User Manual

Data Logger
Sebalog D-3

Mess- und Ortungstechnik
Measuring and Locating Technologies

Elektrizitätsnetze
Power Networks

Kommunikationsnetze
Communication Networks

Rohrleitungsnetze
Water Networks

Abwassernetze
Sewer Systems

Leitungsortung
Line Locating

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Consultation with SebaKMT

The present system manual has been designed as an operating guide and for reference. It is meant to answer your questions and solve your problems in as fast and easy a way as possible. Please start with referring to this manual should any trouble occur.

In doing so, make use of the table of contents and read the relevant paragraph with great attention. Furthermore, check all terminals and connections of the instruments involved.

Should any question remain unanswered or should you need the help of an authorized service station, please contact:

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Terms of Warranty

SebaKMT accept responsibility for a claim under warranty brought forward by a customer for a product sold by SebaKMT under the terms stated below.

SebaKMT warrant that at the time of delivery SebaKMT products are free from manufacturing or material defects which might considerably reduce their value or usability. This warranty does not apply to faults in the software supplied. During the period of warranty, SebaKMT agree to repair faulty parts or replace them with new parts or parts as new (with the same usability and life as new parts) according to their choice.

This warranty does not cover wear parts, lamps, fuses, batteries and accumulators.

SebaKMT reject all further claims under warranty, in particular those from consequential damage. Each component and product replaced in accordance with this warranty becomes the property of SebaKMT.

All warranty claims versus SebaKMT are hereby limited to a period of 12 months from the date of delivery. Each component supplied by SebaKMT within the context of warranty will also be covered by this warranty for the remaining period of time but for 90 days at least.

Each measure to remedy a claim under warranty shall exclusively be carried out by SebaKMT or an authorized service station.

This warranty does not apply to any fault or damage caused by exposing a product to conditions not in accordance with this specification, by storing, transporting, or using it improperly, or having it serviced or installed by a workshop not authorized by SebaKMT. All responsibility is disclaimed for damage due to wear, will of God, or connection to foreign components.

For damage resulting from a violation of their duty to repair or re-supply items, SebaKMT can be made liable only in case of severe negligence or intention. Any liability for slight negligence is disclaimed.

Since some states do not allow the exclusion or limitation of an implied warranty or of consequential damage, the limitations of liability described above perhaps may not apply to you.

Contents

1 Safety Instructions

1.1 General Safety Instructions and Warnings

- Do not drop the device / the system's components or subject it / them to strong impacts or mechanical shocks.
- The limits described under Technical Data may not be exceeded.
- The device / system must be in a technically perfect condition for measurement.
- The indicated degree of protection can only be ensured if plugs or the provided protection caps are put in all sockets of the device.
- The plugs of the supplied connection cables are only compliant to the indicated degree of protection as long as they are plugged in. Plugs which are not connected or which are connected in a wrong way are not protected from water and dust ingress.
- If the O-ring seal of a socket is obviously damaged, it must be replaced in order to ensure the total protection against water and dust ingress.

1.2 General Notes

Safety precautions

This manual contains basic instructions for the commissioning and operation of the device / system. For this reason, it is important to ensure that the manual is always available to the authorised and trained operator. He needs to read the manual thoroughly. The manufacturer is not liable for damage to material or humans due to non-observance of the instructions and safety advices provided by this manual.

Locally applying regulations have to be observed!

Labelling of safety instructions

The following signal words and symbols are used in this manual and on the product itself:

Signal word / symbol	Description
CAUTION	Indicates a potential hazard which may result in moderate or minor injury if not avoided.
NOTICE	Indicates a potential hazard which may result in material damage if not avoided.
	Serves to highlight warnings and safety instructions. As a warning label on the product it is used to draw attention to potential hazards which have to be avoided by reading the manual.
	Serves to highlight important information and useful tips on the operation of the device/system. Failure to observe may lead to unusable measurement results.

Check contents

Check the contents of the package for completeness and visible damage right after receipt. In the case of visible damage, the device must under no circumstances be taken into operation. If something is missing or damaged, please contact your local sales representative.

Working with products from SebaKMT

It is important to observe the generally applicable electrical regulations of the country in which the device will be installed and operated, as well as the current national accident prevention regulations and internal company directives (work, operating and safety regulations).

After working on the system, it must be voltage-free and secured against reconnection as well as having been discharged, earthed and short-circuited.

Use genuine accessories to ensure system safety and reliable operation. The use of other parts is not permitted and invalidates the warranty.

Repair and maintenance

Repair and maintenance work has to be carried out by SebaKMT or authorised service partners using original spare parts only. SebaKMT recommends having the system tested and maintained at a SebaKMT service centre once a year.

SebaKMT also offers its customers on-site service. Please contact your service centre if needed.

Special transportation requirements

The lithium batteries of the device are dangerous goods. The transport of the batteries itselves and of devices which contain such batteries is subject to regulations based on the UN Model Regulations “Transport of Dangerous Goods” (ST/SG/AC.10-1).

Please inform yourself about the transportation requirements and follow them when shipping the device.

Electromagnetic radiation

This device is designed for industrial use. When used at home it could cause interference to other equipment, such as the radio or television.

The interference level from the line complies with the limit curve B (living area), the radiation level complies with the limit curve A (industrial area) according to EN 55011. Given that living areas are sufficiently far away from the planned area of operation (industrial area), equipment in living areas will not be impaired.

For FCC:

- User Information acc. to FCC15.21:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- Part 15 Statement gem. FCC 15.19/RSS Gen Issue 3 Sect. 7.1.3

This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

2 Technical description

2.1 Design

2.1.1 Controls and indicators

The following figure shows the loggers' ON/OFF switch and control lamp.

Item	Description
1	**On/Off contact area**
2	**I/O control lamp**

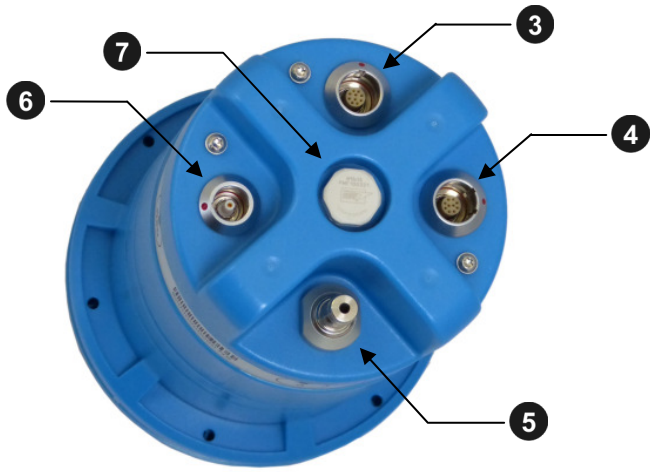
Control lamp states

Here you find some possible states of the logger's control lamp 2.

LED status	Description
green (1 x per second)	logger is switched on
red (regularly)	logger is sampling (flashing is according to log interval)
blue (1x each 10 seconds)	logger is checking for radio signal
blue (rapidly)	during data transfer via radio
blue (constantly)	during connection to radio signal
green (unsteady)	GSM operations are done, data are transmitted
green (constantly)	logger is dialing in to GSM network
red (constantly)	Error !! • common GSM error, e.g. powering up modem failed,no SIM card detected, dial in unsuccessful, error during ftp data transfer - (LED turns off when modem was successfully turned down) • wrong PIN code - (flashing red 3x before turning on constantly) • SIM-card blocked, PUK needed - (flashing white 3x before turning on constantly)

2.1.2 Connectors

The following figure shows the connectors of a fully equipped logger. Which connectors are part of the assembly depends on the configuration of the logger.



Item	Description
3	**IN socket** for connecting sensors, alarm triggering or peripheral devices
4	**DC ext. socket** for connecting an external power supply
5	**Connector P (internal pressure sensor)** for connecting hoses via quick-release coupling
6	**GSM socket** for connecting the external GSM antenna
7	**Venting membrane**

2.2 Function

Sebalog D-3 (in short: Log D-3) is a compact, robust and extremely versatile data logger. The device can record the readings of various sensor types in user-defined intervals. Depending on the configuration, up to 4 freely programmable channels can be connected to sensors for data recording.

The logger also can provide an internal pressure sensor hoses can be connected to directly. When using the internal pressure sensor, in addition to the standard pressure measurement the recording of sudden pressure fluctuations (known as ‘pressure surges’) is possible.

Using the ‘real-time measurement’ function or the ‘Step Test’ function, a measurement can be carried out and observed ‘live’ on a computer.

The logger can be used for monitoring purposes, as it is able to trigger user-defined alarm signals (e.g. signal lights, SMS or e-mail) if a threshold is exceeded or special alarm equipment is triggered.

Recorded measuring data are stored in the loggers memory and can be retrieved via short range radio. Loggers equipped with a GSM module can also send the data regularely to an FTP server, from where they can be downloaded to any Internet-capable computer.

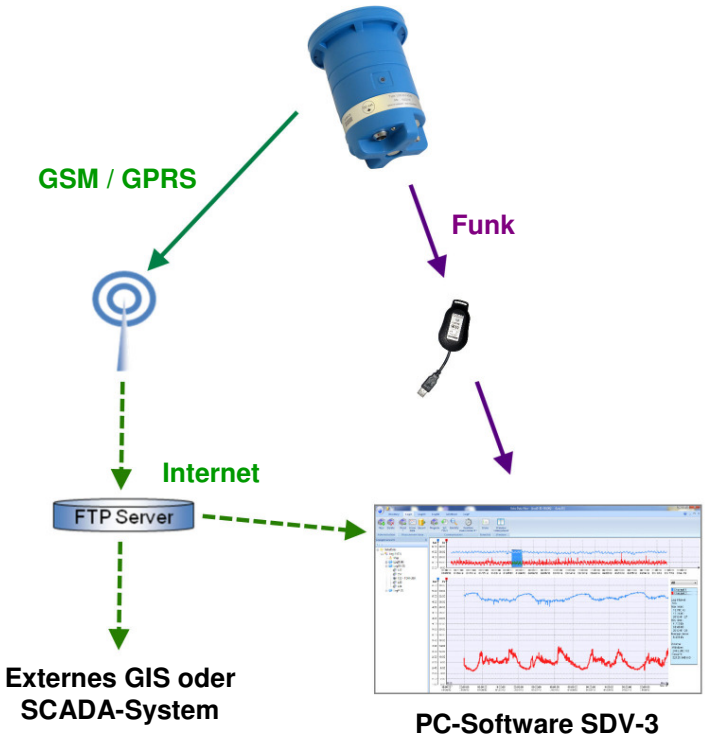
Programming of the device, as well as retrieving and evaluating the recorded measuring data is performed by the help of the ‘SebaDataView-3’ PC software.

2.3 Communication

The SebaDataView-3 software is used on a PC/laptop to program the logger before the measurement and to retrieve the collected data after the measurement.

Short range radio is used for communication between the devices. The computer must have a radio interface. For that purpose the ‘Log RI’ / "Log RI+"or the ‘Reader-3’ from SebaKMT can be connected.

Furthermore, if your logger is equipped with an internal GSM module, measurement data uploads to an FTP server or configuration data downloads to the logger are possible.



Loggers, which are to be contacted via radio, have to be switched on and must be situated within the wireless range of the computer or reading device.

2.3.1 Log RI or Log RI+ radio interface

'Log RI' The compact 'Log RI' is the standard radio interface for communicating with devices of the Sebalog series.

'Log RI+' The radio interface 'Log RI+' is available as accessory from SebaKMT. Compared to the Log RI the device has a higher-performing radio module which allows a higher radio range.

Use Simply connect the 'Log RI' / 'Log RI+' to a USB port of the computer. The device switches itself on. The device is automatically detected by the computer and immediately ready to establish the radio link. There are no further adjustments to be done.

Status LED The device has a status LED:

- flashing 1x red, 1x green … switching on
- blue light … data transfer in progress
- red light … malfunction

Update We recommend that the device is always operated with the latest firmware. More exact information on how to update the firmware in Sebalog N-3 series devices is available in its own section in this operating manual (see page 40).

2.3.2 Reader-3 used as radio interface

The 'Reader-3' reading device from SebaKMT can be used to establish radio communication, too.

Connect the Reader-3 to the USB port of your PC using the Docking Station and switch it on. The device automatically starts in USB mode. It is automatically detected by the computer and immediately ready to establish the radio link. There are no further adjustments to be done. For further information please consult the operating instructions of your Reader-3.

2.4 Power supply

The device is powered by two internal Lithium batteries.

Battery lifetime

The effective lifetime of the batteries strongly depends on which functions are used and how often they are used.

Using the following settings and under the following conditions a logger can be operated for up to five years without changing the batteries.

Parameter	Setting
Channel 1	Internal pressure sensor
Channel 2	External sensor; Input signal: Pulse
Channel 3	External sensor; Input signal: Pulse
Channel 4	External sensor; Input signal: Pulse
Log interval	15 min

Event	Number
Data transfer via GSM	Once a day (SMS / e-mail / FTP upload)
Pressure surge recording	Once a day
Alarm events per day	No

Battery status

In order to obtain information about a logger's battery condition, you can call the 'program' input screen of the SDV-3 software. For that, select the relevant logger in the directory tree and click on **Program** in the menu bar. The **State** segment, inter alia, provides information about the battery (see page 40).

Empty batteries

When the batteries get low, the logger switches itself off. Measurement data, logged up to that point, remain safely in the loggers' memory until the next programming.

Empty batteries cannot be recharged. They need to be replaced. The battery replacement must be carried out by SebaKMT or an authorized service station, in order to warrant the loggers' protection against water and dust ingress.

External power supply

In order to expand the operating time of the measuring system, the data logger can be supplied by an external energy source.

The Logger is connected to this source using the VK 76 connection cable (see page 24).

- Supply voltage: 12 V
- Supply current: approx. 0.5 A (if the GSM function is not used)
  approx. 1.5 A (when using the GSM function)

NOTE	Peaks of 4 A can occur.

External rechargeable battery pack

In order to expand the operating time of the measuring system, the data logger can be connected to an external rechargeable battery pack which can be ordered from SebaKMT.

The logger is connected to the external battery pack by means of the VK88 connection cable. The 10-pole connector (red) of the cable has to be plugged in the **DC ext.** 4 socket of the logger. Then the 5-pole connector has to be plugged in one of the sockets of the battery, no matter which one. From now on the logger is powered by the external battery only, until the connection is cut or the capacitance of the external battery gets low. In that case, the logger switches back to internal power supply.

Use the supplied mains adapter to recharge the external battery pack. Plug the round 5-pole connector in one of the sockets of the battery, no matter which one. Once the battery is connected to the mains, it is charging. The charging process for a fully loaded battery takes 12 to 13 hours. Overcharging of the battery cannot occur if the supplied mains adapter is used.

2.5 Memory

The device has 4 MB internal memory. For example, if 4 sensors are connected and a recording interval of 5 minutes is specified, this is sufficient for 5 years non-stop data recording. As part of the programming process, the logger can be set to "ring memory mode". As the memory fills up with data in this mode, the device keeps logging and the respective oldest value is overwritten.

2.6 Technical data

Depending on the configuration, the Sebalog D-3 is specified by the following parameters:

Parameter	Value
Communication	Short-range radio 868 MHz (in Europe) 913,02 MHz (in the US) 913 / 916 MHz (depending on the country) Mobile radio (GSM / GPRS / UMTS) 850 / 900 / 1800 / 1900 / 2100 MHz
Inputs / outputs	2 or 4 freely programmable channels, digital: 0…5 V / pulse / frequency analogue:4…20 mA (max. 2 channels); Up to 2 switching inputs (alarm trigger); Up to 2 switching outputs (alarm installation); Connectors for internal pressure sensor
Internal pressure sensor	optional (16 bar / 25 bar / 35 bar); accuracy: +/- 1 % resolution: 0.006 bar (16 bar sensor)
Log interval standard measurement pressure surge meas.	Standard measurement 1 sec up to 24 hrs selectable Pressure surge measurement 0.1 sec or 1 sec selectable
Memory	4 MB internal memory block or roll memory selectable
Alarm	Switching input and threshold monitoring for each channel possible; Triggering of switching output(s); Alarm messages via SMS / e-mail; Measuring data upload to FTP server in case of alarm
Battery	Internal lithium batteries
Ext. power supply	12 V DC
Operating temperature	-20°C … +70°C
Storage temperature	-20°C … +70°C
Dimensions (L x W x H)	115 x 115 x 180 mm
Weight	approx. 0.9 kg (incl. batteries)
Degree of protection	IP 68

2.7 Scope of delivery

Standard accessory parts

Besides of the logger unit and a magnet, the Sebalog D-3 package contains the following accessories:

Accessory part	Description	Item No.
CSW Dataview-3 PC software	standard user software for programming the logger and retrieving or evaluating measurement data	118302210
VK86 connection cable (green)	for connecting up to 4 sensors; must be connected to the **IN** socket ❸	820019262
VK76 connection cable (red)	for connecting up to 2 switching inputs / outputs (alarming); must be connected to the **DC ext.** socket ❹	820012450
GSM antenna, magnetic, with connection cable, 2 m	only for loggers with GSM modem; must be connected to the **GSM** socket ❻	820020888
Special PVC pneumatic hose, 2 m, 35 bar	only for loggers with internal pressure sensors; to be connected to the nipple of an internal pressure sensor	118304220

Optional accessory parts

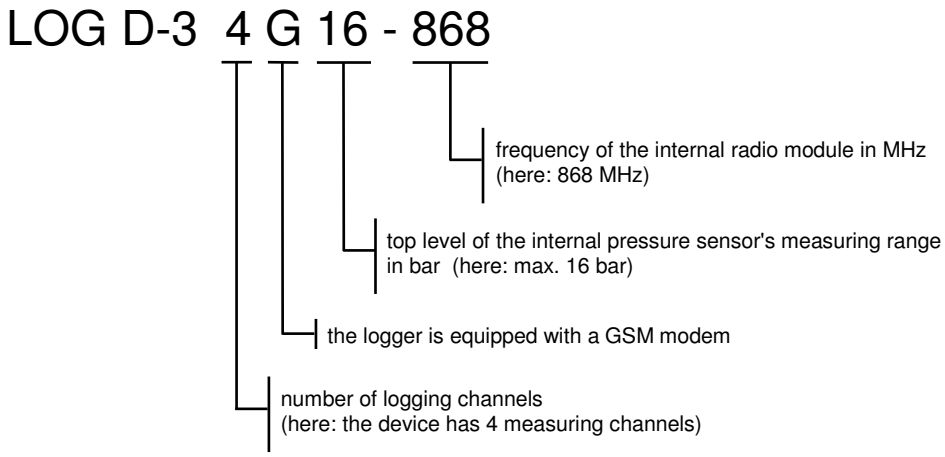
In addition to the standard scope of delivery, there are optional accessory parts which can be ordered from SebaKMT.

Accessory part	Description	Item No.
LOG RB-3 Sebalog Reader-3 set incl. docking station	portable device for wireless on-site data readout without PC; can be used to establish a radio link between the logger and a PC	118304287
LOG D-EB external accumulator set	external power supply for the logger	820021915
VK84 connection cable	for connecting a UDM 200 to the data logger	820018168

2.8 Available versions

The Sebalog D-3 data logger is available in a wide variety of configurations. The type code on the logger's label showshow the device is equipped..

Type code The type code consists of the following segments:



Due to the large amount of possible configurations, this manual cannot state explicitly whether or not a described function applies to your device. Please use the information provided within this section to identify the specific capabilities of your logger.

3 Commissioning the logger

3.1 Preparations for mobile communication

If your data logger is equipped with an internal GSM modem for mobile radio communication, alarm messages and status messages can be sent via e-mail or SMS. Furthermore, collected data can be transferred to an FTP server. From there they can be downloaded with any Internet-capable computer anywhere in the world.

UMTS / GPRS For data transfer via mobile radio you have to close a suitable contract with a mobile phone service provider, in order to get a SIM card enabled for data transfer via UMTS / GPRS.

FTP server For measuring data uploads, free memory space on an FTP server is needed. You can ask your administrator to set up an FTP server using the server infrastructure of your company or you can rent a server from a commercial internet service provider.

You can also rent FTP space from SebaKMT. Please contact your SebaKMT distributor.

Under certain conditions the demo server run by SebaKMT can be used.

E-mail messages If you wish to receive alarm messages or status messages via e-mail, an e-mail account is needed from which the messages are to be sent. If the mail server of your company is not capable for this task (e.g. due to a firewall), a webmail account from an internet service provider (e.g. Yahoo or Google) can be used instead.

Under certain conditions the demo account run by SebaKMT can be used.

Please note that the mobile radio link function increases the loggers' energy demand, which has a strong negative influence on the battery life of the logger.

3.2 Preparing the logger for GSM

In order to prepare the logger for GSM connectivity, the SIM card you received from your mobile operator has to be inserted and the GSM antenna must be connected.

Insert SIM card Proceed as follows:

Step	Description
1	Loosen the six screws and remove the cover of the device.
	Result: Inside the housing you have access to the batteries and SIM card slot.
2	Insert the SIM card.

Please be careful not to damage any parts. Don't use any force.

To remove the tray for the SIM card from its fastener, press the yellow spring mechanism (see picture), e.g. by the help of a screwdriver or a pen. Remove the tray and place the SIM card on it so it fits. Then push the tray back into the bracket until it locks into place.

Step	Description
	
3	Attach the cover to the housing again. The rubber seal inside the cover is not glued in and may possibly fall out. Therefore, when re-assembling the device, it may be helpful not to put the cover on the housing but to take both parts upside down and then put the housing on the cover. To ensure that the housing remains waterproof, please observe the following points: • The rubber seals and the housing and cover surfaces which touch each other must be free of dirt. • Be careful not to jam the housing parts against each other. • Tighten the screws finger-tight (1 Nm). Do not overtighten!

Connect GSM antenna

The logger has no internal or external antenna. To enable the GSM connectivity the delivered external GSM antenna must be connected to the device.

Connect the antenna to the **GSM** socket ❻. Make sure that the guide on the plug fits in the groove in the socket and that you feel the plug latch in.

3.3 Switching the logger On/Off

The logger is switched on by the help of a magnetic switch.

NOTE	Before switching the logger on, all connected devices have to be disconnected (unplug connectors) because the internal relays of the logger are initiated during the switch-on process. Thus, connected devices could be turned on and off unexpectedly and unintentionally.

Move the supplied magnet in front of the contact area 1. After the magnet switch has been activated, the **I/O** control lamp 2 is lit green for a moment and starts flashing blue after the logger has been started up. The device is now in energy saving mode.

Whenever a radio or GSM connection is established and whenever a data transfer takes place, the logger automatically switches to data transfer mode.

In order to switch the logger off, the magnet must be held in front of the contact area 1 for a few seconds while the **I/O** control lamp 2 is lit orange. As soon as the lamp switches to red, the magnet has to be taken away from the contact area. Afterwards, the logger switches off and the lamp goes out. Make sure to take the magnet away immediately after the lamp switches to red. Otherwise, the logger reboots right after it has been switched off.

Switching the device off has no effect on the measurement data stored. The measurement data remain in the logger's memory up to the time at which the device receives new configuration data.

After being switched off and on again, the logger's latest configuration still is stored and can be retrieved, but it is no longer valid. The logger does not resume measuring.

Furthermore, after being switched off and on again, the logger's system time is no longer current.

Therefore, the logger needs to be programmed anew after every restart.

3.4 Programming the logger

Prior to its on-site installation, the logger must be properly configured using the supplied SebaDataView-3 software. In doing so, the logger has to be provided with the channel allocation, the alarm conditions and the wireless connection parameters among other things.

Please refer to the according chapter in order to get a detailed description of how to program the logger.

4 Connecting the logger and installing it on-site

4.1 Connecting sensors to the logger

Depending on its configuration, the following peripheral and measuring devices can be connected to a logger:

- up to 4 sensors can be attached and the data can be logged (e.g. pressure, flow)
- up to 2 alarm-triggering devices (e.g. a light barrier) can be connected to the switching inputs
- up to 2 devices (e.g. signal lamp, pump) can be connected to the switching outputs and can be triggered in the case of an alarm
- one hose can be directly connected to the internal pressure sensors

Depending on the type of sensors / alarm devices connected, the appropriate parameter values have to be provided to the logger using the *SebaDataView-3* software. Please refer to the according chapter in order to get a detailed description of the necessary configuration steps (see page 42).

External sensors connected cannot be supplied by the data logger. They need a separate power supply.

4.1.1 Fixed channel allocations

The internal pressure sensor is always linked to measuring channel 1. The respective channel is in use and must not be connected to an external sensor.

Due to the internal wiring of the logger, current loops can only be connected to the channels 2 and 4.

2-channel loggers Corresponding to these conventions, the following channel allocations apply for 2-channel loggers which are equipped with a pressure sensor:

	Channel 1	Channel 2	Channel 3	Channel 4
Int. pressure sensor	X			
Current loop		X		

The following channel allocations apply for 2-channel loggers without pressure sensor:

	Channel 1	Channel 2	Channel 3	Channel 4
First current loop		X		
Second current loop				X

4-channel loggers The following channel allocations apply for loggers with 4 measuring channels:

	Channel 1	Channel 2	Channel 3	Channel 4
Int. pressure sensor	X			
First current loop		X		
Second current loop				X

4.1.2 Connecting a hose to the internal pressure sensor

If your logger is equipped with a pressure sensor, a hose can be connected directly to the connector **P** 5. In order to do so, your hose has to be equipped with a female quick-fit connector.

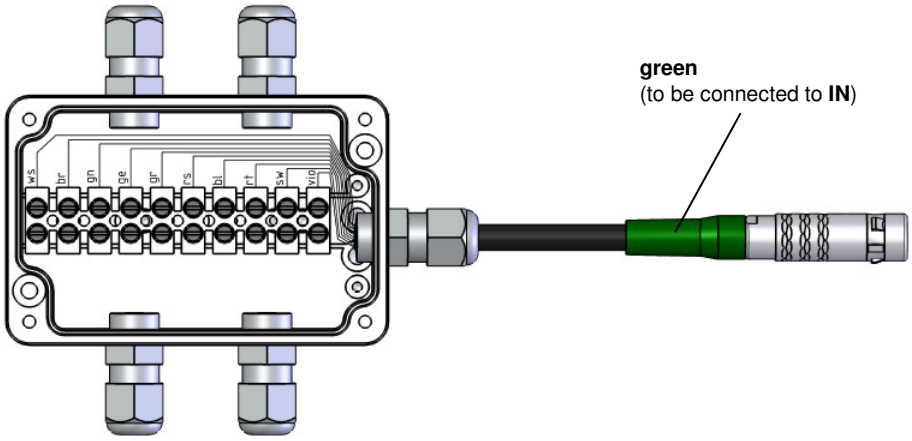
NOTE	When connecting a hose to the internal sensor, the following instructions must be noted: • Pressure sensors are sensitive to overpressure. Do not exceed the measuring range in order to avoid irreparable damage to the sensor. • Make sure no dirt or rust can ingress inside the sensors. In case of doubt, use a filter. • There must not be any water inside the sensor after use. Otherwise, frost can damage the sensor. • After a sensor has been in use or in storage for a longer period, it must be cleaned with compressed air.

The sensors are capable of measuring the pressure of both liquid and gaseous media.

4.1.3 Connecting sensors

Any connection of a sensor is established via the VK86 connection cable attached to the **IN** socket ❸.

One end of the connection cable is equipped with a box providing a terminal block the colour-coded wires coming from the logger are connected to. Each colour represents a specific input / output of the logger.



The VK86 connection cable has the following pin assignment:

Wire	Description	
white	Channel 1 +	Channels up to 4 sensors can be connected to.
brown	Channel 1 –	
green	Channel 2 +	
yellow	Channel 2 –	
grey	Channel 3 +	
pink	Channel 3 –	
blue	Channel 4 +	
red	Channel 4 –	
black	not used	
purple	not used	

To connect a sensor, lead its connecting wires into the box using one of the four cable glands and connect them to the respective terminal of the terminal block.

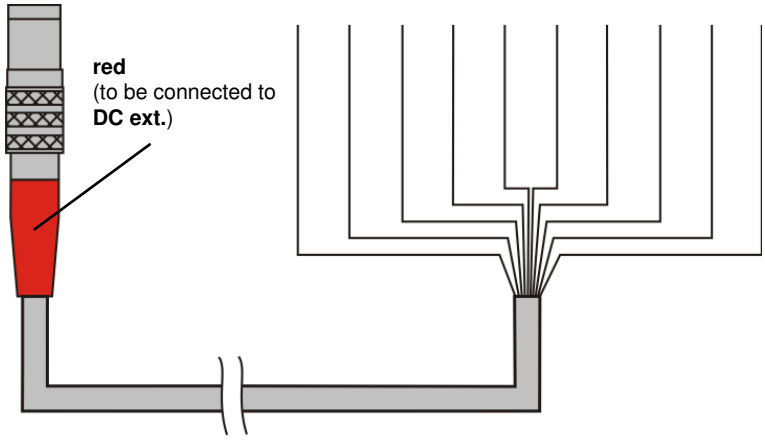
When you connect the cable to the **IN** socket of the logger, make sure that the guide on the plug fits in the groove in the socket and that you feel the plug latch in.

NOTE	When you install the measuring system please keep in mind that water and dust can penetrate the box.

4.1.4 Connecting devices to the switching Inputs / Outputs

The switching input / output connections and the external power supply are established via the VK76 connection cable attached to the **DC ext.** socket 4.

One end of the cable is uncoated and ten colour-coded wires stick out of it. According to its colour, each of these wires represents a specific input / output of the logger and can be directly connected to the respective terminal of a peripheral device.



The VK76 connection cable has the following pin assignment:

Wire	Description	
white	Switching Input 1	An alarm-triggering device with a voltage output of 0 … 5 V can be connected between a switching input and the purple wire (GND).
green	Switching Input 2	
brown	Relay 1 OUT	An electric circuit with an external DC power supply up to 12 V / 1 A can be connected to each switching output. If an internal relay is triggered by an alarm event, the respective circuit is closed and the connected load is activated / triggered.
yellow	Relay 2 OUT	
pink	Relay 1&2 IN	
red	External power supply	An external power supply with 12 V DC can be connected between this wire and the purple wire (GND). The internal battery cannot be charged by an external power supply.
purple	GND	
grey	not used	
blue	not used	
black	not used	

If no adequate terminals are existent, a luster terminal or other accessories can be used to connect a peripheral device. A proper electrical insulation must be ensured.

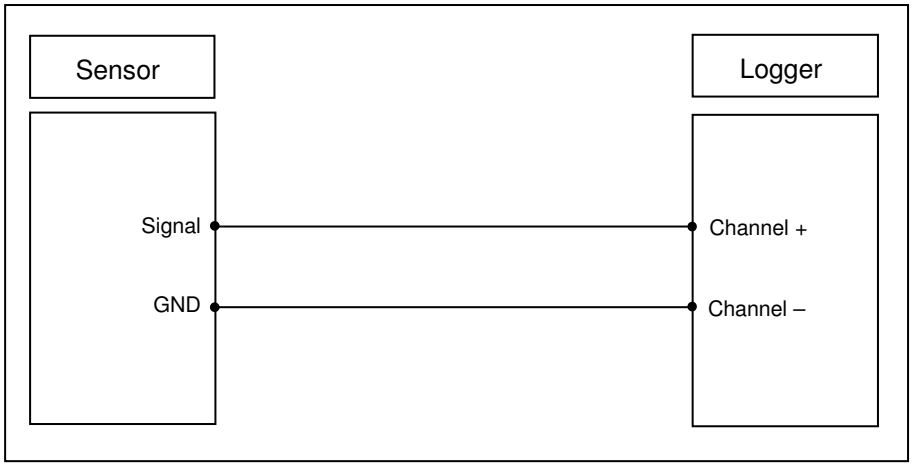
Make sure that the guide on the plug of the VK76 cable fits in the groove in the **DC ext.** socket 4 and that you feel the plug latch in.

4.1.5 Wiring diagram examples

In the following, some connection examples are described. Depending on the sensor, the actual wiring diagram and the terminal designation may differ. Please refer to the respective sensor manual for detailed information.

Output signal type ***voltage/frequency/ pulse***

The following example describes how to connect a sensor with a 0 - 5 V voltage output or 0 Hz - 6000 Hz frequency output or pulse output:



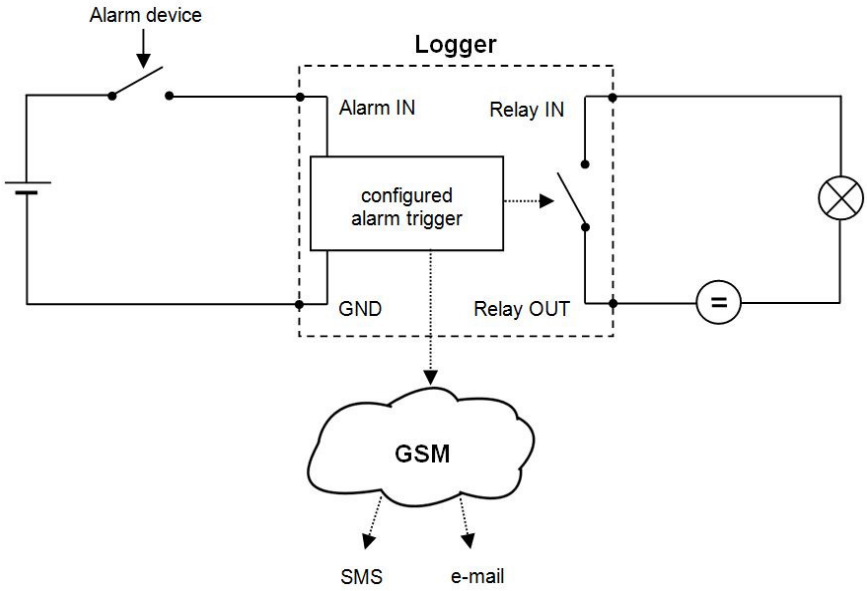
Output signal type ***current***

The following example describes how to connect a sensor to a 4 … 20 mA current loop:

A current loop can only be connected to channel 2 or 4.

Example of an alarm loop

The following example shows an electrical circuit with DC power source connected to the switching input of the loggers. If an alarm is raised by the alarm device (e.g. light barrier) is activated, the circuit is closed and the switching input is triggered. Depending on the alarm configuration, one or two of the internal relays are switched in order to activate / trigger the load connected to the respective switching output (in this case a signal lamp) and a SMS and / or e-mail can be sent to predefined receivers.



Alarms can also be triggered when the value of a monitored measurement crosses a predefined threshold. Please refer to the corresponding section for detailed information on how to configure the threshold monitoring (see page 48).

4.2 Positioning the logger

The logger housing is protected against the ingress of dust and water and, thus, especially qualified for the operation in pipeline shafts where it can be installed next to the measuring point.

The logger can be installed in vertical and horizontal position or even upside-down and it can also be hung up using, e.g., a cable tie.

During field installation the following instructions must be observed, in order to ensure proper operation of the logger:

- Make sure that all connections to sensors of other peripheral devices are established in a professional manner and that the connection points are properly insulated.
- When you plug a connection cable in the respective socket, make sure you feel the plug latch in. Only proper and positive locking connections provide protection against ingress of water and ensure error-free data transfer.
- Care shall be taken to ensure that cables and their connections are not subjected to tensile load.
- Do not hang the logger on its connection cables.
- Do not bend the connection cables.
- Make sure the logger is switched on before you leave the site.

4.3 Positioning the GSM antenna

You have to observe the following instructions when positioning the GSM antenna:

- The GSM antenna must be properly connected to the logger. Make sure that the guide on the plug fits in the groove in the **GSM** socket (6) and that you feel the plug latch in.
- Be aware that thick walls and other barriers do affect the signal strength negatively.
- If the logger is installed underground, e.g. in a pipeline shaft, the antenna should be positioned as near as possible to the ground surface. The deeper the antenna is positioned, the smaller is the chance of an adequate reception.

Check the GSM connectivity using the GSM test function of the SebaDataView-3 software (see page 57) right after the GSM antenna has been positioned. If no connection can be established, a better position has to be found. If necessary, lead the antenna out of the shaft and bury it a few centimetres under the ground surface.

5 SebaDataView-3 software

SebaDataView-3 (abbreviation: SDV-3) is the multifunctional application software for working with devices in the 'Sebalog' series. You can use it to configure the majority of devices and read out the measurement data from the devices. The measurement data can be displayed and analysed in greater detail using various functions on the computer.

5.1 Installation

System requirements Your machine must meet the following minimum system requirements in order to run the SebaDataView-3 software:

- PC or notebook with Windows 7® or higher
- min. Pentium IV compatible CPU (at least 2 GHz)
- min. 2 GB memory
- USB interface
- CD ROM drive

Installation To install the software insert the provided CD, execute the installation file and follow the instructions on the screen. The application is installed to the following folder: *C:\Program Files\SebaKMT\SebaDataView*.

Furthermore, a database is created in the Windows standard folder for application data (see page 38).

Software start Start the application by double-clicking on the desktop icon created during the installation process. Alternatively, the application can be started via the Windows start menu.

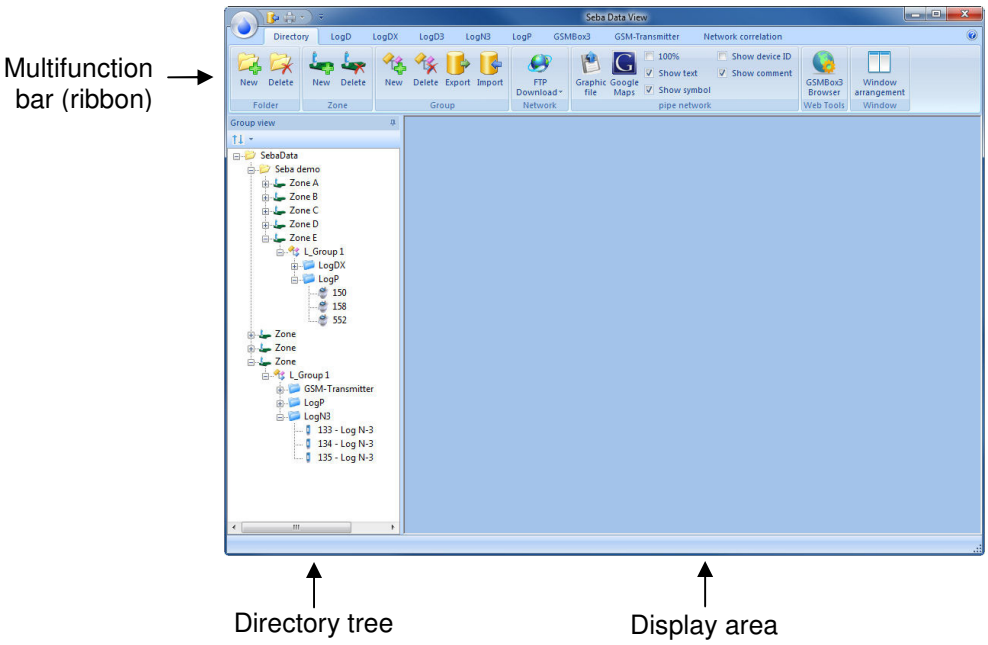
Language selection During start-up you are asked to select the language of the user interface. Make your choice from the drop-down-list and click on **OK**.

Software update During start-up, the current version of the software is displayed on the screen. Please check *www.sebakmt.com* regularly for updates. To install a new version of the software, store the respective file on your PC, execute it and follow the instructions on the screen.

5.2 Function and structure

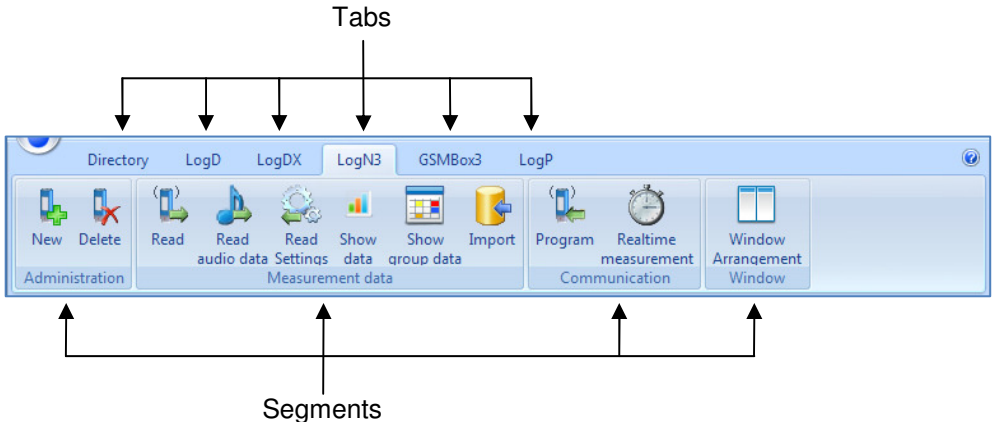
Introduction SebaDataView-3 (SDV-3) is the multifunctional user software for working with devices of the Sebalog series. Using the software, loggers can be programmed prior to the measurement. After measurement the recorded data can be queried from the loggers, displayed and analyzed.

User interface The SDV-3 user interface is based on the Microsoft Office suite (2007 and later). In all menu levels the display shows the following structure:



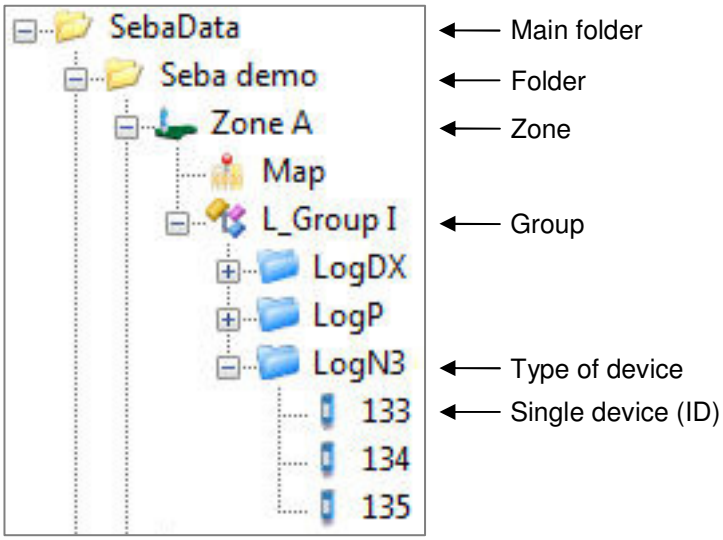
Multifunction bar All function and command buttons are arranged in a panel, called ‘ribbon’, as it is known from Microsoft Office applications.

Every Sebalog device series that can be managed using the SDV-3 software has its own ‘tab’. All the commands needed when working with this device are grouped in the ‘segments’ of this tab.



Directory tree On the left of the screen the directory structure of the software database is displayed. All the devices added to the database by means of their identification number can be found in this so called 'directory tree'.

The directory tree shows the following structure of folders and sub-folders:



Display area All dialogue and display windows of the various functions appear in the display area.

5.3 Device administration

5.3.1 Creating / deleting folders

Create a folder To create a new folder in the directory tree, proceed as follows:

Step	Description
1	Mark the folder 'SebaData', or any other existing folder which the new folder should be added to as a sub-directory.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Folder**, click on **New**.
4	In the window which opens, enter the **Name** and a **Comment** for the new folder and confirm the entries by pressing **OK**.
	Result: The new folder has now been created in the database and will appear in the directory tree.

Delete a folder To remove a folder from the directory tree, proceed as follows:

Step	Description
1	Mark the folder to be deleted.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Folder**, click on **Delete**.
4	Answer the security query with **Yes**.
	Result: The corresponding folder is removed from the directory tree.

If a folder is deleted, all loggers/devices assigned and all the collected data are deleted, too.

5.3.2 Creating / deleting zones

Create a zone To create a new zone in the directory tree, proceed as follows:

Step	Description
1	Mark the folder in the directory tree in which the new zone should be created.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Zone**, click on **New**.
4	In the window which opens, enter the **Name** and a **Comment** for the new zone and confirm the entries by pressing **OK**.
	Result: The new zone has now been created in the database and will appear in the directory tree.

Delete a zone To remove a zone from the directory tree, proceed as follows:

Step	Description
1	Mark the zone to be deleted.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Zone**, click on **Delete**.
4	Answer the security query with **Yes**.
	Result: The corresponding zone is removed from the directory tree.

If a zone is deleted, all loggers/devices assigned and all the collected data are deleted, too.

5.3.3 Creating / deleting groups

Create a group To create a new group in the directory tree, proceed as follows:

Step	Description
1	Mark the zone in the directory tree in which the new group should be created.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Group**, click on **New**.
4	In the window which opens, enter the **Name** and a **Comment** for the new group and confirm the entries by pressing **OK**.
	Result: The new group has now been created in the database and will appear in the directory tree.

Delete a group To remove a group from the directory tree, proceed as follows:

Step	Description
1	Mark the group to be deleted.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Group**, click on **Delete**.
4	Answer the security query with **Yes**.
	Result: The corresponding group is removed from the directory tree.

If a group is deleted, all loggers/devices assigned and all the collected data are deleted, too.

5.3.4 Adding / deleting single devices

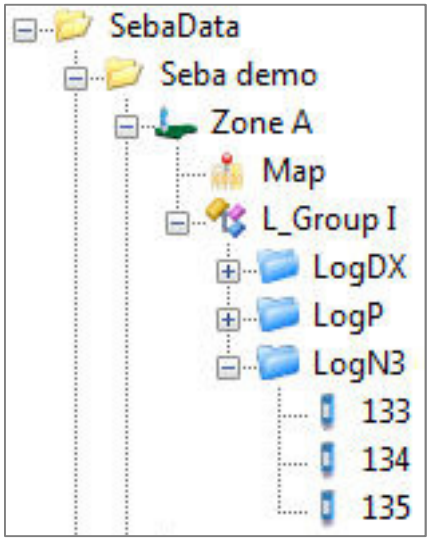
Add a device

To add a device to a group in the directory tree, e.g. a logger, proceed as follows:

Step	Description
1	Mark the group in the directory tree to which the device should be added.
2	In the multifunction bar, open the tab **LogD3**.
3	In the segment **Administration**, click on **New**.
4	In the window which opens, enter the **Identification Number (ID)** of the device or use the "Automatic detection" (find more information below in the text). Click on **OK** to add the device to the group.
	Result: The new device has now been created in the database and will appear in the directory tree. Add more devices to the group successively or close the window.

There is the possibility to add devices of different types to the same group. Then, automatically new sub-directories are created by the software to which the various devices are added according to their type.

Example: "Group I" has LogDX, Log P and Log N3 loggers:



Automatic detection

A radio interface (e.g. Log RI) needs to be connected to the computer in order to be able to use the „Automatic detection“ when signing on devices.

Tick the checkbox „Automatic detection“ in the window which opens. Then bring the device which has to be turned off near the computer and switch it on. The identification number of the device will be recognised and displayed on the screen.

Click **OK** or **Insert** in order to accept the ID and to add the device to the group.

If you tick the checkbox „Automatic insertion“, the recognised devices will be added automatically to the group.

Delete a device To remove a device from the directory tree, proceed as follows:

Step	Description
1	Mark the device to be deleted.
2	In the multifunction bar, open the tab **LogD3**.
3	In the segment **Administration**, click on **Delete**.
4	Answer the security query with **Yes**.
	Result: The corresponding device with all its measuring data is removed from the directory tree.

5.4 Map function

You have the opportunity to mark the location of installation of each of your devices on a virtual map. Thus, you obtain an overview of the zone and all the devices used.

5.4.1 Creating a map

Introduction

You have the chance to import any image file into the software - e.g., a sector of a pipe network plan or a detail of a map, etc.

If you have access to the Internet, the software also provides the possibility to call up the 'Google Maps' web service, in order to create a map of the respective zone.

Import an image file

To import an image file and add it to a zone in the directory tree, proceed as follows:

Step	Description
1	Mark the zone in the directory tree to which the map should be added.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Pipe network**, click on **Graphic file**.
4	Use the window that opens to navigate to the source folder, from where the image file is to be imported ('jpg', 'bmp' and 'png' format are possible). Select the file and click on **OK**.
	Result: The image file is imported into the software and now appears in the directory tree in the form of a sub-folder called **Map**. A new window opens, where the newly created map is shown.
5	To mark the place of installation of a device, in the directory tree click on the device concerned, keep the left mouse button pushed and drag the device to the point desired on the map displayed. Proceed in the same way to place the other devices of the zone on the map.

Create a map using 'Google Maps'

To create a map using the 'Google Maps' web service and add it to a zone in the directory tree, proceed as follows:

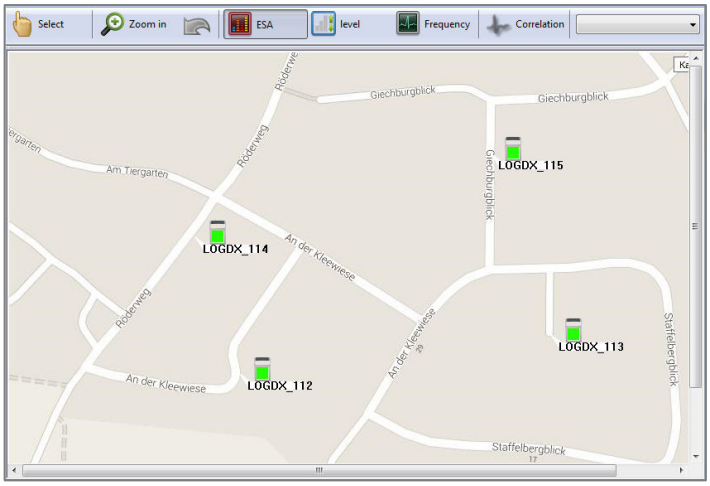
Step	Description
1	Mark the zone in the directory tree to which the map should be added.
2	Open the tab **Directory** in the multifunction bar.
3	In the segment **Pipe network**, click on **Google Maps**.
	Result: A connection to 'Google Maps' is established. A new window opens, showing the known 'Google Maps' user interface. Aditionally, you find some input fields and controls.
4	To get a certain destination area displayed, use one of the following options: • Mark the checkbox **Address** and enter the destination adress desired into the field right beside, or • mark the checkbox **Coordinate** and enter a GPS position, using the fields **Latitude** and **Longitude**. Confirm your entry by pressing the ENTER key on your keyboard.
5	Use the known tools of the 'Google Maps' user interface (moving, zooming, etc.) to customize the map section displayed.

(continued on the next paage)

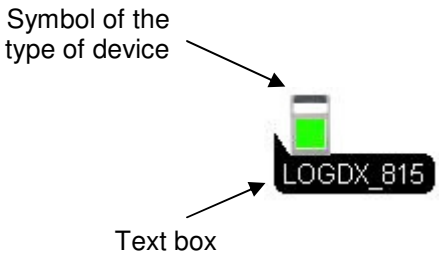
Step	Description
6	Click on **OK**.
	Result: The adjusted map section is stored as an image file and now appears in the directory tree in the form of a sub-folder called **Map**. A new window opens, where the newly created map is shown.
7	To mark the place of installation of a device, in the directory tree click on the device concerned, keep the left mouse button pushed and drag the device to the point desired on the map displayed. Proceed in the same way, in order to place the other devices of the zone on the map.

5.4.2 Executing a map

To open the map window of a zone, in the directory tree double-click on the **Map** sub-folder of the zone concerned.



The markings, indicating the positions of the single devices on the map, show the following design:



Thanks to the pictogram (symbol), the type of device marked can easily be recognized.

The text box shows ‘type & identification number’ or the ‘comment’ of the device marked - depending on the settings made in the **Pipe network** segment of the multifunction bar (see page 36).

Create a marking

To mark the place of installation of a device, in the directory tree click on the device concerned, keep the left mouse button pushed and drag the device to the point desired on the map displayed.

Move a marking

To move a marking on the map, proceed as follows:

Step	Description
1	In the menu bar of the window, click on **Select**.
	Result: The mode of the cursor changes from 'show' to 'select'.
2	Click on the marking concerned, keep the left mouse button pushed and move it to a new position.
3	Finally, click on the **Select** button once again in order to deactivate it.

Zoom function

You have the chance to get a section of the map magnified in an extra window. Proceed as follows:

Step	Description
1	In the menu bar of the window, click on **Zoom**.
	Result: The cursor changes from mode „show" to mode „enlarge" .
2	On the map, mark the area that is to be magnified. (For this, click on the map, keep the left mouse button pressed and move the cursor diagonally across the area of interest.)
	Result: The map section selected is magnified.

Undo last step

In order to undo the last steps click the arrow button in the menu bar.

In order to leave the magnified map view click once again the **Zoom** button.

Costumize the view

You have the chance to costumize the map view. For this purpose, open the **Directory** tab of the multifunction bar. There, in the **Pipe network** segment, the following checkboxes are available:

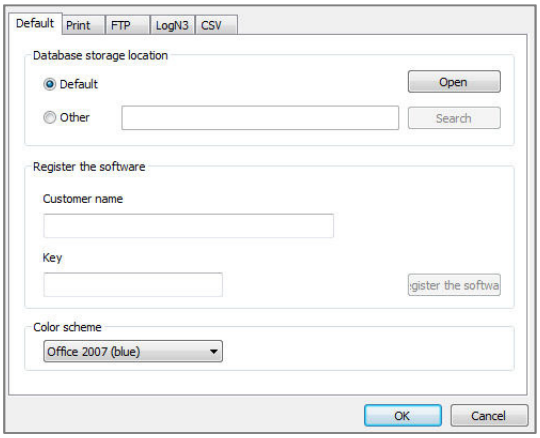
Option	Description
100 %	If this checkbox is enabled, the map section is scaled up or down corresponding to the size of the window displayed If it is disabled, the size of the map remains static.
Show text	If this checkbox is disabled, the text box of the markings is hidden.
Show symbol	If this checkbox is disabled, the pictogram of the markings is hidden.
Show device ID	If this checkbox is enabled, the text box of a marking shows the type and the identification number" of the device.
Show comment	If this checkbox is enabled, the text box of a marking shows the comment/name of the device.

5.5 System settings

In the System settings menu you can make various basic settings for use of the SDV-3 software or specify frequently recurring parameters etc.

To open the menu, first click the water drop symbol  in the top left. Then, click the **Settings** button in the appearing context menu.

A new window appears showing the system settings menu:



5.5.1 Managing the storage location of the measurement database

During installation of the software, a directory with the name ‘data’ is created on the computer by default. All recorded data is saved to this directory.

In the system settings of the software, you have the option to display the current storage location of the measurement data or set up another storage location.

To get access to the storage location management tools, you have to open the **Default** tab.

Displaying the storage location

To display the current storage location of the measurement data, click **Open** in the **Database storage location** segment. The current target directory opens in an Explorer window. (With the default setting, it is the ‘data’ directory mentioned above.) The precise target path is displayed in the address line.

Changing the storage location

You have the option to define another storage location in place of the standard target directory of ‘data’.

Select the **Other** radio button in the **Database storage location** segment. Then click **Search (Browse)** and use the Explorer window that opens to set a new target directory. After the next restart of the software, all newly saved measurement data will be saved in this folder. All previously saved measurement data remains in the previous target folder. There is no longer access to this data from SDV-3.

If you define a new storage location and want to still have access to the previously saved measurement data, you need to first move the entire previous target directory to the new storage location. Only after you do this should you set the new target path, as described above, by selecting the **Other** checkbox and defining the new target path by pressing the **Search (Browse)** button.

5.5.2 Saving access data for FTP server and email account

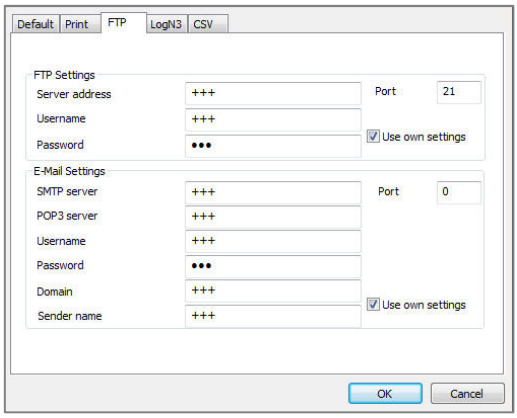
Introduction Various devices in the Sebalog series are equipped with an integrated GSM modem. This means that they can

- send messages per SMS or email (e.g. alarm messages), as well as
- upload measurement data to an FTP server.

Every time the devices are programmed the access data for the sending email account or the access data for the FTP server being used must be entered.

If you wish you can save the data for an email account as well as the FTP server data permanently in the software. When programming the saved access data can then simply be accepted into the input screen 'with a click of the mouse'.

Procedure To store access data in the software, proceed as follows:

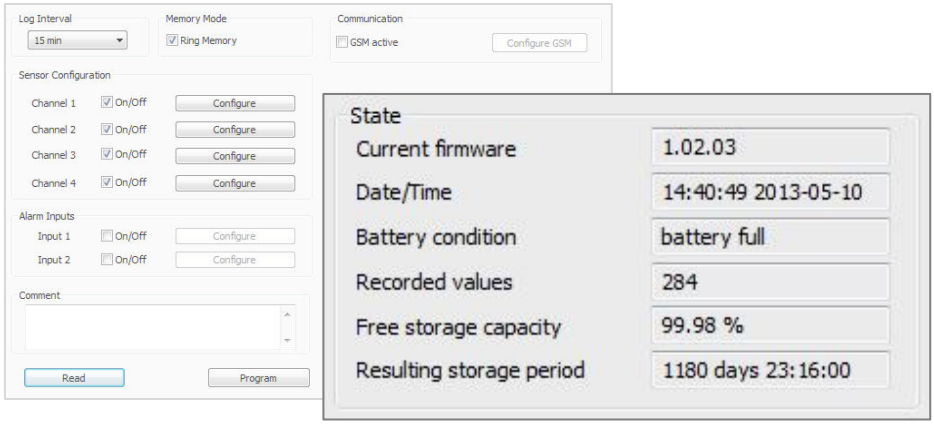
Step	Description
1	In system settings open the **FTP** tab.
	Result: The following entry screen then appears in the window:
	
	The **FTP Settings** segment contains boxes for entering access data for your FTP server. You can ask your company's system administrator or the server operator for this data or it is available in your FTP usage agreement. The **Email Settings** segment contains boxes for entering the access data for the sender email account, if messages are to be sent per email. The data will be assigned to you by the operator of the mail account, or by your system administrator. In the **Sender name** field, you can enter any name, which will subsequently be used to identify the device which is the sender of the alarm message.
2	Click the relevant **Use own settings** checkbox.
3	Enter the access data in the input fields.
4	Click on **OK** to confirm the details and to close the window.
	Result: The access data are now permanently stored in the software. When programming the devices a checkbox is shown for each of the steps in the entry area, with which the stored access data can then be inserted.

Only when the **Use own settings** checkbox has been activated will it be possible at a later stage to access the stored data for programming purposes.

If the checkbox has not been activated, the user is then offered a choice of using a SebaKMT demo FTP server and/or a demo email account.

5.5.3 Getting information about the current device state

When programming a device, in the configuration window the **State** segment can be found. This segment provides various information about the device's current state, e.g. the battery level, the system date and time or the firmware version used.



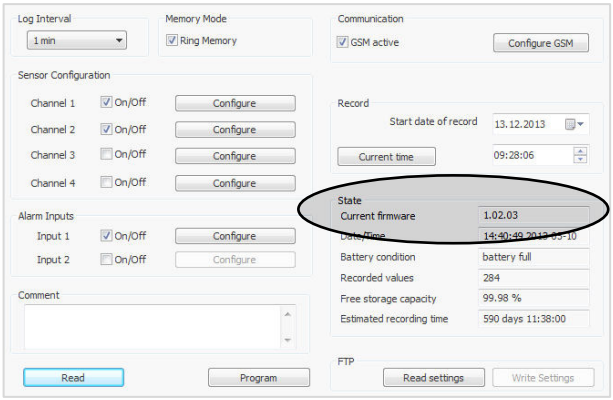
The data refer to the time of the last data readout.

In order to get the latest information, you can read the device's configuration. (For this, locate the switched on device within the computer's radio range, select the device in the directory tree of the SDV-3 software, click on **Program** in the multifunction bar and then on **Read** in the appearing configuration window.)

5.6 Updating the firmware of a device

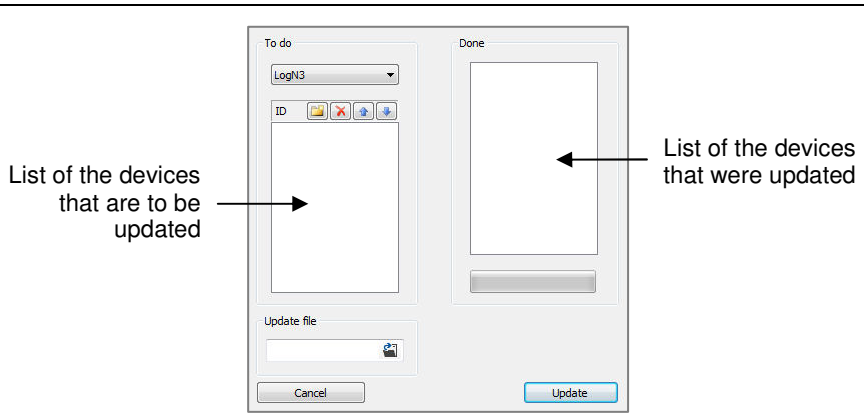
Introduction SebaKMT makes improved versions of the firmware available in the download area of www.sebakmt.com on a regular basis. We recommend that you keep the firmware of all devices current at all times.

In order to determine which firmware version is currently installed on a device, you can read the device's configuration. (For this, locate the switched on device within the computer's radio range, select the device in the directory tree of the SDV-3 software, click on **Program** in the multifunction bar and then on **Read** in the appearing configuration window.) The version of the firmware is displayed in the **State** segment of the configuration window.



All data stored in the device's internal memory may be deleted by the firmware update. Therefore, retrieve all data from the device before carrying out an update.

Procedure To update the firmware of one or more devices, proceed as follows:

Step	Description
1	Download the file for the update from the download area of www.sebakmt.com onto your computer.
2	Open the SebaDataView-3 software.
3	Click the water drop symbol on the top left of the window and select the option **Firmware Update** in the window that opens.
	Result: The Firmware Update screen opens.
	
4	In the drop-down list in the top left, select the type of devices whose firmware is to be updated. Several devices can be updated at the same time. However, they all need to be of the same type – just LogN3 loggers or just LogDX loggers, for example.
5	At the top of the list on the left, click the folder symbol . A new input field opens. There, enter the identification number (ID) of the relevant device, and confirm with the ENTER key on your keyboard. Repeat the process until all devices to which the firmware update is to be transferred are in the list. If you want to remove a device from the list, select the relevant ID and click the symbol for 'Delete' at the top of the list. If you want to change the position of a device within the list, select the relevant ID and move it up or down with the arrow keys .
6	In the **Update file** segment on the lower left of the window, enter the location where you saved the update file that you downloaded to your computer in step 1. To do this, click the folder symbol and use the Explorer window that opens.
7	Click **OK** to start the firmware update.
	Result: The update file is transferred to the devices and installed there. A bar under the list on the right shows the progress of this process. After the file is installed, each device restarts automatically. The IDs of the successfully updated devices switch from the left to the right side on the screen. As soon as the firmware update is successfully completed for all devices, a corresponding message appears in the update window.

6 Programming the logger

Introduction Before a logger can be installed in the field, the device has to be properly configured. In doing so, you can specify the inputs, the logging intervals, the alarm conditions and the radio communication settings, among other things.

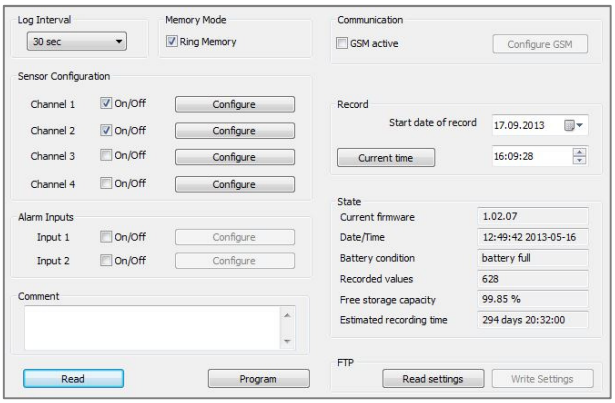
Requirements The device must be switched on and a connection between the device and the computer is needed.

For a radio link

- an interface must be connected to the computer (e.g. Log RI),
- the device must be within the computer's wireless range.

Procedure In order to program the device, proceed as follows:

Step	Description
1	In the SDV-3 software, select the relevant device in the directory tree.
2	In the menu bar, in the segment **Communication**, click on **Program**.
	Result: The window for programming opens.
3	If the fields displayed can not be edited, you have to retrieve the effective configuration data from the device, first. (This usually has to be done when a device has newly been added to the software.) ↓ Click on **Read** to read out the data directly from the device. ↓ Click on **Read settings** to download the data from a FTP server. (Requirements: • internet access • the FTP access information must have been stored in the SDV-3 settings (see page 39)
4	Enter all the required data.
5	To finish the entry and to transmit the configuration settings to the device, click on **Program**.



You find detailed information about the necessary programming steps in the following sections.

6.1 Selecting the logging interval

You can select the time interval in which the measured values are logged from the **Log Interval** drop-down list.

6.2 Configuring a measuring channel

Introduction

Depending on its configuration, up to 4 sensors can be connected to a logger. In order to evaluate the logged data in the right way, the logger needs to know which type of sensor is connected to which channel.

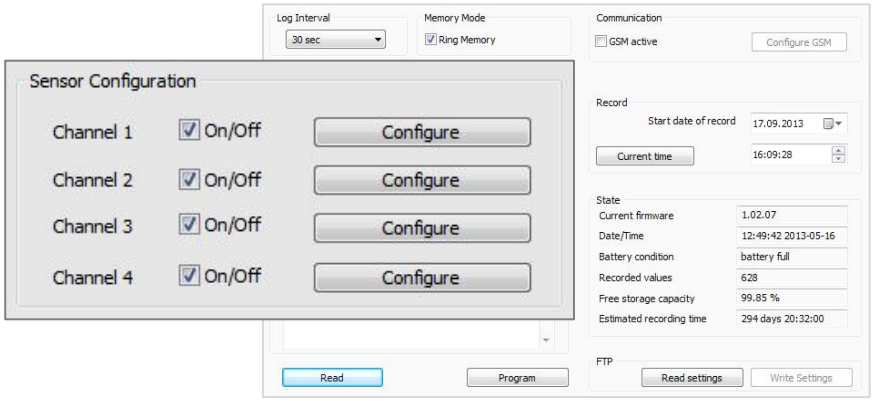
Make sure that the sensor configuration is consistent with the effective connection setup. Each channel is linked with specific wires of the VK86 connection cable (see page 23).

Please pay regard to the fixed channel allocations (see page 21) when configuring internal pressure sensors or sensors with current output.

Make sure you enter the values in the same format as shown in the figures.

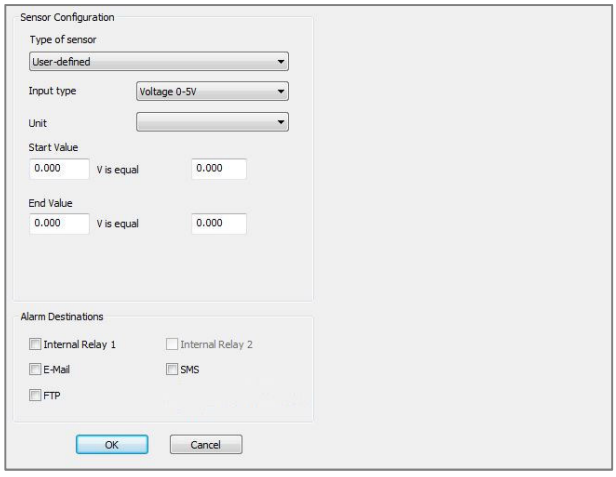
Activating channels

First of all, you have to specify which channels are in use (connected to a sensor) during the upcoming operation period. A channel can be activated by marking the respective On/Off checkbox exemplified by the following figure:



Configuring a channel

After a channel has been activated, it has to be specified which type of sensor is connected to the channel. Click the respective **Configure** button. The following window appears:



6.2.1 Selecting the type of sensor

Introduction The physical value measured by the sensor is transformed into an electrical signal (e.g. voltage, pulses, frequency) which is used to transmit the data to the logger. In order to transform this carrier signal back into the original physical values, the logger needs to know how the ranges are correlated to each other.

Procedure Select the sensor connected to the channel from the drop-down list on the upper left of the window. If your sensor type is not contained in the drop-down list, select the User-defined entry.

The sensors contained in the list are parameterized. The signal conversion data are already populated and cannot be edited. Usually, no further configuration is required.

In some cases you have the chance to specify the unit for the recorded values - e.g. ‘m3/h‘ or ‘l/sec‘.

Furthermore, with some flow sensors you have the chance to compare your results to the values of a water meter. For this purpose, enter the water meters’ meter reading into the displayed field prior to the measurement. The logger will then accept this count as a starting point for the measurement.

6.2.1.1 Configuring an Internal Pressure Sensor

Most parameters of the internal pressure sensor are filled in automatically and cannot be edited.

Unit You have the chance to select the unit for the recorded pressure. Use the drop-down list.

Recording pressure surges If you want sudden pressure fluctuations, known as pressure surges, to be recorded in addition to the standard pressure measurement, select the Record Press Shocks checkbox

Using the input field to the right of the checkbox, you specify how much a measuring value has to differ from the previous value in order to classify a pressure fluctuation as a ‘pressure surge’.

Example: If ‘0.5’ is set, pressure surge recordings start as soon as a measuring value is min. 0.5 bar higher or lower than the preceding value.

By means of the High resolution checkbox you can specify which sampling interval should be used for the 60 second pressure surge recordings:

- checkbox de-selected: 1 sec sampling interval
- checkbox selected: 0.1 sec sampling interval

Using the short 0.1 sec interval allows a more detailed recording.

Please note that the high resolution recording of pressure surges requires more energy and, thus, has a strong negative impact on the logger’s battery life.

The recording of pressure surges is parallel to the standard pressure measurement and has no effect on this.

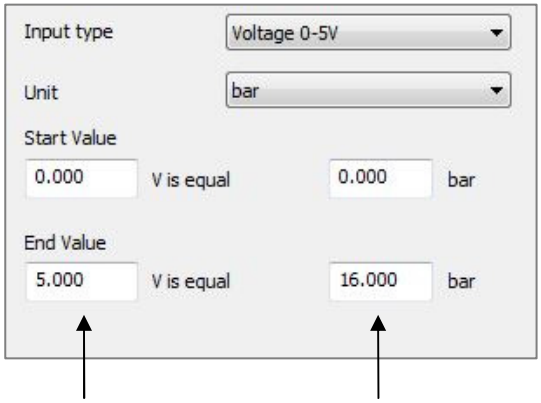
6.2.1.2 Configuring a ‘user defined’ sensor

Introduction

In the case of a ‘user defined’ sensor which is not contained in the mentioned Drop-Down-List, the input type (carrier) and the unit of the physical value have to be specified manually. Furthermore, the upper and lower thresholds of the input signal and the correlating measurement values have to be specified.

Configuring the input type

Perform the following steps to configure the input type of a ‘user defined’ sensor:

Step	Description
1	Select the type of signal, the sensor uses to pass the measured data to the logger from the Input type drop-down list.
2	Select the unit of the physical value measured by the sensor from the Unit drop-down list.
3	Depending on the selected input type and value, some additional fields may need to be populated with the upper and lower thresholds of the input signal and the correlating measurement values.  **Input signal thresholds** **Correlating measured values** For detailed information about the input type and the ranges, please refer to the manual of the connected sensor.

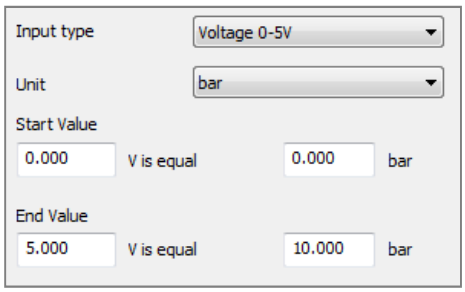
6.2.1.3 Input type examples

Input type Voltage

A 10 bar pressure sensor with voltage output is connected to a channel of the logger.

Input type: Voltage 0-5V
Unit: bar

The lower limit of the measuring range (0 bar) is indicated by a voltage value of 0 V while the upper limit (10 bar) correlates with 5 V. As a result, the fields must be populated as follows:



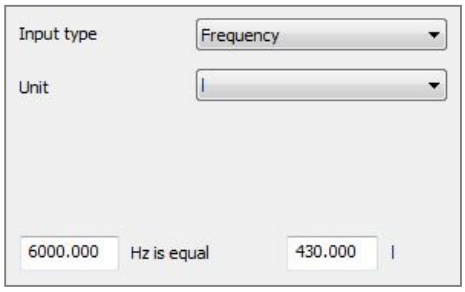
NOTE	The maximum permissable input voltage is 5 V.

Input type Frequency

A level meter with frequency output is installed in a 430 l tank.

Input type: Frequency
Unit: l

The maximum level of 430 l is indicated by a frequency of 6000 Hz. As a result, the fields must be populated as follows:

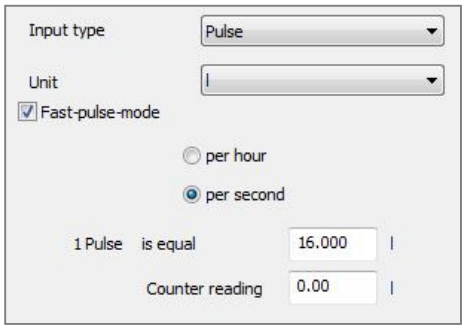


The maximum permissable frequency is 6000 Hz. If the connected sensor transmits higher frequencies, a frequency divider must be interconnected.

Input type Pulse

A flowmeter with a digital pulse output is connected to a channel of the logger. The flowmeter transmits one pulse per 16 litres.

Input type: Pulse
Unit: l



The checkbox **Fast-pulse-mode** must be activated if a sensor is used with a pulse rate >50 Hz (ie, more than 50 pulses per second). Otherwise, it may result in inaccurate measurements.

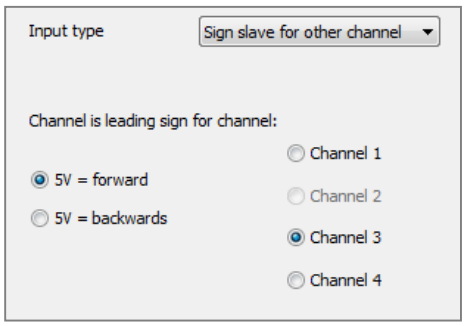
Select whether the flow shall be measured **per hour** or **per second**.

If you want to compare your results to the values of a water meter, you have the chance to enter the water meters' **counter reading** into the respective field prior to the measurement.

Determining the flow direction

A flowmeter is connected to channel 3. In addition to the flow rate itself, the flow direction shall be determined. For this purpose, a sensor which indicates the flow direction by means of voltage values is connected to another channel of the logger.

Input type: Sign slave for other channel



First of all, it has to be specified which direction is indicated by the 5 V value. A voltage value of 0 V automatically indicates the opposite direction.

Furthermore, the channel (flow), the determined flow direction applies to, has to be selected (in this case Channel 3).

6.2.2 Configuring alarm conditions (Threshold monitoring)

Introduction

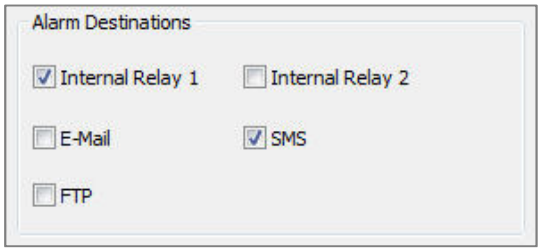
The device can trigger an alarm whenever a specified minimum or maximum threshold is crossed. That way,

- alarm messages can be sent via SMS and / or e-mail (if GSM connectivity has been established and properly configured)
- an unscheduled measuring data upload to your FTP server can be performed (if GSM connectivity has been established and properly configured)
- up to two connected devices (e.g. a pump or a valve) can be triggered by the internal relays

Alarm thresholds have to be specified for each channel individually.

Configuring alarm destinations

Specify under **Alarm Destinations** which **Internal Relay** shall switch to trigger the connected device and which type of alarm message shall be sent (**SMS** and / or **e-mail** and / or **data upload to FTP server**).



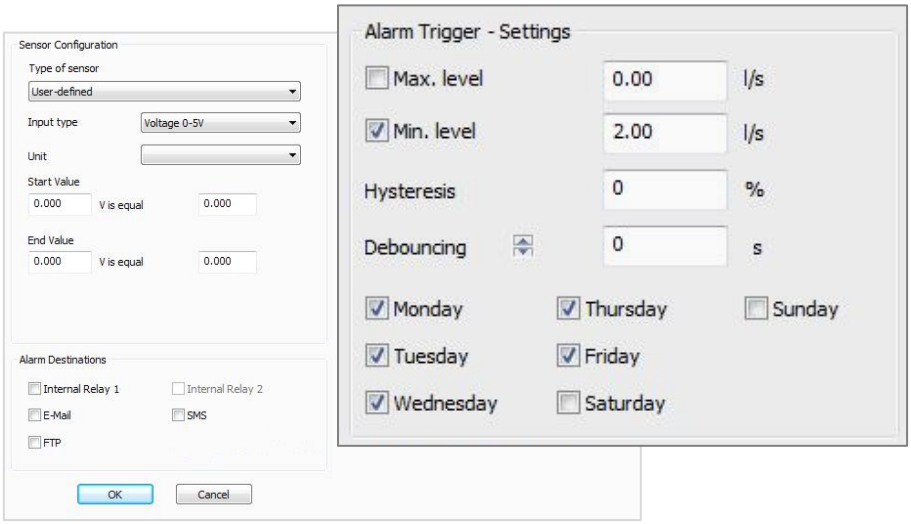
If a maximum level is set, the activated relay will trigger a connected device to switch on as soon as the max. level is exceeded. The device is switched off, as soon as the signal falls back below the threshold. This process takes place vice versa for a minimum level.

The minimum and the maximum threshold cannot be assigned to different relays. If both levels are set, each of the activated relays will switch as soon as one of the thresholds is crossed, no matter which one.

A relay cannot be assigned to more than one alarm. If a relay is already included in an existing channel configuration, it cannot be used in combination with any other channel or switching input.

Configuring alarm trigger

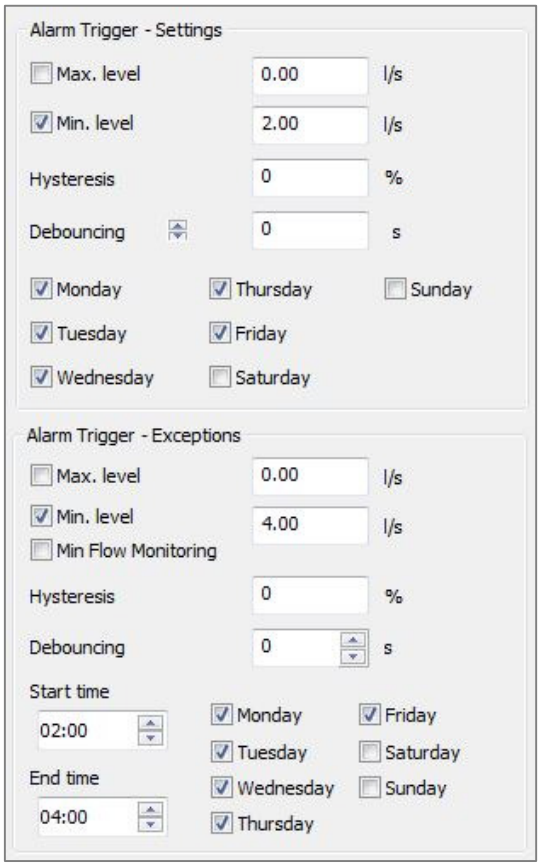
Perform the following steps to configure the alarm thresholds:

Step	Description
1	In the segment **Alarm Trigger – Settings** specify whether there is a minimum and / or a maximum threshold to be monitored by activating the respective checkbox(es). 
2	Enter the minimum and / or the maximum threshold into the respective field(s).
3	A hysteresis can be defined for alarm input preventing a constant triggering of the alarm by measuring values fluctuating marginally around the threshold. Enter a **Hysteresis** value. The Hysteresis value in percent designates a symmetrical range around the specified threshold the input signal can fluctuate in without having an impact on the current alarm status. **Example:** (pressure sensor) Min. level: 2.0 bar Hysteresis: 10 % The alarm does not switch on until the input signal reaches 90 % of the specified threshold (here 1.8 bar). After this, the alarm does not switch off until the input signal exceeds 110 % of the threshold (here 2.2 bar). Select a **Debounce** value. The input signal must cross the specified threshold not only one time in order to switch an alarm on or off, but two times more after specific periods of time. These periods of time, called ‘debounce’, always are a multiple of the specified logging interval. **Example:** (pressure sensor) Logging interval: 5 sec Min. level: 2.0 bar Debounce: 15 sec The alarm does not switch on until the input signal crosses the specified threshold (2.0 bar) three times in succession (15 seconds).
4	Select the days of the week alarming should be active on by marking the respective checkbox(es).

Defining exceptions

The segment **Alarm Trigger – Exceptions** offers the possibility to modify the alarm setting, entered under **Alarm Trigger - Settings**, for specific periods of time (certain days of the week or even periods of time in a day).

Example: The following picture shows a possible setting:



Here, from Monday to Friday an alarm is switched on as soon as the input signal falls below a value of 2.0 bar (set in **Alarm Trigger – Settings** segment), but from 2 to 4 o'clock in the morning a threshold of 4.0 bar is valid (set in **Alarm Trigger – Exceptions** segment).

6.2.3 Finishing the sensor configuration

Confirm and save the configuration of a channel by clicking the **OK** button.

Perform the configuration for the remaining channels.

6.3 Configuring the alarm inputs

Introduction

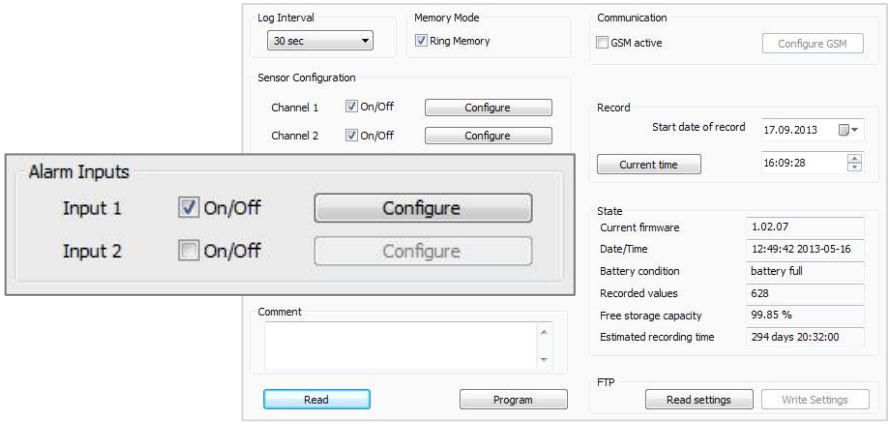
Depending on its configuration a logger can be equipped with up to two switching inputs (alarm inputs) which can be connected to active circuits. For each of these inputs it can be specified which input voltage value causes an alarm.

As known from the channel configuration, an alarm can trigger up to two internal relays.

If your logger is equipped with a GSM modem, alarm messages can be sent via SMS and / or e-mail. Furthermore, an unscheduled measuring data upload to your FTP server can be performed in case of alarm. For that, GSM connectivity must be established and properly configured.

Activating an alarm input

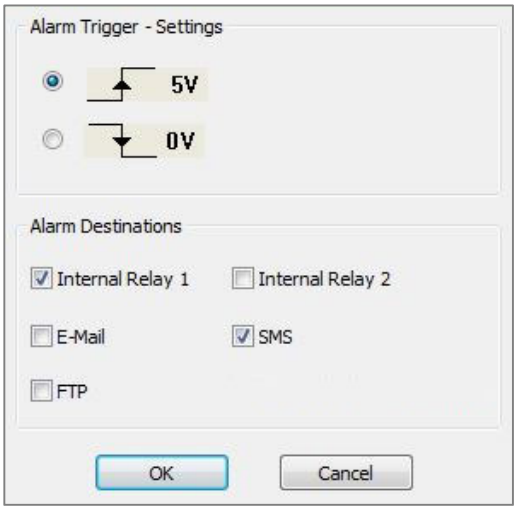
First of all, you have to activate the **Alarm Inputs** which are going to be part of an alarm input during the upcoming operation period by marking the respective **On**/**Off** checkbox:



Configuring an alarm input

After an alarm input has been activated, it must be specified which input voltage value causes an alarm and which actions are triggered by an alarm.

Click the respective **Configure** button. The following window appears:



Proceed as follows to configure an alarm input:

Step	Description
1	Specify the input voltage value which does, when present at the switching input, trigger an alarm.

Step	Description
	The input voltage threshold is 2.5 V. Any voltage value below 2.5 V is interpreted as **0 V** while voltages higher than 2.5 V are interpreted as **5 V**. In order to ensure a reliable classification, the actual voltage values should not be too close to 2.5 V.
2	Specify under **Alarm Destinations** which type of alarm message shall be sent (**SMS** and / or **e-mail** and / or **data upload to FTP server**) and which **Internal Relay** shall switch to trigger the connected device.
3	Confirm and save the settings by clicking the **OK** button.

A relay cannot be assigned to more than one alarm. If a relay is already included in an existing channel configuration, it cannot be used in combination with any other channel or switching input.

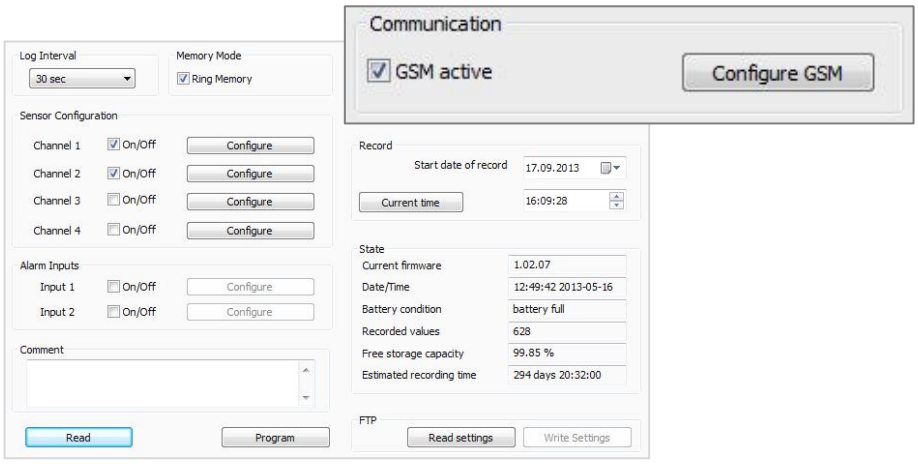
6.4 Configuring the mobile communication

Introduction If your logger is equipped with an internal GSM modem, data transfer and alarm messaging via UMTS / GPRS can be realised.

For this purpose, a UMTS / GPRS-enabled SIM card (data contract) is required which can be obtained from almost any local mobile network operator.

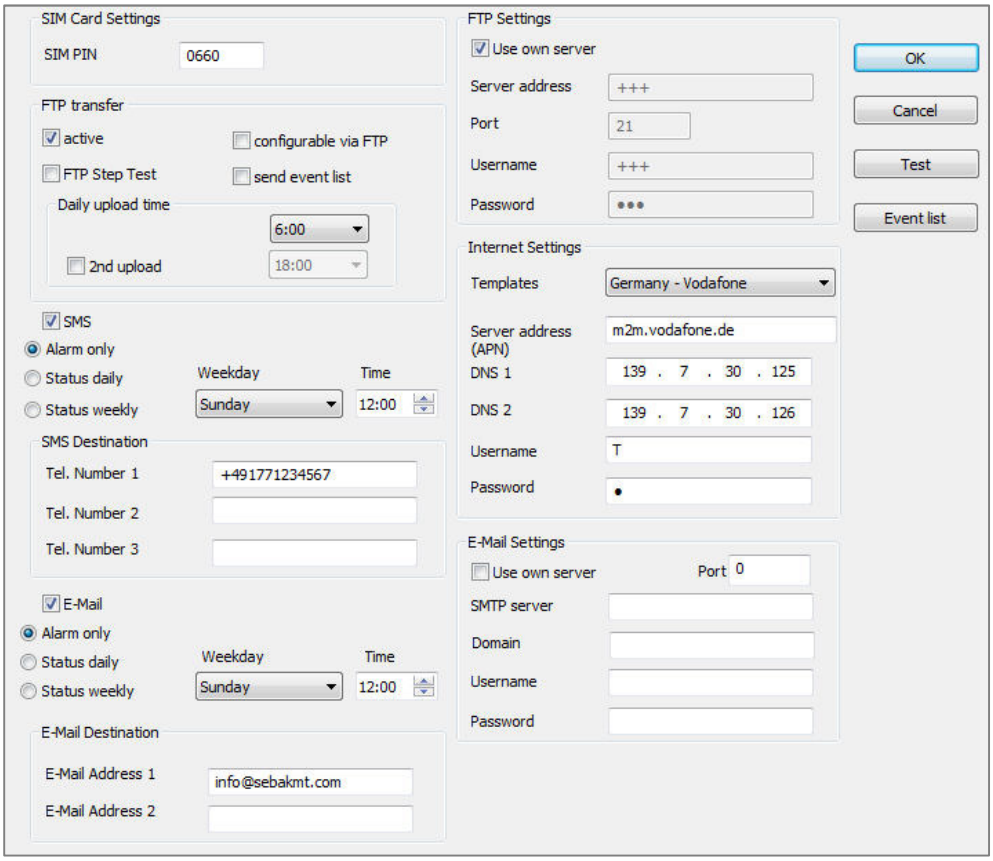
Usually, all the data required to set up mobile data transfer is provided within the mobile network contract. Further information can be obtained from the website or the hotline of the mobile network operator. If necessary, request guidance for setting up data communication in particular. SebaKMT cannot provide any specific technical advice in this case.

Procedure Proceed as follows to set up data communication via UMTS / GPRS:

Step	Description
1	Make sure the logger has been properly prepared for GSM connectivity (see page 18).
2	In the **Communication** segment of the window, select the **GSM active** checkbox in order to enable the GSM function. 
3	Click the **Configure GSM** button.
	Result: The GSM configuration dialogue appears.
4	Enter all the requested data. (You find more information about the configuration dialogue below in the text).
5	Carry out a **GSM test** to check the functionality of the GSM connection. (You find more information about testing the GSM connection below in the text).
6	Confirm and save the settings by clicking the **OK** button.

6.4.1 Explanations about the GSM configuration dialogue

The picture shows the GSM configuration dialogue:



You find explanations on the individual segments of the configuration dialogue in the following table:

Segment	Parameter
SIM Card Settings	Enter the PIN code of the SIM card which is being used in the device (see mobile communication contract or ask your provider).
FTP transfer	If you want the logged data to be transferred to a FTP server daily, select the **Active** checkbox. Under **Daily upload time** you have the chance to specify the time at which this upload should take place. If you wish a second measuring data upload every day, select the **2nd upload** checkbox and specify the desired time for this second upload. If you select the **send Event List** checkbox, simultaneously with the measuring data upload another file is sent to the FTP server containing the last 100 alarm events and GSM connection establishments of the device. These information can then be added to the device's 'event list'. If you want the upcoming measurement to be a StepTest, select the **FTP Step Test** checkbox. As a result, the device starts logging right after having received its configuration data.

Segment	Parameter
	Every recorded value is immediately uploaded to the FTP server, so that the measurement can be monitored from any Internet-capable computer. If you select the **Configurable via FTP** checkbox, the device checks the FTP server for new configuration data after every measuring data upload. The new configuration data is downloaded and immediately installed on the device.
SMS checkbox and **E-Mail** checkbox	To enable the alarm messaging service via SMS (regular status messages and/or alarm messages), select the **SMS** checkbox. To enable the alarm messaging service via e-mail (regular status messages and/or alarm messages), select the **E-Mail** checkbox. Use the radio buttons to select, which messages you want to receive: • **Alarm only** You will receive alarm messages only • **Status daily** You will receive alarm messages and, beyond, a status message once a day • **Status weekly** You will receive alarm messages and, beyond, a status message once a week Furthermore, specify the point in time and, if required, the day of the week, the status message shall be sent. (Time values are specified in 24-hour format.) Each alarm message contains: • ID of the sender device • sending date and time • number of the measuring channel concerned • alarm reason and alarm value Each status message contains: • ID of the sender device • sending date and time • the highest and the lowest measured values of each measuring channel (seit der letzten Statusmeldung) • flow rate seit der letzten Statusmeldung (nur bei Durchflusssensoren)
SMS Destination	Specify up to three mobile phone numbers here to which summary or alarm messages should be sent.
E-mail Destination	Specify up to two e-mail addresses here to which summary or alarm messages should be sent.
E-mail Settings	Enter the **SMTP server address**, **user name** and **password** for the e-mail account from which alarm or status messages are to be sent.

Segment	Parameter
	(Usually, this kind of information can be obtained from the 'How to configure an e-mail client' tutorial on the providers' website. Username and password can be specified during the account setup procedure or can be requested from the operator of the mail account or from your system administrator. SebaKMT does not provide e-mail accounts.) Maybe the access data for your e-mail account are already stored in the database of the software (see page 39). To use these stored data, select the **Use own server** checkbox. The data are then filled in automatically. The **Seba Demo Mode** checkbox offers the chance to use a demo account run by SebaKMT. The respective data are filled in automatically. However, the Seba Demo Account is for demonstration purposes only!
Internet Settings	Enter the data required for internet access (see mobile communication contract or ask your provider). If you can find your provider in the **Templates** drop-down list and you select it, then the aforementioned data will be entered automatically.
FTP Settings	Enter the **Server address, port, user name** and **password** for the FTP server. (These information can be obtained from your administrator or your internet service provider.) Maybe the access data for your FTP server are already stored in the database of the software (see page 39). To use these stored data, select the **Use own server** checkbox. The data are then filled in automatically. The **Seba Demo Mode** checkbox offers the chance to use a demo FTP server run by SebaKMT. The respective data are filled in automatically. The logged measuring data will be transferred to this server. However, the Seba Demo Server is for demonstration purposes only!

6.4.2 Testing the mobile connection

You have the chance to check the functionality of the GSM connection.

Please note that the GSM test will reprogram the GSM settings of the device. Furthermore, all measurement data in the device will be lost.

Requirements In order to perform a GSM test,

- the GSM configuration must have been already finished (see previous sections),
- a radio interface has to be connected to the computer (e.g. Log RI),
- the device must be within the computer's wireless range and it has to be switched on.

Procedure Proceed as follows to carry out a GSM test:

Step	Description
1	In the SDV-3 software open the GSM configuration dialogue of the respective device (see previous sections).
2	On the upper right of the window, click on the **Test** button.
	Result: The device dials into the mobile network. It sends a test SMS or e-mail respectively. Furthermore, it tries to create a test file in the target folder of your FTP server.

Test FTP file If the transmission has been successfully completed, you find a test file with the name *"ftp-test.txt"* on your FTP server. It contains date and time of the test.

Test SMS / e-mail All addressees should receive a SMS or e-mail containing the following information:

- Type of device and identification number
- Date and time of the test
- Signal quality

  0-1 … bad
  2-15 … average
  16-30 … good

In the case of bad signal quality (**SignalQ** 0 or 1), it may help to move the GSM antenna in a better position.

Debugging If no file is created in the folder of the FTP server or no SMS / e-mail has been received, the test failed. Then, use the **Event list** button to retrieve the event list from the device. There, information can be found which can help to identify the problem.

6.5 Adjusting the start time of data recording

The point in time, the device shall start logging, has to be defined under **Record**.

Use the controls to specify a start date and time or click on the **Current time** button to get the system date and time of the computer filled in.

If the entered recording start lies in the past, seen from the point in time the device is receiving the configuration data, the device starts data storage immediately.

6.6 Adjusting the memory mode

The device has 4 MB internal memory.

By checking the **Ring memory** checkbox under **Memory Mode**, the logger can be set to 'ring buffer' mode. As the memory fills up with data in this mode, the device keeps logging and the respective oldest value is overwritten.

If the **Ring memory** checkbox is not selected, measuring data storage stops as soon as the logger's memory is full.

6.7 Checking the device status

Some characteristic data about the device are listed under **State** (e.g. remaining memory, battery condition, system time, firmware version etc.).

The data has been derived during the last data or configuration readout.

6.8 Finishing the programming

Adding a comment

By adding a comment to the **Comment** field you can take some notes, e.g., on the location of the device.

Transmitting the configuration data

Click on the **Program** button in order to finalize the configuration.

Thereupon, the data is transmitted to the data logger. After the settings have been saved on the device, a confirmation message appears.

If no connection to the device can be established, an error message appears. Check the link between device and computer and try to transmit the data again.

7 Retrieving and evaluating data

7.1 'Realtime Measurement' function

Using the **real-time measurement** function you have the chance to carry out a measurement and observe the data recording in real-time. Also a current measurement can be observed.

Requirements

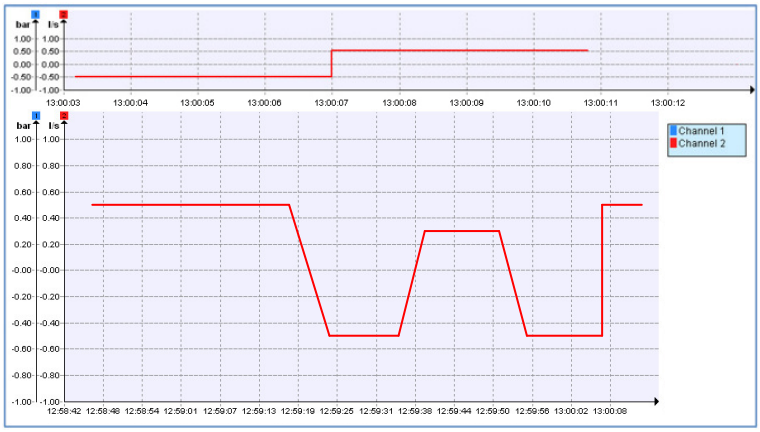
For the realtime measurement the device must be switched on and a connection between device and computer is needed.

For a radio link

- a radio interface must be connected to the computer (e.g. Log RI)
- the device must be within the computer's wireless range.

Procedure

Proceed as follows to retrieve and display live data:

Step	Description
1	Select the relevant device in the directory tree of the SDV-3 software.
2	In the menu bar in the segment **Communication**, click on **Realtime measurement**.
3	From the context menu select if the 'live' measuring values should be displayed graphically (select: **graph**) or numerically (select: **digital**). In the **digital view** the measured value of each active channel is displayed numerically in a table: In the **graphical view**, the continuous curves in the top diagram show the last 10 taken values. The bottom diagram shows the entire realtime measurement: 
	Result: If a measurement already is in process, the values of this recording are displayed. Otherwise, a new measurement is started and the taken 'live' data is shown.

You finish the realtime measurement function using the **Stop** button or by closing the display window.

Storing the data set

After having closed the graphical view, a dialogue appears asking if you'd like to store the data set of this realtime measurement. If you answer with **Yes**, the measuring data is stored in the software database and can from now on be found in the data records list.

7.2 Retrieving measurement data

The measuring data is stored in the memory of the device. It can be read out using the computer or another reading device (e.g. Reader-3).

If measuring data have been transmitted from the device to a FTP server, it can be downloaded from there to your computer.

7.2.1 Reading out data using the PC/Laptop

You can read out the measuring data from the device using your computer with SebaDataView-3 software.

Requirements The device must be switched on and a connection between the device and the computer is needed.

For a radio link

- a radio interface must be connected to the computer (e.g. Log RI),
- the device must be within the computer's wireless range.

Procedure Proceed as follows:

Step	Description
1	Select the relevant device in the directory tree of the SDV-3 software.
2	In the menu bar in the segment **Measurement data**, click on **Read**.
3	Select **RF** from the appearing context menu.
	Result: The connection between the computer and the device is established and the data readout starts. In a small window the progress of the data transfer is displayed. As soon as the transfer is completed, a new window opens and the measuring data is displayed.

7.2.2 Downloading data from a FTP server

Depending on the device's configuration the measuring data may have been transmitted to a FTP server. From there it can be downloaded to your computer.

Requirements The following requirements must be met:

- computer with SDV-3 software and Internet access
- the FTP access data must have been entered and stored in the database of the software (see page 39)

Procedure Proceed as follows to download data from the FTP server:

Step	Description
1	Select the relevant device in the directory tree of the SDV-3 software.
2	In the menu bar in the segment **Measurement data**, click on **Read**.
3	Select **FTP** from the appearing context menu.
	Result: The download starts. In a small window the progress of the data transfer is displayed.

Step	Description
4	As soon as the download is finished, click the **OK** button.
	Result: The small window closes. Measuring data and event list data of the respective device are now available in the software database and can be displayed.

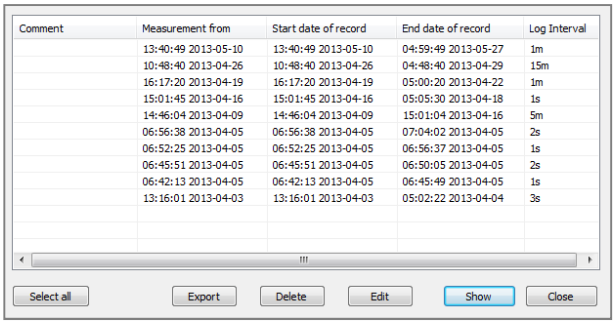
7.3 Managing saved measurement data

In the database of the software, a large number of measurement data records can be saved for each device.

You can display all measurement data records of a device in a list. Proceed as follows:

Step	Description
1	Select the relevant device in the directory tree of the SDV-3 software.
2	In ihe menu bar in the segment **Measurement data**, click on **Show data**.
	Result: A new window opens. It shows a table where all measurement data records of the device are listed (see figure). If only one measurement data record is saved for the device, this window does not appear. Instead, the measurement data display opens immediately.

Data records list The window contains a table in which all measurement data records saved for this device in the database of the software are listed. These are results from standard measurements as well as recordings of real-time measurements.



Functions Using the buttons at the bottom of the window, you can call up and manage the individual measurement data records.

Select the relevant line in the list and click the desired button:

Show … The measurement data is shown.
(Alternatively, you can simply double-click the respective line in the table.)

Edit … A window that can be used to edit the comment text for this measurement opens.

Delete … The data record is deleted from the database of the software. Answer the confirmation prompt with **Yes**.

Export … The data record can be exported and stored in CSV format to the hard disk or any other memory. The saved file can be accessed using any CSV-capable application (e.g. Microsoft Excel).

7.4 Displaying measurement data

7.4.1 Calling up a measurement

Calling up the most recent measurement

To call up the most recently saved measurement data of a device, double-click this device in the directory tree of the software. The window for displaying the measurement data opens (see below).

Calling up a particular measurement

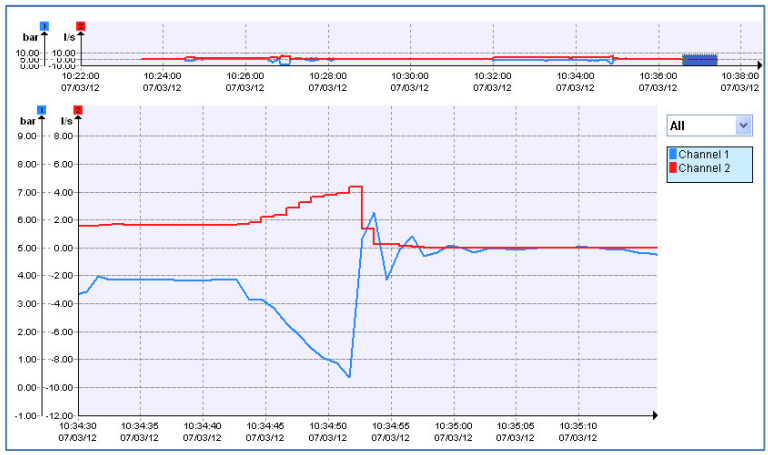
To call up the results of a particular measurement, proceed as follows:

Step	Description
1	Select the relevant device in the directory tree.
2	In the menu bar in the segment **Measurement data**, click on **Show data**.
	Result: The data records list opens. If only one measurement data record is saved for this device, this list does not appear. Instead, the measurement data display opens immediately.
3	Select the required data record in the list and click **Show** or double-click the concerning line.
	Result: The measurement data is shown.

7.4.2 Using the measurement data display

Design

The following figure shows the window for displaying measurement data:



In the top diagram the entire measurement is displayed. Up to four different coloured curves can be seen. Each curve is representing the results of one of the logger's measuring channels.

The bottom diagram is used for viewing enlarged subareas of the measurement curves (known as the "ZoomView" – see below).

The **X-axis** corresponds to the chronological sequence of a measurement. The **Y-axis** corresponds to the measured values.

Selecting a channel

To focus on the data of one measuring channel you can either select the channel from the blue info window on the right or click directly on the respective curve in the bottom diagram.

The curve is shifted to the foreground. If there are alarm thresholds set for this channel, they are indicated by horizontal black lines.

If the curve represents a pressure measurement, all recorded pressure surges are indicated by vertical black lines.

Some important characteristics of the measurement are displayed in the blue window. The information relate exclusively to the section of the measurement that is currently displayed in the bottom diagram.

Click anywhere in the diagram to end focusing on one individual channel.

Specifying the zoom area

You have the following options for displaying an enlarged subarea of the overall measurement curve:

- **Free selection of a section of the curve**

  Select the desired area of the measurement in the top diagram. To do this, click inside the diagram, hold down the left mouse button and guide the cursor diagonally across the relevant area. The selected area will be displayed in the bottom diagram.

  If you click the coloured area that was selected and hold down the left mouse button, you can freely move the selection within the top diagram. This function is practical for use as a “magnifying glass”.

- **Selecting time frames from the list**

  Using the drop-down list on the right next to the diagram, you can restrict the time frame of the displayed area to a month, a week, a day or an hour. By means of the "User-defined" option you have the the chance to specify the start and end time of the span to be displayed.

Moving in the diagram

Using the mouse wheel (if available), you can move within the diagram along the axes:

- **Mouse wheel** … Movement along the X-axis
- **Shift key + mouse wheel** … Movement along the Y-axis

Other functions

A **context menu** opens after you right-click in the diagram view. A number of other functions for working with the diagram are available here:

Function	Description
Zoom in	You can use this function to select an area in the diagram for enlarged display. The cursor symbol switches from to . Left-click in the diagram, hold down the button and guide the cursor to the desired area.
Pan	You can use this function to grab and move the displayed measurement area. The cursor symbol switches from to . Left-click in the diagram, hold down the button and freely move the image section in all directions.
Select	Use this command to end the functions **Zoom in** and **Pan**.
Measure	You can use this function to display the time span and pressure difference between any two points on the displayed measurement curve. Left-click in the diagram on the desired starting point, hold down the button and guide the cursor to the desired ending point. The time span between the two points is displayed.

Function	Description
Insert label	You can use this function to create text fields (labels) within the diagram. These fields can be used to add comments to any points in the diagram. Labels remain saved after the diagram display is closed. Edit text … Double-click the text field – input text – then click once outside of the field Move label … Click the text field once – then “grab onto it” (click it and hold down the left mouse button) and move it wherever you would like Delete label … Click the text field once – then press the “Delete” key on your keyboard
Hide / **Show grid**	You can use this option to decide whether there should be a grid shown in the bottom diagram’s background or not.

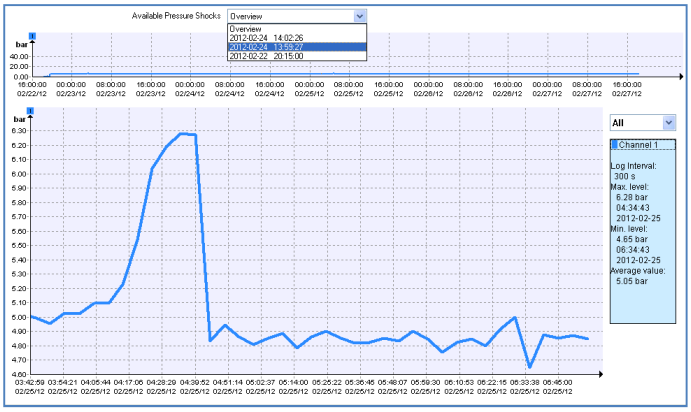
Print If you want to print the actual diagram view, right-click in the bottom diagram and select **Print** from the appearing context menu.

Reset initial view If you want to cancel all active functions in the window and return to the initial diagram view, right-click in the bottom diagram and select **Reset** from the appearing context menu.

7.4.3 Displaying pressure surges

If pressure surges were recorded in addition to the standard pressure measurement, you will see a **drop-down list** at the very top of the displayed window. All recorded pressure surges are in this list.

In order to display the one-minute recording of an individual pressure fluctuation, click the desired recording time point in this list. The corresponding measurement curve will be displayed in the bottom diagram.



With the tools described above, you can view the recording in detail and carry out a closer analysis.

To return to the standard measurement display, click **Overview** in the drop-down list.

8 Miscellaneous functions of the SebaDataView-3 software

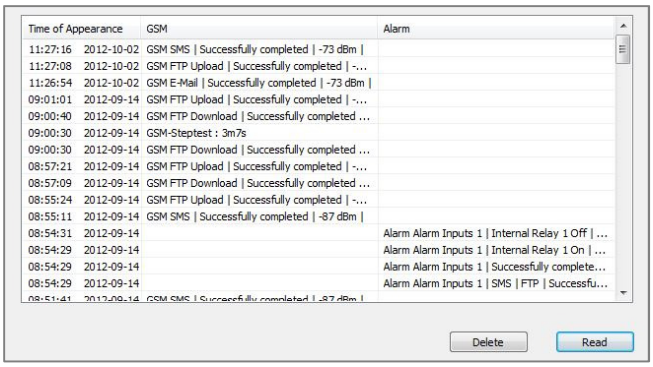
8.1 Receiving an 'Event List'

Introduction

By the help of the **Event List** function you get information about

- a device's alarm events up to now,
- a device's GSM connection establishments up to now.

These events are listed in a table on the screen.



If measuring data have been sent from the device to a FTP server, the event list is part of these data and is available right after the download.

For energy saving reasons, the event list is not part of the data transferred to the computer via radio. In this case, the event list still needs to be retrieved from the logger, before it can be displayed on the screen.

A maximum of 600 events can be listed. After 600 entries have been reached, the respective oldest values are overwritten.

Requirements

The device must be switched on and a connection between the device and the computer is needed.

For a radio link

- a radio interface must be connected to the computer (e.g. Log RI),
- the device must be within the computer's wireless range.

Procedure

Proceed as follows to call the event list of a device:

Step	Description
1	Select the relevant device in the directory tree.
2	In the menu bar in the segment **Event list** click on **Show**.
	Result: The event list window opens (see picture above). If the list is empty, there are no events stored for this logger in the software database. Maybe the list has not yet been read out from the device.
3	In order to retrieve the current list from the device now, click the **Read** button.
	Result: The transfer of the event data from the device starts. A small window indicates the progress. After data transfer is finished, all alarms and GSM establishments of the respective device are shown in the event list. If the list still is empty, no events have been stored by the device.

Deleting events You can remove events from the list and delete them in the software database by selecting them in the window and clicking the **Delete** button.

8.2 Exporting data in CSV format

Introduction The data collected from a device and stored in the SDV-3 database can be exported in CSV ('Comma Separated Values') format. In doing so a file containing all logged value-time pairs line by line is saved to the hard disk or any other memory. The saved file can be accessed using any CSV-capable application (e.g. Microsoft Excel).

Export all data records To export all the stored measurement data of one device, proceed as follows:

Step	Description
1	Select the device whose data you want to export in the directory tree.
2	In the multifunction bar in the segment **Measurement data** click on **Export**.
	Result: An Explorer window opens.
3	Browse to the desired target folder and save the data there.

Export one data record To export the data of one individual measurement, proceed as follows:

Step	Description
1	Select the device whose data you want to export in the directory tree.
2	In the multifunction bar in the segment **Measurement data** click on **Show data**.
	Result: A new window shows all measurement data records saved for this device (see page 61).
3	Select the relevant data record and click on **Export**.
	Result: An Explorer window opens.
4	Browse to the desired target folder and save the data record there.

Tento symbol indikuje, že výrobek nesoucí takovéto označení nelze likvidovat společně s běžným domovním odpadem. Jelikož se jedná o produkt obchodovaný mezi podnikatelskými subjekty (B2B), nelze jej likvidovat ani ve veřejných sběrných dvorech. Pokud se potřebujete tohoto výrobku zbavit, obraťte se na organizaci specializující se na likvidaci starých elektrických spotřebičů v blízkosti svého působiště.

Dit symbool duidt aan dat het product met dit symbool niet verwijderd mag worden als gewoon huishoudelijk afval. Dit is een product voor industrieel gebruik, wat betekent dat het ook niet afgeleverd mag worden aan afvalcentra voor huishoudelijk afval. Als u dit product wilt verwijderen, gelieve dit op de juiste manier te doen en het naar een nabij gelegen organisatie te brengen gespecialiseerd in de verwijdering van oud elektrisch materiaal.

This symbol indicates that the product which is marked in this way should not be disposed of as normal household waste. As it is a B2B product, it may also not be disposed of at civic disposal centres. If you wish to dispose of this product, please do so properly by taking it to an organisation specialising in the disposal of old electrical equipment near you.

Този знак означава, че продуктът, обозначен по този начин, не трябва да се изхвърля като битов отпадък. Тъй като е B2B продукт, не бива да се изхърля и в градски пунктове за отпадъци. Ако желаете да извърлите продукта, го занесете в пункт, специализиран в изхвърлянето на старо електрическо оборудване.

Dette symbol viser, at det produkt, der er markeret på denne måde, ikke må kasseres som almindeligt husholdningsaffald. Eftersom det er et B2B produkt, må det heller ikke bortskaffes på offentlige genbrugsstationer. Skal dette produkt kasseres, skal det gøres ordentligt ved at bringe det til en nærliggende organisation, der er specialiseret i at bortskaffe gammelt el-udstyr.

Sellise sümboliga tähistatud toodet ei tohi käidelda tavalise olmejäätmena. Kuna tegemist on B2B-klassi kuuluva tootega, siis ei tohi seda viia kohalikku jäätmekäitluspunkti. Kui soovite selle toote ära visata, siis viige see lähimasse vanade elektriseadmete käitlemisele spetsialiseerunud ettevõttesse.

Tällä merkinnällä ilmoitetaan, että kyseisellä merkinnällä varustettua tuotetta ei saa hävittää tavallisen kotitalousjätteen seassa. Koska kyseessä on yritysten välisen kaupan tuote, sitä ei saa myöskään viedä kuluttajien käyttöön tarkoitettuihin keräyspisteisiin. Jos haluatte hävittää tämän tuotteen, ottakaa yhteys lähimpään vanhojen sähkölaitteiden hävittämiseen erikoistuneeseen organisaatioon.

Ce symbole indique que le produit sur lequel il figure ne peut pas être éliminé comme un déchet ménager ordinaire. Comme il s'agit d'un produit B2B, il ne peut pas non plus être déposé dans une déchetterie municipale. Pour éliminer ce produit, amenez-le à l'organisation spécialisée dans l'élimination d'anciens équipements électriques la plus proche de chez vous.

Cuireann an siombail seo in iúl nár cheart an táirgeadh atá marcáilte sa tslí seo a dhiúscairt sa chóras fuíoll teaghlaigh. Os rud é gur táirgeadh ghnó le gnó (B2B) é, ní féidir é a dhiúscairt ach oiread in ionaid dhiúscartha phobail. Más mian leat an táirgeadh seo a dhiúscairt, déan é a thógáil ag eagraíocht gar duit a sainfheidhmíonn i ndiúscairt sean-fhearas leictrigh.

Dieses Symbol zeigt an, dass das damit gekennzeichnete Produkt nicht als normaler Haushaltsabfall entsorgt werden soll. Da es sich um ein B2B-Gerät handelt, darf es auch nicht bei kommunalen Wertstoffhöfen abgegeben werden. Wenn Sie dieses Gerät entsorgen möchten, bringen Sie es bitte sachgemäß zu einem Entsorger für Elektroaltgeräte in Ihrer Nähe.

Αυτό το σύμβολο υποδεικνύει ότι το προϊόν που φέρει τη σήμανση αυτή δεν πρέπει να απορρίπτεται μαζί με τα οικιακά απορρίμματα. Καθώς πρόκειται για προϊόν B2B, δεν πρέπει να απορρίπτεται σε δημοτικά σημεία απόρριψης. Εάν θέλετε να απορρίψετε το προϊόν αυτό, παρακαλούμε όπως να το παραδώσετε σε μία υπηρεσία συλλογής ηλεκτρικού εξοπλισμού της περιοχής σας.

Ez a jelzés azt jelenti, hogy az ilyen jelzéssel ellátott terméket tilos a háztartási hulladékokkal együtt kidobni. Mivel ez vállalati felhasználású termék, tilos a lakosság számára fenntartott hulladékgyűjtőkbe dobni.Ha a terméket ki szeretné dobni, akkor vigye azt el a lakóhelyéhez közel működő, elhasznált elektromos berendezések begyűjtésével foglalkozó hulladékkezelő központhoz.

Questo simbolo indica che il prodotto non deve essere smaltito come un normale rifiuto domestico. In quanto prodotto B2B, può anche non essere smaltito in centri di smaltimento cittadino. Se si desidera smaltire il prodotto, consegnarlo a un organismo specializzato in smaltimento di apparecchiature elettriche vecchie.

Šī zīme norāda, ka iztrādājumu, uz kura tā atrodas, nedrīkst izmest kopā ar parastiem mājsaimniecības atkritumiem. Tā kā tas ir izstrādājums, ko cits citam pārdod un lieto tikai uzņēmumi, tad to nedrīkst arī izmest atkritumos tādās izgāztuvēs un atkritumu savāktuvēs, kas paredzētas vietējiem iedzīvotājiem. Ja būs vajadzīgs šo izstrādājumu izmest atkritumos, tad rīkojieties pēc noteikumiem un nogādājiet to tuvākajā vietā, kur īpaši nodarbojas ar vecu elektrisku ierīču savākšanu.

Šis simbolis rodo, kad juo paženklinto gaminio negalima išmesti kaip paprastų buitinių atliekų. Kadangi tai B2B (verslas verslui) produktas, jo negalima atiduoti ir buitinių atliekų tvarkymo įmonėms. Jei norite išmesti šį gaminį, atlikite tai tinkamai, atiduodami jį arti jūsų esančiai specializuotai senos elektrinės įrangos utilizavimo organizacijai.

Dan is-simbolu jindika li l-prodott li huwa mmarkat b'dan il-mod m'għandux jintrema bħal skart normali tad-djar. Minħabba li huwa prodott B2B , ma jistax jintrema wkoll f'ċentri ċivili għar-rimi ta' l-iskart. Jekk tkun tixtieq tarmi dan il-prodott, jekk jogħġbok għamel dan kif suppost billi tieħdu għand organizzazzjoni fil-qrib li tispeċjalizza fir-rimi ta' tagħmir qadim ta' l-elettriku.

Dette symbolet indikerer at produktet som er merket på denne måten ikke skal kastes som vanlig husholdningsavfall. Siden dette er et bedriftsprodukt, kan det heller ikke kastes ved en vanlig miljøstasjon. Hvis du ønsker å kaste dette produktet, er den riktige måten å gi det til en organisasjon i nærheten som spesialiserer seg på kassering av gammelt elektrisk utstyr.

Ten symbol oznacza, że produktu nim opatrzonego nie należy usuwać z typowymi odpadami z gospodarstwa domowego. Jest to produkt typu B2B, nie należy go więc przekazywać na komunalne składowiska odpadów. Aby we właściwy sposób usunąć ten produkt, należy przekazać go do najbliższej placówki specjalizującej się w usuwaniu starych urządzeń elektrycznych.

Este símbolo indica que o produto com esta marcação não deve ser deitado fora juntamente com o lixo doméstico normal. Como se trata de um produto B2B, também não pode ser deitado fora em centros cívicos de recolha de lixo. Se quiser desfazer-se deste produto, faça-o correctamente entregando-o a uma organização especializada na eliminação de equipamento eléctrico antigo, próxima de si.

Acest simbol indică faptul că produsul marcat în acest fel nu trebuie aruncat ca şi un gunoi menajer obişnuit. Deoarece acesta este un produs B2B, el nu trebuie aruncat nici la centrele de colectare urbane. Dacă vreţi să aruncaţi acest produs, vă rugăm s-o faceţi într-un mod adecvat, ducând-ul la cea mai apropiată firmă specializată în colectarea echipamentelor electrice uzate.

Tento symbol znamená, že takto označený výrobok sa nesmie likvidovať ako bežný komunálny odpad.Keďže sa jedná o výrobok triedy B2B, nesmie sa likvidovať ani na mestských skládkach odpadu. Ak chcete tento výrobok likvidovať, odneste ho do najbližšej organizácie, ktorá sa špecializuje na likvidáciu starých elektrických zariadení.

Ta simbol pomeni, da izdelka, ki je z njim označen, ne smete zavreči kot običajne gospodinjske odpadke. Ker je to izdelek, namenjen za druge proizvajalce, ga ni dovoljeno odlagati v centrih za civilno odlaganje odpadkov. Če želite izdelek zavreči, prosimo, da to storite v skladu s predpisi, tako da ga odpeljete v bližnjo organizacijo, ki je specializirana za odlaganje stare električne opreme.

Este símbolo indica que el producto así señalizado no debe desecharse como los residuos domésticos normales. Dado que es un producto de consumo profesional, tampoco debe llevarse a centros de recogida selectiva municipales. Si desea desechar este producto, hágalo debidamente acudiendo a una organización de su zona que esté especializada en el tratamiento de residuos de aparatos eléctricos usados.

Den här symbolen indikerar att produkten inte får blandas med normalt hushållsavfall då den är förbrukad. Eftersom produkten är en så kallad B2B-produkt är den inte avsedd för privata konsumenter, den får således inte avfallshanteras på allmänna miljö- eller återvinningsstationer då den är förbrukad. Om ni vill avfallshantera den här produkten på rätt sätt, ska ni lämna den till myndighet eller företag, specialiserad på avfallshantering av förbrukad elektrisk utrustning i ert närområde.