – field names

Field name	Description (CS44a temperatures, *.46d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr44A0	Stator temperature	°C
mr44A1	Rotor temperature	°C
mr44A2	Nacelle outside temperature	°C
mr44A3	Nacelle inside temperature	°C
mr44A4	Front bearing temperature	°C
mr44A5	Rear bearing temperature	°C
mr44A6	Blade A temperature	°C
mr44A7	Blade B temperature	°C
mr44A8	Blade C temperature	°C
mr44A12	Nacelle control cabinet temperature	°C
mr44A13	Control cabinet temperature	°C
mr44A14	Tower temperature	°C
mr44A18	Transformer temperature	°C
mr44A24	Outside floor temperature	°C
mr44A25	Yaw inverter control cabinet temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

Tab. 63: CS44b temperatures (file *.47d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.47d	10-minute report

Tab. 64: CS44b temperatures (file *.47d) – field names

Field name	**Description (CS44 temperatures, *.47d)**	**Unit**
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr44bA0	Stator temperature	°C
mr44bA1	Rotor temperature	°C
mr44bA2	Nacelle outside temperature	°C
mr44bA3	Nacelle inside temperature	°C
mr44bA4	Front bearing temperature	°C
mr44bA5	Rear bearing temperature	°C
mr44bA6	Blade A temperature	°C
mr44bA7	Blade B temperature	°C
mr44bA8	Blade C temperature	°C
mr44bA12	Nacelle control cabinet temperature	°C
mr44bA13	Control cabinet temperature	°C
mr44bA14	Tower temperature	°C
mr44bA18	Transformer temperature	°C
mr44bA28	Outside floor temperature	°C
mr44bA29	Yaw inverter control cabinet temperature	°C
Second	Second (data record generation)	s

8.3.17.3 Temperatures CS48a

Tab. 65: CS48 temperatures (file *.49d) – file path

Location	ENERCON SCADA Remote 3 – Data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.49d	10-minute report

Tab. 66: CS48 temperatures (file *.49d) – field names

Field name	Description (CS48 temperatures, *.49d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr48A0	Spinner temperature	°C
mr48A1	Front bearing temperature	°C
mr48A2	Rear bearing temperature	°C
mr48A6	Pitch heat sink A temperature	°C
mr48A7	Pitch heat sink B temperature	°C
mr48A8	Pitch heat sink C temperature	°C
mr48A9	Pitch control cabinet A temperature	°C
mr48A10	Pitch control cabinet B temperature	°C
mr48A11	Pitch control cabinet C temperature	°C
mr48A12	Blade A temperature	°C
mr48A13	Blade B temperature	°C
mr48A14	Blade C temperature	°C
mr48A15	Rotor 1 temperature	°C
mr48A16	Rotor 2 temperature	°C
mr48A17	Stator 1 temperature	°C
mr48A18	Stator 2 temperature	°C
mr48A19	Nacelle outside temperature	°C
mr48A20	Nacelle inside temperature	°C
mr48A21	Nacelle control cabinet temperature	°C
mr48A22	Rectifier heat sink 1 temperature	°C
mr48A23	Rectifier heat sink 2 temperature	°C
mr48A24	Rectifier control cabinet temperature	°C
mr48A25	Heat sink excitation temperature	°C
mr48A34	Ambient temperature of floor outside	°C
mr48A35	Tower temperature	°C
mr48A36	Control cabinet temperature	°C
mr48A37	Transformer temperature	°C
mr48A46	Converter 1 control cabinet temperature	°C
mr48A55	Converter 2 control cabinet temperature	°C
mr48A64	Converter 3 control cabinet temperature	°C
Second	Second (data record generation)	s

8.3.17.4 Temperatures CS66

Tab. 67: CS66 temperatures (file *.67d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.67d	10-minute report

Tab. 68: CS66 temperatures (file *.67d) – field names

Field name	**Description (CS66 temperatures, *.67d)**	**Unit**
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr66A0	Stator temperature	°C
mr66A1	Rotor temperature	°C
mr66A2	Nacelle outside temperature	°C
mr66A3	Nacelle inside temperature	°C
mr66A4	Spinner temperature	°C
mr66A5	Front bearing temperature	°C
mr66A6	Rear bearing temperature	°C
mr66A7	Blade A temperature	°C
mr66A8	Blade B temperature	°C
mr66A9	Blade C temperature	°C
mr66A19	Nacelle control cabinet temperature	°C
mr66A20	Control cabinet temperature	°C
mr66A21	Tower temperature	°C
mr66A25	Transformer temperature	°C
mr66A26	Power cabinet 1 temperature	°C
mr66A27	Power cabinet 2 temperature	°C
mr66A28	Power cabinet 3 temperature	°C
mr66A29	Power cabinet 4 temperature	°C
mr66A30	Power cabinet 5 temperature	°C
mr66A31	Power cabinet 6 temperature	°C
mr66A45	Outside floor temperature	°C
Second	Second (data record generation)	s

8.3.17.5 Temperatures CS70b

Tab. 69: CS70b temperatures (file *.73d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.73d	10-minute report

Tab. 70: CS70b temperatures (file *.73d) – field names

Field name	Description (CS70b temperatures, *.73d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr70bA0	Stator temperature	°C
mr70bA1	Rotor temperature	°C
mr70bA2	Nacelle outside temperature	°C
mr70bA3	Nacelle inside temperature	°C
mr70bA4	Spinner temperature	°C
mr70bA5	Front bearing temperature	°C
mr70bA6	Rear bearing temperature	°C
mr70bA7	Blade A temperature	°C
mr70bA8	Blade B temperature	°C
mr70bA9	Blade C temperature	°C
mr70bA19	Nacelle control cabinet temperature	°C
mr70bA20	Control cabinet temperature	°C
mr70bA21	Tower temperature	°C
mr70bA25	Transformer temperature	°C
mr70bA51	Outside floor temperature	°C
mr70bA61	Yaw inverter control cabinet temperature	°C
Second	Second (data record generation)	s

8.3.17.6 Temperatures CS82

Tab. 71: CS82 temperatures (file *.84d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.84d	10-minute report

Tab. 72: CS82 temperatures (file *.84d) – field names

Field name	Description (CS82 temperatures, *.84d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr82A0	Spinner temperature	°C
mr82A1	Front bearing temperature	°C
mr82A2	Rear bearing temperature	°C
mr82A6	Pitch heat sink A temperature	°C
mr82A7	Pitch heat sink B temperature	°C
mr82A8	Pitch heat sink C temperature	°C
mr82A9	Control cabinet A temperature	°C
mr82A10	Control cabinet B temperature	°C
mr82A11	Control cabinet C temperature	°C
mr82A12	Blade A temperature	°C
mr82A13	Blade B temperature	°C
mr82A14	Blade C temperature	°C
mr82A15	Rotor 1 temperature	°C
mr82A16	Rotor 2 temperature	°C
mr82A17	Stator 1 temperature	°C
mr82A18	Stator 2 temperature	°C
mr82A19	Nacelle outside temperature	°C
mr82A20	Nacelle inside temperature	°C
mr82A21	Nacelle control cabinet temperature	°C
mr82A22	Rectifier heat sink 1 temperature	°C
mr82A23	Rectifier heat sink 2 temperature	°C
mr82A24	Rectifier control cabinet temperature	°C
mr82A25	Heat sink excitation temperature	°C
mr82A36	Outside floor temperature	°C
mr82A37	Tower temperature	°C
mr82A38	Control cabinet temperature	°C
mr82A39	Transformer temperature	°C
Second	Second (data record generation)	s

Tab. 73: CS82 temperatures (file *.85d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.85d	10-minute report

Tab. 74: CS82 temperatures (file *.85d) – field names

Field name	**Description (CS82 temperatures, *.85d)**	**Unit**
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr82A48	Converter 1 control cabinet temperature	°C
mr82A57	Converter 2 control cabinet temperature	°C
mr82A66	Converter 3 control cabinet temperature	°C
mr82A75	Converter 4 control cabinet temperature	°C
mr82A84	Converter 5 control cabinet temperature	°C
mr82A93	Converter 6 control cabinet temperature	°C
mr82A102	Converter 7 control cabinet temperature	°C
mr82A111	Converter 8 control cabinet temperature	°C
mr82A120	Converter 9 control cabinet temperature	°C
mr82A129	Converter 10 control cabinet temperature	°C
mr82A138	Converter 11 control cabinet temperature	°C
Second	Second (data record generation)	s

8.3.17.7 Temperatures CS101

Tab. 75: CS101 temperatures (file *.03d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.03d	10-minute report

Tab. 76: CS101 temperatures (file *.03d) – field names

Field name	**Description (CS101 temperatures, *.03d)**	**Unit**
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h

Field name	Description (CS101 temperatures, *.03d)	Unit
Minute	Minute (data record generation)	min
mr101A0	Spinner temperature	°C
mr101A1	Front bearing temperature	°C
mr101A2	Rear bearing temperature	°C
mr101A13	Pitch control cabinet A temperature	°C
mr101A14	Pitch control cabinet B temperature	°C
mr101A15	Pitch control cabinet C temperature	°C
mr101A16	Blade A temperature	°C
mr101A17	Blade B temperature	°C
mr101A18	Blade C temperature	°C
mr101A19	Rotor 1 temperature	°C
mr101A20	Rotor 2 temperature	°C
mr101A21	Stator slot 1 temperature	°C
mr101A22	Stator slot 2 temperature	°C
mr101A27	Nacelle outside temperature 1	°C
mr101A28	Nacelle outside temperature 2	°C
mr101A29	Nacelle inside temperature	°C
mr101A30	Nacelle control cabinet temperature	°C
mr101A31	Main carrier temperature	°C
mr101A36	Rectifier control cabinet temperature	°C
mr101A38	Yaw inverter control cabinet temperature	°C
mr101A54	Nacelle fan inverter control cabinet temperature	°C
mr101A63	Outside temperature	°C
mr101A64	Tower temperature	°C
mr101A65	Control cabinet temperature	°C
mr101A66	Transformer temperature	°C
mr101A194	Transformer ambient temperature	°C
Second	Second (data record generation)	s

Tab. 77: CS101 temperatures (file *.04d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.04d	10-minute report

Tab. 78: CS101 temperatures (file *.04d) – field names

Field name	Description (CS101 temperatures, *.04d)	unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr101A75	System 1 converter 1 control cabinet temperature	°C
mr101A84	System 1 converter 2 control cabinet temperature	°C
mr101A93	System 1 converter 3 control cabinet temperature	°C
mr101A102	System 1 converter 4 control cabinet temperature	°C
mr101A111	System 1 converter 5 control cabinet temperature	°C
mr101A120	System 1 converter 6 control cabinet temperature	°C
mr101A129	System 1 converter 7 control cabinet temperature	°C
mr101A138	System 1 converter 8 control cabinet temperature	°C
mr101A147	System 1 converter 9 control cabinet temperature	°C
mr101A156	System 1 converter 10 control cabinet temperature	°C
mr101A165	System 1 converter 11 control cabinet temperature	°C
mr101A174	System 1 converter 12 control cabinet temperature	°C
mr101A183	System 1 converter 13 control cabinet temperature	°C
mr101A192	System 1 converter 14 control cabinet temperature	°C
mr101A225	System 1 converter 15 control cabinet temperature	°C
Second	Second (data record generation)	s

8.3.17.8 Temperatures CS126

Tab. 79: CS126 temperatures (file *.15d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data

File path	Name/Content
LOC_#\yyyy\mm\dd\yyyymmdd.15d	10-minute report

Tab. 80: CS126 temperatures (file *.15d) – field names

Field name	Description (CS126 temperatures, *.15d)	Unit
Date	Date (data record generation) or configuration date	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr112A0	Spinner temperature	°C

Field name	Description (CS126 temperatures, *.15d)	Unit
mr112A2	Front bearing temperature	°C
mr112A3	Rear bearing temperature	°C
mr112A17	Pitch control cabinet A temperature	°C
mr112A18	Pitch control cabinet B temperature	°C
mr112A19	Pitch control cabinet C temperature	°C
mr112A20	Blade A 1 temperature	°C
mr112A21	Blade A 2 temperature	°C
mr112A22	Blade B 1 temperature	°C
mr112A23	Blade B 2 temperature	°C
mr112A24	Blade C 1 temperature	°C
mr112A25	Blade C 2 temperature	°C
mr112A26	Rotor 1 temperature	°C
mr112A27	Rotor 2 temperature	°C
mr112A28	Stator 1.1 temperature	°C
mr112A29	Stator 2.1 temperature	°C
mr112A40	Heat sink rectifier 1.1 temperature	°C
mr112A41	Rectifier heat sink 1.2 temperature	°C
mr112A42	Rectifier heat sink 2.1 temperature	°C
mr112A43	Rectifier heat sink 2.2 temperature	°C
mr112A44	Rectifier heat sink 3.1 temperature	°C
mr112A45	Rectifier heat sink 3.2 temperature	°C
mr112A46	Rectifier heat sink 4.1 temperature	°C
mr112A47	Rectifier heat sink 4.2 temperature	°C
mr112A48	Nacelle outside temperature 1	°C
mr112A49	Nacelle inside temperature	°C
mr112A50	Nacelle control cabinet temperature	°C
mr112A55	Control cabinet excitation temperature	°C
mr112A56	Yaw inverter control cabinet temperature	°C
mr112A64	Outside floor temperature	°C
mr112A65	Tower temperature	°C
mr112A66	Control cabinet temperature	°C
mr112A67	Transformer system 1 temperature	°C
mr112A68	Transformer system 2 temperature	°C
mr112A69	Transformer system 3 temperature	°C
mr112A70	Transformer system 4 temperature	°C
mr112A301	Nacelle fan inverter control cabinet temperature	°C

Field name	Description (CS126 temperatures, *.15d)	Unit
mr112A302	Nacelle outside temperature 2	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

Tab. 81: CS126 temperatures (file *.16d) – file path

Location	ENERCON SCADA Remote 3 – data request	
Group	Data	
File path		**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.16d		10-minute report

Tab. 82: CS126 temperatures (file *.16d) – field names

Field name	Description (CS126 temperatures, *.16d)	Unit
Date	Date (data record generation) or configuration date	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr112A79	System 1 converter 1 control cabinet temperature	°C
mr112A88	System 1 converter 2 control cabinet temperature	°C
mr112A97	System 1 converter 3 control cabinet temperature	°C
mr112A106	System 1 converter 4 control cabinet temperature	°C
mr112A115	System 1 converter 5 control cabinet temperature	°C
mr112A124	System 2 converter 1 control cabinet temperature	°C
mr112A133	System 2 converter 2 control cabinet temperature	°C
mr112A142	System 2 converter 3 control cabinet temperature	°C
mr112A151	System 2 converter 4 control cabinet temperature	°C
mr112A160	System 2 converter 5 control cabinet temperature	°C
mr112A259	System 1 converter 6 control cabinet temperature	°C
mr112A268	System 2 converter 6 control cabinet temperature	°C
mr112A315	System 1 converter 7 control cabinet temperature	°C
mr112A324	System 1 converter 8 control cabinet temperature	°C
mr112A333	System 2 converter 7 control cabinet temperature	°C
mr112A342	System 2 converter 8 control cabinet temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

Tab. 83: CS126 temperatures (file *.17d) – file path

Location	ENERCON SCADA Remote 3 – data request

Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.17d	10-minute report

Tab. 84: CS126 temperatures (file *.17d) – field names

Field name	Description (CS126 temperatures, *.17d)	Unit
Date	Date (data record generation) or configuration date	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mr112A169	System 3 converter 1 control cabinet temperature	°C
mr112A178	System 3 converter 2 control cabinet temperature	°C
mr112A187	System 3 converter 3 control cabinet temperature	°C
mr112A196	System 3 converter 4 control cabinet temperature	°C
mr112A205	System 3 converter 5 control cabinet temperature	°C
mr112A214	System 4 converter 1 control cabinet temperature	°C
mr112A223	System 4 converter 2 control cabinet temperature	°C
mr112A232	System 4 converter 3 control cabinet temperature	°C
mr112A241	System 4 converter 4 control cabinet temperature	°C
mr112A250	System 4 converter 5 control cabinet temperature	°C
mr112A277	System 3 converter 6 control cabinet temperature	°C
mr112A286	System 4 converter 6 control cabinet temperature	°C
mr112A351	System 3 converter 7 control cabinet temperature	°C
mr112A360	System 3 converter 8 control cabinet temperature	°C
mr112A369	System 4 converter 7 control cabinet temperature	°C
mr112A378	System 4 converter 8 control cabinet temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

8.3.17.9 Temperatures EP3-CS-02

Tab. 85: EP3-CS-02 temperatures (file *.36d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.36d	10-minute report

Tab. 86: EP3-CS-02 temperatures (file *.36d) – field names

Field name	Description (EP3-CS-02 temperatures, *.36d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mrEP3A0	Spinner temperature	°C
mrEP3A1	Front bearing temperature	°C
mrEP3A2	Rear bearing temperature	°C
mrEP3A15	Electrical cabinet A temperature	°C
mrEP3A16	Electrical cabinet B temperature	°C
mrEP3A17	Electrical cabinet C temperature	°C
mrEP3A21	Blade A temperature	°C
mrEP3A22	Blade B temperature	°C
mrEP3A23	Blade C temperature	°C
mrEP3A24	Rotor 1 temperature	°C
mrEP3A25	Rotor 2 temperature	°C
mrEP3A30	Cooling water temperature	°C
mrEP3A31	Hub height outside temperature 1	°C
mrEP3A33	Nacelle temperature	°C
mrEP3A34	Nacelle control cabinet temperature	°C
mrEP3A36	Main carrier temperature	°C
mrEP3A43	Yaw inverter control cabinet temperature	°C
mrEP3A60	Nacelle fan inverter control cabinet temperature	°C
mrEP3A80	Outside floor temperature	°C
mrEP3A81	Tower temperature	°C
mrEP3A82	Control cabinet temperature	°C
mrEP3A83	Transformer temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

Tab. 87: EP3-CS-02 temperatures (file *.37d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.37d	10-minute report

Tab. 88: EP3-CS-02 temperatures (file *.37d) – field names

Field name	Description (EP3-CS-02 temperatures, *.37d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mrEP3A97	Converter 1 electrical cabinet temperature	°C
mrEP3A107	Converter 2 electrical cabinet temperature	°C
mrEP3A118	Converter 3 electrical cabinet temperature	°C
mrEP3A129	Converter 4 electrical cabinet temperature	°C
mrEP3A140	Converter 5 electrical cabinet temperature	°C
mrEP3A151	Converter 6 electrical cabinet temperature	°C
mrEP3A162	Converter 7 electrical cabinet temperature	°C
mrEP3A173	Converter 8 electrical cabinet temperature	°C
mrEP3A184	Converter 9 electrical cabinet temperature	°C
mrEP3A195	Converter 10 electrical cabinet temperature	°C
mrEP3A206	Converter 11 electrical cabinet temperature	°C
mrEP3A217	Converter 12 electrical cabinet temperature	°C
mrEP3A227	Converter 13 electrical cabinet temperature	°C
mrEP3A238	Converter 14 electrical cabinet temperature	°C
mrEP3A249	Converter 15 electrical cabinet temperature	°C
mrEP3A260	Converter 16 electrical cabinet temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

8.3.17.10 Temperatures EP4-CS-01

Tab. 89: EP4-CS-01 temperatures (file *.22d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.22d	10-minute report

Tab. 90: EP4-CS-01 temperatures (file *.22d) – field names

Field name	Description (EP4-CS-01 temperatures, *.22d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h

Field name	Description (EP4-CS-01 temperatures, *.22d)	Unit
Minute	Minute (data record generation)	min
mrEP4A0	Spinner temperature	°C
mrEP4A1	Front bearing temperature	°C
mrEP4A2	Rear bearing temperature	°C
mrEP4A31	Pitch control cabinet A temperature	°C
mrEP4A32	Pitch control cabinet B temperature	°C
mrEP4A33	Pitch control cabinet C temperature	°C
mrEP4A34	Blade A 1 temperature	°C
mrEP4A38	Blade B 1 temperature	°C
mrEP4A42	Blade C 1 temperature	°C
mrEP4A46	Rotor 1 temperature	°C
mrEP4A47	Rotor 2 temperature	°C
mrEP4A50	Stator winding overhang temperature, front	°C
mrEP4A52	Cooling water temperature	°C
mrEP4A61	Rectifier control cabinet 1.1 temperature	°C
mrEP4A62	Rectifier control cabinet 1.2 temperature	°C
mrEP4A63	Rectifier control cabinet 2.1 temperature	°C
mrEP4A64	Rectifier control cabinet 2.2 temperature	°C
mrEP4A65	Rectifier control cabinet 3.1 temperature	°C
mrEP4A66	Rectifier control cabinet 3.2 temperature	°C
mrEP4A67	Rectifier control cabinet 4.1 temperature	°C
mrEP4A68	Rectifier control cabinet 4.2 temperature	°C
mrEP4A69	Hub height outside temperature 1	°C
mrEP4A71	Nacelle temperature	°C
mrEP4A72	Nacelle control cabinet temperature	°C
mrEP4A73	Main carrier temperature	°C
mrEP4A81	Yaw inverter electrical cabinet temperature	°C
mrEP4A98	Nacelle fan inverter heat sink temperature	°C
mrEP4A113	Outside floor temperature	°C
mrEP4A114	Tower temperature	°C
mrEP4A115	Control cabinet temperature	°C
mrEP4A116	Transformer system 1 temperature	°C
mrEP4A117	Transformer system 2 temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

Tab. 91: EP4-CS-01 temperatures (file *.23d) – file path

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.23d	10-minute report

Tab. 92: EP4-CS-01 temperatures (file *.23d) – field names

Field name	**Description (EP4-CS-01 temperatures, *.23d)**	**Unit**
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mrEP4A128	System 1 converter 1 control cabinet temperature	°C
mrEP4A137	System 1 converter 2 control cabinet temperature	°C
mrEP4A146	System 1 converter 3 control cabinet temperature	°C
mrEP4A155	System 1 converter 4 control cabinet temperature	°C
mrEP4A164	System 1 converter 5 control cabinet temperature	°C
mrEP4A173	System 1 converter 6 control cabinet temperature	°C
mrEP4A182	System 1 converter 7 control cabinet temperature	°C
mrEP4A191	System 1 converter 8 control cabinet temperature	°C
mrEP4A200	System 1 converter 9 control cabinet temperature	°C
mrEP4A209	System 1 converter 10 control cabinet temperature	°C
mrEP4A218	System 2 converter 1 control cabinet temperature	°C
mrEP4A227	System 2 converter 2 control cabinet temperature	°C
mrEP4A236	System 2 converter 3 control cabinet temperature	°C
mrEP4A245	System 2 converter 4 control cabinet temperature	°C
mrEP4A254	System 2 converter 5 control cabinet temperature	°C
mrEP4A263	System 2 converter 6 control cabinet temperature	°C
mrEP4A272	System 2 converter 7 control cabinet temperature	°C
mrEP4A281	System 2 converter 8 control cabinet temperature	°C
mrEP4A290	System 2 converter 9 control cabinet temperature	°C
mrEP4A299	System 2 converter 10 control cabinet temperature	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

8.3.17.11 Temperatures EP5-CS-03

Tab. 93: EP5-CS-03 temperatures (file *.52d) – file path

Location	ENERCON SCADA Remote 3 – Data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\mm\dd\yyyymmdd.52d	10-minute report

Tab. 94: EP5-CS-03 temperatures (file *.52d) – field names

Field name	Description (EP5-CS-03 temperatures, *.52d)	Unit
Date	Date (data record generation)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Minute	Minute (data record generation)	min
mrEP5A15	Temperature hub air 1	°C
mrEP5A46	Temperature generator outcomming air	°C
mrEP5A58	Temperature main bearing rotating 1	°C
mrEP5A59	Temperature nacelle outside	°C
mrEP5A60	Temperature nacelle inside	°C
mrEP5A70	Temperature MV room incomming air	°C
mrEP5A71	Temperature MV room outcomming air	°C
mrEP5A72	Temperature MV transformer bottom	°C
mrEP5A73	Temperature tower base inside air top	°C
mrEP5A74	Temperature tower base inside air bottom	°C
mrEP5A76	Temperature tower top cables	°C
mrEP5A88	Temperature converter cooling water out	°C
mrEP5A89	Temperature converter cooling water in	°C
mrEP5A90	Temperature converter air outlet 2	°C
mrEP5A95	Temperature phase L1 difference LSU	°C
mrEP5A96	Temperature phase L2 difference LSU	°C
mrEP5A97	Temperature phase L3 difference LSU	°C
mrEP5A98	Temperature phase L1 difference INU	°C
mrEP5A99	Temperature phase L2 difference INU	°C
mrEP5A100	Temperature phase L3 difference INU	°C
mrEP5A101	Temperature converter line PP	°C
PlantNo	Plant number	
Second	Second (data record generation)	s

8.3.18 Transmission substation temperatures

Tab. 95: Transmission substation temperatures (file *.ut*) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\00000000.utr	Current daily report
LOC_#\00000000.utw	Current weekly report
LOC_#\00000000.utm	Current monthly report
LOC_#\00000000.uty	Current annual report
LOC_#\yyyy0000.utm	Monthly report
LOC_#\yyyy0000.uty	Annual report
LOC_#\yyyy\yyyymm00.utr	Daily report
LOC_#\yyyy\yyyymm00.utw	Weekly report
LOC_#\yyyy\mm\yyyymmdd.utd	10-minute report

Tab. 96: Transmission substation temperatures (file *.ut*) – field names

Field name	**Description (transmission substation temperatures, *.ut*)**	**Unit**
Date	Date (data record generation)	
Date0	Date with suffixed index *0-n* (date on which event occurred)	
Error	Number of sampling values not received	%
Hour	Hour (data record generation)	h
Hour0	Hour with suffixed index *0-n* (hour at which event occurred)	h
lruwSmpT1	Minimum transformer temperature 1	°C
lruwSmpT10	Minimum outside temperature 2	°C
lruwSmpT11	Minimum free temperature 1	°C
lruwSmpT12	Minimum free temperature 2	°C
lruwSmpT2	Minimum transformer temperature 2	°C
lruwSmpT3	Minimum transformer temperature 3	°C
lruwSmpT4	Minimum transformer temperature 4	°C
lruwSmpT5	Minimum room temperature 1	°C
lruwSmpT6	Minimum room temperature 2	°C
lruwSmpT7	Minimum room temperature 3	°C
lruwSmpT8	Minimum room temperature 4	°C
lruwSmpT9	Minimum outside temperature 1	°C
Minute	Minute (data record generation)	min

Field name	Description (transmission substation temperatures, *.ut*)	Unit
Minute0	Minute with suffixed index *0-n* (minute at which event occurred)	min
mruwSmpT1	Average transformer temperature 1	°C
mruwSmpT10	Average outside temperature 2	°C
mruwSmpT11	Average free temperature 1	°C
mruwSmpT12	Average free temperature 2	°C
mruwSmpT2	Average transformer temperature 2	°C
mruwSmpT3	Average transformer temperature 3	°C
mruwSmpT4	Average transformer temperature 4	°C
mruwSmpT5	Average room temperature 1	°C
mruwSmpT6	Average room temperature 2	°C
mruwSmpT7	Average room temperature 3	°C
mruwSmpT8	Average room temperature 4	°C
mruwSmpT9	Average outside temperature 1	°C
PlantNo	Plant number	
pruwSmpT1	Maximum transformer temperature 1	°C
pruwSmpT10	Maximum outside temperature 2	°C
pruwSmpT11	Maximum free temperature 1	°C
pruwSmpT12	Maximum free temperature 2	°C
pruwSmpT2	Maximum transformer temperature 2	°C
pruwSmpT3	Maximum transformer temperature 3	°C
pruwSmpT4	Maximum transformer temperature 4	°C
pruwSmpT5	Maximum room temperature 1	°C
pruwSmpT6	Maximum room temperature 2	°C
pruwSmpT7	Maximum room temperature 3	°C
pruwSmpT8	Maximum room temperature 4	°C
pruwSmpT9	Maximum outside temperature 1	°C
Sample	Number of samples	
Second	Second (data record generation)	s
Second0	Second with suffixed index *0-n* (second at which event occurred)	s

8.3.19 Bat Protection control actions

Tab. 97: Bat Protection control actions (file *.btt) – file paths

Location	ENERCON SCADA Remote 3 – data request
Group	Data
File path	**Name/Content**
LOC_#\yyyy\yyyymm00.btt	Monthly report

Tab. 98: Bat Protection control actions (file *.btt) – filed names

Field name	Description
Date	Date
Hour	Hour
Minute	Minute
Second	Second
Error	Error code
Line	Number of configuration line
PlantNo	Plant number of controlled wind energy converter
Control	Control action (stop), an empty field indicates that the wind energy converter is not being stopped by Bat Protection.
StartTime	Configured start time (with absolute time or the calculated time)
EndTime	Configured end time (with absolute time or the calculated time)
Sunset	Calculated sunset
Sunrise	Calculated sunrise
DataType	Data type, sensor type (wind speed, nacelle position, etc.)
ActVal	Measured value (current sensor value, average value)
Operator	Comparison operator
ConfigVal	Configured shutdown value
TestBit	Indicates the status of the test mode: ■ 0: Test mode inactive ■ 1: Test mode active
State	Main status of the wind energy converter
SubState	Substatus of the wind energy converter
Info	Free text field

Tables

Glossary of terms

dBASE	File-based database management system for personal computers.
DNS	Domain Name System (DNS) is a network service whose main purpose is to respond to requests for name resolution. For example, host name "www.enercon.de" returns an IP address following the pattern "192.0.2.55".
Dongle	Connector which, in combination with a user name and a password, is used to uniquely identify a user, define the user level and provide protection from unauthorised use of software.
ENERCON SCADA FCU	The superordinate wind farm control unit registers the voltage and the power injected at a reference point and uses these values to compute the actual values of the controlled variables, e.g. active and reactive power. The difference to the prescribed setpoints is used to generate the respective actuating variables, and they are sent to the wind turbines in the wind farm via a data bus.
ENERCON SCADA Remote	The ENERCON SCADA Remote software can be used to display plant data from an ENERCON wind farm in real time and to transmit collected and stored data to an external computer for offline analysis.
ENERCON SCADA RTU-C	Wind farm controller that can control a wind farm relative to the actual parameter at the NCP.
ENERCON SCADA server	The ENERCON SCADA server is a personal computer installed in the wind farm with a special software. It fulfils a variety of wind farm communication, open-loop control and closed-loop control system functions. It is the central interface through which the wind farm operator/owner, the grid operator and ENERCON Service receive up-to-date and archived operating data.
Online	Active connection to a communication network e.g. the ENERCON SCADA Server.
PCM	ENERCON SCADA Power Consumption Management is used to limit the power consumption of ENERCON wind energy converters at the point of connection to a predefined value.
Plug and Play (PnP)	Automatic installation of drivers by the system after new devices have been connected to the computer.
SCADA	System for data acquisition, remote monitoring and open-loop/ closed-loop control both in individual wind turbines and entire wind farms. It enables the user to monitor operating states and analyse stored operating data.