Operating Instructions

Data Logger DL.OCS, Software and Accessories
Software and Firmware Release 3.1.0.0

Doc-No. 10.00.0392

Version: 29.08.2017

These operating instructions must be read by the operator before operation and installation!

Translation of the original operating conditions

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1 Introduction

1.1 Requirements/Basics

You need basic knowledge on the Microsoft Windows operating system to understand these operating instructions. In the interest of a good overview and legibility, standard functions, such as file functions, are not explained in these instructions.

1.2 Abbreviations

Abbreviation	Meaning
DL	Data logger
OCS	Product is based on OCS technology
USB	Universal serial bus
RS-485	Serial bus for data transmission with the DL.OCS
MSR	Data series
GUI	Graphical user interface

Tab. 1: Abbreviations

1.3 Limitation of Liability

All information and notes in these instructions have been put together under consideration of the applicable standards and provisions, the state of the art and our many years of insights and experiences.

The manufacturer assumes no liability for damage due to:

- Non-observation of these instructions
- Non-intended use
- Use of untrained staff
- Unauthorized conversions
- Technical changes
- Use of unapproved replacement parts

The actual scope of delivery may deviate from the expectations and illustrations here in special designs, utilization of additional order options or due to the latest technical changes.

Apart from this, the obligations agreed on in the supply contract, the general terms and conditions and the delivery conditions of the manufacturer and the statutory rules applicable at the time of conclusion of the contract shall apply.

Warranty

The manufacturer guarantees the function of the applied process technology and the published performance parameters.

The warranty period shall commence at the time of delivery of the device to the customer.

Components shall be excluded from the guarantee and claims for defects if the damage has been caused by the user.

1.4 Copyright protection

The operating instructions must not be provided to any third parties without the written consent of the manufacturer.

NOTE!

The content, texts, drawings, pictures and other illustrations are copyright-protected and subject to the commercial property rights. Any abusive utilization is punishable.

Reproductions of any kind and form - even in excerpts - as well as use and/or disclosure of the contents shall not be permitted without written consent of the manufacturer.

1.5 Spare parts

ATTENTION!

Wrong or defective spare parts may cause damage, malfunction or total failure.

Therefore:

→ Only use genuine spare parts from the manufacturer.

Purchase spare parts through the authorized dealer or directly from the manufacturer. Address on the reverse page.

1.6 Guarantee

For guarantee, see "General terms and conditions".

1.7 Customer service

STS provides Global support either directly or through its worldwide group of partners.

Details of your local contact can be obtained by contacting us directly via phone, fax or email provided on the last page.

1.8 Registered trademarks

Microsoft®, Windows®, Windows Vista® and the Windows logo are registered trademarks of Microsoft Corporation in the United States of America and/or in other countries.

Any other brand and product names are registered trademarks of the respective companies and organizations.

2 Safety

2.1 Intended use

The data logger DL.OCS is only intended for remote long-term monitoring of liquid levels (e. g. potable water, sewage).

The use of corrosive materials is only possible with limitations.

Application and media compatibility must be discussed with STS before commissioning or when ordering.

Use in salt or brackish water is only recommended for the data logger with titanium housing.

Only use the device according to the technical data (see data sheet).

Use the data logger as intended.
The operating instructions should be complied with.

The user will be responsible for any damage incurred through non-intended use.

2.2 Explanation of symbols

Warning notes

Warning notes are marked with symbols in these operating instructions. The notes are associated with words that express the scope of the danger.
Comply with the notes and act with caution to avoid accidents, injury and property damage.

ATTENTION!

… indicates a potentially dangerous situation that may cause slight or minor injury if not avoided.

CAUTION!

… indicates a potentially dangerous situation that may cause property damage if not avoided.

Advice and recommendations

NOTE!

… highlights useful advice and recommendations, as well as information for efficient and interference-free operation.

3 Product overview

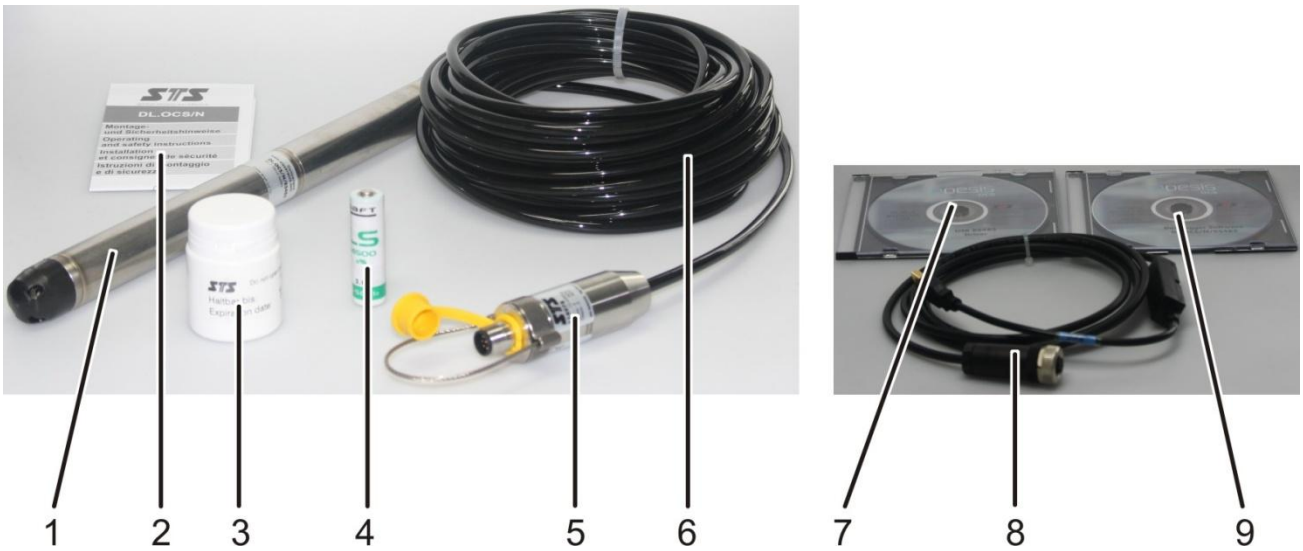

Fig. 1: Product overview data logger DL.OCS

1	Data logger	6	Data logger cable
2	Mounting and safety notes	7	USB driver
3	Spare desiccant	8	Adapter cable USB/RS485
4	Spare battery	9	DL.OCS Application PC Software
5	Connection housing		

There are different variations of the data logger:

- Housing of stainless steel or titanium
- With or without conductivity probe
- With battery supply or external power supply via Y-cable. The variation with external supply also has a battery for bridging if the power supply is interrupted.
- Various process connections (closed or for screwing into a system)
- Absolute design (without cables and connection housings, the adapter cable is connected right to the data logger)

3.1 Typical applications

On-site monitoring of the levels of ground water, potable water and surface waters (data must be read out on site)

- Monitoring of surface waters, such as rivers, lakes, salt or brackish water
- Monitoring of water quality/salt content
- Tide monitoring
- Monitoring ground water lowering or raising
- Hydrological preliminary examination for construction projects

4 Installation and commissioning

4.1 Commissioning of the data logger

4.1.1 Unpacking

The data logger is delivered in custom packaging that protects it under regular transport conditions. Check the packaging for external damage. Take out the data logger carefully.

4.1.2 Safety notes

CAUTION!
Check the values on the rating plate, and particularly the pressure range. These values must correspond to the required technical data. The seals are made of Viton (FPM), unless the order confirmation states differently.

ATTENTION!
Have your device installed by specialists. Observe the national safety provisions when installing and operating the data logger.

CAUTION!
Excessive vibrations, impact and pressure peaks may falsify measurements and damage the data logger.

CAUTION!
Use a data logger with titanium housing in case of abrasive material or salt water.

CAUTION!
Observe that the battery housing is completely closed after installation (no seals visible).

4.1.3 Notes on installation

ATTENTION!
There is a danger of injury when screwing the data logger directly into a pressurized system!

Connect the data logger to depressurized systems only.

NOTE!

Some data loggers are delivered with a yellow protective cap for the pressure connection. Remove the cap before you use the data logger.

- Do not install the data logger in the direct proximity of motors, pumps, valves, heat sources or other possible interference sources.
- Protect the membranes from damage. Do not touch the membranes.
- Data logger with cable exit: Avoid damage to the cable jacket. Observe the maximum permitted medium temperature of the cable referenced on the data sheet.
- Do not kink/excessively bend the cable or route it over sharp edges. Avoid abrasion of the cable.
- Keep tension of the cable and the cable socket to the minimum.
- Observe a max. tightening torque of 20 Nm when screwing the data logger into a system!
- Avoid the formation of ice in the protective cap of the data logger. Ice falsifies the measuring accuracy and may cause destruction of the membrane.
- The data logger is provided with a breather to provide relative compensation of pressure. Avoid clogging of this and its placement in a high relative humidity location (see Fig. 2).

Fig. 2: Breather for relative compensation at the connection housing

CAUTION!

Ensure that the connection at the data logger is closed again carefully with the yellow protective cap after disconnecting the cable from the data logger!

NOTE!

When inserting a new battery into the data logger, the time is reset to 2000-01-01.

At initial commissioning, the data logger must be configured via the software by an administrator; see chapter 5.4.2.

4.1.4 Installing the data logger

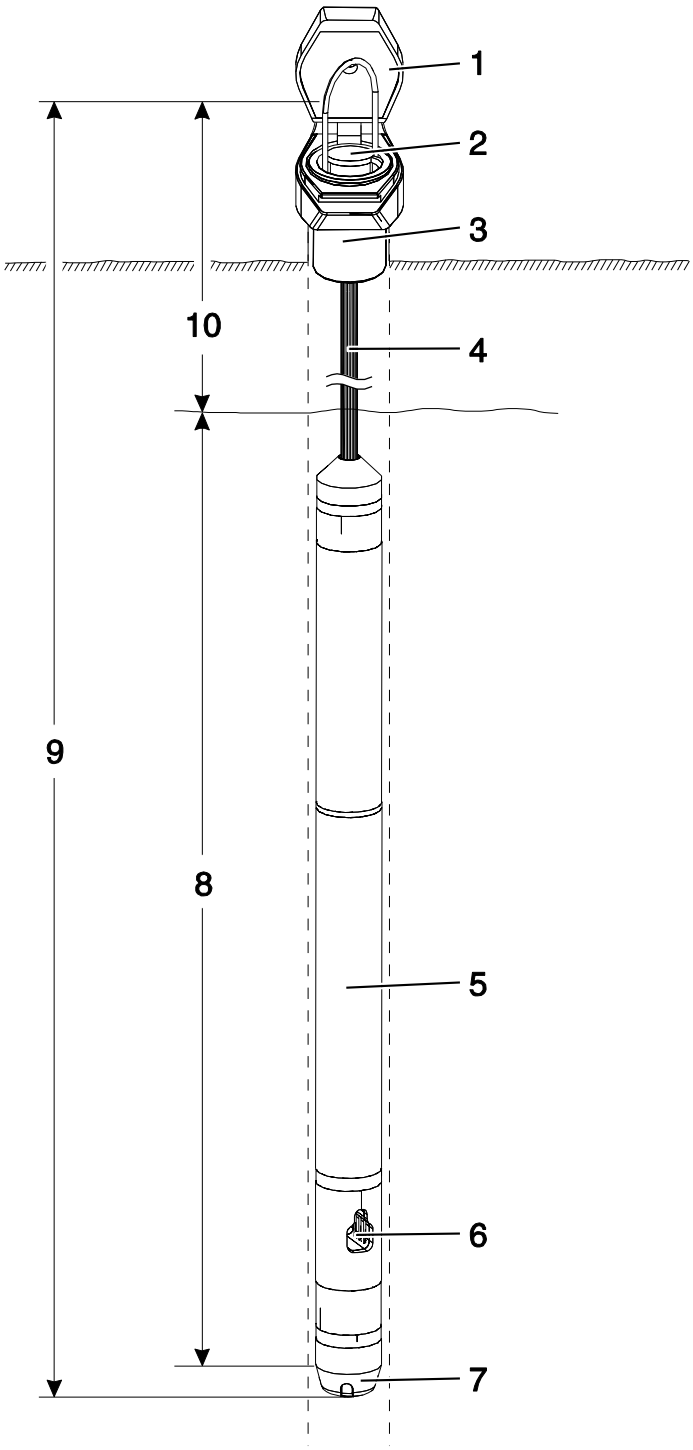

Fig. 3: Setup of a measuring point

1	Closure cap	6	Conductivity probe
2	Connection housing	7	Pressure sensor for level
3	Plastic insert	8	Measuring range
4	Data logger cable	9	System length
5	Data logger	10	Depth to water

The data logger is installed by suspension in a monitoring well or similar (observation well).
If the data logger is to be screwed into a system for an industrial application, please contact your STS sales partner.

- Installation material (closure caps, adapter plates/flanges, etc.) for the data logger can be purchased from STS; contact your STS sales partner.
- There are closure caps for measuring wells with a diameter of 2" and 4".

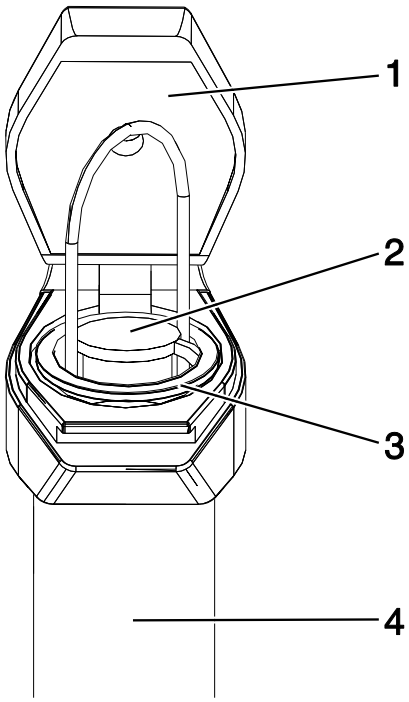

Fig. 4: Installation with closure cap 2" on monitoring well 2"

1	Closure cap 2"	3	Plastic insert
2	Connection housing of the data logger	4	Monitoring well 2"

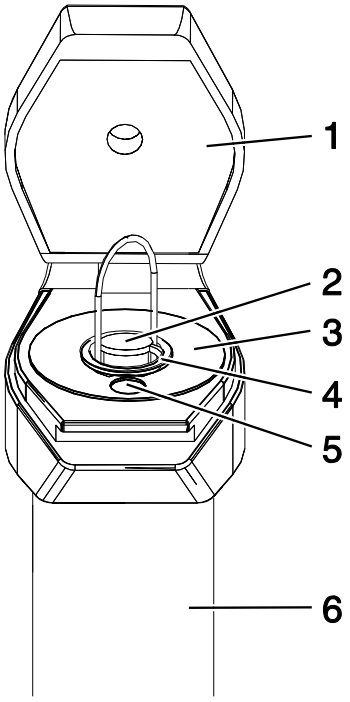

Fig. 5: Installation with closure cap 4" on monitoring well 4"

1	Closure cap 4"	4	Plastic insert
2	Connection housing of the data logger	5	Opening for contact gauges
3	Adapter disc 4"	6	Monitoring well 4"

- Use the adapter plate/flange for installation on monitoring wells with a diameter of 2" to 4.5". Adapter plates are available with a cut-out for contact gauges for reference measurement.

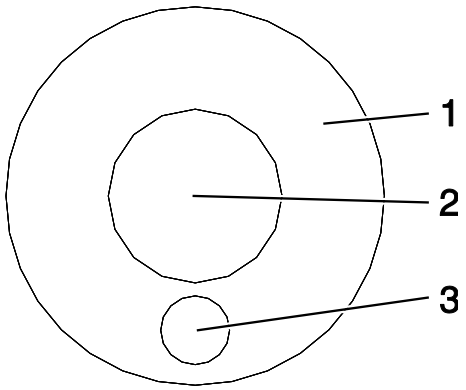

Fig. 6: Adapter disc for closure cap 4"

1 Adapter disc 4"
2 Opening 2" for plastic insert
3 Opening for contact gauges

- The plastic insert is directly suspended in the closure cap or the adapter plate/flange.
- Determine current depth to water with contact gauges and write it down. The depth to water is needed for the later configuration of the data logger.
- Before immersing the data logger in the measuring well, insert the battery into the data logger (see chapter 6.2) and remove the yellow protection cap from the pressure connection (if present).
- Route the data logger and data logger cable through the plastic insert from above. Slowly and carefully lower the data logger into the measuring well until the data logger is suspended from the connection housing in the plastic insert.
- Close closure cap.

If you have any questions/problems, contact your STS sales partner.

4.2 Installation of the DL.OCS Application PC Software

4.2.1 System Requirements

Type	Prerequisites	
PC, Notebook, Netbook	**At least:** x86 CPU with dual core, 1.6 GHz Hard disc memory 10 GB 2 GB RAM	**Recommended:** Intel Core i5 or equal Hard disc memory 10 GB 8 GB RAM Windows 7 or above (64-Bit)
Tablet computer	Runs only on x86-computers under Microsoft Windows. If you want to use the DL.OCS Application PC software on a tablet computer, contact your STS sales partner.	
Operating system	Microsoft Windows XP SP3, Windows 7, Windows 8, Windows 8 Pro (32- or 64-Bit)	
Software	DL.OCS Application PC software installation DVD or downloaded installation package	
Driver	Adapter cable driver USB<->RS485 on DVD or as driver installation package	

Tab. 2: System Requirements

NOTE!

Observe that your Windows system is up to date with all patches!

NOTE!

This software does not work with Windows 8 RT (a special version of Windows 8 for tablet computers with ARM processor).

4.2.2 Notes on installation

ATTENTION!
Danger of data loss!

When the software is installed on a computer for the first time, the installation program will reboot the computer without warning. This may cause data loss!

Therefore:

→ Save your data and close all other applications before starting the installation program!

NOTE!

Deactivate virus scanners and other safety services during installation.

- If Windows (UAC, firewall) or other safety and access control tools ask you to grant access to applications, services and web servers (e.g. uhttpd.exe) and to permit them to start during installation, confirm this prompt and, if applicable instruct your software to remember this choice. For more information, see chapter 7.1.2.
- The software must be installed by an administrator.
- All configurations in the software, including database and administrator password, are saved individually for the logged-on operator.
- An internet connection is recommended for installation of the driver for the adapter cable. The drivers are also enclosed on the DL.OCS Application PC Software-DVD.

If any problems occur in installation, see chapter 7.1.

4.2.3 Process of the installation

1. Switch on the computer.
2. Connect the computer to the data logger DL.OCS via the adapter cable USB/RS485.
3. Install the drivers for the adapter cable, see chapter 4.2.3.1.
4. Close all browsers and install the DL.OCS Application PC Software from the enclosed DVD, see chapter 4.2.3.2.
5. At initial commissioning, the data logger must be configured via the software by an administrator; see chapter 5.4.2.
6. Then data series can be drawn up, see chapter 5.4.3.

4.2.3.1 Install the drivers for the adapter cable.

The data logger is connected to the enclosed adapter cable USB/RS485. If you have not installed any drivers for this device yet, you should do this now.

The drivers are enclosed on the DL.OCS Application PC Software-DVD. Use the current drivers (USB/RS485 drivers CDM 2.08.24 with WHQL-certification).

Installation instructions

1. Switch on the computer (without connected USB adapter!) and connect the adapter for USB-/RS485 to a free USB port after start-up.
2. (If possible) the computer should be connected to the Internet.
3. The window "New hardware found" is displayed.
4. Let Windows look online for the required drivers.
   - Usually, Windows will be able to find functional drivers online and install them automatically.
   - If this is not the case, install a suitable driver for your Windows installation from the enclosed DL.OCS Application PC Software-DVD.
5. Drivers for the adapter USB/RS485 and for the serial port or USB port must be installed. Therefore, the installation wizard appears twice.
6. Reboot your computer after installation of the driver even if the installation wizard does not expressly ask you to.

Some Windows installations will ask you to insert a CD-ROM for the driver installation as soon as you connect a new USB <-> RS485 adapter cable. Keep the CD-ROM at hand or copy the driver directory to the computer.

Installation of the drivers is a task that is monitored precisely by the safety systems of Microsoft Windows and virus scanners and safety packs. During this process, an administrator with computer-technical specialist knowledge should be available.

Installation of these drivers in Windows 8 is possible, but special instructions of the hardware manufacturer must be observed, since its drivers are not signed by Microsoft. When you start a DL.OCS under Windows 8, please inform your STS sales partner before starting installation so that we can organize seamless support for you.

4.2.3.2 Installation of the DL.OCS Application PC Software

Save your data and close all other applications before starting the installation program!

Insert the DL.OCS Application PC Software-DVD into the computer's DVD drive.

The installation program starts automatically.
If the installation program does not start automatically, start setup.exe in Windows Explorer.

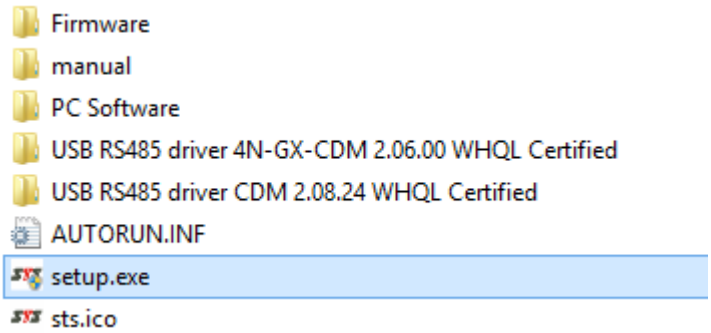

Fig. 7: Software directory with setup.exe

Click "Install DL.OCS Application PC Software" to start the installation.

Fig. 8: Installation screen

After successful installation, the desktop shows the symbol "DL.OCS Application PC Software".

Fig. 9: Desktop symbol

The desktop symbol can be used to start the software. The start/stop screen opens.

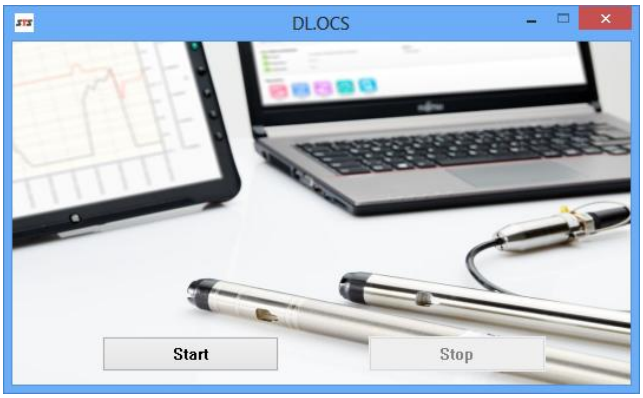

Fig. 10: Start/stop screen

5 Operation

NOTE!

For system-related reasons, the screenshots in these instructions may deviate from the ones actually displayed.

5.1 Access to the software

5.1.1 Connecting the software and data logger

For the software to recognize the adapter cable USB<->RS485 and the data logger, the cable must be connected to the data logger and the computer/tablet before you start the DL.OCS Application PC Software!

CAUTION!

Ensure that the connection at the data logger is closed again carefully with the yellow protective cap after disconnecting the cable from the data logger!

NOTE!

Only one data logger at a time can be connected to the computer and the software!

NOTE!

The cable must be connected directly to the computer/tablet. The reading cable must not be connected to a USB-HUB.

NOTE!

If the data logger with external power supply has been disconnected from the power supply for an extended period, its system clock is reset to 2000-01-01 and must be set again according to chapter 5.4.2.1.

5.1.2 Starting the software

CAUTION!

Close all running browsers before starting the DL.OCS Application PC Software. Otherwise, a conflict may occur with the enclosed browser "SRWare Iron Portable"!

When the DL.OCS Application PC Software has been started, the start button starts the enclosed program "SRWare Iron Portable".

5.2 Login screen

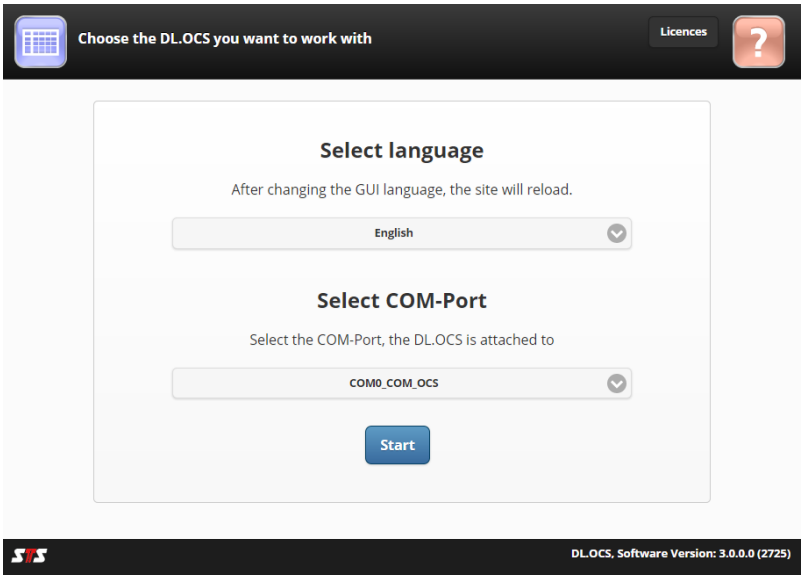

Fig. 11: Login screen

Select the language of the user interface from the drop-down list "Select language". The page is reloaded.

From the dropdown list "Select COM-Port" (list of all active COM ports), select the COM port to which the data logger with the adapter cable is connected. The COM port is marked "USB Serial Port". If it is unclear to which COM port the data logger is connected, see chapter 7.2.1.

Push "Start". The start page for the operator (see chapter 5.5) or administrator (see chapter 5.4) opens, depending on which one was last active.

5.3 General notes on the user interface

5.3.1 Header

Fig. 12: Header

The header is present in all OCS software modules. The name of the data logger and the current page are displayed.

The header gives you access to different functions of the respective module. The data logger module has the following functions:

- "Choose the device": Return to the login screen for selection of the data logger and to change the language.
- "Overview" Return to the start page
- "Administrator"/"Operator": Changing the operator role (from administrator to operator and vice versa – see chapter 5.3.3). The operator role to which you can switch is displayed.
- "SW Settings": Changing the language of the graphical user interface, the administrator password or the network settings (for administrator only).
- "Licenses": Call the license texts as a PDF, provided that a PDF reader is installed.
- "?": Call the operating instructions as a PDF, provided that a PDF reader is installed.

5.3.2 Note on colors and symbols

Areas between 0% and 100% are presented by colored dots according to the following chart:

- blue: 0–50 % (normal)
- orange: 50-75 % (critical)
- red: 75–100 % (blocked condition - empty or full - almost reached)

5.3.2.1 Symbols

Symbols have the following meanings

Export

Import

Graph

Settings/properties

Measurement/logging

Data logger

Data channel (pressure, temperature, conductivity)

OCS help module (call of the operating instructions)

Alarm

5.3.3 User rights in the system

- Operator:
  As an operator, you can export current data and have data displayed as a graph/table. No password is needed.
- Administrator:
  As an administrator, you have full access to all functions of the software, and can define system-relevant configurations for the user. You need to log in with a password.

CAUTION!

After selecting a data logger on the start page and starting the software, the user role that was last logged in is active.

Therefore:

→ Always log off with the button "Operator" before ending work as an administrator to protect the settings from changes!

5.3.3.1 Logging in as administrator

Log in via the button "Administrator" in the upper right corner next to the help symbol .

The default starting login data are:

- Password: 123456

To log off again, use the button "Operator".

5.3.3.2 Change administrator password

You can change the administrator password in the settings of the DL.OCS module after logging on.

> *NOTE!*
> *We recommend always changing the password since the login data for the initial login are printed in this manual and may be known to third parties.*

Enter the settings to change the administrator password by clicking "SW Settings" in the header.

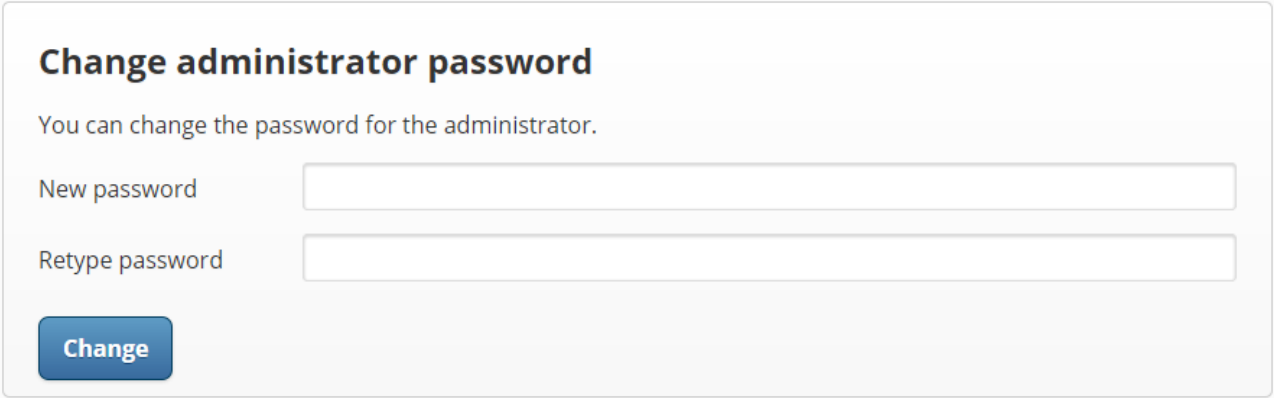

Fig. 13: Change administrator password

Enter and repeat new password. Accept the new password with the "Change" button.

Operator names cannot be changed, and no new operators can be added.

5.3.3.3 Forgot password

If you forgot the administrator password, contact the STS Sales Support to reset the password or have a system recovery performed. For this action, a support technician must have access to your computer.

5.4 Administrator

After logging in as administrator, the starting page for the administrator is displayed.

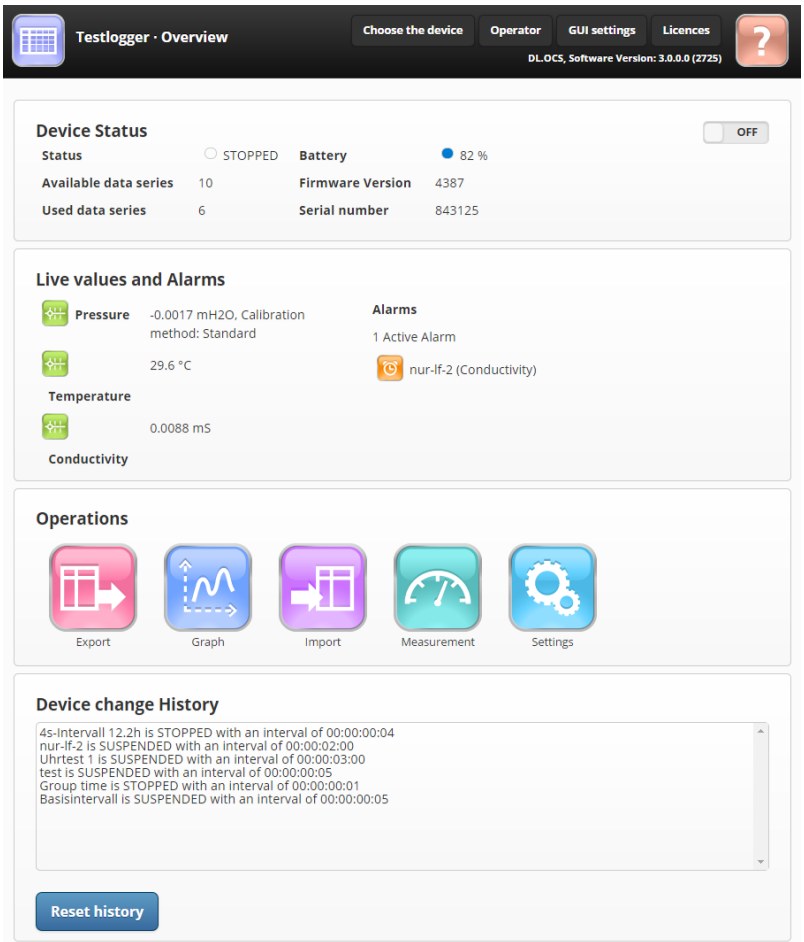

Fig. 14: Starting page administrator

5.4.1 Information/actions on the starting page

Device status

As for operator; see chapter 5.5.1.

- ON/OFF: Setting this switch to OFF will suspend all valid data series (paused).
  This may be used, e.g. during maintenance, so that the data logger will not record any measuring data while not in the medium.
  Data series in the status TIMER are not affected by this and will start even with the switch set to "OFF".
  Setting the switch to ON will reset all suspended data series to the previous status.

Current values and alarms

As for operator; see chapter 5.5.1.

Operations

- Exporting: Exporting the measured data or configuration of the data logger
- Graph: Graphical illustration of the measured data of the data logger
- Importing: Firmware update or import configuration
- Measurement: Generating, managing, deleting data series
- Settings: Configuration of the data logger and the measuring channels

Device change history

Device history of the data logger (administrator and user history) since the last resetting of the history

The button "Reset history" resets the device history of the data logger (administrator and user history).

5.4.2 Configure data logger

The data logger must be confirmed at initial commissioning.

Use the button "Settings" on the start page to switch to the page "Settings".

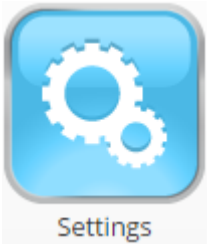

Fig. 15: Button "Settings"

5.4.2.1 General configuration

On the subpage "General", the name of the device, time, device number and owner information can be set.

Setting name and time

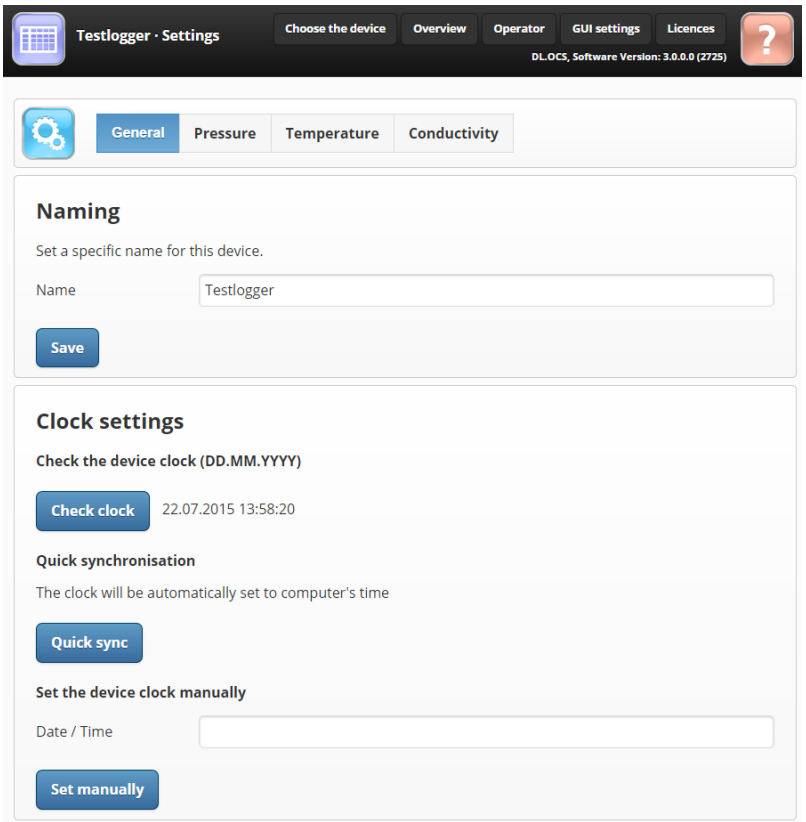

Fig. 16: Subpage "General" - name and clock settings

Specify the name for the data logger and save it with "Save".

Set the internal system clock of the data logger to the current date and time or a reference time.

The standard setting is the current time and date setting of your computer. You are now able to synchronize the time and date with the connected computer by pushing a button ("Quick sync") or manually ("Set manually").

Observe that the system clock of your data logger is set properly!

CAUTION!
Caution for clock settings!

There may be side effects when changing the time settings, particularly when switching between summer and winter time and when the time has been reset by a dead battery.

E.g. if there are already measured data with the same time stamp, they will not be overwritten; the recording will only start again after a time for which no measured data are present yet.

Setting device number and owner information

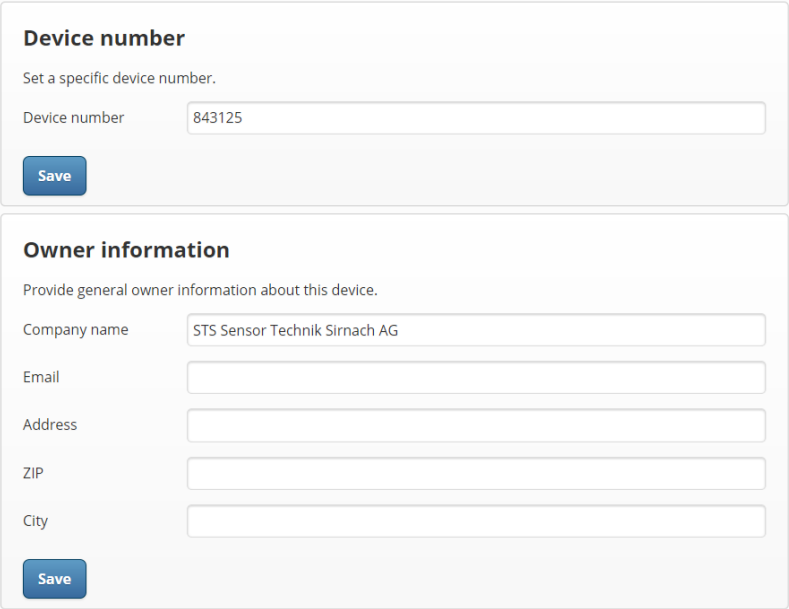

Fig. 17: Subpage "General" - Device number and Owner information

The device number by default corresponds to the serial number of the data logger, but may also be changed by input into the field "Device number" and then pushing "Save".
This can be used, e.g., when a replacement device (with a different serial number) is to be run under the same device number as the old device.

Enter owner information into the corresponding fields and then "Save".

5.4.2.2 Configure pressure

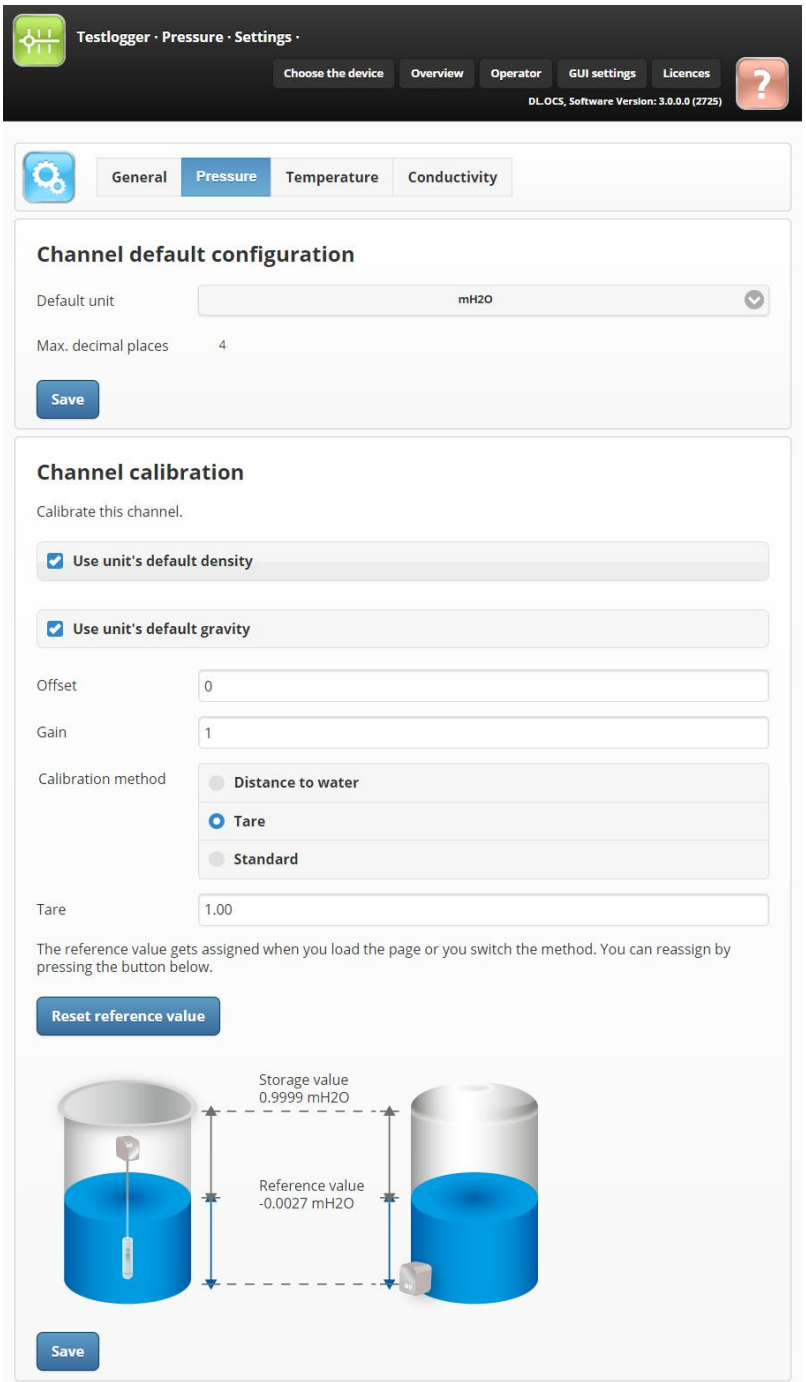

Fig. 18: Sub-page "Pressure"

Channel default configuration

Choose the standard unit of measurement for the pressure channel from the dropdown list and then "Save".

The maximum decimal digits for the chosen unit are displayed.

Channel calibration

The following settings are possible to calibrate the pressure channel:

- Density of the medium to be measured: The software uses either a standard value for the density or corrects the measured value with the density entered. Setting the density is only useful when the calibrated units are not pressure measuring units (such as bar or mbar). At the moment, density is defined via the chosen unit of measurement. The decimal digits are limited to 4.
- Gravity: Use unit's default gravity or enter specific value. Since gravity is not a constant value but will change slightly depending on geographic location, this can be adjusted site-specific.
  Only applies to measured units when useful, e.g. "mH2O" In other cases e.g. in the unit mbar, this value is set to 1.
- Offset: Adds an offset for the measured value
- Gain: Multiplies the measured value by a factor
- Calibration method:
  - Distance to water: The height difference between the reference point and the liquid level is called distance to water. This height difference can be determined with an electric contact gage or something similar and then entered in the field "Distance to water". When changing the liquid level, this also changes the distance to water, which is then measured or saved.
  - Tare: If the zero point of the measurement (the position of the sensor membrane) does not match the zero point of the medium (measured depth not identical to effective depth), the currently measured pressure can be set as the effective value in the data logger.
  - Standard: The measured value is saved.
- Reset reference value: This button resets the value in Tare or “Distance to water” to the measured value specified in the device.

Save settings with "Save".

5.4.2.3 Configure temperature

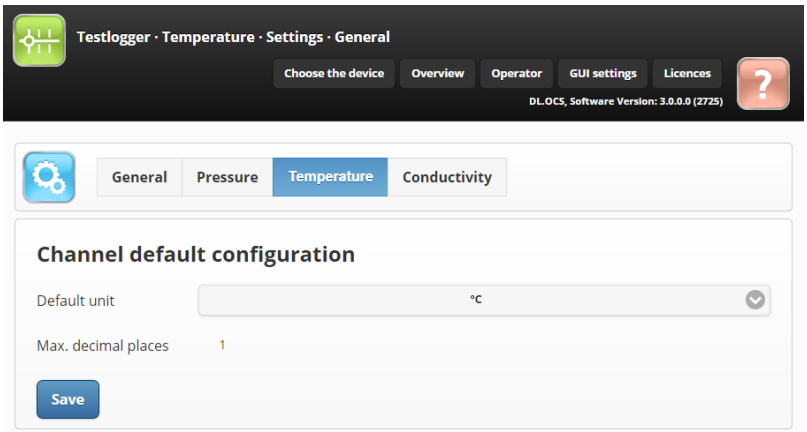

Fig. 19: Sub-page "Temperature"

Choose "default unit" for temperature measurement from the dropdown list and then "Save".

The maximum decimal digits for the chosen unit are displayed.

5.4.2.4 Configure conductivity

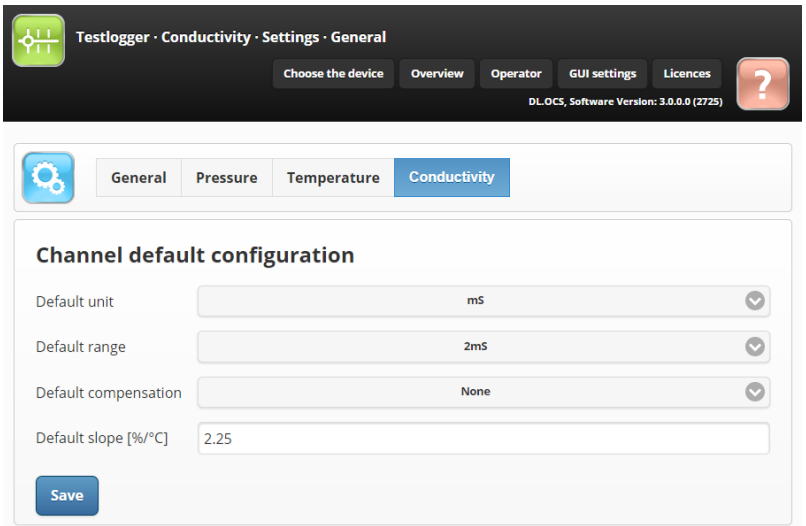

Fig. 20: Sub-page "Conductivity"

The following settings are possible to configure the conductivity channel:

- Default unit: Choose the unit for the conductivity measurement from the dropdown list.
- Standard range: Choose the range for the conductivity measurement from the dropdown list.
- Standard compensation: Choose the compensation method for the conductivity measurement from the dropdown list.

- Standard inclination: Enter the compensation factor for the conductivity measurement input field.

Save settings with "Save".

CAUTION!

To obtain accurate measurement data, air bubbles must be prevented from forming near the conductivity probe.

CAUTION!

The conductivity probe requires approx. 60 minutes in the medium (settling time) in order to read measured values at the specified accuracy.

5.4.3 Generating/managing data series

To generate/manage data series, go to measurement by clicking "Measurement" on the starting page.

Fig. 21: Button "Measurement"

- You can generate up to 16 data series.
- You can configure alarms for data series.
- The values that are possible and necessary are shown in the software.
- Up to 4 data series can be measured or read out at the same time.
- Units for measuring channels, settings for Depth to Water/Tare, etc., are taken from the channel settings.

5.4.3.1 Generating new data series

A new data series can be generated in the sub-page "New data series".

Generating quick start data series

The quick start data series records (with a configurable interval) the data measured by all channels with standard settings (units of measurement, etc.). The data series runs until the maximum date allowed by the data logger.

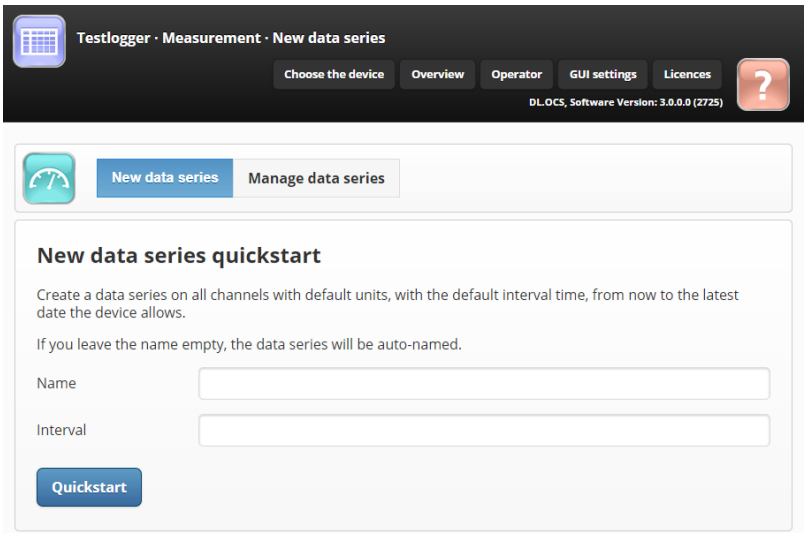

Fig. 22: Sub-page "New data series", section "New data series quick start"

- Enter name for the new data series.
- Choose storage interval.
- Start the data series with the button "Quick start".

Generate data series in manual mode

In manual mode, a data series can be generated for all available channels with specific parameters, such as start and stop times.

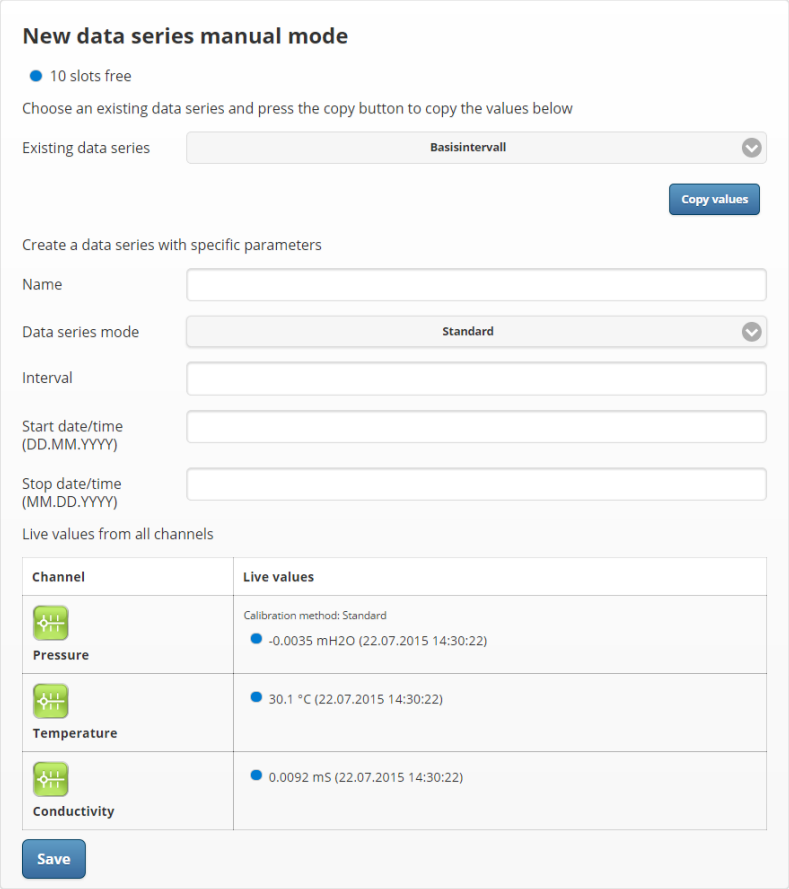

Fig. 23: Sub-page "New data series", section "New data series manual mode"

NOTE!

Make sure that the system clock of your data logger is set properly. Otherwise, the data series will not work as expected!

NOTE!

Data in the input fields are only accepted if they are meaningful in context. For example, the end of a data series cannot be before its start.

The number of available data series positions is displayed ("x places available").

Selecting a data series from the dropdown list "Existing data series" permits copying its settings into the fields of the new data series with "Copy values". However, at least the start and stop time should be adjusted at this time, since no data will be recorded for dates in the past.

Enter data for the new data series:

- Name: Name of the new data series
- Data series method: Configure standard or alarm data series (see below).
- Storage interval: Set measuring interval across the time window that opens. The range is between 1 second and 99 days.
- Start Date/Time: Time at which the measurement is automatically started. The standard specification is the current system time. This means that the data series starts as soon as it is saved.
- Stop date/time: Time at which the measurement stops automatically

Save input with "Save". The data series is started at the set start time.

Alarm data series

An alarm data series can be generated for individual channels. Two thresholds A and B are defined. Once the data exceeds or undercuts the indicated thresholds, the alarm data series is started and will record until the default values are reached again.
If the alarm data series is recorded, this is displayed on the starting page.

Alarm data series are set up by selecting "Alarm" in the generation in manual mode at "Data series mode".

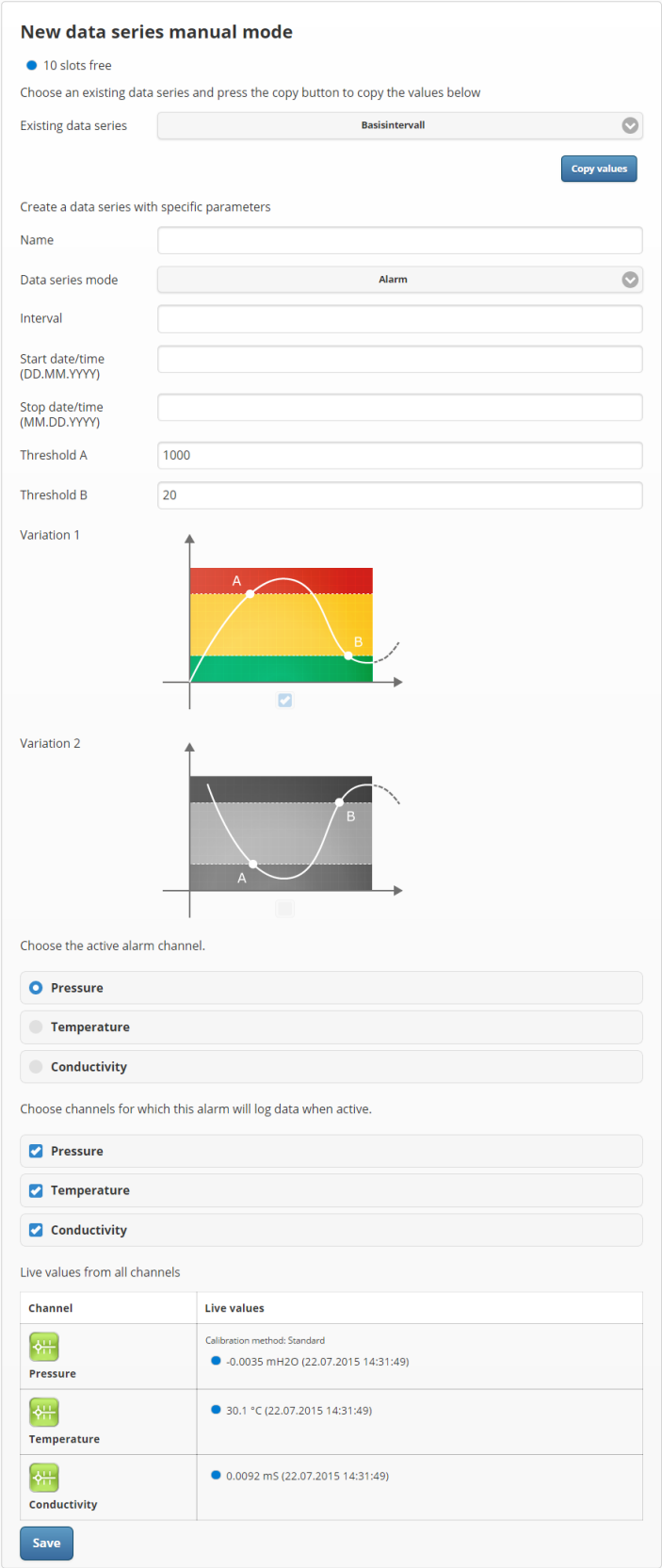

Fig. 24: Sub-page "New data series", section "New data series manual mode", Alarm data series

In addition to the standard data series, the following information must be provided:

- Thresholds A and B: The normal range is between the values A and B. If the normal range is exceeded or undercut, the alarm data series is started.
  Check that the two thresholds are not identical!
- "Choose the active alarm channel": Choose the channel (pressure, temperature or conductivity) to be monitored.
- "Choose the channels for which data is to be recorded in case of alarm": Choose channels to be recorded when the alarm data series starts.

5.4.3.2 Manage data series

For overview and management of existing data series, switch to the sub-page "Manage data series".

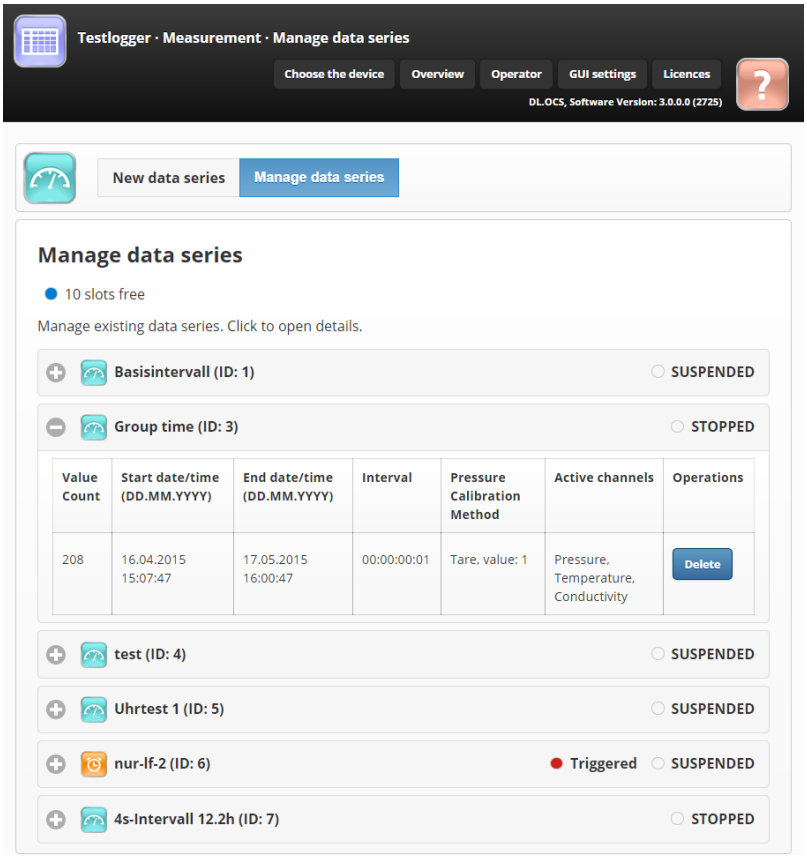

Fig. 25: Sub-page "Manage data series"

All data series of the data logger are displayed with name, ID and status.

To display detailed information/action on a data series, open the line with "+".

CAUTION!

Do not forget to export all data of a data series that you still need before deleting the data series!

- You can delete old entries (definitions and data).
- Active data series must be deactivated (aborted) before you can delete them.
- You cannot edit an existing definition! You need to deactivate the old data series if it has been configured incorrectly, and generate a new data series with the correct settings.
  The button "Copy" on the sub-page "New data series" makes it very simple to copy a data series and adjust it before saving.

Status for data series

These are the status options for data series:

- TIMER: The data series is started at a later time.
- STOPPED: The data series has been ended normally because the end data has been reached.
- ABORTED: The data series has been stopped manually by the operator.
- SUSPENDED: The data series is suspended manually and can be restarted afterwards.
- RUNNING: The data series is running and recording measured data.

5.4.4 Exporting data

Use the button "Export" on the start page to get to the page "Export".

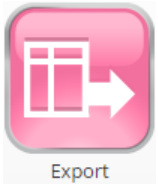

Fig. 26: Button "Export"

1. On the sub-page "Export", choose whether the recorded measured data is to be selected by date ("Period of time") or index ("By index range").

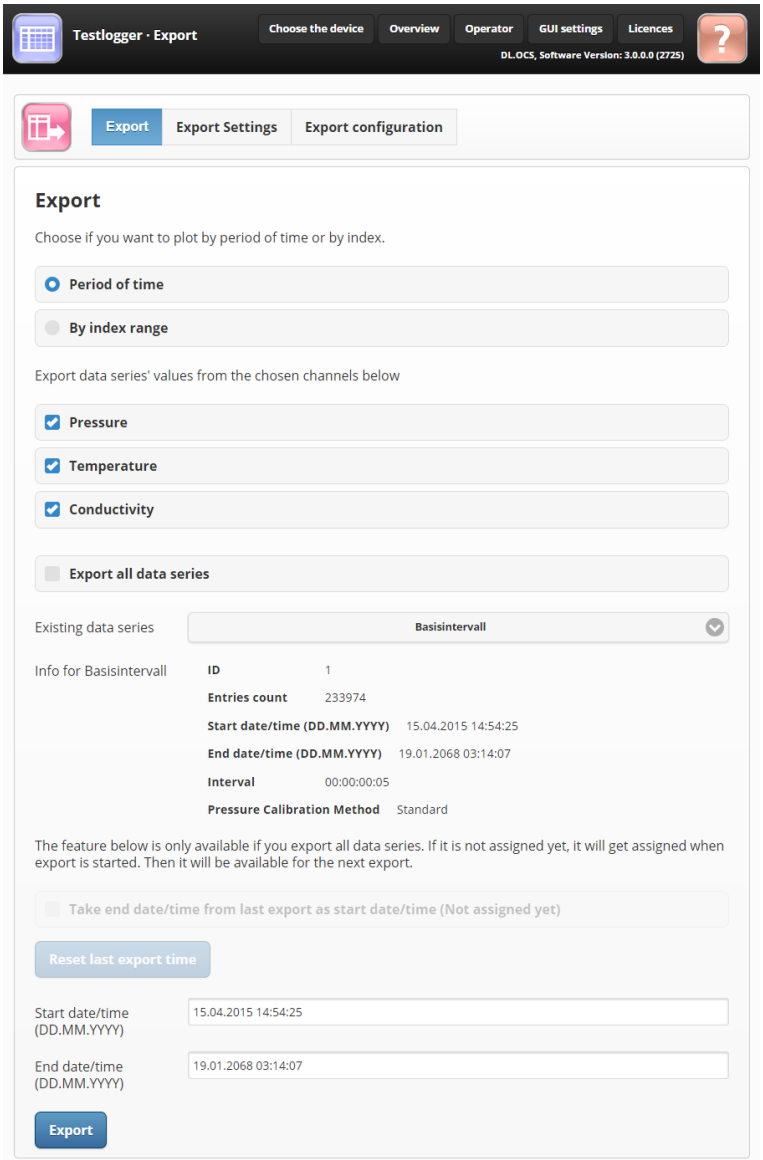

Fig. 27: Sub-page "Export"

2. Select the data series values to be exported. For this, check "Pressure", "Temperature" or "Conductivity".
3. Select the desired data series from the dropdown list "Existing data series". Or check "Export all data series" to export all data series.
4. Choose date or index range.

- Date: Choose the start and end date/time.
  - By setting a check mark at "Use End date/time from the last export as start date/time", the time stamp saved in the data logger from the last export of all available measured data (no matter if by the user or administrator) is used as the start date for the current export.
  - The time stamp saved in the data logger from the last export of all available data can be reset with the button "Reset last export time".
- Index: Choose the start and end index

5. Use the button "Export" to export the selected data as a .csv-file onto the connected computer.

CAUTION!

Caution when saving the export file with the "Save as" dialog. Existing data can be overwritten.

For saving the file with the data, the "Save as" dialog of the browser will appear by default.

The administrator can also set that the file is automatically saved (with browser settings).
Attention! The settings may be reset in case of software updates or new operators.

CAUTION!

If the data export process is aborted, this may cause corrupt data or errors. Therefore:

→ Do not refresh or close the browser window during data export. Do not restart your browser, software and PC.

Export settings

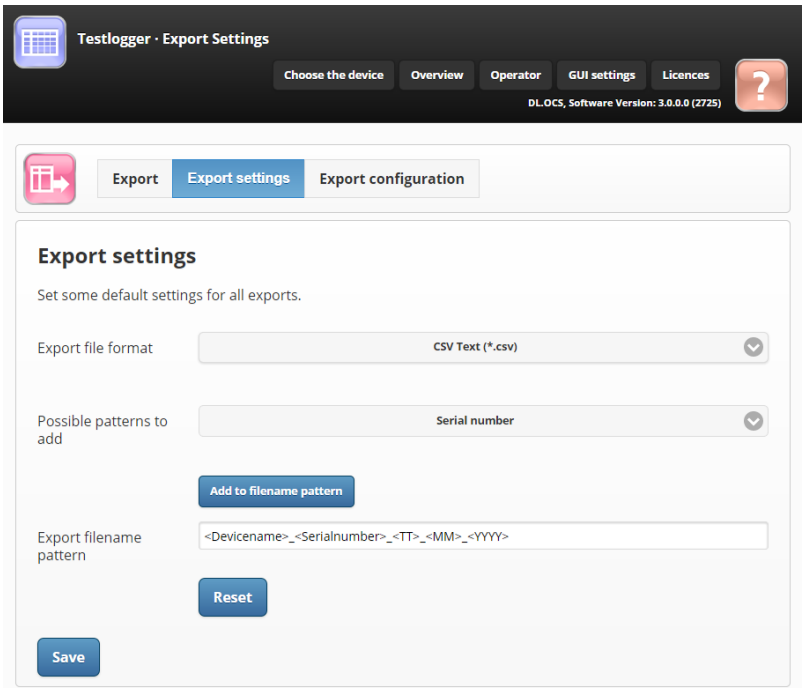

Fig. 28: Sub-page "Export Settings"

Settings for exporting the measured data can be made on the sub-page "Export Settings".

- File format:
  Choose "Export file format" from the dropdown list.
- Put together file names for the export file:
  Choose name component from the dropdown list "Possible patterns to add" and insert it into the field "Export filename pattern" by "Add to the file name". The file name can be deleted and restarted with "Reset".
  It is recommended to include date and time.
  Possible components are: Serial number, device number, device name, year, month, day and customized text.

Save changed export settings with the button "Save".

Setup and content of the export file

The export format essentially is a CSV format that can be read by spreadsheet programs such as Microsoft Excel, Openoffice.org Calc, Microsoft Works and other applications.

It contains a header with the following information:

- Names of the data cells
- Settings for taring and depth of water
- Gauge (G), absolute (A), sealed gauge (SG)

- Gain factor/offset
- Start date, end date, data series number, data series designations
- Data logger name, data logger serial number, etc.
- Any other applicable parameters

The structure of the header permits showing/hiding fields as required. The structure adjusts to the data series configuration in the data logger.

The data section is, however, always fixed. It always contains the following information:

- Index
- Time stamp (internal)
- Time stamp in a format that is human-readable
- Measuring data
- Measuring unit
- Measuring data
- Measuring unit
- ...

The number of data columns depends on the number of exported channels.

5.4.5 Graphic illustration of data

Use the button "Graph" on the start page to switch to the page "Graph".

Fig. 29: Button "Graph"

1. Choose whether the recorded data is to be selected by date ("Period of time") or index ("By index range").
2. Select the data series values to be presented. For this, check "Pressure", "Temperature" or "Conductivity".
3. Select the desired data series from the dropdown list "Existing data series".
4. Choose date or index range.
   - Date: Choose the start and end date/time.
   - Index: Choose the start and end index

NOTE!

It is recommended not to display more than 150,000 data records since it results in long data loading time and might be interrupted due to technical reasons.

5. Push the button "Update graph" to load the measured data.

Loading can be aborted with "Cancel" or stopped with "Pause" and continued later with "Continue".

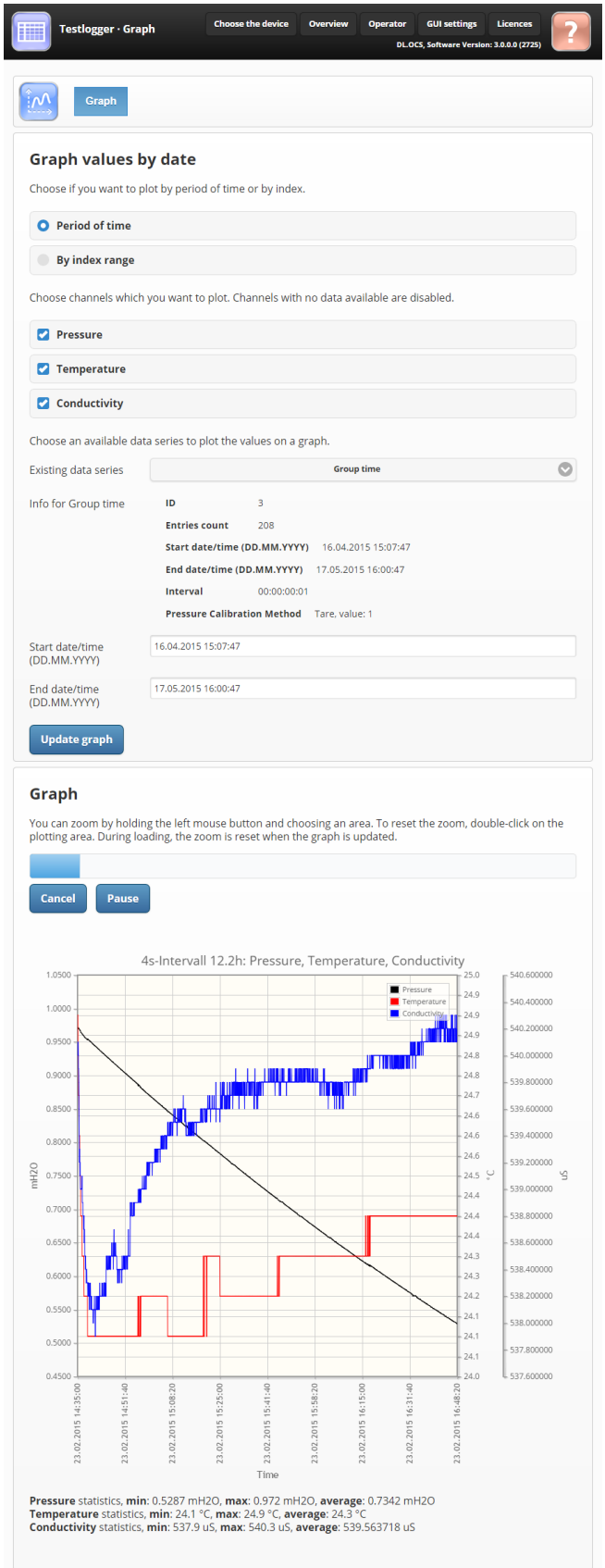

Fig. 30: Page "Graph" with displayed data

Click in the graph to enlarge an area of interest. Double click will rescale to original size.

5.4.6 Further settings/functions

5.4.6.1 Export device configuration.

The device configuration can be exported, e.g. to "clone" devices.

Push the “Export” button on the start page and select “Export Configuration”.

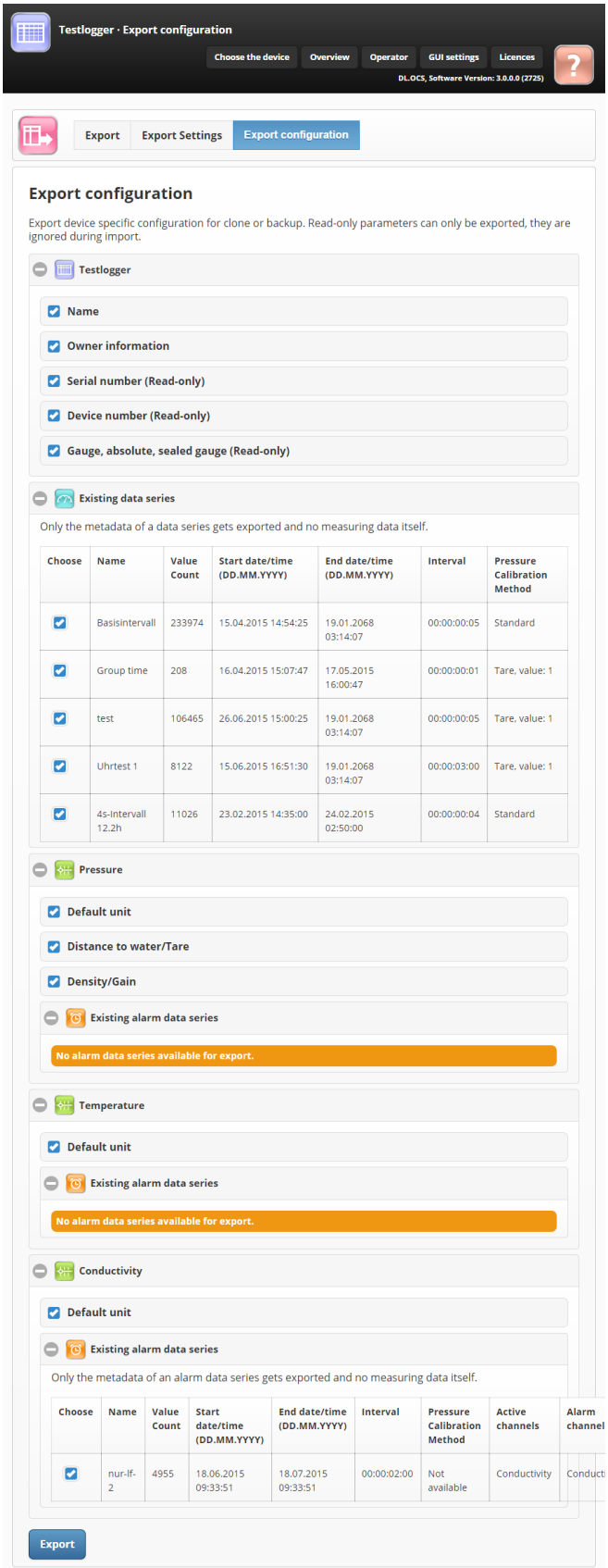

Fig. 31: Sub-page "Export configuration"

Check the settings/data series metadata to be exported. Individual items can be opened and closed by clicking "+" and "–".

Use the button "Export" to export the selected configuration as a file.

5.4.6.2 Import device configuration

The device configuration can be imported, e.g. to "clone" devices.

CAUTION!

Present settings are overwritten when importing a configuration file.

Read-only data are not overwritten and are marked accordingly on the subpage "Export configuration" (see chapter 5.4.6).

Push the button “Import” on the start page and select the sub-page “Configuration”.

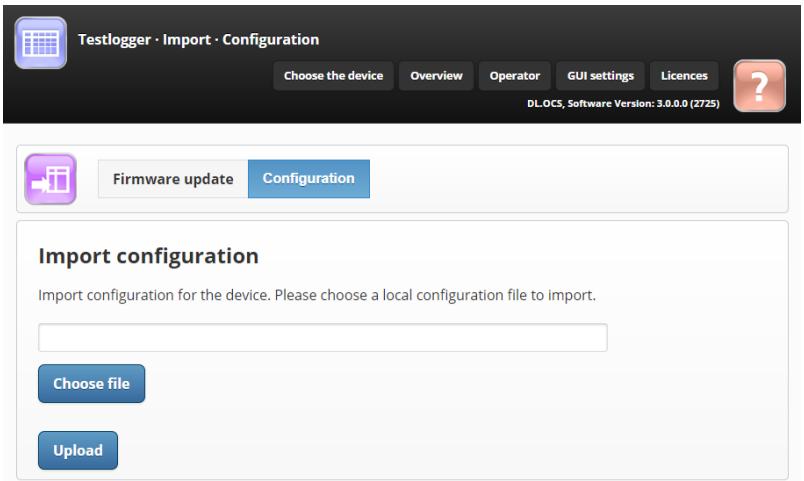

Fig. 32: Import configuration

Choose a configuration file on the computer with the button "Choose file".

Use the button "Upload" to store the settings from the configuration file on the data logger.

5.4.6.3 Change the language of the user interface.

After logging in, the language of the user interface can be changed in the SW settings.

For this, click "SW settings" in the header.

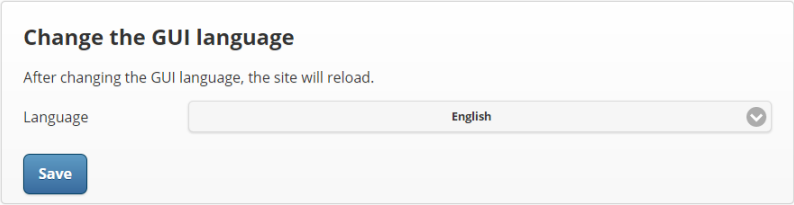

Fig. 33: Change the language.

Accept the changes made with "Save".

5.4.6.4 Connection settings

The connection settings can be configured, e.g. refreshing of the logger, if a logger is connected, etc.

These values usually do not need to be changed. If problems occur with the network or the network performance, please contact your STS sales partner.

Enter the connection settings by clicking "SW Settings" in the header.

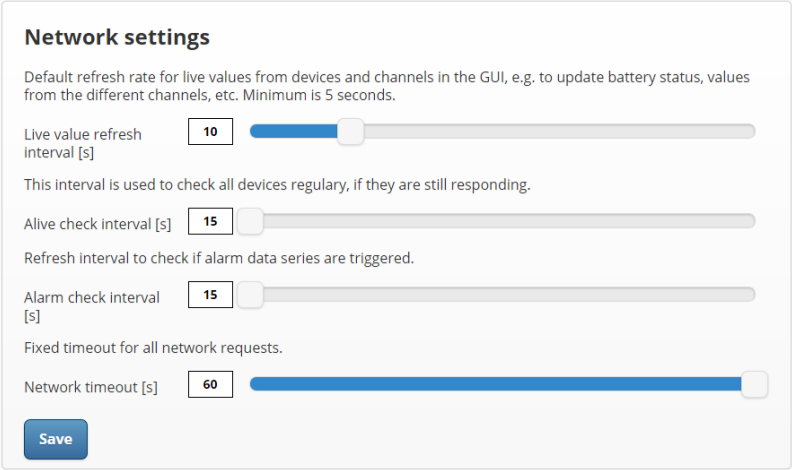

Fig. 34: Connection settings

Accept the changes made with the "Save" button.

5.4.6.5 Firmware update

NOTE!

A firmware update is only possible for data loggers with firmware version 3920 upwards.
The current version of the firmware is displayed on the start page of the data logger under "Device Status".

With this function, you can update the firmware of your data logger. You can upload the firmware file into the data logger and then install the new software in the DL.OCS. Firmware updates are released by STS periodically to support, optimize functions or remove system errors and problems.

CAUTION!
Danger of data loss!
Export all data before a firmware update.

CAUTION!
Do not interrupt the connection with the data logger and do not shut down the DL.OCS Application PC Software before update is completed!

CAUTION!
Close all other browser windows that are connected to the DL.OCS Application PC Software web interface before starting the update.

Ensure that other persons at other computers cannot establish a connection to the data logger while updating.

On the start page, push the button "Import" and choose the sub-page "Firmware update".

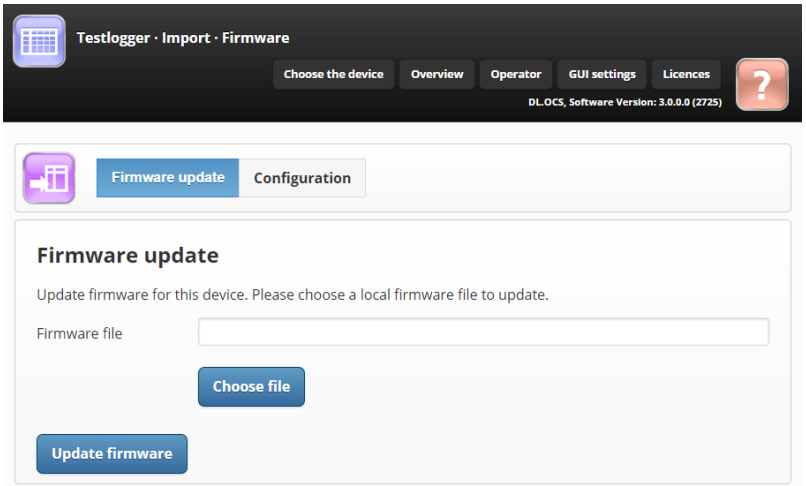

Fig. 35: Update firmware

Choose the firmware file on the computer with the button "Choose file".

Use the button "Update firmware" to install the new firmware.

- This process takes about 10 minutes. The status bar shows the progress of the installation.
- If your web browser closes, the process will continue in the background. In this case, do not restart your web browser and do not start any further firmware update! Wait for 10 minutes and then launch the web interface again!
- If another web browser window is connected to the DL.OCS Application PC Software web interface and a firmware update is running, an error message will likely appear, since the data logger cannot establish a connection during updating.

If problems occur during the firmware update, see chapter 7.3.

5.5 Operator

After logging in as operator, the start page for the operator is displayed.

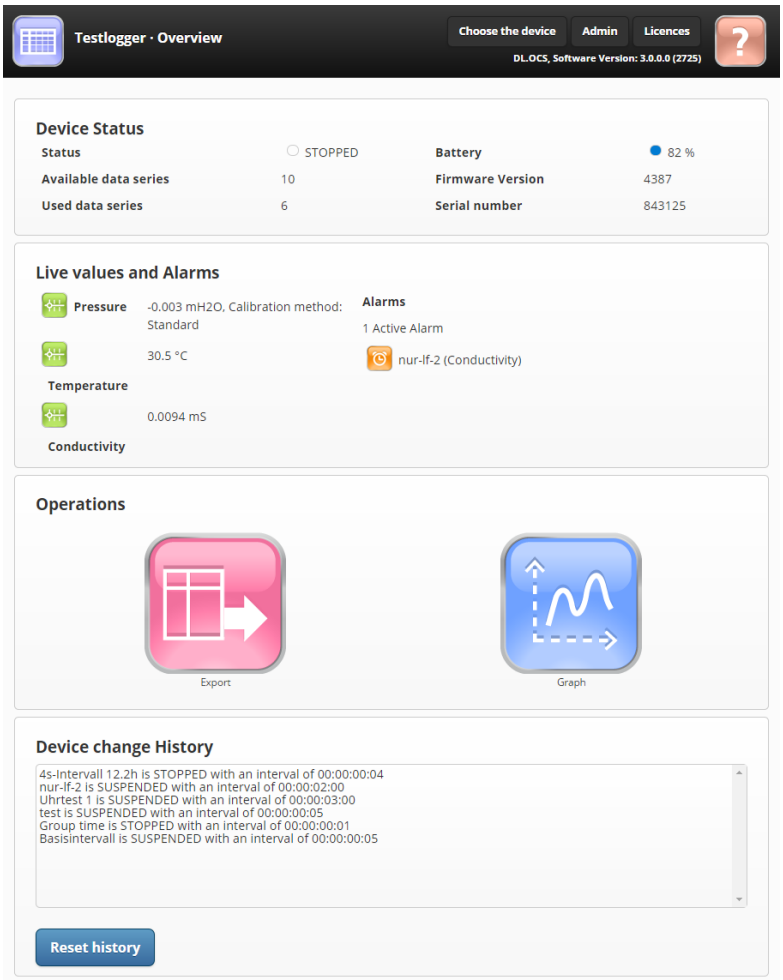

Fig. 36: Start page operator

5.5.1 Information/actions on the start page

Device status

- Status: There are the following data logger status options:
  - STOPPED: The data logger has been stopped and does not record any data.
  - RUNNING: The data logger is in operation and records data.
  - SUSPENDED: Recording of the data has been interrupted.
- Available data series: Number of available data series of the data logger.

- Used data series: Number of data series of the data logger that are in use.
- Battery: Approximate charge status of the battery in the data logger in percent. The battery condition is calculated under consideration of the ambient temperature and the battery properties. For battery usage duration, see chapter 8.1.
- Firmware Version: Current version of the firmware on the data logger.
- Serial number: Serial number of the data logger

Current values and alarms

Display of the current measured values (pressure, temperature and conductivity) and alarms (of alarm data series) of the data logger.

Operations

- Exporting: Exporting the data of the logger
- Graph: Graphical illustration of the data of the logger

Device change history

Device history of the data logger (user history) since the last resetting.

The button "Reset history" resets the device history of the data logger (user history).

5.5.2 Exporting data

Use the button "Export" on the start page to export all measured data from the last export time onwards as a .csv-file onto the connected computer.

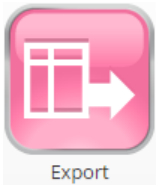

Fig. 37: Button "Export"

For saving the file with the measured data, the "Save as" dialog of the browser will appear by default.

After successful export of the data, a corresponding message is displayed under the button.

Fig. 38: Button "Export" after successful export

CAUTION!

If the data export process is aborted, this may cause corrupt data or errors. Therefore:

→ Do not refresh or close the browser window during data export. Do not restart your browser, software and PC.

5.5.3 Graphic illustration of data

Use the button "Graph" on the start page to switch to the page "Graph".

Fig. 39: Button "Graph"

Select the desired data series from the dropdown list "Existing data series".

Push the button "Update graph" to load the data.

Loading can be aborted with "Cancel" or stopped with "Pause" and continued later with "Continue".

Only the data since the last export time are displayed.

NOTE!

It is recommended not to display more than 150,000 data records since it results in long data loading time and might be interrupted due to technical reasons.

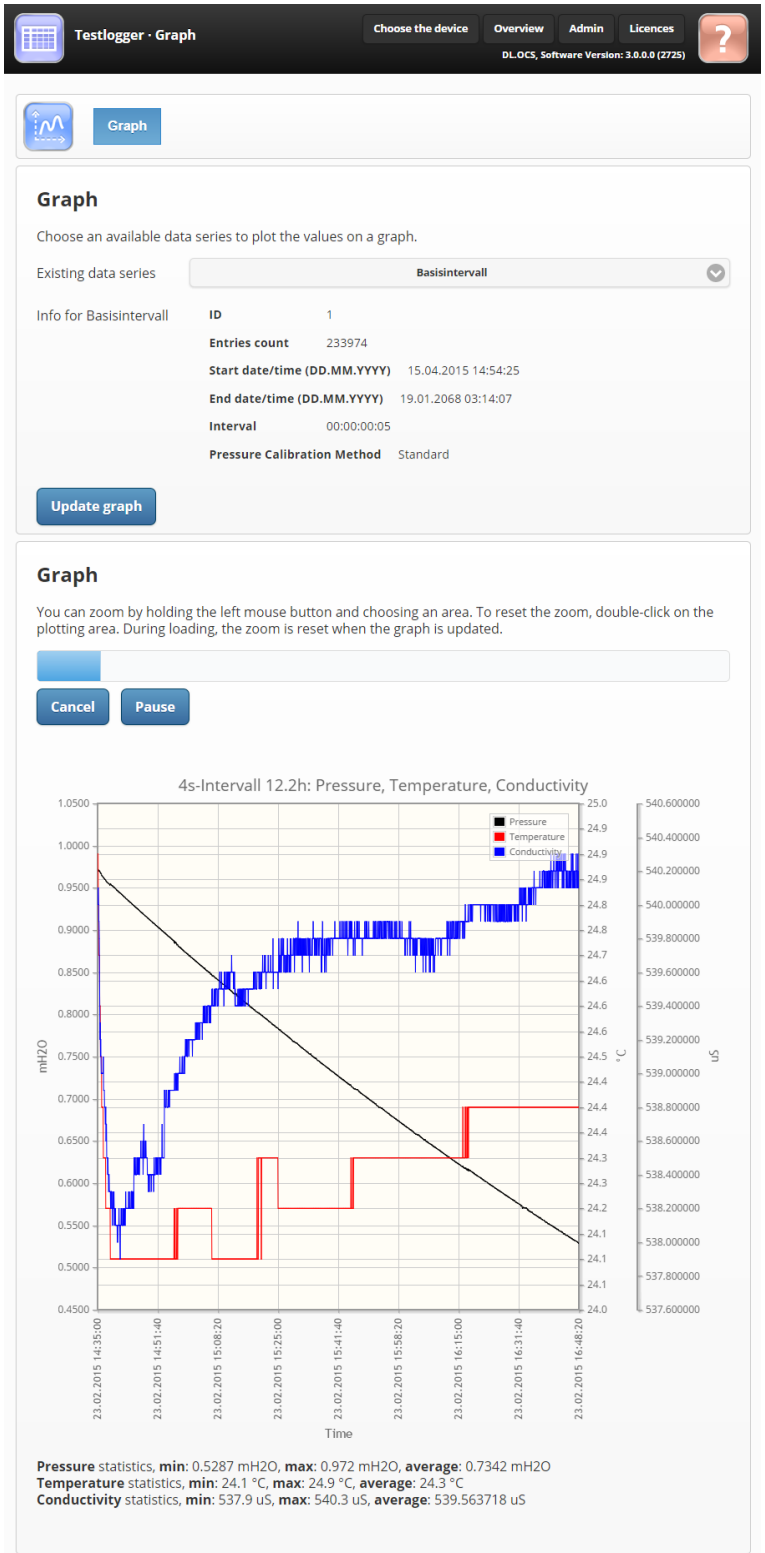

Fig. 40: Page "Graph" with loaded measured data

In the graph, you can choose areas for enlargement with the mouse. With a double-click, you can display the graph in the original scale again.

6 Maintenance

Interval	Maintenance work
Every data readout of logger	Check charge status of the battery. Replace the battery if necessary (see chapter 6.2).
	Check the membrane of the data logger for contamination and deposits. Clean if necessary (see chapter 6.1).
	Check the conductivity module of the data logger for contamination and deposits. Clean if necessary (see chapter 6.3).

For information on the service life of the battery, see chapter 8.1.

6.1 Cleaning the membrane

CAUTION!

Never use pointed objects (e.g. screwdriver) to clean the membrane! They may destroy the membrane.

Screw off the cap to expose the membrane.

Flush the membrane under running water. You can also use a fine, lint-free cloth. Ensure that the membrane is not damaged.

CAUTION!

Remove all plastic parts before descaling (seals, safety cap). Do not use any further aids to remove scale. Otherwise, the membrane may be damaged.

In case of scale deposits, the membrane can be cleaned with commercial descaler. Flush with running water after descaling.

In case of strong contamination, the membrane can also be cleaned carefully with a cotton swab and liquid benzine. Ensure that the membrane is not pushed in or damaged.

6.2 Battery change

CAUTION!

Follow the procedure as described!

Improper replacing of the battery may cause data loss and damage to the logger.

NOTE!

Read the package slip of the spare battery for the battery change.

Spare batteries and desiccants are available as a kit from STS and the sales partners.

1. Start the DL.OCS Application PC software and log in as administrator
2. On the page "Settings", sub-page "General", in "Battery maintenance", push the button "Start battery replacement". This prevents resetting of the date and time to 2000-01-01 and the battery counter will be set to 100 % again after the battery has been replaced.

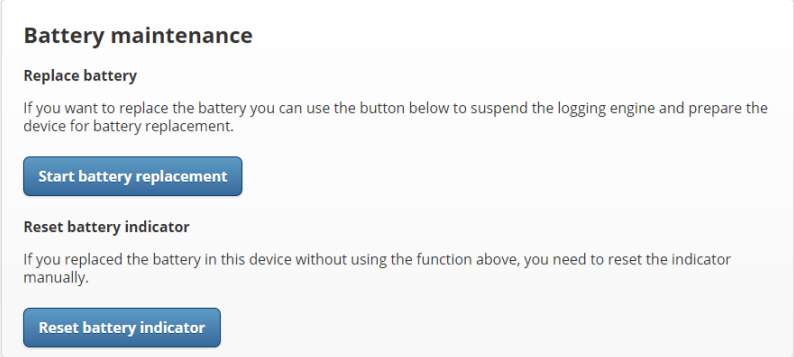

Fig. 41: Section "Battery maintenance" in the settings

CAUTION!

The battery must only be replaced in a dry environment. Clean and dry the data logger with a cloth or paper before opening the housing.

3. Hold the data logger by the housing, open the lock nut with your free hand and push it back over the cable.

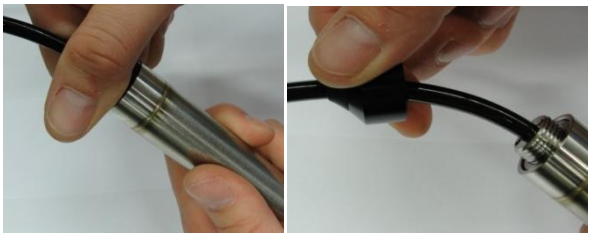

Fig. 42: Loosening the lock nut and pushing it back over the cable

4. Pull off the protective tube until the battery compartment is exposed completely.

Fig. 43: Remove the protective tube

5. Remove the battery from the battery compartment (pull to the right and lift off).

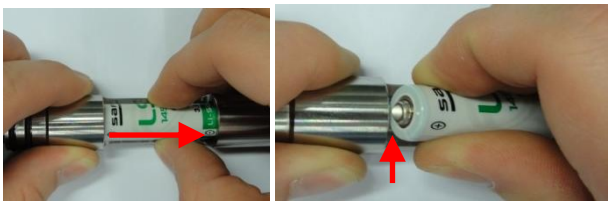

Fig. 44: Release the battery.

6. Insert the new battery. Make sure the polarity is correct. Never use pointed objects (e.g. screwdriver) to remove the dead battery! Then replace the used desiccant.

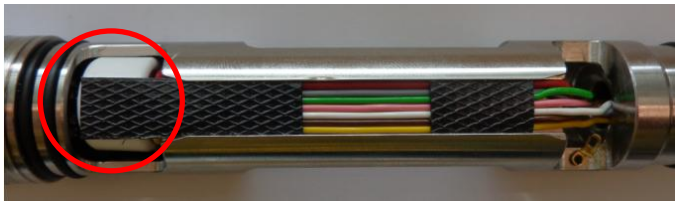

Fig. 45: Replacing the desiccant

7. Check the sealing rings for cracks. Sealing rings can be ordered from STS. After battery change, push the protective tube over the battery compartment and tighten the lock nut again. Observe that the O-ring seals are not damaged.

CAUTION!

Always ensure that the data logger is closed tightly again after a battery change (no gap between the data logger and the protection tube) and that the O-ring seals are not damaged.

If O-ring seals are defective, contact your STS sales partner.

NOTE!

If the battery is replaced without first pushing the button "Start battery replacement" in the settings, you need to reset the battery counter to 100 % via the software ("Reset battery indicator") after the new battery has been inserted! The date and time must be reset as well.

6.3 Cleaning the conductivity probe

CAUTION!

The electrodes and milled surfaces (marked yellow) must be free from dirt and grease. Dirt and grease residues can falsify readings.

CAUTION!

Never use sharp objects (e.g. screwdrivers) to clean the conductivity probe! These can damage the electrodes.

The electrodes can be cleaned under running water, with distilled water or with a cotton bud soaked in alcohol. The electrodes must not be scratched or otherwise damaged.

CAUTION!

Use no other means to clean the electrodes!

CAUTION!

If alcohol is used for cleaning, the conductivity probe must first remain dry for 24 hours before being reused.

6.4 Recalibration

Return the data logger to STS for recalibration if necessary.

6.5 Disposal

Return the data logger to STS for disposal.

7 Help/troubleshooting

7.1 Help/troubleshooting for the installation

Fault	Possible cause	Troubleshooting
The adapter cable is connected to the computer, but the previously installed driver is not found.	–	See chapter 7.1.1.
Driver for adapter cable is not working/causes problems.	The driver automatically installed by Windows does not match the adapter cable.	Uninstall the driver installed by Windows and install the driver from the DL.OCS Application PC Software-DVD.
Problems or messages, e.g. from firewalls, appear when installing driver, software or establishing the connection.	Firewalls, safety programs or user account control impairs installation or connection to the data logger.	See chapter 7.1.2.

7.1.1 Problems with the installation of the drivers for the adapter cable

The adapter cable is connected to the computer, but the previously installed driver is not found.

Check if the hardware is displayed in the Windows device manager.

- If the hardware is displayed but marked with a question mark or a similar symbol, try updating or reinstalling the drivers in the window "Presettings" (position, designation, function and general appearance of this option differs by Windows version).
- If your system has no adapters for USB<->RS485 and no devices with the designation FTDI or 4Ngalaxy, reboot your computer, and repeat the complete installation.
- If the converter is present, but the driver still isn't working, you can manually refresh/reinstall it in the device manager. Information on the process can be found on the online help pages of Microsoft.

If you and your IT specialist cannot install the driver ready for use, contact your STS sales partner.

7.1.2 Personal firewalls, safety programs and user account control (UAC)

This manual assumes that you call the DL.OCS Application PC Software via a web browser installed on the same computer on which the software is installed. Therefore, we do not deal with network and safety problems when establishing connections via a network (firewalls, other local and network-based safety software, routing, performance). Even if you only use a local connection, it is possible that new and unexpected safety warnings and prompts from your Windows operating system or your safety program of the personal firewall or other similar software are suddenly displayed. Please allow connections to the local host or 127.0.0.1 and give the applications/processes qemu.exe, qemu-system-arm.exe, setup.exe or LabView access.

If you are working in a high-security or otherwise complex IT environment, contact your system administrator. The STS Sales Support can support your IT specialists with additional technical information if necessary.

7.2 Help/troubleshooting in operation

Category	Fault	Possible cause	Troubleshooting
Application slow/crashed	**Slow connection/data transmission**	Windows runs with roaming user profiles.	Ask your system administrator.
	Graphical user interface works, but reacts more slowly than usual.	Several web browsers/tabs/windows for the DL.OCS Application PC Software application are opened.	Always work with a simple web browser and one web browser window.
	The entire application has crashed, certain buttons no longer react.	System subject to overload. Firmware update running.	Wait until actions have been completed.
		The application has crashed.	Restart the software. **Attention!** Only when no firmware update is running.
	The application reacts slowly, wrongly or not at all.	Windows has not been restarted for an extended period.	Reboot Windows.
	The screen view seems to be frozen.	Web browser window too small.	Display window in full screen mode.
		Screen resolution too low.	Use screen with a higher resolution (minimum size 1280 pixels).
		Web browser cache is too full.	Empty web browser cache.
Problems with connection/port	**The data connection to the data logger is suddenly interrupted. The device is displayed as offline although the cable is connected.**	The battery has failed.	Replace battery and check if the data logger goes online again.
		Cable connection defective.	Check cable connections.
		Problems in Windows, block of the communication between the web browser and the DL.OCS Application PC Software or between the DL.OCS Application PC Software and the serial connection or cable.	Reboot Windows. If the behavior continues, contact your Windows support.

Category	Fault	Possible cause	Troubleshooting
	Data logger at the end of the USB cable has been replaced; however, the software does not react to the change.	The software does not recognize automatically whether a new data logger has been connected to the same COM port.	Restart the software.
	Device is not recognized	Several possible causes	See chapter 7.2.2.
	Message "Error when reading the file with the structure information of the device" is displayed.	No connection can be established with one of the devices.	Follow the instructions in the error messages. The system or one of the connected data loggers has reached its capacity limit. Check if a firmware update is running. If the problem continues, contact STS sales partner.
	Error messages (e.g. "No answer", "Device offline"), communication impaired or implausible or application slow.	PC overloaded.	Reboot PC. Restart the application.
Measuring data missing/defective/ corrupt	**Measuring data missing**	Time error (clock set incorrectly, data already present with the same time stamp).	Check time settings and correct them if necessary.
		Device defective.	Contact STS sales partner.
	The file with the exported measuring data is empty.	Clock set incorrectly (e.g. not set again after a battery change or due to empty/defective battery)	Check time settings and correct them if necessary. Replace battery.
	Data logger is listed and can be configured, but no active data is displayed in the overview window and no data is recorded.	–	Contact STS sales partner.
	Measuring data defective	Pressure cell (membrane) contaminated. Membrane defective or damaged (e.g. dented).	Clean membrane, see chapter 6.1. Contact STS sales partner in case of defect/damage.

Category	Fault	Possible cause	Troubleshooting
		Conductivity probe contaminated.	Clean membrane, see chapter 6.3.
	Measuring data corrupt	Charge status of the battery too low or battery defective.	Check clock settings. If clock settings are incorrect, replace battery.

7.2.1 Which number does the COM port of the connected data logger have?

NOTE!

It is recommended to always connect the data logger to the same USB port in the computer. If this is not done, the COM port may change. The computer may even try to reinstall the driver.

The COM port number is assigned by Windows and usually contains the designation "USB".

- If there are only a few COM ports in the "Select COM-Port" dropdown list, you can try out which one is assigned to the connected data logger.
  If the wrong COM port is chosen in the "Select COM-Port" dropdown list on the start screen, the following error message is issued.
  - "This device is not responding. Please make sure it's connected properly and check the battery."
- If there is a larger number of COM ports, it is recommended to start Windows Device Manager and unplug and plug in the adapter cable connecting the data logger and computer again. In the item "USB Serial Port", "USB-Controller", "Connections (COM & LPT)" or similar (depending on the Windows version), it can be seen which COM port is removed and added again. This is the COM port that is assigned to the connected data logger.

7.2.2 Data logger is not recognized.

If you connect a data logger that you had already added as a device previously, the software can recognize and activate the data logger automatically. This is displayed in the login screen. If the data logger is not displayed, try the following:

- Restart the software (data logger must be connected to the computer before the software is started).
- Check cable. Check for correct port and integrity of the cable. Check cable for cable break and damage. Check cable and plug at the connection housing for corrosion.
- If this is not the case, you need to terminate the DL.OCS Application PC Software and restart it for the adapter cable USB<->RS485 to be recognized.
- Check if Windows has properly recognized the adapter 4NGalaxy USB <-> RS485. The device must be displayed in the device manager of Microsoft Windows.

Check online how to view the control panel in your version of Microsoft Windows or use the help system of Microsoft Windows.

When you have completed this verification successfully:

- Try to select the device again.
- Check the battery of the data logger.

7.3 Help/troubleshooting with the firmware update

If the firmware update fails and the data logger cannot establish a connection, try the following:

1. Load the browser window again and return to the overview window. Alternatively, shut down the entire DL.OCS Application PC Software.
2. Disconnect the data logger from the computer.
3. Remove the battery of the data logger.
4. Wait for 20 seconds.
5. Reinsert the battery.
6. Connect the data logger to the computer again.
7. Call the update function for the data logger firmware (if you have to shut down the software, start it again).
8. Perform the firmware update again.

If the update crashed after more than 10 % of the process, the data logger will probably be able to continue the update from there.

8 Technical data

See datasheet of the data logger.

8.1 Battery life time

The battery life time depends on the ambient conditions and the measuring frequency.

In extreme cases (e.g. in case of cold temperatures or measuring frequencies < 15 seconds), the usage duration may be relatively short and in some cases could be only a few days.

NOTE!

If several data series are active, the shortest measuring interval is indicative for the battery lifetime.

NOTE!

For short measuring intervals < 15 seconds, an external power supply is recommended.

At measuring frequencies of > 15 seconds, the life time increases, since the data logger will switch to standby mode and thus energy is saved.

Log Interval	Estimate of battery service life time in a data series
24 h	10 years
12 h	9.5 years
6 h	9 years
3 h	8 years
1.5 h	6.6 years
1 h	5.1 years
30 min	3.1 years
15 min	1.7 years
10 min	1 year
5 min	6 months
1 min	1.5 months
30 s	21 days
≤ 10 s	2 days

Tab. 3: Estimated battery lifetime in the temperature range -5 °C … +50 °C

CAUTION!

A temperature outside of the temperature range specified in the datasheet may cause the battery to fail and thus reset the clock settings and cause corrupt measuring data or data gaps.

Therefore:

→ After use in extreme temperatures, check the clock settings and replace the battery if necessary.

9 Appendix

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Change date	Chapter	Page	Change
29.08.2017	5.4.2.4	37	Addendum to the instruction of the conductivity probe
29.08.2017	6.3	64	Addendum to the cleaning instruction of the conductivity probe

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