User manual

Jellox Analog Pro / Jellox Analog Elite

Valid from:

- **Firmware version: 02v022**
- **App. version: 11.1.1**
- **Server version: 54v00x**
- **Hardware version: 1.0**



301613 | Rev.09

Microtronics

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Chapter 2 Declaration of conformity

EU-Konformitätserklärung

EU Declaration of Conformity / Déclaration de conformité UE

Type: D012-11008200D06
Type code :
Type:

Microtronics

Hersteller: **Microtronics Engineering GmbH**
Manufacturer : Hauptstrasse 7
Fabricant: A-3244 Ruprechtshofen

Das bezeichnete Produkt stimmt mit den folgenden Europäischen Richtlinien überein. Eine oder mehrere der in der zugehörigen Baumusterprüfbescheinigung SIQ 24 ATEX 212 X genannten Normen wurden durch neue Ausgaben ersetzt. Der Hersteller erklärt für das vorstehend genannte Produkt auch die Übereinstimmung mit den Anforderungen der neuen Normenausgaben."
The designated product is in conformity with the following european directives. One or more of the associated listed in the Type Examination Certificate SIQ 24 ATEX 212 X standards have been replaced by new editions. The manufacturer for the above product also compliance with the requirements of the new standard editions.
Le produit décrit est conforme aux directives européennes suivantes. Une ou plusieurs des normes énumérées dans l'attestation de type concernant SIQ 24 ATEX 212 X étaient replacées par des nouvelles éditions. Le producteur déclare pour le produit décrit ci-dessus la conformité aux exigences des nouvelles éditions des normes.

		Europäische Norm	
(2014/30/EU)	**EMC Directive**		
		EN61326-1	
(2014/35/EU)	**LVD Directive**		
		EN61010-1	
(2014/53/EU)	**RED Directive**		
	Safety & Health 3.1a	EN62368-1 EN62368-1+A11:2017 EN62311	
	EMC 3.1b	EN301489-1 V2.2.3 EN301489-19 V2.2.1 EN301489-52 V1.1.0 EN301489-1 V2.1.1 EN301489-17 V3.2.4	
	Radio spectrum efficiency 3.2	EN301908-1 V15.2.1 EN301908-13 V13.2.1 EN303413 V1.2.1 EN300328 V2.2.2	
	Cybersecurity 3.3	EN18031-1	
(2014/34/EU)	**ATEX Directive**		
		EN IEC 60079-0 EN 60079-11	
(2015/863/EU)	**RoHS Directive**		
	Prevention 4.1	EN IEC 63000	
	Kennzeichnung/ Markings/ Marquage CE 0123 Ex II 2G Ex ib IIB T3 Gb		

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name and signature of authorised person
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Ruprechtshofen, den 15.07.2025
Ort und Datum der Ausstellung
Place and date of issue
Lieu et date d'établissement

Chapter 3 Ex certification

(1) **EU-TYPE EXAMINATION CERTIFICATE**

(2) Product Intended for use in Potentially Explosive Atmospheres – **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

SIQ 24 ATEX 212 X **Issue: 0**

(4) Product: Rugged GW Analog, type: D012-x1***2***05

(5) Manufacturer: Microtronics Engineering GmbH

(6) Address: Hauptstrasse 7, 3244 Ruprechtshofen, Austria

(7) This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) SIQ Ljubljana, Notified body number 1304 in accordance with Article 17 and Article 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive. Certification body is not accredited for notification purposes.

The examination and test results are recorded in the confidential test report TEx212/24.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 + AC:2020-02 **EN 60079-11:2012**

Where additional criteria beyond those given here have been used, they are listed at item (18) in the schedule to this certificate.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Ex II 2 G Ex ib IIB T3 Gb

Certification body Ljubljana, 13 June 2024

Gregor Schoss

The EU-Type Examination Certificate is valid only if signed. The certificate may be reproduced only in full and without changes. Any extracts and changes shall be approved by SIQ Ljubljana.

SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number CP-001 in the field of certification of products, processes and services (SIST EN ISO/IEC 17065).

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(13) **SCHEDULE**

(14) **EU-Type Examination Certificate Number SIQ 24 ATEX 212 X, Issue: 0**

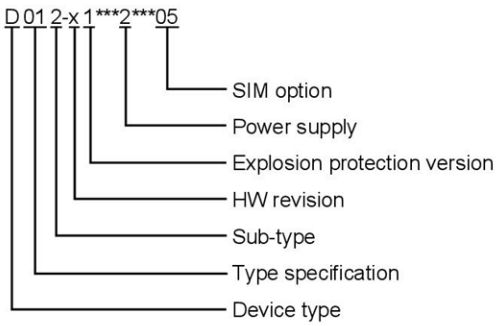
(15) Description of Product

Rugged GW Analog, type: D012-x1***2***05, is a data logger for recording and transferring analogue signals via wireless network. It is designed in type of protection intrinsic safety 'ib'.

The device has internal batteries for power supply. The batteries are not intended to be replaced by user. The device has two external connectors, one for connection of the antenna and the other for connection of the intrinsically safe sensor. It has an adjustable (0...22 V) voltage output to supply the sensors.

Enclosure is made from plastic material and has additional plastic protective armor.

Type key:



An * could be any character from 0 to 9 or from A to Z and has no impact on hardware and explosion protection.

A "x" defines the revision of hardware that is placed in device and related mobile network protocol.

For details see User manual.

Technical data:

Ambient temperature range:	From -20°C to +50°C
Sensor supply:	U_o = 25.6 V I_o = 82 mA P_o = 523 mW C_o = 0.31 µF 0.36 µF 0.465 µF L_o = 1000 µH 250 µH 100 µH
Data transmission	- Local radio connection 2.4 GHz: Range: 20 m (depending on the environmental conditions) Transmission rate: 120 data records/sec. - LTE-M/NB-IoT (World): M1: LTE B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B28, B66 NB1/NB2: LTE B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66

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Chapter 4 Specifications

Voltage supply	Battery: 2 x Li-SOCl2 cells with a total of 25,74 Ah
Housing	Material: Noryl GTX 973 / PC (housing/cover) Weight: 730 g Dimensions (WHD): 106 x 169 x 61 mm (with protective armour) Degree of protection: IP66 / IP68 / IP69; applicable for IP68: • 105 days at an immersion depth of 1 m • 35 days at an immersion depth of 4 m
Ex certification	 II 2G Ex ib IIB T3 Gb
Operating temperature	-20...+50 °C
Air humidity	15...90 % RH non-condensing
Max. operating altitude	≤ 2000 m
Contamination level	PD2
Storage and transport temperature	-20...+70 °C
Measurement channel	1 x analogue Modes: • 0...20 mA: Resolution 1 µA , max. 25,6 mA , load 2 Ω • 4...20 mA: Resolution 1 µA , max. 25,6 mA , load 2 Ω Additional information is provided in "Technical details about the universal input" on page 65.
Sensor supply	1 x switchable and adjustable sensor supply (0...22 V) • U_o: 25,6 V • I_o: 82 mA • P_o: 0,523 W • C_o: 0,31 µF • L_o: 1000 µH Additional information is provided in "Technical details about the sensor supply" on page 65.
Remote measurement channels	Jellox Analog Pro : 1 x sensor module (connected via local radio connection) Jellox Analog Elite : 4 x sensor module (connected via local radio connection) The sensor module is not included in the standard scope of supply. Specifications of the senor module are provided in the relevant user manual. A list of compatible sensor modules are provided in chapter "Sensor modules" on page 194.

Display	1,5" OLED display with a resolution of 128 x 128 pixels and the ability to display 262.144 different colours
Operation	Reed switch for activating the display and triggering setup mode
Antenna connector	FME-M
Data memory	Internal flash memory for up to 14.296 measurement cycles
Data type	f32 (32 Bit floating point)
Data transmission	Local radio connection: Range: up to 20 m [1)] Transmission rate: 120 data records/sec. LTE-M/NB-IoT modem (world): M1: LTE B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B28, B66 NB1/NB2: LTE B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66
SIM	Integrated SIM chip
Battery life	up to 10 years at 10 sec. measurement interval and 12 h transmission cycle

[1)] Depending on ambient and structural conditions

Chapter 5 General specifications

The information in this manual has been compiled with great care and to the best of our knowledge. The manufacturer, however, assumes no liability for any incorrect specifications that may be provided in this manual. The manufacturer is not responsible for direct, indirect, accidental or consequential damages which arise from errors or omissions in this manual even if advised of the possibility of such damages. In the interest of continuous product development, the manufacturer reserves the right to make improvements to this manual and the products described in it at any time and without prior notification or obligation.

> ***Note:*** *The specifications in this manual are valid as of the versions listed on the front page. Revised versions of this manual are available via the manufacturer's website (see "Contact information" on page 205).*

5.1 Translation

For deliveries to countries in the European Economic Area, the manual must be translated into the language of the respective country. If there are any discrepancies in the translated text, the original manual (German) must be referenced or the manufacturer contacted for clarification.

5.2 Copyright

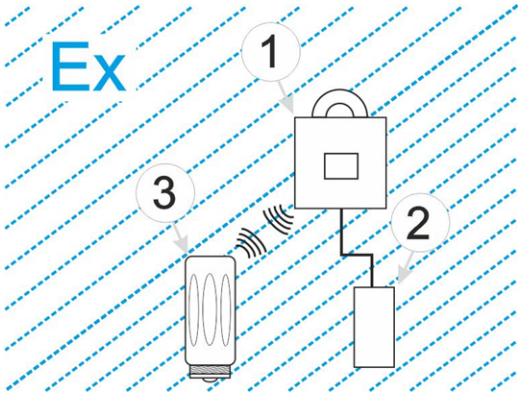
The copying and distribution of this document as well as the utilisation and communication of its contents to others without express authorisation is prohibited. Contraventions are liable to compensation. All rights reserved.

5.3 General descriptive names

The use of general descriptive names, trade names, trademarks and the like in this manual does not entitle the reader to assume they may be used freely by everyone. They are often protected registered trademarks even if not marked as such.

5.4 Ex protection

The battery operated, stationary Jellox Analog is designed for use in areas with a zone 1 explosive atmosphere. If the measurement system (Jellox Analog incl. sensors) is operated in areas with a zone 1 explosive atmosphere, the separately available sensor modules and the sensor with mA ouput which is connected via cable must of course also be approved for use in areas with a zone 1 explosive atmosphere.



1 Jellox Analog	**3** Sensor module approved for Ex zone 1
2 Sensor with mA ouptut approved for Ex zone 1	

Important note: *The Ex approval is only valid if the corresponding marking is provided on the type plate of the Jellox Analog .*

Important note: *The certificates of conformity and any relevant test certificates from the respective authorities must be carefully observed during installation and commissioning.*

5.4.1 Jellox Analog

The following conditions must be observed:

- Only the manufacturer is permitted to open the enclosure to carry out maintenance work, which must also be completed strictly outside the Ex area.
- The manufacturer's original spare parts must be used without exception.
- The batteries may only be replaced with certified products of identical design.
- Possible danger of electrostatic discharge build-up - clean the device with a moist or electrostatically dissipative cloth.
- A mounting distance of min. 50 mm must be maintained on all sides to prevent any soiling.
- The device must be protected from UV radiation.

II 2G Ex ib IIB T3 Gb

5.4.2 Sensor modules

The sensor module is not included in the standard scope of supply. The conditions to be observed and the Ex certification are provided in the user manual of the relevant sensor module.

5.5 Safety instructions

For the connection, commissioning and operation of the Jellox Analog , the following information and higher legal regulations of the country (e.g. ÖVE), such as valid EX regulations as well as the applicable safety and accident prevention regulations for the respective application case must be observed.

Read this manual completely before unpacking, setting up or operating this device. Observe all hazard, danger and warning information. Non-observance can lead to serious injuries to the operator and/or damage to the device.

Ensure that the safety equipment of this measurement instrument is not impaired. Install and use the measurement system only in the manner and method described in this manual. Do not make any changes to the measurement system under any circumstances.

> ***Important note:*** *The manufacturer's products that are designed for use outdoors include extensive protection against penetrating moisture and dust. If the sensor connector is not used, it must be protected against the ingress of moisture and dust by means of a protective cap. It is the responsibility of the operator to comply with local safety regulations.*

5.5.1 Use of the hazard warnings

DANGER:
Indicates a potential or threatening hazardous situation that will result in death or serious injuries if not avoided.

WARNING:
Indicates a potential or threatening hazardous situation that can result in death or serious injuries if not avoided.

CAUTION:
Indicates a potential hazardous situation that can result in minor or moderate injuries or damage to this instrument.

Important note: *Indicates a situation that can result in damages to this instrument if it is not avoided. Information that must be particularly emphasised.*

Note: *Indicates a situation that does not result in any injury to persons.*

Note: *Information that supplements the specifications in the main text.*

5.5.2 Safety symbols on the device

	Devices marked with this symbol must be disposed of in accordance with the requirements of Directive 2012/19/EU on waste electrical and electronic equipment.
	This symbol on a device indicates the location of the earth connection.
	This symbol on a device indicates the location of a fuse or current limiting circuit.

5.5.3 General safety instructions

- This manual is intended to be used by qualified personnel (see "Personnel requirements" on page 29). Read this manual thoroughly before unpacking, setting up or operating the device..
- If you encounter difficulties in understanding the information contained in this manual (or parts thereof), please contact the manufacturer or authorised distributors (see "Contact information" on page 205).
- Keep this manual on hand so that you can refer to it whenever you need information.
- Before installation or commissioning, ensure that the device is in good condition. For this purpose, check for visible defects on all important components. Pay particular attention to fastenings, connections, cable connections, seals, moving parts (e.g. hinges or joints), battery packs, power supply units, etc., if present.
- If defects are found that jeopardise operational safety, all further work must be stopped immediately. This applies regardless of whether the defects are found before installation or commissioning, or during installation, commissioning or ongoing operation.
- Do not attempt to repair the device yourself, either mechanically or electrically. In the event of damage, return the device to the manufacturer in its original packaging (see "Repair & return" on page 171).
- The device must not be disposed of with household waste under any circumstances. Information on correct disposal can be found in the chapter "Removal & disposal" on page 173.

5.5.4 Specific safety instructions



WARNING:
Never use this device in areas where the use of wireless equipment is prohibited. The device must not be used in hospitals and/or in the vicinity of medical equipment, such as heart pacemakers or hearing aids, as their functionality could be compromised by the mobile network modem contained in the device.

5.5.5 Safety and preventative measures for handling devices with mobile network modems

The following safety and preventative measures must be observed during all phases of installation, operation, maintenance or repair of a mobile network modem. The manufacturer is not liable if the customer disregards these preventative measures.



CAUTION:
The mobile network connection must not be used in hazardous environments.

No guarantee of any kind, whether implicit or explicit, is given by the manufacturer and its suppliers for the use with high risk activities.

In addition to the following safety considerations, all directives of the country in which the device is installed must be complied with.

> ***Important note:*** *No liability shall be assumed at any time and under no circumstances for connections via a mobile network modem for which wireless signals and networks are utilized. The mobile network modem must be switched on and operated in an area where sufficient signal strength is present.*

5.5.5.1 Safety and precautionary measures for devices with mobile network modem

- This device must only be installed by a trained technician who applies the recognised installation practices for a radio frequency transmitter including the correct grounding of external antennas.
- The device must not be operated in hospitals and/or in the vicinity of medical equipment such as heart pacemakers or hearing aids.
- The device must not be subjected to strong vibrations or impacts.
- The mobile network modem can cause interferences if it is located in the vicinity of television sets, radios or computers.
- Do not open the mobile network modem. Any modification to the device is prohibited and will result in the operating licence being revoked.
- The use of mobile network services (text messages/data communication/GPRS, etc.) may incur additional costs. The user is solely responsible for any resulting damages and costs.
- Do not install the device in any other way to the one described in the operating instructions. Improper use will invalidate the warranty.

5.5.5.2 Safety measures for installing the antenna

- Only use antennas that are recommended or supplied by the manufacturer.
- The antenna must be installed at a distance of at least 20 cm from individuals.
- The antenna must not protrude beyond the lightning-protected area of buildings and must be protected against lightning strikes.

5.5.6 Safety and precautionary measures when entering confined spaces and containers



DANGER:
Confined spaces may only be entered by trained personnel who are familiar with evacuation and first aid procedures and are equipped with detection, protective and safety equipment. Before entering, the confined space must be ventilated and the atmosphere checked.

The employee must obtain information about the applicable safety regulations from their employer in advance. These safety regulations must be observed before entering confined spaces.

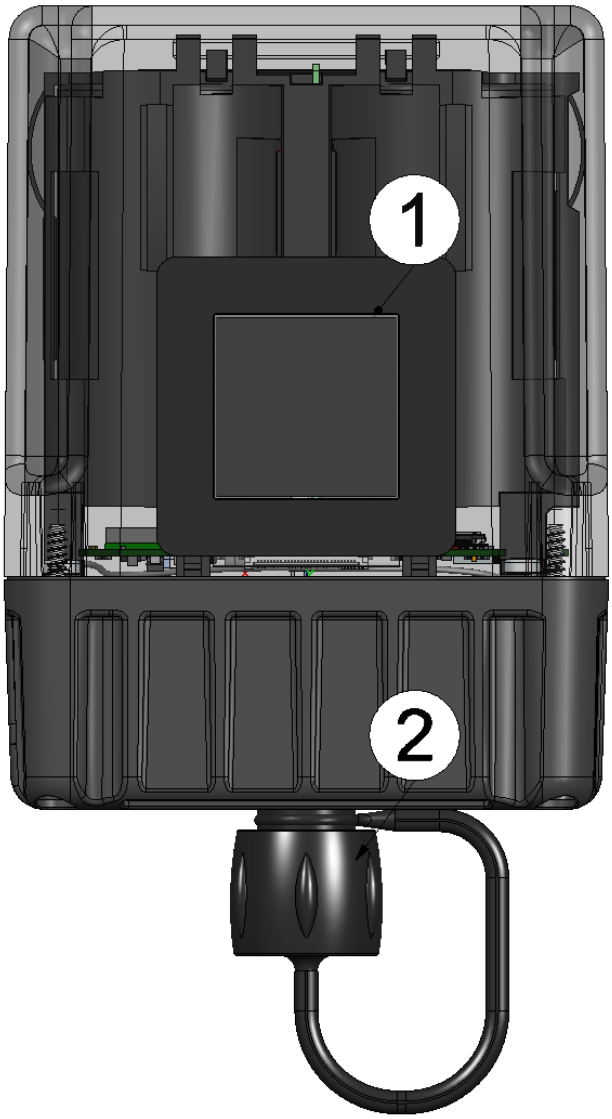
Confined spaces and containers are areas that are largely sealed off from the surrounding environment and where exchange with the ambient air is difficult or impossible. Examples include shafts, sewers, storm water overflow basins, tanks, silos, etc. A confined space is also an area that meets or could potentially meet the following conditions:

- An atmosphere containing less than 19.5% or more than 23.5% oxygen and/or a certain amount of hydrogen sulphide (i.e. H2S). As an indication, concentrations above 10 ppm of hydrogen sulphide (H S) are generally considered hazardous and require protective measures. Refer to the national occupational exposure limits (TWA and STEL) applicable in the country of use.
- An atmosphere that may be flammable or explosive due to gases, vapours, mists, dust or fibres.
- Toxic substances that may cause injury, incapacitation, or even death upon contact or inhalation.

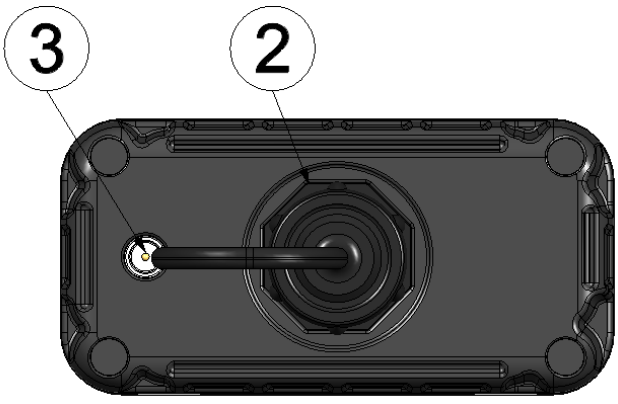
Confined spaces are not intended for permanent occupation by people. Access is restricted to certain individuals and the associated hazards are known. These include:

- Oxygen deficiency
- Risk of fire and explosion
- Hazardous and/or biological substances
- Unexpected flooding in of working materials

5.6 Overview



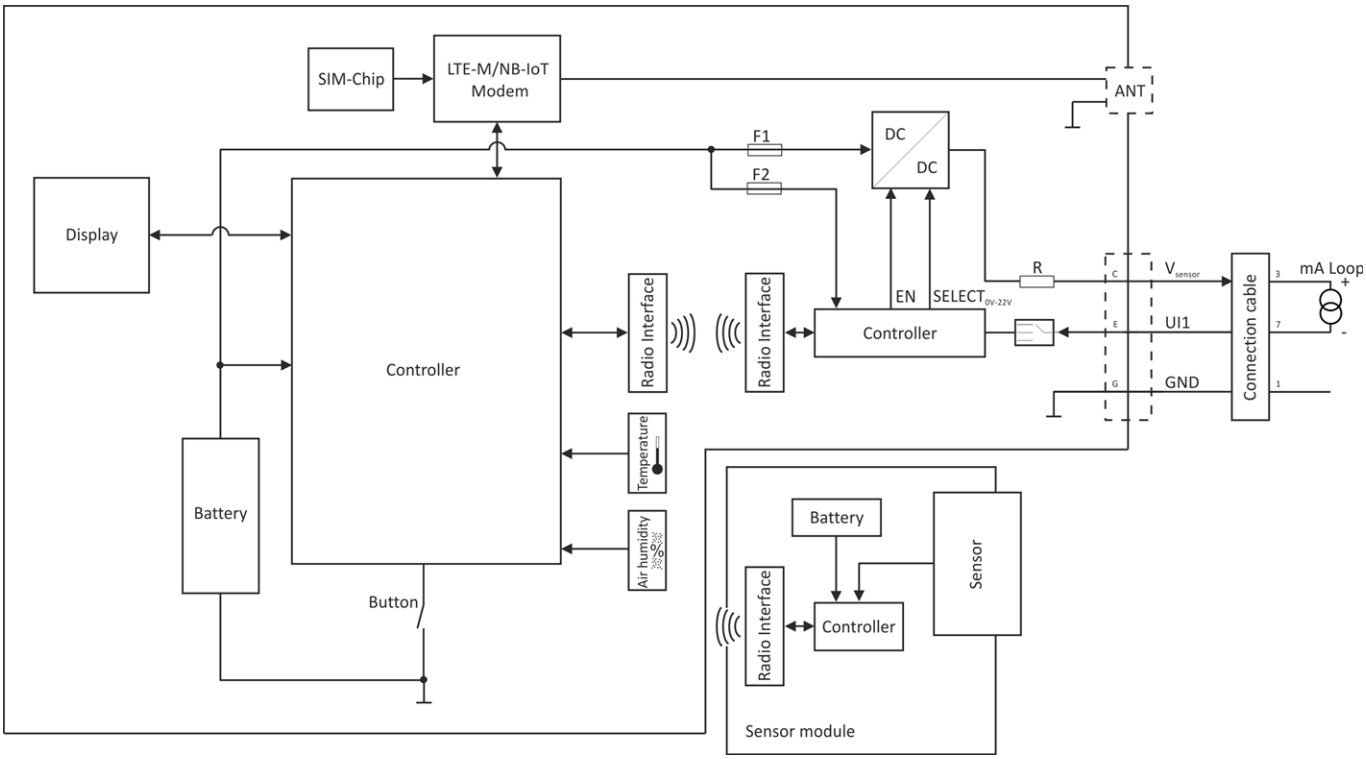
Front of the Jellox Analog
(view without protective armour)



Bottom of the Jellox Analog
(view without protective armour)

1 Display	**3** Antenna connector
2 Sensor connector (with protective cap)	

5.6.1 Block diagram



Block diagram of the Jellox Analog

5.7 Limitations of use

The following chapters describe the limits within which use of the device is permitted. Reasonably foreseeable misuse is also listed and the use of the device in this way is explicitly excluded.

> ***Note:*** *Any use of the device that is not specified in chapters "Intended use" on page 23, "Type of use" on page 24 and "Field of application" on page 24 is not permitted. This also applies if the device is used in a way that is not explicitly excluded as unauthorised in the chapter "Unauthorised use" on page 25. The manufacturer is not liable for any damage or consequential damage resulting from unauthorised use. The risk is borne solely by the operator.*

5.7.1 Intended use

The measurement device is designed for use in the field of water disposal. This includes the process of wastwater treatment and disposal, in which used water is collected, treated and reintroduced into the environment otherwise reused. It can be used to determine, process and transmit a mA signal as well as measurement values provided by remote sensor modules. A list of compatible sensors is provided under the following web address "https://support.microtronics.com/jellox-analog/compatible-sensors". For sensors not included in this list, proof of intrinsic safety must be provided by the user. The relevant parameters are provided in chapter "Specifications" on page 15. Only the remote sensor modules listed in chapter "Sensor modules" on page 194 can be used. The device is suitable for both mobile measurement campaigns and permanent stationary measurements. It can be used as a stand-alone device or as part of a swarm sensor system. Areas of application include the monitoring of water levels, fill levels, surface velocity, flow rates (based on the water level, separate calculation required), rain events, inflow and infliltration, monitoring the usage of the sewer system as well as the detection of overflows, blockages or manhole blockages. Depending on the sensor with mA signal used, there are other possible applications, such as speed

measurement, flow rate calculation (based on water level and speed, separate calculation required) or the detection of cover/valve/choke/structure status. The device operates independently of the mains supply and was designed for use in sewers with a zone 1 explosive atmosphere. The measured and recorded data is saved on a non-volatile storage medium. This stored data can be read out the data locally via radio connection or it can be automatically forwarded via mobile network connection to a central server for further processing. The device is equipped with an integrated SIM chip for this purpose. To read out the data locally via radio connection and to simultaneously forward it to a central server, the smartphone app provided by the manufacturer can be used. The device is designed solely for operation within the limits specified in chapter "Specifications" on page 15.

> ***Note:*** *This device is exclusively intended to be used for the purposes as described before. Any other use or use beyond what is specified or a modification of the device shall be deemed to be not for the intended purpose and is not permitted without the express written consent of the manufacturer. The manufacturer shall not be held liable for any damages that may result from such unauthorised use or modification. The operator alone bears the associated risk.*
>
> ***Note:*** *The manufacturer is not liable for data loss of any kind.*
>
> ***Note:*** *The integrated SIM chip provides a mobile communications connection to a variety of international service providers. In order to be able to utilise all functions of the device, you must ensure that the device is located in the service area of one of these service providers. A Managed Service contract with Microtronics Engineering GmbH is required for use of the mobile data transmission (see www.microtronics.com/managedservice). This includes the provisioning of the mobile communications connection via the network of the service provider included in the above-mentioned list.*

5.7.2 Type of use

Installation, commissioning and maintenance may only be completed by qualified personnel (see "Personnel requirements" on page 29). The device is only approved for use in sewers with a zone 1 explosive atmosphere.

5.7.3 Field of application

It is only authorised for use in the industrial sector, business/commercial sector or in small businesses.

5.7.4 Unauthorised use

Note: *The following describes the types of use of the device that are not permitted. This is not a complete list, but rather a list of reasonably foreseeable misuse. Only the use specified in chapters "Intended use" on page 23, "Type of use" on page 24 and "Field of application" on page 24 is permitted. The manufacturer is not liable for any damage or consequential damage resulting from unauthorised use. The risk is borne solely by the operator.*

- The device must not be exposed to direct sunlight or direct weather influences (rain, snow, ...).
- The device must not be installed in locations that are permanently flooded.
- The device must not be installed suspended from the connection cable.
- The device must not be operated in the field without protective armour.
- The device must not be operated without antenna.
- A rod antenna must not be connected directly to the antenna connection. The "multiband antenna with bracket" or another antenna with a connection cable must be used.
- When using antennas with a connection cable, neither the device nor the antenna may be suspended from the antenna cable.
- The sensor connection must not be used in the field without a counterpart. If the sensor connection is not used, it must be protected with a protective cap.
- No traction may be exerted on the sensor connection. A straining clamp must be used to secure the sensor cable in a suitable manner.
- The device must not be mounted lying down or upside down. The sensor recess must always be aligned pointing downwards.

5.8 General product information

The Jellox Analog is a compact, battery operated, stationary measurement device designed for recording and transmitting a mA signal as well as measurement values that are provided by remote sensor modules. Information about measurement range, resolution, precision, measurement method and capacity of the intstalled battery is provided in the user manual of the respective sensor module. Communication between the sensor module and the Jellox Analog is realised via local radio connection. Depending on the ambient conditions, the bridgeable distance can be up to 20 m . In addition to the primary measurement value (i.e. level with installation height and trimming taken into account), up to 3 secondary measurement values (e.g. distance to the surface, amplitude and temperature of the electronics) and the internal measurement values "Battery", "Battery life" (remaining days until the next battery replacement), "Flags" (sensor status) and "RSSI" (local radio signal strength) are determined for the sensor modules. To record the mA signal, a corresponding sensor connector is available directly on the Jellox Analog . The sensor is also supplied via this connector. For this purpose, the Jellox Analog has an adjustable (0...22 V) voltage output. To save energy, the voltage output can be configured so that it is only activated briefly before and during measurement. In addiditon to the primary measurement value, the 3 secundary measurement values "Sensor supply", "Number of sample measurements" and "warmup time" as well as the inernal measurement value "Flags" (sensor status) are determined for the mA input. Furthermore the internal measurement values "SOC" (State of Charge), "Battery", "Int. Temp", "rH" (humidity inside the housing), "GSM" (mobile network signal strength), "Service" (remaining days until the next battery replacement) and "Load" (energy cosumption between two recordings) of the Jellox Analog are determined.

The measurement data of the remote sensor module is determined at an interval of 10 sec. (to monitor the conditions under which a "Smart Action" is triggered) and can be recorded in the internal data memory at an adjustable interval (see "Device settings " on page 98). The measurement interval for the mA input at the Jellox Analog is configurable (see "Device settings " on page 98). In this interval, the conditions under which a

"Smart Action" is triggered are monitored. For recording the measurement data of the mA input, the same interval as the one for the remote sensor module is used.

The recorded data can be read out locally via radio connection or, in a freely selectable interval, transmitted automatically to a central myDatanet server via mobile network connection. The device is equipped with an integrated SIM chip for this purpose. This To read out the data locally via radio connection and to simultaneously forward it to a central myDatanet server, the "OnSite Companion" smartphone app (see "OnSite Companion" on page 153) can be used. The myDatanet server provides a variety of options for managing and displaying the data. More information is provided in the server manual ("myDatanet Server Manual " 805002). The device is configured via the interface of the relevant myDatanet server. If the level falls below or exceeds a defined value (applicable for both the measurement value determined via the mA input and the primary measurement value and internal measurement values provided by the remote sensor modules), regardless of the transmission cycle that is currently set, the "Smart Actions" can be used to initiate an immediate transmission, to start an immediate recording, to trigger a warning or an alarm, to switch to an alternative transmission interval or to activate an alternative transmission interval (see "Edit Smart Action" on page 125).

The Jellox Analog has a 1,5" OLED display to show the current measurement values and various status information (e.g. remaining days until the next battery replacement of the sensor module). The display is activated via reed switch. Detailed information on this is provided in chapter "Display" on page 80.

5.9 Device labelling

The specifications in this user manual apply exclusively to the Jellox Analog device type. The type plate is located on the rear side of the device and contains the following specifications:

- Product designation
- Serial number
- Item number
- Type key
- Ex marking as specified in chapter "Declaration of conformity" on page 11
- Ex parameters as specified in chapter "Ex certification" on page 13
- Hazard note regarding electrostatic charge build-up
- CE marking
- Logo for the EU WEEE Directive
- Environmental conditions during operation
- Protection class[1)]
- Week and year of production
- Hardware revision
- Name and address of the manufacturer



Type plate Jellox Analog

[1)] Only the highest of the protection classes for which the device has been tested is indicated on the type plate. A list of all protection classes for which the device has been tested can be found in chapter "Specifications" on page 15.

The correct specification of the type designation and serial number is important for all queries and spare part orders. Only then can we process requests promptly and properly.

> ***Note:*** *These operating instructions are part of the device and must be available to the user at all times. The safety instructions contained therein must be observed.*

WARNING:
It is strictly prohibited to disable the safety equipment or modify its mode of operation.

5.10 Installation of spare and wear parts

Be advised that spare and accessory parts that have not been supplied by the manufacturer have also not been inspected or approved by the manufacturer. The installation and/or use of such products can possibly have a negative impact on the specified constructional properties of the device. The manufacturer shall not be liable for any damages that arise from the use of non-original parts and non-original accessory parts.

> ***Note:*** *The use of spare and wear parts that are not approved by the manufacturer shall void the Ex approval.*

5.11 Storage of the product

To store the Jellox Analog , activate transport mode by setting the "operating mode" in the input window "Device settings" (see "Device settings " on page 98) to "transport". Then activate the setup mode using the solenoid switch (see "Setup mode" on page 43) to transmit the altered configuration to the Jellox Analog . This way any data that has not yet been transferred to the myDatanet server at this point in time is transmitted. The data transmission and measurement are then deactivated. The sensor cable and antenna can be removed as soon as the mobile network connection has been terminated - indicated by "transport mode" being shown on the display (see "Display" on page 80). You may need to activate the display again by briefly holding the magnet (approx. 1 sec.) to the reed switch again (see "Reed switch" on page 80). Most of the compatible sensor modules do not have to be deactivated separately. Information on whether a sensor module has a special transport mode is provided in the chapter "Storage of the product" of the user manual of the relevant sensor module. Store all of the components of the Jellox Analog in their original packaging. Do not remove the protective armour during this process. The sensor connector must be protected during storage using the protective cap (type "UTS10DCG") included in the scope of supply. If necessary, the protective cap must be cleaned before attaching it.

The Jellox Analog is placed in a very energy-saving mode by activating transport mode. However, it may still occur that the batteries are fully discharged if the device is stored for very long periods. However, the configuration and the most recently recorded data are always retained. Transport mode is deactivated again by triggering setup mode again and the Jellox Analog resumes operation according to the configuration. A connection to the myDatanet server is also established as part of this process, so that any changes to the configuration settings made via the server interface are transmitted to the device. Sensor modules that do not have a transport mode are always ready for operation and do not have to be activated separately.

5.12 Warranty

The device has been functionally tested before delivery. If it is used as intended (see "Intended use" on page 23) and the operating instructions, the applicable documents (see "Applicable documents " on page 69) and the safety notes and instructions contained therein, are observed, no functional restrictions are to be expected and perfect operation should be possible.

> ***Note:*** *Please also note in this regard the next chapter "Disclaimer" on page 28.*
>
> ***Note: Limitation of warranty***
>
> *In the event of non-compliance with the safety instructions and instructions in this document, the manufacturer reserves the right to limit the warranty.*

5.13 Disclaimer

The manufacturer assumes no liability

- for damages owing to **a change** of this document. The manufacturer reserves the right to change the contents of this document and this disclaimer at any time and without any notice.
- for damages to persons or objects resulting from **failure to comply** with applicable **regulations**. For connection, commissioning and operation of the devices/sensors all available information and higher local legal regulations (e.g. in Austria ÖVE guidelines) such as applicable Ex regulations as well as safety requirements and regulations in order to avoid accidents shall be adhered to.
- for damages to persons or objects resulting from **improper use**. For safety and warranty reasons, all internal work on the instruments beyond from that involved in normal installation and connection, must be carried out only by qualified Microtronics personnel or persons or companies authorised by Microtronics .
- for damages to persons or objects resulting from the use of instruments in technically **imperfect** condition.
- for damages to persons or objects resulting from the use of instruments **not in accordance with the requirements**.
- for damages to persons or objects resulting from **failure to comply** with **safety information** contained within this instruction manual.
- for missing or incorrect measurement values or resulting consequential damages due to **improper installation** or **incorrect parameterisation/programming**.

5.14 Obligation of the operator

WARNING:
In the EEA (European Economic Area), the national implementation of the framework directive (89/391/EEC) as well as the associated specific directives and from these in particular, the directive (2009/104/EC) about the minimum safety and health requirements for use of work equipment by workers at work, each in their respective version are to be complied with.

The operator must obtain the local operating licence and the associated documents.

In addition, the operator must comply with the local legal requirements for

- the safety of the personnel (accident prevention measures),
- the safety of the equipment (protective equipment and maintenance),
- the product disposal (waste disposal law),
- the material disposal (waste disposal law),
- the cleaning (cleaning agents and disposal) and
- the environmental protection amendments.

Before commissioning, the operator must ensure that the installation and commissioning – provided these were performed by the operator himself – are in compliance with the local regulations.

5.15 Personnel requirements

Installation, commissioning and maintenance may only be completed by personnel who meet the following conditions:

- Qualified specialist personnel with the relevant training
- Authorised by the facility operator

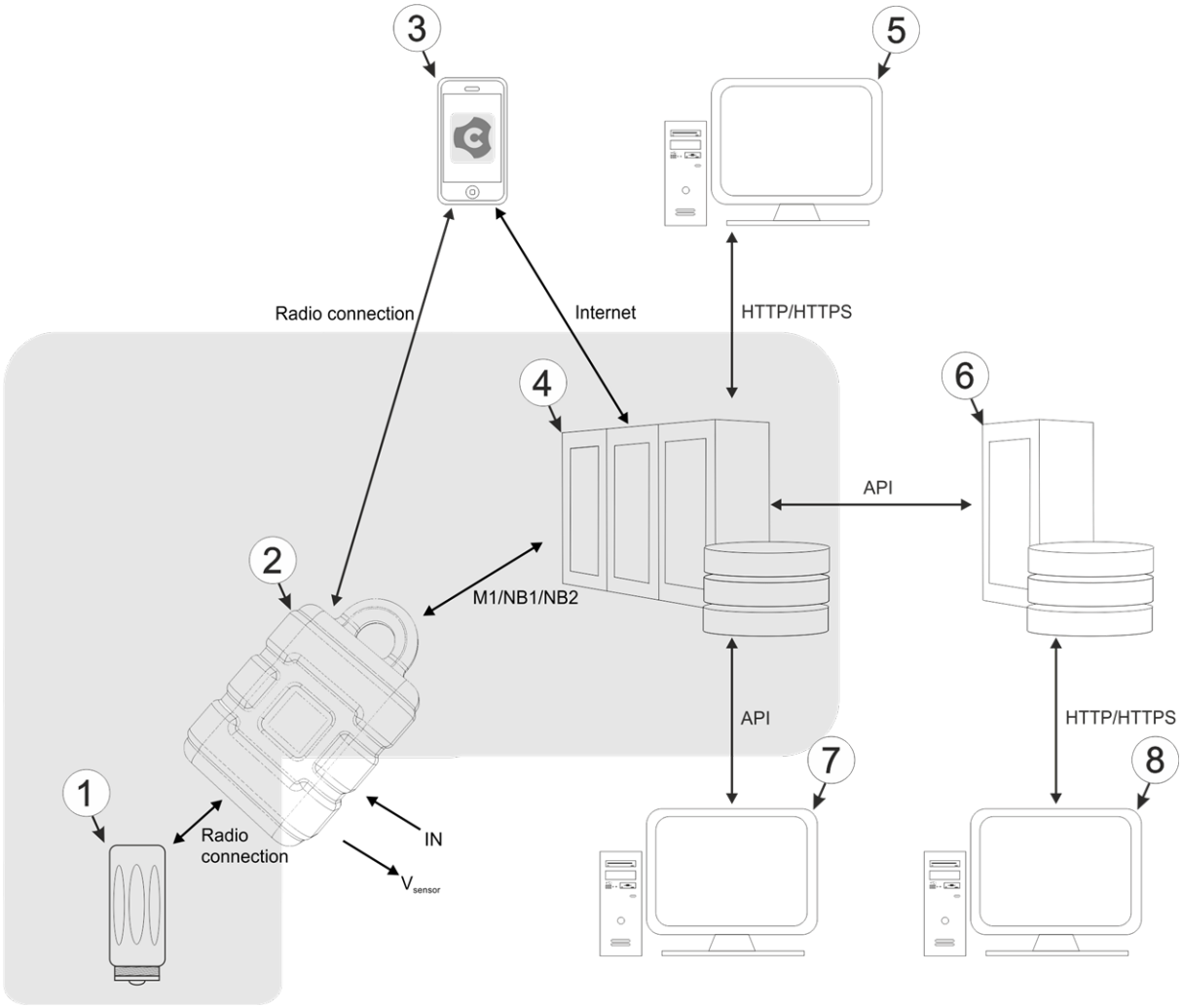
Note: Qualified personnel

In the context of these instructions and the warnings on the product itself, individuals responsible for the setup, installation, commissioning and operation of the product must have gained relevant qualifications relating to their activities, including, for example:

- *Training, instruction and authorisation to activate/deactivate, ground and label electric circuits and devices/systems in accordance with the standards of safety engineering.*
- *Training or instruction on the maintenance and use of suitable safety equipment in accordance with the standards of safety engineering.*
- *First aid training*

Chapter 6 Functional principle

In the graphic below, all of the components that are part of the myDatanet are illustrated in grey. All other components must be provided/created by the customer.



Functional principle

1	Sensor module or output module (available separately)
2	Jellox Analog with integrated managed service SIM chip
3	Smartphone with installed smartphone app "OnSite Companion"
4	myDatanet server, to which the data is transferred
5	Client that accesses the interface of the myDatanet server via the web browser
6	Customer-specific server that provides clients with their own interface. The customer-specific server obtains the data via the API interface of the myDatanet server (see "API" on page 167).
7	Client, on which a PC program is running, that obtains its data via the API interface of the myDatanet server (see "API" on page 167)
8	Client that accesses the interface of the customer-specific server via the web browser

As illustrated in the previous figures (see "Functional principle" on page 31), there are 2 options for transferring the data from the Jellox Analog to the myDatanet server:

- Directly via LTE-M/NB-IoT mobile connection
- Indirectly, by reading the data from the device via local radio connection using the "OnSite Companion" smartphone app that then uses the smartphone's Internet connection to transfer the data to the myDatanet server.

Functions and components provided by myDatanet :

- Jellox Analog

  It is a system approved for Ex zone 1 used to determine a mA signal as well as measurement values that are provided by remote sensor modules. Communication between the sensor modules and theJellox Analog is realised via local radio connection. To connect a sensor with mA ouptut, a sensor connector is available directly on the Jellox Analog . The saved data can either be sent directly to a central server via the mobile network (LTE-M/NB-IoT) for further processing or it can be read out via local radio connection a smartphone, using the smartphone's internet connection to forward the data to a central server.

- Sensor module or output module (available separately)

  A list of compatible sensor modules is provided in chapter "Sensor modules" on page 194.

- "OnSite Companion" smartphone app (optional)

  In combination with a compatible smartphone, the "OnSite Companion" smartphone app not only enables commissioning the device, but it also offers the possibility to read out the data from the Jellox Analog via local radio connection and forward it to a central myDatanet server.

- Managed Service

  Managed Service is the basis for operating the devices and provides a wide range of services. Managed Service includes updates for device firmware, mobile data transmission on a global scale and free support - providing you with one contact person for the entire solution.

- myDatanet server

  Database for saving the measurement data and configurations. Data is either accessed via the API (see "API" on page 167) or the web interface of the server.

Functions and components provided by the customer:

- Sensor with mA output

  Sensor with an interface that is compatible with the specifications listed in chapter "Technical details about the universal input" (see "Technical details about the universal input" on page 65). If the device is operated in areas with zone 1 explosive atmosphere, only sensors that are also approved for zone 1 and of which the Ex parameters are compatible with those of the Jellox Analog may be used.

- Customer-specific server with web interface for the clients (optional)

  It is therefore possible to create an individual web interface for the clients. Using this method, the data is read out of the myDatanet server via the API interface (see "API" on page 167) by the customer specific server.

6.1 List of determined measurement values

6.1.1 Remote measurement channels

For each of the sensor modules linked to one of the remote measurement channels of the Jellox Analog , the following measurment values are determined:

Primary measurement value
e.g. Level (mounting height and trimming taken into consideration) for sensor modules of type "LVL-R-5"

Secondary measurement value 1 - 3
e.g. "Distance to surface", "Amplitude (energy received for the distance determined)" and "Temperature of the electronics" for sensor modules of type "LVL-R-5"

Battery [mV]
current voltage of the battery installed in the sensor module

Runtime [days]
remaining time until the next sensor battery replacement

Flags [ ]
e.g. "Status of the distance" for sensor modules of type "LVL-R-5"

RSSI [dBm]
Radio signal strength between the sensor module and the Jellox Analog

6.1.2 Measurement channel

The following measurement values are determined for the mA input of the Jellox Analog :

Value
scaled measurement value (trimming and offset taken into consideration) in the desired unit (e.g. mm)

Vsens [mV]
sensor supply voltage stored in the configuration at the time of measurement

Sample Count []
number of sample measurements carried out to generate the measurement value

Warmup Time [s]
warmup time stored in the configuration at the time of measurement

Flags []
indicates the status of the mA input

There is a status register with individual flags. Several of these flags can be set simultaneously.

Flags	*Status*	*Explanation*
Bit 0 (0x01)	*mA input ready*	*The mA input is ready for operation*
Bit 1 (0x02)	*Measurement active*	*A measurement is currently being carried out*
Bit 2 (0x04)	*Error A/D converter*	*Error when determining the measurement value*
Bit 3 (0x08)	*Error sensor supply*	*Error when activating/setting the sensor supply*

6.1.3 Internal measurement values

In addition to the measurement values provided by the external sensors, the following internal measurement values are determined:

SOC [%]
State of Charge of the internal battery of the Jellox Analog

Battery [V]
current voltage of the the internal battery of the Jellox Analog

Int. temp [°C]
internal device temperature of the Jellox Analog

rH [%]
humidity in the housing of the Jellox Analog

> ***Note:*** *If the humidity in the housing exceeds 95 %, the Dehumidification (301736) service can be ordered.*

GSM [dBm]
Mobile network signal strength

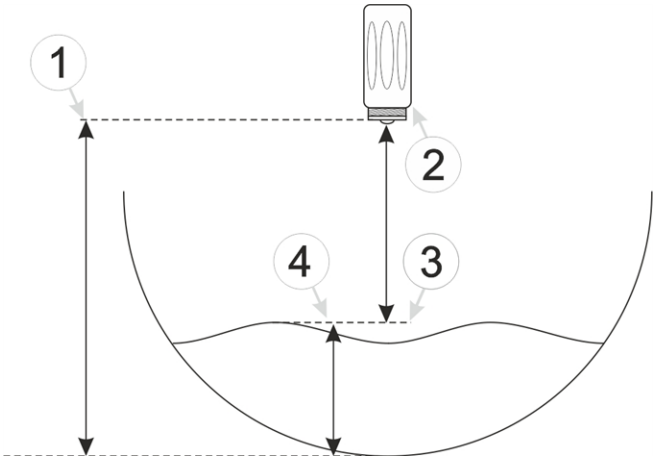
Service [Days]
remaining days until the next replacement of the batteries of the Jellox Analog

Load [mAs]
Energy consumption between two recordings

6.2 Determining the measurement values

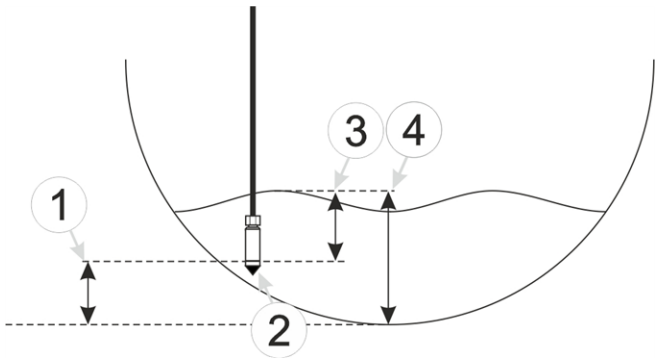
6.2.1 Determining the water level

The sensor modules supported by the Jellox Analog use different measuring methods to determine the water level. The "LVL-R-5 " sensor module determines the water level by means of distance measurement using a radar sensor and thus enables non-contact measurement. Sensor modules of the "Gauge " family use a piezoresistive pressure sensor that must be immersed in the medium to be measured. The following illustration shows a comparison of these two types of sensor modules.



Installation situation of the LVL-R-5

1 Installation height
2 LVL-R-5
3 Measured distance to surface
4 Calculated level

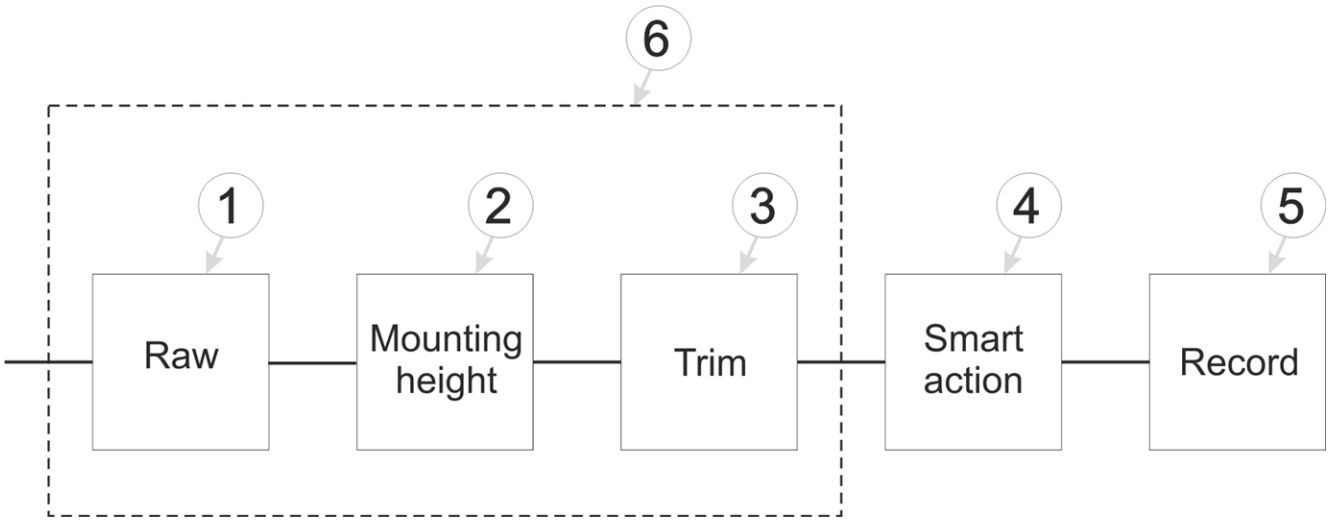


Installation situation of the pressure sensor of the Gauge

1 Offset
2 Pressure sensor of the Gauge
3 Output value of the pressure sensor
4 Calculated level

> ***Note:*** *In the following, the term "Installation height" is used both for the distance of the "LVL-R-5 " sensor module to the ground and for the distance of the pressure sensor of the "Gauge " sensor module to the ground.*

The module chain described in the following is started every 10 sec. (i.e. with the measurement interval) and executed once. The first three stages ("raw", "Installation height" and "Trim") are already completed in the sensor module. I.e. the measurement level delivered by the sensor module is already the actual water level (installation height and trimming considered). The measurement interval is independent from the record interval and cannot be altered. It is used to monitor the conditions under which a "Smart Action" is triggered. It is then the currently valid measurement value generated in the measurement interval that is recorded. The measurements executed since the last recording are not consolidated (e.g. average determination). The interval for the recordings can be selected via the "Record interval" parameter (see "Device settings " on page 98). The "Smart Actions" can, however, be used to switch to an alternative record interval (see "Edit Smart Action" on page 125).



Schematic diagram of how the measurement value for the "Remote measurement channel" is generated

1	Generation of the raw value using the relevant measuring method (see "Determining the raw value" on page 36)	**4**	Monitoring of the conditions under which a "Smart Action" is triggered (see "Smart Action module" on page 41)
2	calculates the preliminary water level taking the configurable "Installation height" into consideration (see "Taking the installation height into consideration" on page 36)	**5**	As the record interval can be selected differently from the non-changable measurement interval, the measurement values are not recorded every time a measurement takes place. (see "Record module" on page 41)
3	corrects the preliminary water level with the configurable value for "Trimming" (see "Taking trimming into consideration" on page 37)	**6**	This part of the module chain is already completed in the sensor module.

6.2.1.1 Determining the raw value

The raw value is the measurement value generated directly from the sensor module. Depending on the type of sensor module, different measuring processes are applied (e.g. distance measurement using a radar sensor). If necessary, an automatic compensation of external influences (e.g. temperature) is applied.

6.2.1.2 Taking the installation height into consideration

The installation height of the sensor module can be taken into consideration in this stage. Information on how the configuration parameter "Installation height"/ "Offset" influences the calculation of the water level is provided in the user manual of the relevant sensor module. Depending on the type of sensor module and on the installation situation, a negative sign may also be required.

The following table indicates the parameters relevant for the module:

Configuration section	Parameter	Explanation
Measurement system -> Remote sensor module of type LVL-R-5	Installation height	Specifies the installation height of the sensor.
Measurement system -> Remote sensor module of type Gauge	Offset	specifies the sensor offset.

6.2.1.3 Taking trimming into consideration

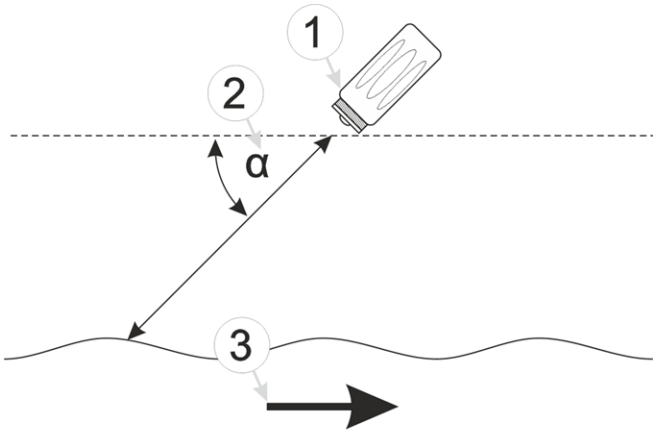
This stage allows to adjust the zero point without having to change the value for the installation height again. Information on how the "trimming" configuration parameter is influencing the calculation of the water level is provided in the user manual of the relevant sensor module. Depending on this and on whether the water level value has to be corrected scaling up or down, a negative sign has to be set.

The following table indicates the parameter relevant to the module:

Configuration section	Parameter	Explanation
Measurement system -> Remote sensor module of type LVL-R-5	Trimming	Is used to adjust the zero point
Measurement system -> Remote sensor module of type Gauge	Trimming	Is used to adjust the zero point

6.2.2 Determining the surface velocity

The "VEL-R-5 " sensor module is supported by the Jellox Analog . It a uses pulsed, coherent radar technonlogy operating in the millimetre wave range to determine the surface velocity, thereby enabling contactless measurement. The following figure shows the installation situation for this type of sensor module.

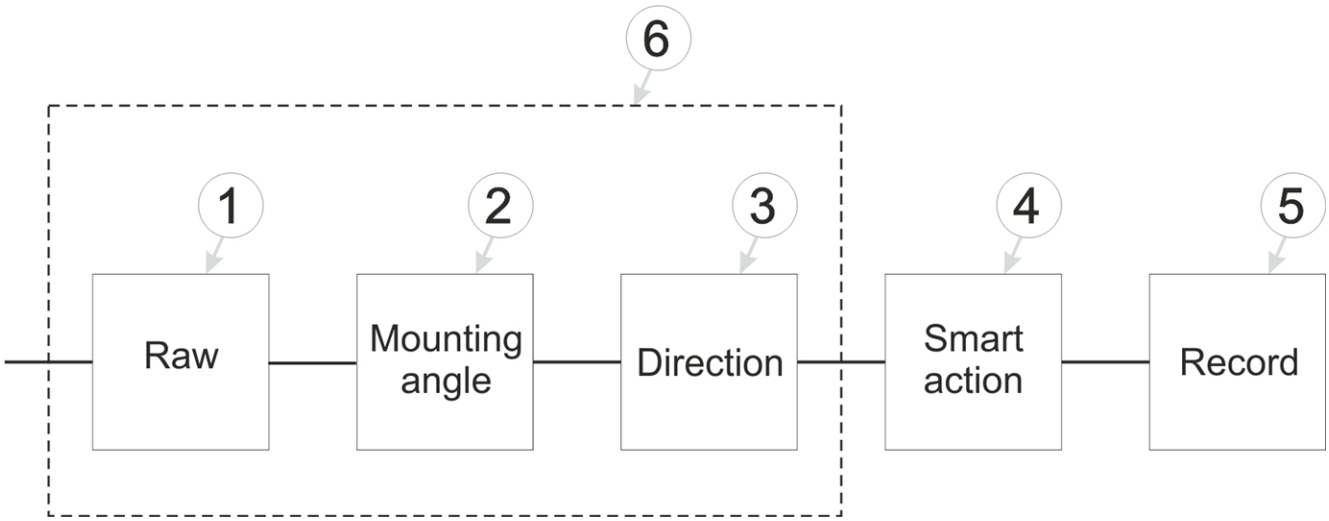


Installation situation of the VEL-R-5 (upstream, recommended)

1 VEL-R-5
2 Measured mounting angle
3 Direction of flow

The module chain described in the following is started every 10 sec. (i.e. with the measurement interval) and executed once. The first three stages ("raw", "Mounting angle" and "Direction") are already completed in the sensor module. I.e. the measurement level delivered by the sensor module is already the actual surface velocity (mounting angle and direction of flow considered). The measurement interval is independent from the record interval and cannot be altered. It is used to monitor the conditions under which a "Smart Action" is triggered. It is then the currently valid measurement value generated in the measurement interval that is recorded. The measurements executed since the last recording are not consolidated (e.g. average

determination). The interval for the recordings can be selected via the "Record interval" parameter (see "Device settings " on page 98). The "Smart Actions" can, however, be used to switch to an alternative record interval (see "Edit Smart Action" on page 125).



Schematic diagram of how the measurement value for the "Remote measurement channel" is generated

1	Determining the raw value (see "Determining the raw value" on page 38)	**4**	Monitoring of the conditions under which a "Smart Action" is triggered (see "Smart Action module" on page 41)
2	Calculates the surface velocity taking the configurable "mounting angle" into account (see "Taking the mounting angle into consideration" on page 38)	**5**	As the record interval can be selected differently from the non-changable measurement interval, the measurement values are not recorded every time a measurement takes place. (see "Record module" on page 41)
3	Corrects the sign of the surface velocity value taking the configurable "Direction" into account (see "Taking the flow direction into consideration" on page 39)	**6**	This part of the module chain is already completed in the sensor module.

6.2.2.1 Determining the raw value

The raw value is the measurement value generated directly by the sensor module. The algorithm used by the VEL-R-5 is similar to the way traditional radar devices measure speeds using the pulse Doppler effect. The speed is determined based on the phase differences of the reflected signal. These phase differences are caused by minute movements of the waves during the measurement process.

6.2.2.2 Taking the mounting angle into consideration

The mounting angle of the sensor module is taken into account in this step. Due to the angle of inclination between the water surface and the sensor, the waves do not move directly towards the radar beam. However, the sensor can only detect the velocity component that runs in the direction of the radar beam (i.e. directly towards it). What the sensor measures is therefore only the projection of the actual speed of the waves in the direction of the radar beam. If the angle of inclination is known, the actual surface velocity can be calculated based on the measured velocity component.

$$v_{real} = v_{measured} / \cos(\theta)$$

The following table indicates the parameter relevant for the module:

Configuration section	Parameter	Explanation
Measurement system -> Remote sensor module of type VEL-R-5	Mounting angle	Input field for the mounting angle (i.e. angle of inclination between water surface and sensor)

6.2.2.3 Taking the flow direction into consideration

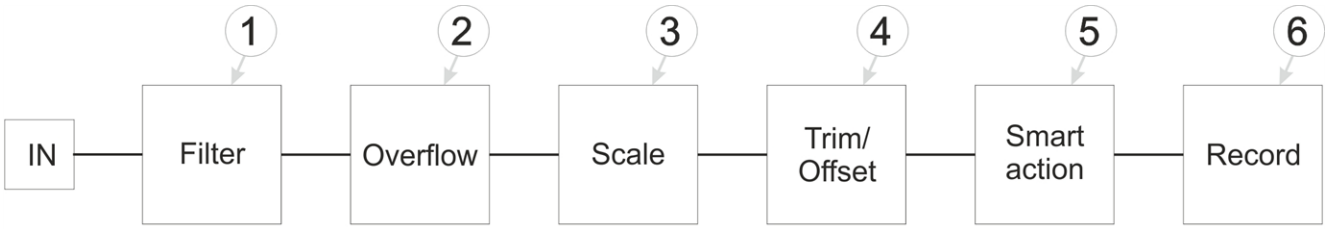
This step allows the flow direction to be taken into account so that the surface velocity is displayed with the correct sign.

The following table indicates the parameter relevant for the module:

Configuration section	Parameter	Explanation
Measurement system -> Remote sensor module of type VEL-R-5	Direction	Selection of how the sensor module is aligned relative to the flow

6.2.3 Determining the measurement value at the mA input

The module chain described in the following is started in a configurable measurement interval and executed once. The measurement interval is independent from the record interval and can be adjusted via the parameter "measurement interval" (see "Device settings " on page 98). It is used to monitor the conditions under which a "Smart action" is triggered. It is then the currently valid measurement value generated in the measurement interval that is recorded. The measurements executed since the last recording are not consolidated (e.g. average determination). The interval for the recordings can be selected via the "Record interval" parameter (see "Device settings " on page 98). The "Smart actions" can however be used to switch to an alternative record interval (see "Edit Smart Action" on page 125).



Schematic diagram of how a measurement value is generated on the mA input

1	Filter to compensate short-term signal fluctuations (see "Filter module" on page 40). The filter module is run through several times during the determination of a measured value.	**4**	Adds the values entered via the configuration parameters "trimming" and "offset" to the measurement value (see "Trim/Offset module" on page 41)
2	Monitoring of the measurement range limits (see "Overflow module" on page 40)	**5**	Monitoring of the conditions under which a "Smart Action" is triggered (see "Smart Action module" on page 41)
3	Rescaling from the raw value to the measurement value (see "Scale module" on page 40)	**6**	As the record interval can be selected differently from the non-changable measurement interval, the measurement values are not recorded every time a measurement takes place (see "Record module" on page 41).

6.2.3.1 Filter module

The filter module is designed to compensate for brief fluctuations of the input signal.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement system -> Universal input	4-20 mA 0-20 mA	Filter time	Time in [ms], during which the analogue signal is averaged for signal smoothing, is designed to suppress signal noise

6.2.3.2 Overflow module

This module monitors the measurement range limits of the raw value. If the mA input was, for example, switched to "4-20 mA" mode, a raw value of 2 mA will violate the measurement range.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement system -> Universal input	4-20 mA 0-20 mA	Overflow	Procedure in the event of measurement range violations

6.2.3.3 Scale module

This module rescales the raw value (e.g. mA) to the required measurement value (e.g. mm).

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement system -> Universal input	4-20 mA 0-20 mA	0 %	Start of the measurement range in the measurement unit
		100 %	End of the measurement range in the measurement unit

6.2.3.4 Trim/Offset module

An offset for the measurement value, if required, can be taken into consideration with the help of this module. It also enables the zero point to be adjusted without having to change the already set offset again. The "Trimming" parameter value and the "Offset" parameter value are added to the initial value of the scale module (see "Scale module" on page 40). This means that a negative prefix must be set for the "Trimming" parameter (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102) if the scaled measurement value should be reduced during the zero point adjustment.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement system -> Universal input	0-20 mA 4-20 mA	Trimming	Is used to adjust the zero point(see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102)
		Offset	Allows for correction of the measurement value by an offset value (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102)

6.2.4 Smart Action module

This module is used to monitor the conditions under which a "Smart Action" is triggered. However, the Smart Action module is only available for the primary measurement values of the sensor module (e.g. water level), the primary measurement value of the mA input and the internal measurement values. Depending on the settings defined and the conditions met, an immediate transmission is triggered if necessary, an immediate recording is started, a warning or alarm is triggered, a switch is made to an alternative recording interval or an alternative transmission interval is activated.

All parameters of the input window "Edit Smart Actions" (see "Edit Smart Action" on page 125) are relevant for this module.

6.2.5 Record module

The measurement values are recorded using the record module. As the record interval may be set differently from the unchangeable measurement interval for "remote measurement channels" and the adjustable measurement interval for the "measurement channel", recordings do not occur every time a measurement takes place.

The following table specifies the relevant parameters for the module:

Configuration section	Parameter	Explanation
Measurement system -> Device settings	Record interval	Time between measurement data recordings

6.3 Functionality of the internal data memory

Structure	Circular buffer
Total size	14.296 measurement cycles
Number of sectors	8
Sector size	1.787 measurement cycles

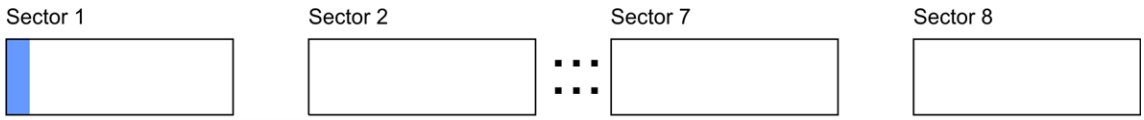
The internal data memory of the Jellox Analog is designed as a circular buffer with 8 sectors. If the maximum number of data records (14.296) is achieved, the sector with the oldest data is deleted fully before new data can be saved in this sector again. This means that the internal data memory at the very least contains the measurement values of the last 12.509 cycles, however at most the measurement values of the last 14.296 cycles.

For this reason, it is recommended to coordinate the transmission cycle and record interval in such a way that a maximum of 12.509 measurement cycles have to be recorded between two transmissions. Note, that if the measurement cycle is shorter than the record interval, the record interval still has to be used for the calculation. In this case, the reason for this is that although the measurement is completed in the measurement cycle, the determined data is saved in the data memory in the record interval. If it can be expected that individual transmissions fail due to poor network coverage or an alternative record interval is activated via the trigger, this must also be taken into consideration when calculating the measurement cycles that are to be saved.

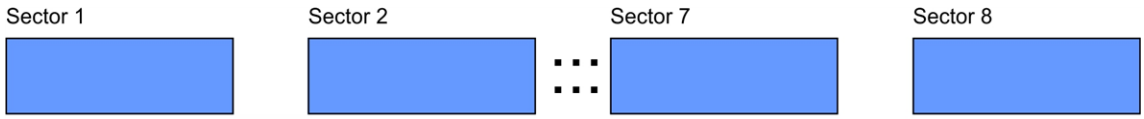
Note:

Additional explanation regarding the functionality of the circular buffer

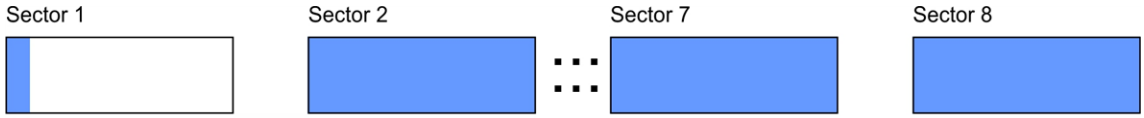
Data memory after the first measurement cycle:



Data memory after 14.296 measurement cycles:



Data memory after 14.296 +1 measurement cycles:



6.4 Procedure in case of connection aborts

If the connection is aborted, another attempt to establish a connection is made after 2 min. . The connection is attempted up to 2 times.

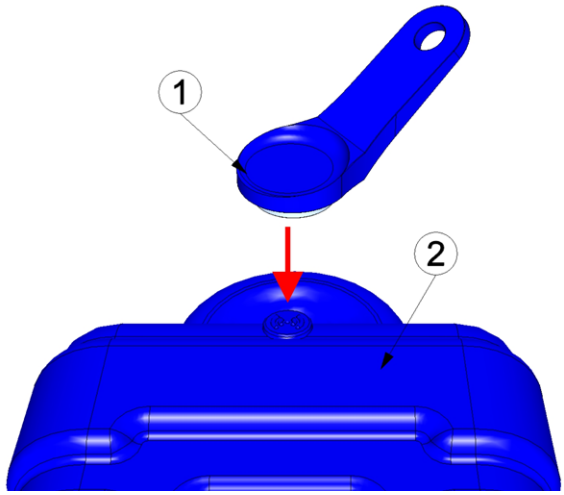
6.5 Setup mode

Setup mode is a special operating mode where the server assignment is verified before a connection to the myDatanet server is established. Setup mode is activated by holding the magnet to the reed switch for at least three seconds (see "Reed switch" on page 80).

If the local radio connection between Jellox Analog and one of the sensor modules is lost (E003, see "Error codes" on page 85), the search for remote sensors is initiated before establishing a mobile network connection to the myDatanet server when setup mode is activated.

How-To-Video: Triggering the setup mode

1. Activate the setup mode by holding the magnet to the reed switch for at least 3 seconds (see "Reed switch" on page 80).



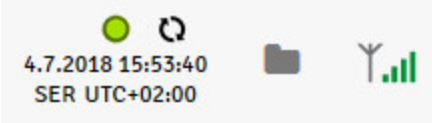
Activating setup mode

1 MDN Magnet (206.803)	**2** Jellox Analog

On the display of the device, first the connection establishment and then the data synchronisation are signalised via the corresponding symbole (circles forming one circle).

> ***Note:*** *To check the current operating state, you may need to activate the display again by briefly holding the magnet (approx. 1 sec.) to the reed switch (see "Reed switch" on page 80).*

2. Wait until it is indicated in the list of sites/applications that the device is connected to the server (rotating arrows).



The Jellox Analog is only for a very shor time connected to the server. You can therefore check whether the time stamp of the last connection (underneath the green status symbol) has been updated.

In the configuration section "Measurement system" of the specific input mask for configuring the site (accessible by clicking on the name of the site in the liste of sites/applications), you can also see whether the device is currently connected to the server (see "Measurement system" on page 90).

6.6 Automatic selection of the mobile network

The mobile network to which the device should register must be selected, as the Jellox Analog is equipped with a SIM chip that provides a mobile connection via a variety of international service providers. This is completed automatically by the device.

6.7 Determining the strength of the mobile network signal

The strength of the mobile network signal is only updated during the connection establishment. However, the value of the mobile network signal strength is copied in the measurement data for every record.

6.8 Determining the position data

An internal flag is set each time the position cycle expires thus ensuring that the GSM position data will also be determined the next time a connection is established. The position cycle can be selected via the relevant parameter in the "Device settings" input window (see "Device settings " on page 98). If set to 0, the GSM position data is generated every time a connection is established.

6.9 Automatic switching between the mobile network technologies "LTE-M" and "NB-IoT"

The Jellox Analog is equipped with a modem supporting the mobile network technologies "LTE-M" and "NB-IoT". The modem automatically selects the most suitable mobile network technology for the respective situation.

Chapter 7 Storage, delivery and transport

7.1 Inspection of incoming deliveries

Check the shipment immediately upon receipt to ensure it is complete and intact. Immediately report any discovered transport damages to the delivering carrier. Also notify Microtronics Engineering GmbHin writing about this without delay. Report any incompleteness of the delivery to the responsible representative or directly to the company headquarters of the manufacturer within two weeks (see "Contact information" on page 205).

Note: *Any claims received thereafter will not be accepted.*

7.2 Scope of supply

Note: *An antenna (see "Antennas" on page 193) is required for operation but is not included in the scope of supply and must be ordered separately.*

Note: *The Jellox Analog Pro (400101) and the Jellox Analog Elite (400104) differ only in the number of remote sensor modules that can be used. While only one sensor module can be used with a Jellox Analog Pro , a Jellox Analog Elite supports connecting up to 4 sensor modules.*

The standard scope of supply of the Jellox Analog Pro (400101) includes:

- Jellox Analog Pro
- Protection casing (300662)
- MDN Magnet (206.803)
- Dust protection cap type "UTS10DCG"

The standard scope of supply of the Jellox Analog Elite (400104) includes:

- Jellox Analog Elite
- Protection casing (300662)
- MDN Magnet (206.803)
- Dust protection cap type "UTS10DCG"

Check additional accessories depending on the order and against the delivery slip.

7.3 Storage

The following storage conditions must be adhered to:

Jellox Analog	Storage temperature	-20...+70 °C
	Humidity	15...90 % RH
Sensor module	Storage temperature	See chapter "Storage" in the manual of the relevant sensor module
	Humidity	

Important note: *During storage, the sensor connector must be covered using the protective cap (type "UTS10DCG") which is included in the scope of supply. If necessary, the protective cap must be cleaned before attaching it.*

Note: *The batteries remain in the devices during storage.*

Store the device so that it is protected against corrosive or organic solvent vapours, radioactive emissions as well as strong electromagnetic radiation.

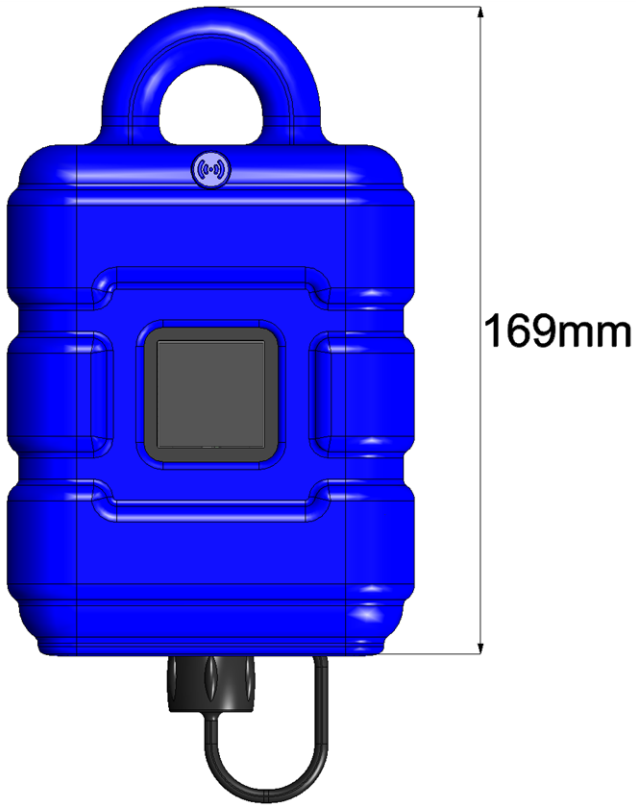
7.4 Transport

Protect the Jellox Analog against heavy shocks, bumps, impacts or vibrations. The original packaging must always be used for transport.

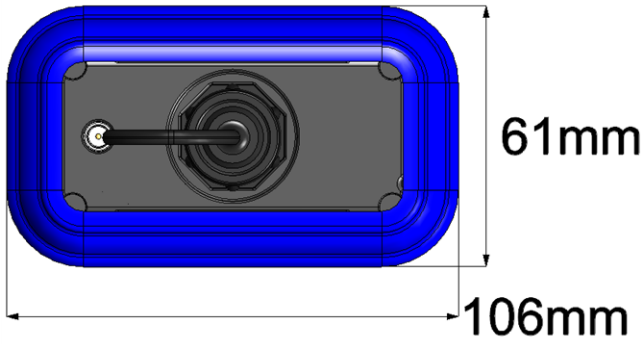
Chapter 8 Installation

Important note: *To prevent any damage to the device, the work described in this section of the instructions must only be performed by qualified personnel.*

8.1 Dimensions



Dimensions: Height
(view with protective armour)



Dimensions: Width and depth
(view with protective armour)

8.2 Installing the Jellox Analog

Important note:

- *Ensure installation is completed correctly.*
- *Comply with existing legal and/or operational directives.*
- *Improper handling can cause injuries and/or damage to the devices.*
- *The Jellox Analog must not be operated in the field without a protective armour.*
- *Due to the electrostatic effects, the protective armour must not be rubbed with cloths in the Ex zone.*
- *When using metallic mounting fixtures, these have to be integrated in the grounding concept in a suitable manner.*

The installation site must be selected according to specific criteria. The following conditions must be avoided in any case:

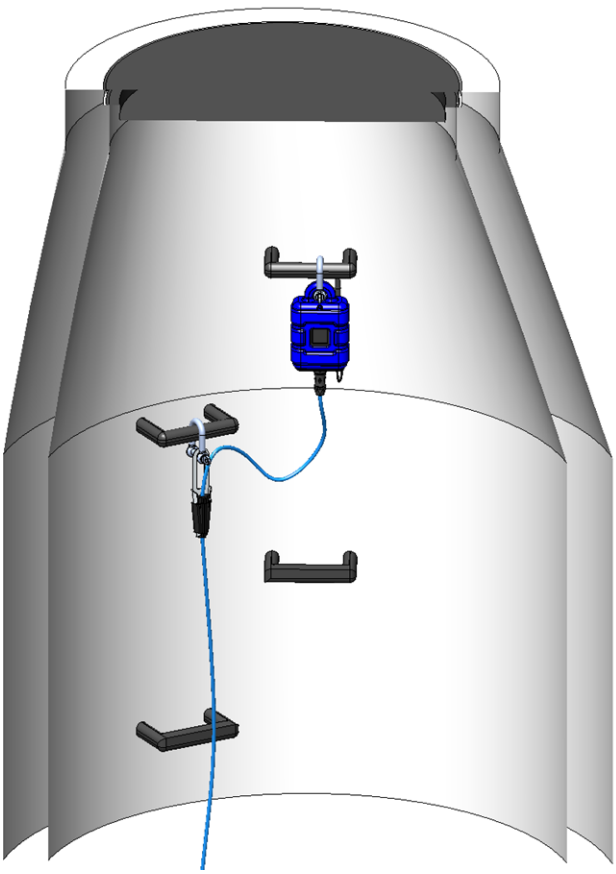
- Direct sunlight
- Direct influence of weather (rain, snow, ...)
- Objects that radiate intense heat (maximum ambient temperature: -20...+50 °C)
- Objects with a strong electromagnetic field (frequency converter or similar)
- Corrosive chemicals or gases
- Mechanical impacts
- Direct installation on paths or roads
- Vibrations
- Radioactive emissions

Note: *Leave sufficient space at the lower end to mount the antenna. The space required depends on the antenna used. Generally, a space of approx. 15 cm must be left beneath the device. Further information regarding the installation dimensions can be found in the relevant sub-chapter.*

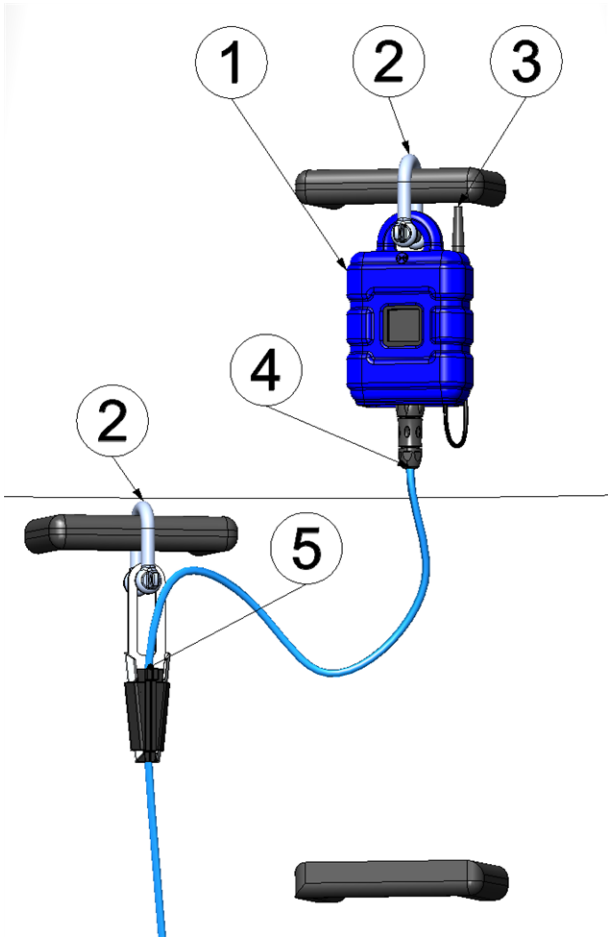
8.2.1 Suspended installation

The following optional accessory sets are required for suspended installations.

- 2 x Niro shackle (206.330)
- 1 x Anchor clamp 5,5 - 10,5 mm (301017)
- 1 x Multi band antenna with bracket (300787)



Suspended installation



Detailed view of a suspended installation

1 Jellox Analog	**4** Connection cable of the sensor (e.g. Connection cable 7-pins for sensors 2,8 m 206.602)
2 Niro shackle (206.330)	**5** Anchor clamp 5,5 - 10,5 mm (301017)
3 Multi band antenna with bracket (300787)	

1. Attach the Multi band antenna with bracket (300787) on the rear side of the Jellox Analog .
2. Use the Niro shackle (206.330), to attach the Jellox Analog to a rung of the manhole ladder or a similar fastening point in accordance with the figure "Detailed view of a suspended installation" on page 49.

3. Use the Niro shackle (206.330) and the Anchor clamp 5,5 - 10,5 mm (301017) to attach the connection cable of the sensor to a rung of the manhole ladder or a similar fastening point in accordance with the figure "Detailed view of a suspended installation" on page 49 .

   Important note: *The sensor connection of the Jellox Analog is not designed to carry heavy loads. For this reason, a clamp must be used in order to fasten the sensor cable in a suitable manner.*

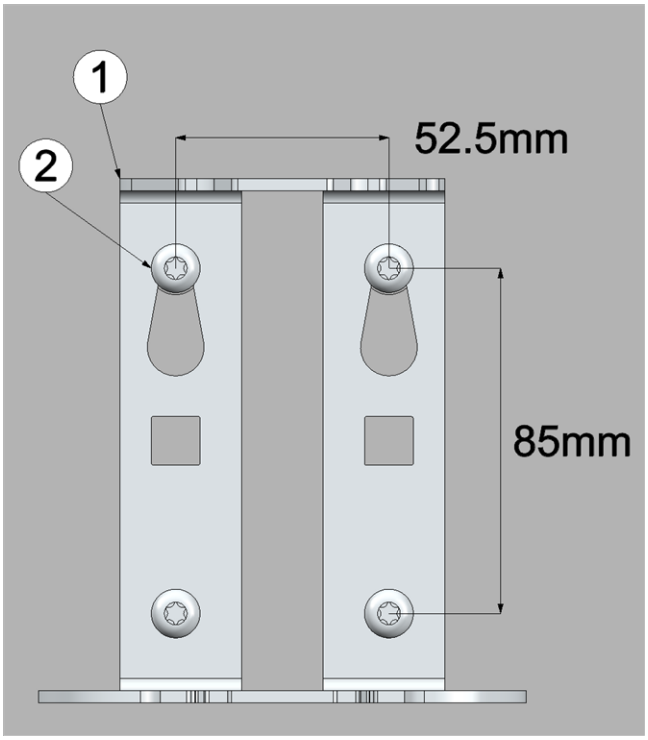
4. Connect the sensor cable with the sensor connection of the Jellox Analog .

   Important note: *If you use a clamping tube to connect the Connection cable 7-pins for sensors 2,8 m (206.602) with the actual sensor cable, the clamping tube must be located between the Anchor clamp 5,5 - 10,5 mm (301017) and the sensor connection of the Jellox Analog (see "Use of the clamping tubes" on page 63).*

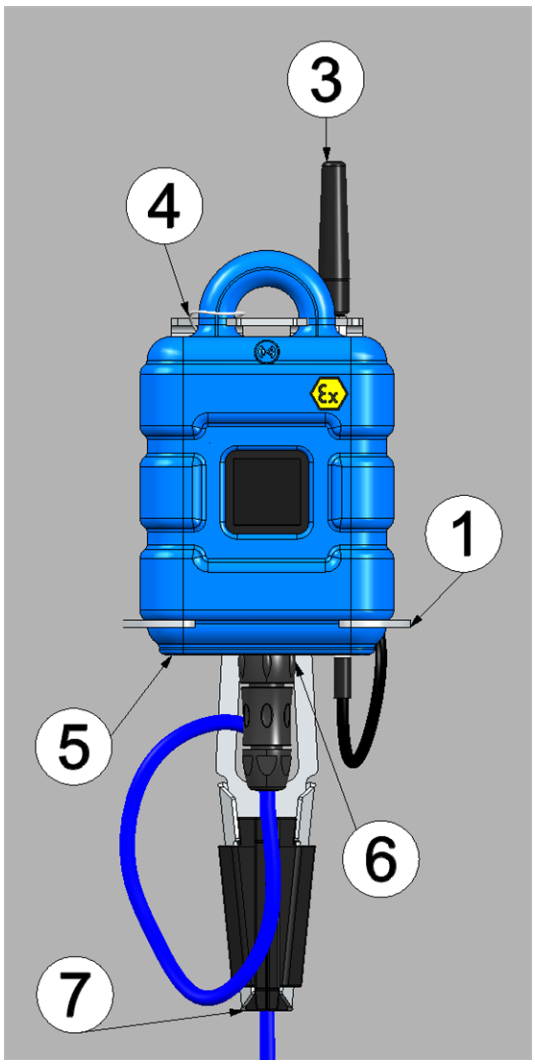
8.2.2 Wall mounting

The following optional accessory sets are required for wall mounting:

- 1 x Wall bracket for Jellox with protection casing (400109)
- 1 x Multi band rod antenna with connection cable 250 mm (400110)
- 1 x Anchor clamp 5,5 - 10,5 mm (301017)
- 1 x Connection cable 7-pins for sensors 2,8 m (206.602)



Wall mounting step 1

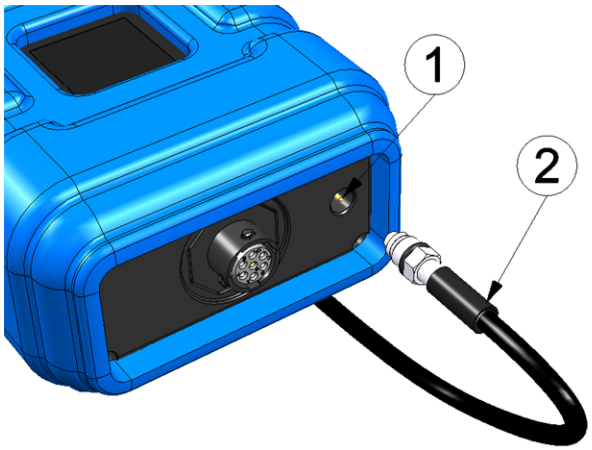


Wall mounting step 2

1	Mounting bracket (included in the scope of supply of 400109)
2	Pan head screw with sheet metal screw thread ST6,3x60 Torx 30 (included in the scope of supply of 400109)
3	Multi band rod antenna with connection cable 250 mm (400110)
4	Seal for detecting tampering (optional)
5	Jellox Analog
6	Connection cable 7-pins for sensors 2,8 m (206.602)
7	Anchor clamp 5,5 - 10,5 mm (301017)

1. Drill the four holes with a diameter of 10 mm and a minimum depth of 60 mm in accordance with the dimensions specified in figure "Wall mounting step 1" on page 51 for the wall plugs (10x50) that are included in the scope of supply of the mounting kit.
2. Insert a wall plug (included in the scope of supply) into each of the four drilled holes before you screw the mounting bracket (1) to the wall.
3. Connect the Multi band rod antenna with connection cable 250 mm to the antenna connector of the Jellox Analog .

   Note: *Depending on the installation situation, it may be more practical to connect the Multi band rod antenna with connection cable 250 mm after inserting the Jellox Analog into the mounting bracket.*

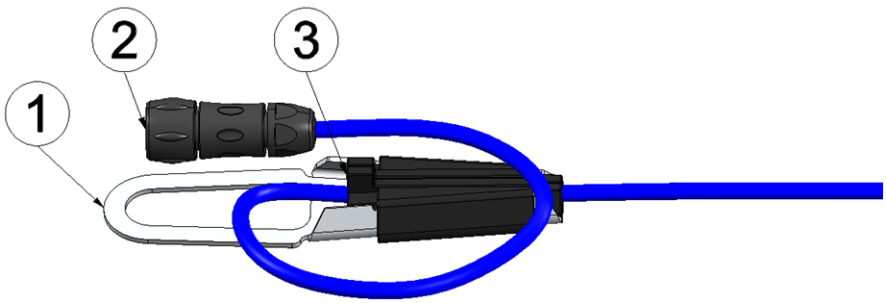


Connecting the mobile network antenna

1 Antenna connector	**2** Multi band rod antenna with connection cable 250 mm

The following two steps are only required if you want to use a sensor with mA ouput:

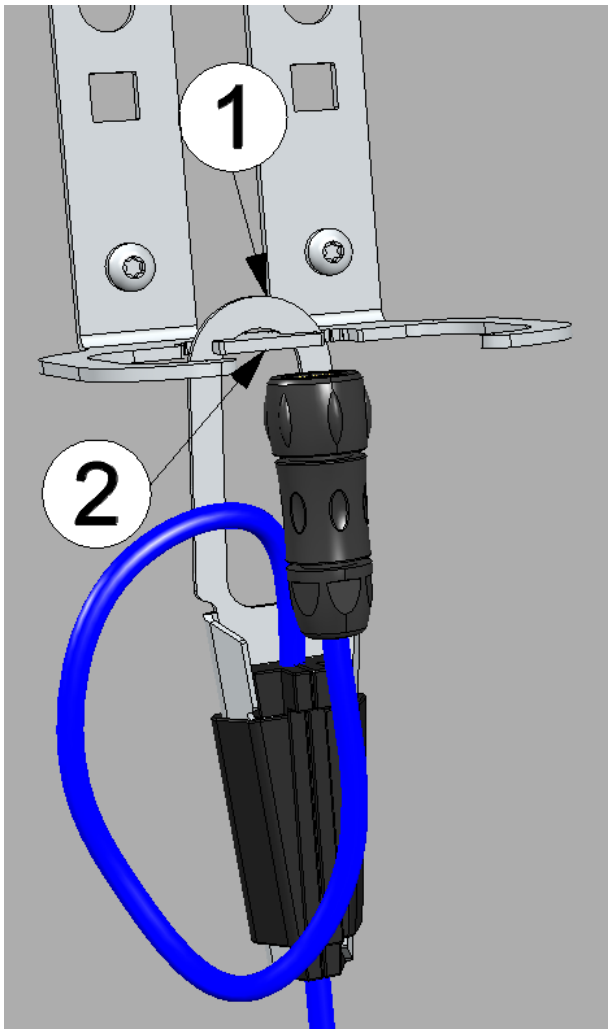
4. Push the plastic clamping jaws of the grounding clamp upwards until the resulting gap is large enough to insert the connection cable. Insert the cable and secure it by pushing the plastic clamping jaws back down. On the end of the connector, the cable should protrude at least 40 cm from the plastic clamping jaws to enable convenient connection of theJellox Analog later on.



Inserting the connection cable into the straining clamp

1 Anchor clamp 5,5 - 10,5 mm	**3** Plastic clamping jaws
2 Connection cable 7-pins for sensors 2,8 m	

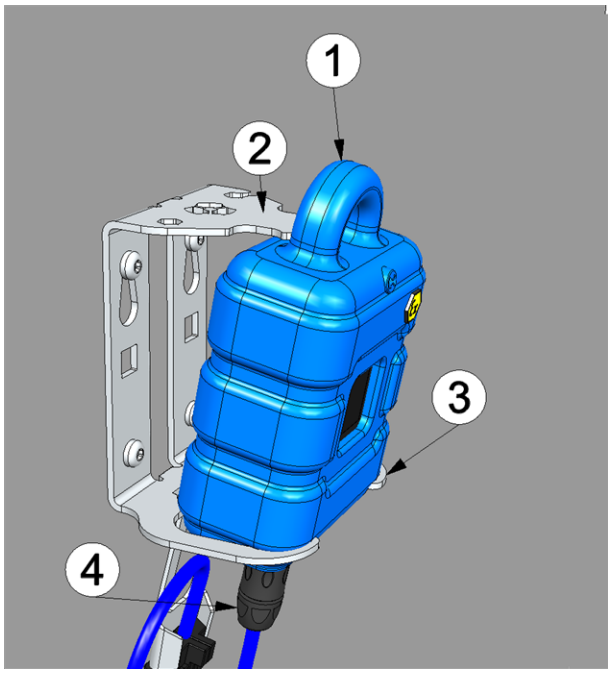
5. Attach the straining clamp to the designated holder on the mounting bracket.



Attaching the straining clamp

1 Anchor clamp 5,5 - 10,5 mm	**2** Fitting for the straining clamp

6. Insert the Jellox Analog into the mounting bracket bottom first. Tilt the Jellox Analog forward (i.e. away from the wall) to position the top of the Jellox Analog underneath the upper brace of the mounting bracket. It is recommended to first connect the connection cable to the sensor connector of the Jellox Analog .

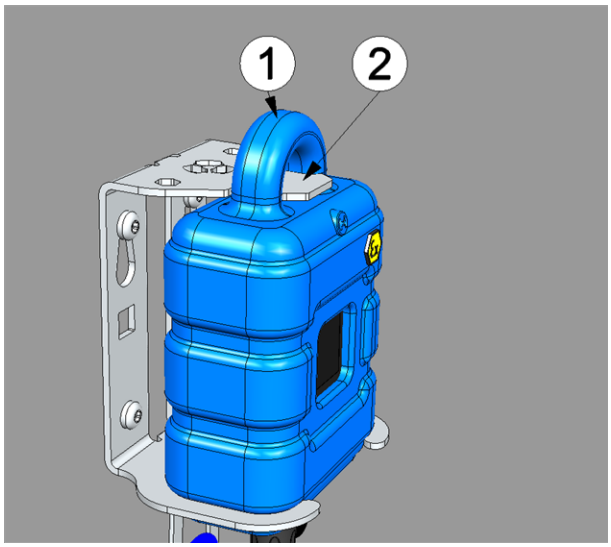


Inserting the Jellox Analog

1 Jellox Analog	**3** Mounting bracket
2 Upper brace of the mounting bracket	**4** Connection cable 7-pins for sensors 2,8 m

7. Press the top of the Jellox Analog towards the wall until the lug of the protective armour is fully engaged in the upper brace of the mounting bracket.

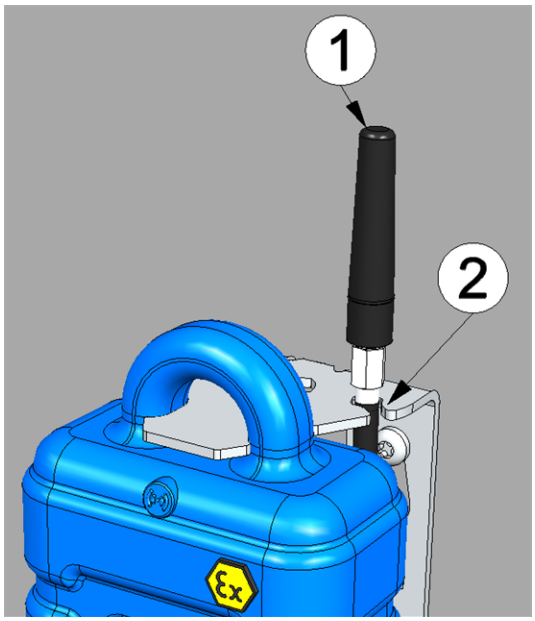
   Note: *If the connection cable becomes taut when inserting the Jellox Analog into the mounting bracket, briefly loosen the plastic clamping jaws of the anchor clamp to correct this problem. Ensure that the bending radius of the cable loop above the strain relief clamp is no less than 3 cm .*



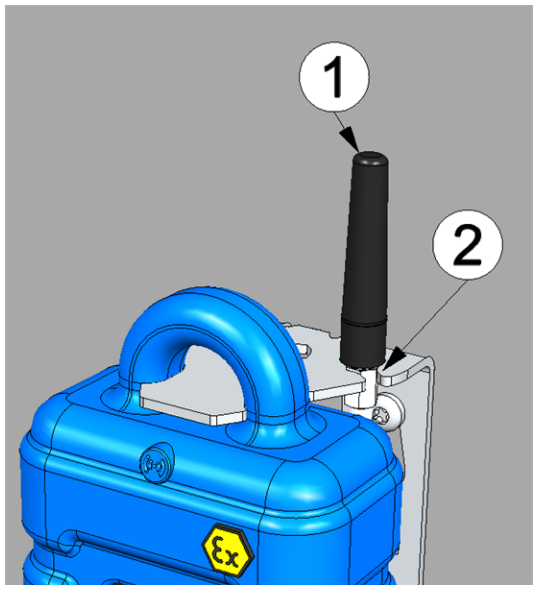
Locking the Jellox Analog in place

1 Lug of the protective armour	**2** Upper brace of the mounting bracket

8. Insert the Multi band rod antenna with connection cable 250 mm into the designated slot in the upper brace of the mounting bracket.



Inserting antanna step 1



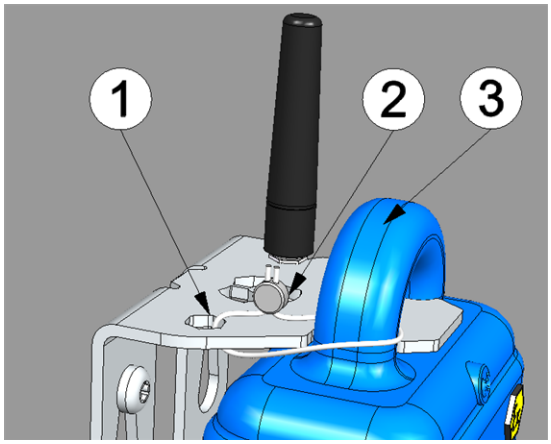
Inserting antenna step 2

1 Multi band rod antenna with connection cable 250 mm	**2** Antenna slot

The following step is only required if you want to add an anti-tamper seal.

9. Pass the sealing wire through the opening in the upper brace of the mounting bracket and through the retaining lug of the protective armour. Form a closed loop and insert both ends of the sealing wire through the seal. Ensure that the sealing wire is tight but not under tension. Secure the seal by pressing it together with sealing pliers. If necessary, document the process in accordance with internal company guidelines.

   CAUTION:
   Cut the wire ends cleanly to prevent injury.



Installing the security seal

1 Opening for security seal or anti-theft device	**3** Lug of the protective armour
2 Security seal	

8.2.3 Installing the sensor module

Tips and information on the installation of the sensor module are provided in the user manual of the relevant sensor module.

8.2.4 Zero point adjustment

The zero point adjustment is used to compensate divergences of the sensor values compared to a reference measurement without having to adjust the configuration of the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset (see "Remote sensor module of type Gauge" on page 112) or with sensors with mA ouptut the offset (see "Universal input" on page 100).

8.2.4.1 Zero point adjustment using setup mode

Note: *As the minimum record interval is 10 sec., this process is only suitable if the water level is as consistent as possible during the zero point adjustment.*

1. Place the sensor module in the final installation position. Tips and information on the installation of the sensor module are provided in the user manual of the relevant sensor module.
2. If you want to use a sensor with mA output, complete all steps described in chapter "Connecting the sensor" on page 60.
3. Connect the antenna (see "Connecting the mobile network antenna " on page 63).

4. Enter the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module (see "Remote sensor module of type Gauge" on page 112)in the relevant input field.
5. Enter the required offset for the sensor with mA output in the relevant input field (see "Universal input" on page 100).
6. Ensure that the "Trimming" parameter is set to 0 for all sensors the zero point needs to be adjusted for (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112 for sensor modules or "Universal input" on page 100 for sensors with mA output).
7. Activate setup mode using the reed switch (see "Setup mode" on page 43) to transmit the configuration of the site to the Jellox Analog .
8. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Device settings " on page 98) and the number of measurement values that you want to take into consideration when calculating the zero point adjustment. If necessary, you can shorten the record interval for this commissioning phase to reduce the waiting time.
9. Activate setup mode using the reed switch (see "Reed switch" on page 80) to transmit the recorded measurement values to the myDatanet server.
10. Click on the "Direct Report" symbol in the list of sites/applications to display the data saved on the myDatanet server.

11. A so-called "report" is used to display the data stored on the myDatanet server (see "Reports" on page 163). Use the "Download" symbol to download the data of the displayed measurement value graphic as a tsv file and calculate the average value of the measurement values for the corresponding sensor (i.e. for the sensor module or the sensor with mA output). Detailed instructions on handling the reports are provided in themyDatanet Server Manual (805002).

12. If the calculated average value do not match the ones of the reference measurement, the zero point will need to be adjusted. To do so, calculate the difference between the calculated average value and the reference measurement and enter a corresponding correction value in the input field for the "Trimming" parameter (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112 for sensor modules or "Universal input" on page 100 for sensors with mA output). Information on how the parameter "trimming" is integrated in the calculation of the water level can be found in the user manual of the relevant sensor. For sensors with mA output, the value of the parameter "trimming" is added. I.e., if the measurement value is to be reduced when adjusting the zero point, a negative sign is to be set for the parameter "trimming" (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102).
13. Trigger the setup mode again to transmit the altered configuration, i.e. the new value for "Trimming", first to the Jellox Analog and in case of "remote sensors" subsequently to the sensor module.
14. If a zero point adjustment was required, repeat all of the steps from step 8 "Wait until some measurement values have been recorded".

15. Then compare the calculated average value of the measurement values of the relevant senor (i.e. for the sensor module or the sensor with mA output) with the corresponding reference measurement again If the values are still different, complete the zero point adjustment again.

    Note: *The current value of the "Trimming" configuration parameter must now be taken into consideration when calculating the difference between the determined average and the reference measurement. Information on how the "Trimming" parameter influences the calculation of the water level is provided in the relevant user manual of the sensor module. For sensors with mA output, the value of the parameter "trimming" is added to the sensor measurement value.*

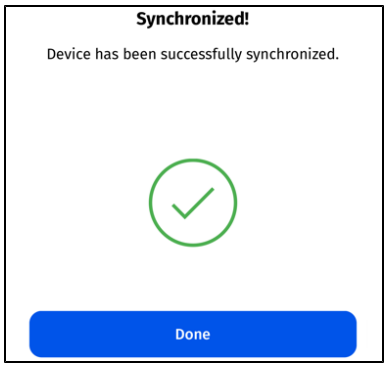
8.2.4.2 Zero point adjustment using the local radio connection

Note: *As the minimum record interval is 10 sec., this process is only suitable if the water level is as consistent as possible during the zero point adjustment.*

1. Place the sensor module in the final installation position. Tips and information on the installation of the sensor module are provided in the user manual of the relevant sensor module.
2. If you want to use a sensor with mA output, complete all steps described in chapter "Connecting the sensor" on page 60.
3. Ensure that transport mode is deactivated. I.e. the "operating mode" in the input window "Device settings" (see "Device settings " on page 98) needs to be set to "normal".
4. Use the "OnSite Companion" smartphone app to synchronise the Jellox Analog and the myDatanet server (see "Synchronisation with the myDatanet server" on page 156). Select "Synchronise device", use the magnifying glass icon to search for compatible devices and click on the desired device in the list displayed.

   The application can also be accessed as a progressive web app (https://companion.microtronics.com/). This means that a PC or laptop can also be used instead of a smartphone. However, in this case, the search for devices within range is not available. The serial number must be entered manually or scanned using the camera icon.
5. Enter the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module (see "Remote sensor module of type Gauge" on page 112)in the relevant input field.
6. Enter the required offset for the sensor with mA output in the relevant input field (see "Universal input" on page 100).
7. Ensure that the "Trimming" parameter is set to 0 for all sensors the zero point needs to be adjusted for (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112 for sensor modules or "Universal input" on page 100 for sensors with mA output).
8. Trigger the synchronisation between Jellox Analog and the myDatanet server again to transmit the configuration of the site to the Jellox Analog .
9. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Device settings " on page 98) and the number of measurement values that you want to take into consideration when calculating the zero point adjustment. If necessary, you can shorten the record interval for this commissioning phase to reduce the waiting time. In this case, trigger the synchronisation again to transmit the altered record interval from the site to the Jellox Analog .

10. Trigger the synchronisation between Jellox Analog and the myDatanet server to transmit the recorded measurement values to the myDatanet server.
11. Wait until the "OnSite Companion" smartphone app indicates that synchronisation is completed.



Synchronisation completed

12. Click on the "Direct Report" symbol in the list of sites/applications to display the data saved on the myDatanet server.



13. A so-called "report" is used to display the data stored on the myDatanet server (see "Reports" on page 163). Use the "Download" symbol to download the data of the displayed measurement value graphic as a tsv file and calculate the average value of the measurement values for the corresponding sensor (i.e. for the sensor module or the sensor with mA output). Detailed instructions on handling the reports are provided in the myDatanet Server Manual (805002).



14. If the calculated average value do not match the ones of the reference measurement, the zero point will need to be adjusted. To do so, calculate the difference between the calculated average value and the reference measurement and enter a corresponding correction value in the input field for the "Trimming" parameter (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112 for sensor modules or "Universal input" on page 100 for sensors with mA output). Information on how the parameter "trimming" is integrated in the calculation of the water level can be found in the user manual of the relevant sensor. For sensors with mA output, the value of the parameter "trimming" is added. I.e., if the measurement value is to be reduced when adjusting the zero point, a negative sign is to be set for the parameter "trimming" (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102).
15. Trigger the synchronisation between Jellox Analog and the myDatanet server again to transmit the altered configuration, i.e. the new value for "Trimming", to the Jellox Analog and in case of "remote sensors" subsequently to the sensor module.
16. If a zero point adjustment was required, repeat all of the steps from step 9 "Wait until some measurement values have been recorded".

17. Then compare the calculated average value of the measurement values of the relevant senor (i.e. for the sensor module or the sensor with mA output) with the corresponding reference measurement again If the values are still different, complete the zero point adjustment again.

> ***Note:*** *The current value of the "Trimming" configuration parameter must now be taken into consideration when calculating the difference between the determined average and the reference measurement. Information on how the "Trimming" parameter influences the calculation of the water level is provided in the relevant user manual of the sensor module. For sensors with mA output, the value of the parameter "trimming" is added to the sensor measurement value.*

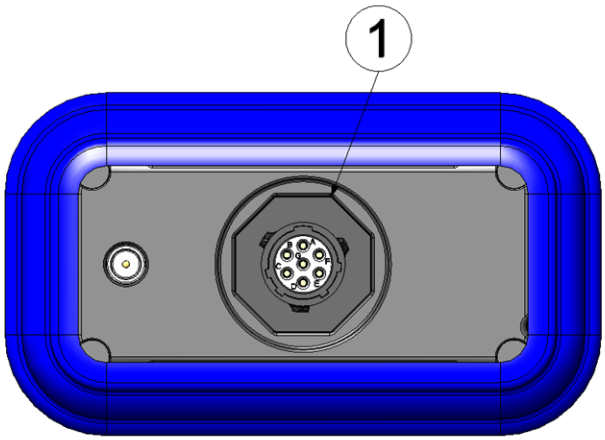
8.3 Electrical installation

> ***Important note:*** *Only qualified personnel should undertake the installation described in this chapter of the operating instructions to avoid any damage to the device.*

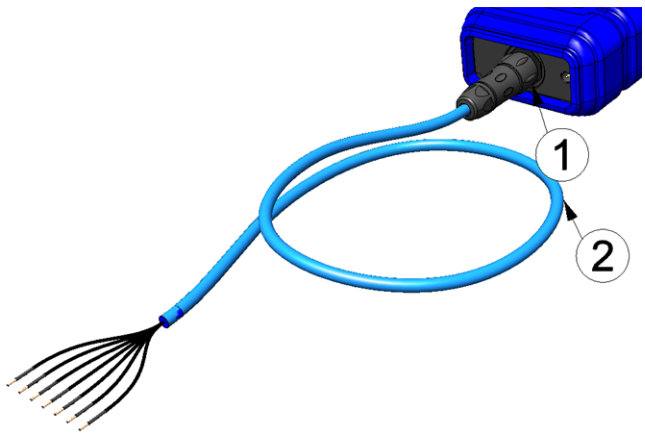
8.3.1 Connecting the sensor

Important note:

- *Ensure installation is completed correctly.*
- *Comply with existing legal and/or operational directives.*
- *Improper handling can cause injuries and/or damage to the instruments.*
- *Run all data cables so that they do not pose a trip hazard and ensure that cables do not have any sharp bends.*
- *Data cables must not exceed a lenght of 30 m.*
- *If no cable is connected to the sensor connector, the plug must be covered with the protective cap (type "UTS10DCG") included in the scope of delivery. If soiled, the protective cap must be cleaned before attaching it.*



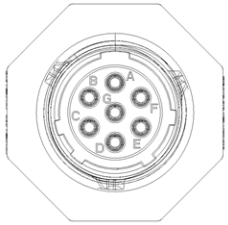
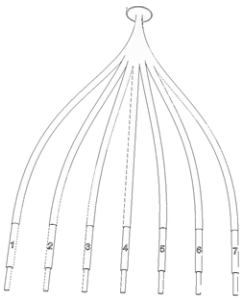
Connecting the sensors



Connecting the sensors when using the Connection cable 7-pins for sensors 2,8 m (206.602)

1 Sensor connector (7-pin MIL connector)	**2** Connection cable 7-pins for sensors 2,8 m (206.602)

Sensor connector

	Sensor connector (7-pin MIL connector)	Connection cable 7-pins for sensors 2,8 m (206.602)	Signal
 Sensor connector	A	5	NC
	B	4	NC
	C	3	switchable and adjustable sensor supply (0...22 V)
	D	2	NC
	E	7	Universal input 1
	F	6	NC
 Connection cable 7-pins for sensors 2,8 m	G	1	Ground

1. Activate the mode suitable for the output signal of the sensor in the input window "Universal input" (see "Universal input" on page 100).
2. Connect your sensors to the sensor connector. You can use the Connection cable 7-pins for sensors 2,8 m (206.602) or Cable connector 7-pins (206.654). Further accessories are detailed in the chapter "Spare parts and accessories" on page 193.

   Important note: *If you operate the Jellox Analog in areas with a zone 1 explosive atmosphere, observe the ATEX requirements when connecting the open ends of the Connection cable 7-pins for sensors 2,8 m (206.602) with your sensors (e.g. distances between the signal lines). The same applies if you use the Cable connector 7-pins (206.654).*

   Important note: *If you use the Connection cable 7-pins for sensors 2,8 m (206.602), the joint between the sensor cable and sensor must be suitably protected against the penetration of moisture and dust. You can use the Clamping tube(300256) or Pressure compensation tube (300131) for this purpose (see "Use of the clamping tubes" on page 63).*
3. Connect the antenna (see "Connecting the mobile network antenna " on page 63).
4. Activate setup mode using the reed switch (see "Setup mode" on page 43). Afterwards, the symbol for connecting should be displayed on the device display.

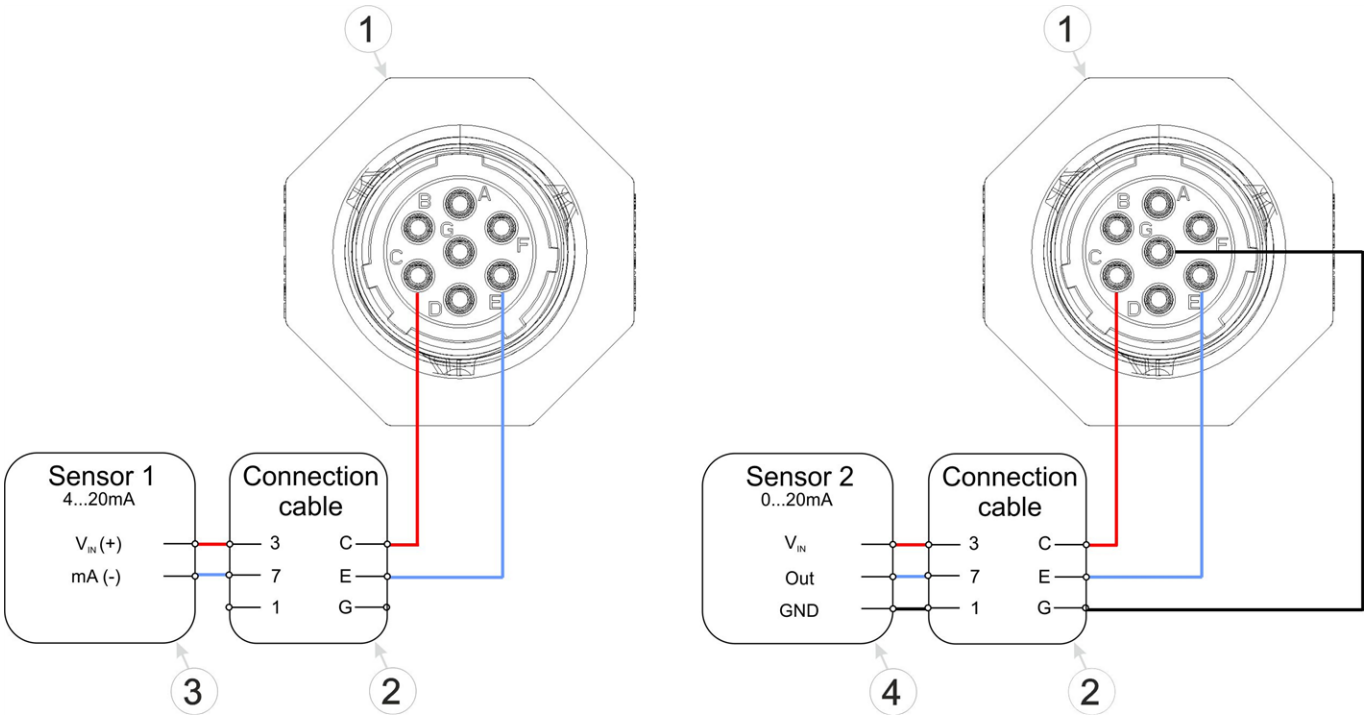
   Note: *If the Jellox Analog is still in transport mode, the transport lock is deactivated by activating setup mode and the device resumes operation according to the configuration settings.*

The following step is not mandatory.

5. Check whether the connection to the myDatanet has worked correctly (see "Testing communication with the device" on page 75).

8.3.1.1 Connection examples

Important note: *This only applies if the sensor is also approved for operation in areas with a zone 1 explosive atmosphere and if the ATEX requirements (e.g. distances between the signal lines) are observed and maintained when the sensor is connected.*



Connection examples

1	Jellox Analog	**3**	2-wire mA sensor
2	Connection cable 7-pins for sensors 2,8 m (206.602)	**4**	3-wire mA sensor

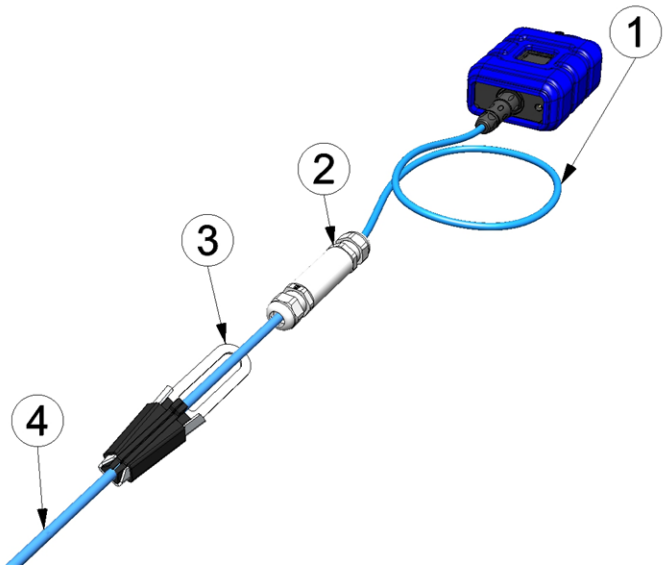
8.3.1.2 Compatible sensors

Microtronics Engineering GmbH is constantly testing various sensors with mA output for compatibility with the Jellox Analog Pro . A list of compatible sensors is available at the following address:

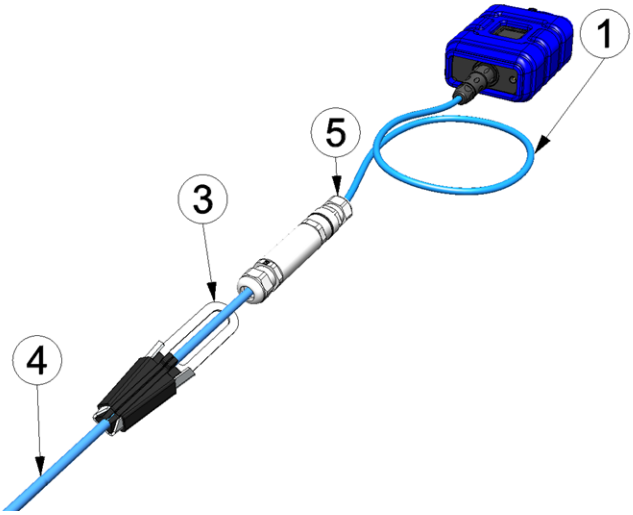
https://support.microtronics.com/jellox-analog/compatible-sensors

In addition to recommendations on how the Jellox Analog Pro should be configured and what battery lifespan can be expected, the list also contains links to the "Proof of intrinsic safety" for the respective combination of Jellox Analog Pro and sensor.

8.3.1.3 Use of the clamping tubes



Connecting the sensors when using the Clamping tube(300256)



Connecting the sensors when using the Pressure compensation tube (300131)

1	Connection cable 7-pins for sensors 2,8 m (206.602)	**4**	Connection cable of the sensor
2	Clamping tube(300256)	**5**	Pressure compensation tube (300131)
3	Anchor clamp 5,5 - 10,5 mm (301017)		

The only difference between the Pressure compensation tube (300131) and Clamping tube(300256) is that one of the two cable screw connections is equipped with a breathable membrane to compensate the pressure.

8.3.2 Connecting the mobile network antenna

Important note:

- *To ensure the correct functionality, only use antennas that are supplied by the manufacturer.*
- *When using extension cables, the total lenght of the cable connection for the antenna must not exceed 30 m.*

The standard antenna is directly connected to the antenna connector (see "Overview" on page 22) of the Jellox Analog .

1. Connect the connection cable of the antenna directly to the antenna connector of the Jellox Analog (see "Overview" on page 22).

The following step is not mandatory.

2. Check whether the connection to the myDatanet has worked correctly (see "Testing communication with the device" on page 75).

8.3.2.1 Optimum antenna positioning for assembly in a shaft

8.3.2.1.1 Typical influences on the signal quality

Signal losses compared to the reference measurement

Steel cover	up to -30 dB
Concrete cover	approx. -10 dB
Environmental influences	up to -15 dB
Installation height of the antenna	approx. -5 dB / 15 cm depth
Vertical/horizontal alignment	approx. -10 dB
Horizontal alignment	up to -15 dB
Centre/edge of the shaft	approx. -10 dB
Other influences	Transmission power of the network operator

Note: *Practical example:*

	Mobile signal level	***Position***
	*-67 dBm*	*Reference measurement outside the shaft*
	*-103 dBm*	*Measurement at a depth of 1.20 m*
	*-95 dBm*	*Vertically on the edge of the shaft at a depth of approx. 15 cm*
	*-83 dBm*	*Centre of the shaft, horizontal on the steel fitting*
	*-89 dBm*	*Antenna turned by 90°*
	*-78 dBm*	*Centre of the shaft, vertical*
	*-75 dBm*	*Plastic pipe used instead of steel fitting*

8.3.2.1.2 Possibilities for improving the signal quality

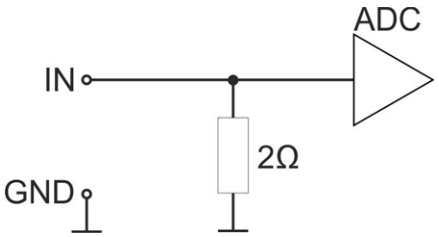
- Drill a duct for the connection cable of the antenna into the concrete ring on the shaft to avoid the steel cover
- Insert the connection cable of the antenna in an existing ventilation or supply pipe
- Use special types of antennas

8.3.3 Technical details about the universal input

Note: *The universal input is not galvanically isolated.*

Important note: *If the Jellox Analog is operated in areas with a zone 1 explosive atmosphere, it is not permitted to connect external voltages to the universal input. This means that an analogue sensor must be supplied by the 0...22 V voltage output of the device.*

The Jellox Analog is equipped with a 16 bit ADC.

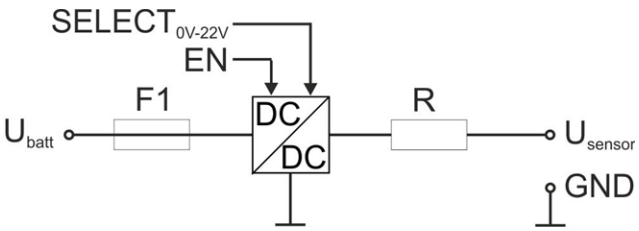


Schematic diagram of an universal input

8.3.3.1 0/4...20mA mode

Resolution	1 µA
I_{max}	25,6 mA
Load	2 Ω

8.3.4 Technical details about the sensor supply



Schematic diagram of the sensor supply

U_{batt}	internal supply voltage
F	electronic fuse
R	330 Ω
U_{Sensor}	0...22 V

Ex parameters

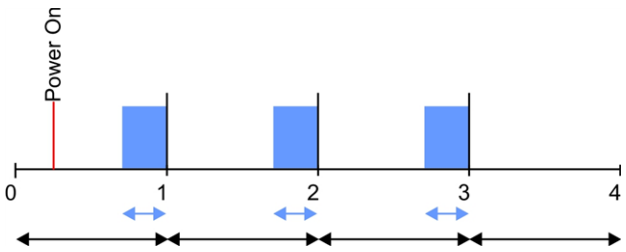
U_o	25,6 V	
I_o	82 mA	
P_o	0,523 W	
	L_o [µH]	**C_o [µF]**
	1000	0,31
	250	0,36
	100	0,465

The sensor supply is activated by setting a value for the warmup time in the input window "Universal input" (see "Universal input" on page 100). The warmup time specifies how long before the measurement the sensor supply is switched on. If it is set to 0sec., the sensor supply will neither be activated prior to nor during the measurement.

Note: *The time of the first recording following the PowerOn is calculated and is not completed exactly according to the time after the PowerOn specified via the record interval. If the record interval is 1 minute long, the first recording is selected in such a way that it is completed at the full minute mark. This means that if the PowerOn is completed at 12:05:34, the first recording is taken at 12:06:00, i.e. 26 sec. after the PowerOn.*

Note: *Example to explain the correlation between warmup time and measurement cycle*

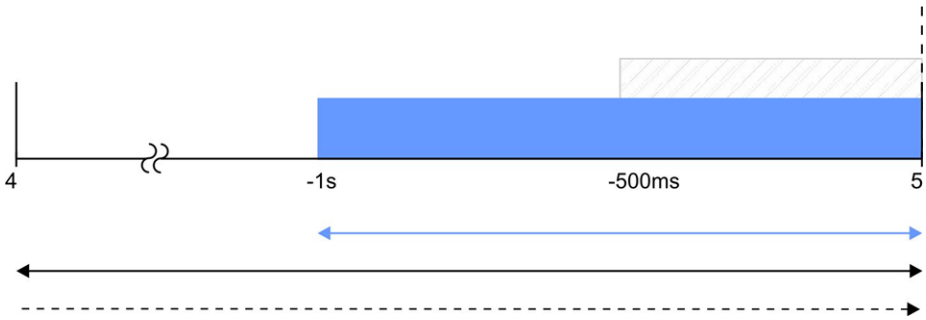
Basic settings		*Measurement cycle*	*1min.*
Measurement channel -> configuration		*Warmup time*	*20sec.*
Output at the device		*Sensor supply*	



Explanation: *The sensor supply is activated 20sec prior to the measurement interval each time, meaning that the value provided at the time of measurement is valid.*

Note: *Example to explain the filter time in conjunction with the Ext. warmup time*

Basic settings		*Record interval*	*5min.*
		Measurement cycle	*1min.*
Measurement channel -> configuration		*Ext. warmup time*	*1sec.*
		Filter time	*500ms*
Output at the device		*Sensor supply*	



Explanation: *The sensor supply is always activated 1sec before expiry of the measurement cycle. The filter time starts 500ms before expiry of the measurement cycle, which ensures that a valid value is available at the time of a measurement. However, this also means that the filter time must be taken into consideration when selecting the Ext. warmup time. In the current example, the sensor connected to the input must at the latest supply stable values 500ms following activation of the sensor supply. Otherwise, invalid values would be taken into consideration while averaging during the filter time resulting in the measurement value being distorted.*

8.3.5 Technical details about the local radio interface

The connection to a compatible smartphone is established via the local radio interface. Communication is only possible via the "OnSite Companion" smartphone app. However, the application can also be accessed as a progressive web app at the following address:

https://companion.microtronics.com/

In chapter "OnSite Companion" on page 153, a detailed description of the smartphone app "OnSite Companion" is provided. It is available for both Android and iOS and can be downloaded free of charge from "Google Play" (Android) or the Apple "App Store" (iOS) respectively.

Chapter 9 Initial Start-Up

9.1 User information

Before you connect the Jellox Analog and place it into operation, you must observe and comply with the following user information!

This manual contains all information that is required for using the device.

Is intended for technically qualified personnel who have the relevant knowledge and experience in the area of measurement technology.

Read this manual carefully and completely in order to ensure the proper functioning of the Jellox Analog

Contact Microtronics Engineering GmbH(see "Contact information" on page 205) if anything is unclear or if you encounter difficulties with regard to installation, connection or configuration.

9.2 Applicable documents

In addition to this operating instructions, additional instructions or technical descriptions may be required for the installation, commissioning and operation of the entire system.

These instructions are enclosed to the respective additional devices or sensors or are available for download on the Microtronics website.

9.3 General principles

The entire measurement system may only be placed into operation after completion and inspection of the installation. Study the manual thoroughly before placing into operation to prevent faulty or incorrect configuration.

Utilise the manual to familiarise yourself with the operation of the Jellox Analog and the input screens of the myDatanet server before you begin with the configuration.

9.4 Commissioning the system

9.4.1 Using the mobile connection and the myDatanet server

Note: *It is recommended that the Jellox Analog is first placed into operation in the office before moving the measurement system to the place of use. During this process, you should set a site for subsequent operation on the myDatanet server (see "Creating the site" on page 163) and and determine a site setting (see "Site configuration" on page 89). Take the opportunity to get to know the functions of the device in a stable environment.You can also use suitable test signals to simulate the sensors to establish the optimum configuration of theJellox Analog prior to its actual first use. This reduces the amount of time required for on-site installation to a minimum.*

The following work should be completed in the office before you go to the future location of the device:

1. If necessary, create a customer on the myDatanet server (see "myDatanet Server Manual " 805002).
2. Within the desired customer, create a new site/application for operation of the Jellox Analog on the myDatanet server (see "Creating the site" on page 163).
3. Configure the created site/application according to your requirements (see "Site configuration" on page 89).

   The following settings should be adjusted if a remote sensor module for level measurement is used:

   1. If already known, enter the intended installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module (see "Remote sensor module of type Gauge" on page 112) in the relevant input field.
   2. Ensure that the parameter "Trim" is set ot 0 (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112).

   The following settings should be adjusted if a remote sensor module for surface velocity measurement is used:

   1. If already known, enter the intended mounting angle and direction of flow (upstream or downstream) of the sensor module in the relevant input field (see "Remote sensor module of type VEL-R-5" on page 113).

   The following settings should be completed if a sensor with mA output is used:

   1. If already known, enter the required offset in the corresponding input field (see "Universal input" on page 100).
   2. Ensure that the parameter "trimming" is set to 0 (see "Universal input" on page 100)
4. Connect the antenna (see "Connecting the mobile network antenna " on page 63). The antenna is not included in the scope of supply and must be ordered separately.

   Note: *This and the 3 following steps can also be skipped, as the transmission also has to be triggered during the installation on site, which transfers the configuration to the Jellox Analog at the same time.*

5. To establish a connection, activate setup mode (see "Setup mode" on page 43) using the reed switch. During this connection, the configuration of the site is transferred to the Jellox Analog . The Jellox Analog is delivered with transport mode active (measurement and transmission "off") and should also always be stored this way (see "Storage of the product" on page 27). When activating the setup mode, transport mode is automatically deactivated and the Jellox Analog resumes operation according to configuration.
6. Activate transport mode again by setting the "operating mode" in the input window "Device settings" (see "Device settings " on page 98) to "transport" and wait until the mobile network connection is disconnected. This has been achieved when the "transport mode" screen is shown on the display (see "Display" on page 80).
7. Remove the antenna again.

The following tasks are to be completed directly at the deployment site of the device:

8. Place the sensor module in the final installation position. Tips and information on the installation of the sensor module are provided in the user manual of the relevant sensor module.

9. If you want to use a sensor with mA output, complete all steps described in chapter "Connecting the sensor" on page 60.
10. Connect the antenna (see "Connecting the mobile network antenna " on page 63).
11. If you have not already done so in the office, enter the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module ("Remote sensor module of type Gauge" on page 112) in the relevant input field.
12. If you have not already done so in the office, enter the mounting angle and flow direction (upstream or downstream) of the sensor module in the relevant input field (see "Remote sensor module of type VEL-R-5" on page 113).
13. Enter the required offset for the sensor with mA output into the corresponding input field (see "Universal input" on page 100) if you haven't already done so at the office.
14. Activate setup mode using the reed switch (see "Reed switch" on page 80) to transmit the configuration of the site to the Jellox Analog .
15. You should then check whether the zero point needs to be adjusted for the individual sensors.

    Proceed as follows during this process:

    1. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Device settings " on page 98) and the number of measurement values that you want to take into consideration when calculating the zero point adjustment. If necessary, you can shorten the record interval for this commissioning phase to reduce the waiting time.

       Note: *As the minimum record interval is 10 sec., this process is only suitable if the water level is as consistent as possible during the zero point adjustment.*

    2. Activate setup mode using the reed switch (see "Reed switch" on page 80) to transmit the recorded measurement values to the myDatanet server.
    3. Click on the "Direct Report" symbol in the list of sites/applications to display the data saved on the myDatanet server.

    4. A so-called "report" is used to display the data stored on the myDatanet server (see "Reports" on page 163). Use the "Download" symbol to download the data of the displayed measurement value graphic as a tsv file and calculate the average value of the measurement values for the corresponding sensor (i.e. for the sensor module or the sensor with mA output). Detailed instructions on handling the reports are provided in the myDatanet Server Manual (805002).

5. If the calculated average value do not match the ones of the reference measurement, the zero point will need to be adjusted. To do so, calculate the difference between the calculated average value and the reference measurement and enter a corresponding correction value in the input field for the "Trimming" parameter (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112 for sensor modules or "Universal input" on page 100 for sensors with mA output). Information on how the parameter "trimming" is integrated in the calculation of the water level can be found in the user manual of the relevant sensor. For sensors with mA output, the value of the parameter "trimming" is added. I.e., if the measurement value is to be reduced when adjusting the zero point, a negative sign is to be set for the parameter "trimming" (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102).
6. Trigger the setup mode again to transmit the altered configuration, i.e. the new value for "Trimming", first to theJellox Analog and if you use "remote sensors", subsequently to the sensor module.
7. If a zero point adjustment is required, repeat all steps from sub-step 1 "Wait until some measurement values have been recorded".
8. Then compare the calculated average value of the measurement values of the relevant senor (i.e. for the sensor module or the sensor with mA output) with the corresponding reference measurement again If the values are still different, complete the zero point adjustment again.

> ***Note:*** *The current value of the "Trimming" configuration parameter must now be taken into consideration when calculating the difference between the determined average and the reference measurement. Information on how the "Trimming" parameter influences the calculation of the water level is provided in the relevant user manual of the sensor module. For sensors with mA output, the value of the parameter "trimming" is added to the sensor measurement value.*

9.4.2 Using the local radio connection and the myDatanet server

You will need the "OnSite Companion" smartphone app to commission the Jellox Analog . It is available for both Android and iOS and can be downloaded free of charge from "Google Play" (Android) or the Apple "App Store" (iOS) respectively. However, the application can also be accessed as a progressive web app at the following address:

https://companion.microtronics.com/

Detailed instructions on using the "OnSite Companion" smartphone app are provided in chapter "OnSite Companion" on page 153.

> ***Note:*** *It is recommended that the Jellox Analog is first placed into operation in the office before moving the measurement system to the place of use. During this process, you should set a site for subsequent operation on the myDatanet server (see "Creating the site" on page 163) and determine a site setting (see "Site configuration" on page 89). Take the opportunity to get to know the functions of the device in a stable environment. You can also use suitable test signals to simulate the sensors with mA output to establish the optimum configuration of the Jellox Analog prior to its actual first use. This reduces the amount of time required for on-site installation to a minimum.*

The following work should be completed in the office before you go to the future location of the device:

1. If necessary, create a customer on the myDatanet server (see "myDatanet Server Manual " 805002).
2. Within the desired customer, create a new site/application for operation of the Jellox Analog on the myDatanet server (see "Creating the site" on page 163).
3. Use the "OnSite Companion" smartphone app to synchronise the Jellox Analog and the myDatanet server (see "Synchronisation with the myDatanet server" on page 156). Select "Synchronise device", use the magnifying glass icon to search for compatible devices and click on the desired device in the list displayed.

   The application can also be accessed as a progressive web app at the following address (https://companion.microtronics.com/). This means that a PC or laptop can also be used instead of a smartphone. However, in this case, the search for devices within range is not available. The serial number must be entered manually or scanned using the camera icon.
4. Configure the created site/application according to your requirements (see "Site configuration" on page 89).

   The following settings should be adjusted if you use a remote sensor module for level measurement:

   1. If already known, enter the intended installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module (see "Remote sensor module of type Gauge" on page 112) in the relevant input field.
   2. Ensure that the parameter "Trim" is set ot 0 (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112).

   The following settings should be adjusted if you use a remote sensor module for surface velocity measurement:

   1. If already known, enter the intended mounting angle and direction of flow (upstream or downstream) of the sensor module in the relevant input field (see "Remote sensor module of type VEL-R-5" on page 113).

   The following settings should be completed if a sensor with mA output is used:

   1. If already known, enter the required offset in the corresponding input field (see "Universal input" on page 100).
   2. Ensure that the parameter "trimming" is set to 0 (see "Universal input" on page 100)
5. Activate the synchronisation between Jellox Analog and the myDatanet server again to transmit the configuration of the site to the Jellox Analog .

The following tasks are to be completed directly at the deployment site of the device:

6. Place the sensor module in the final installation position. Tips and information on the installation of the sensor module are provided in the user manual of the relevant sensor module.
7. If you want to use a sensor with mA output, complete all steps described in chapter "Connecting the sensor" on page 60.
8. Deactivate the transport mode by setting the "operating mode" in the input window "Device settings" (see "Device settings " on page 98) to "normal".

9. Use the "OnSite Companion" smartphone app to synchronise the Jellox Analog and the myDatanet server (see "Synchronisation with the myDatanet server" on page 156). Select "Synchronise device", use the magnifying glass icon to search for compatible devices and click on the desired device in the list displayed.

   The application can also be accessed as a progressive web app (https://companion.microtronics.com/). This means that a PC or laptop can also be used instead of a smartphone. However, in this case, the search for devices within range is not available. The serial number must be entered manually or scanned using the camera icon.

10. If you have not already done so in the office, enter the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module ("Remote sensor module of type Gauge" on page 112) in the relevant input field.

11. If you have not already done so in the office, enter the mounting angle and flow direction (upstream or downstream) of the sensor module in the relevant input field (see "Remote sensor module of type VEL-R-5" on page 113).

12. Enter the required offset for the sensor with mA output into the corresponding input field (see "Universal input" on page 100) if you haven't already done so at the office.

13. Activate the synchronisation between Jellox Analog and the myDatanet server again to transmit the configuration of the site to the Jellox Analog .

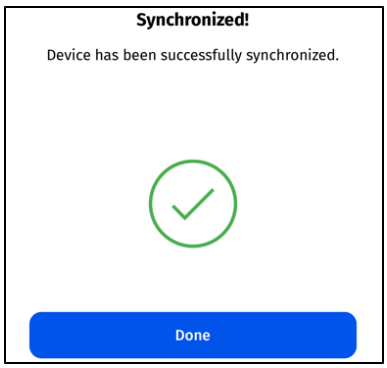
The following steps are only necessary, if you want to complete a zero point adjustment.

14. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Device settings " on page 98) and the number of measurement values that you want to take into consideration when calculating the zero point adjustment. If necessary, you can shorten the record interval for this commissioning phase to reduce the waiting time. In this case, trigger the synchronisation again to transfer the altered record interval from the site to the Jellox Analog .

    Note: *As the minimum record interval is 10 sec., this process is only suitable if the water level is as consistent as possible during the zero point adjustment.*

15. Activate the synchronisation between Jellox Analog and the myDatanet server to transmit the recorded measurement values to the myDatanet server.

16. Wait until the "OnSite Companion" smartphone app indicates that the synchronisation process is completed.



Synchronisation completed

17. Click on the "Direct Report" symbol in the list of sites/applications to display the data saved on the myDatanet server.

18. A so-called "report" is used to display the data stored on the myDatanet server (see "Reports" on page 163). Use the "Download" symbol to download the data of the displayed measurement value graphic as a tsv file and calculate the average value of the measurement values for the corresponding sensor (i.e. for the sensor module or the sensor with mA output). Detailed instructions on handling the reports is provided in the myDatanet Server Manual (805002).

19. If the calculated average value do not match the ones of the reference measurement, the zero point will need to be adjusted. To do so, calculate the difference between the calculated average value and the reference measurement and enter a corresponding correction value in the input field for the "Trimming" parameter (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112 for sensor modules or "Universal input" on page 100 for sensors with mA output). Information on how the parameter "trimming" is integrated in the calculation of the water level can be found in the user manual of the relevant sensor. For sensors with mA output, the value of the parameter "trimming" is added. I.e., if the measurement value is to be reduced when adjusting the zero point, a negative sign is to be set for the parameter "trimming" (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102).
20. Trigger the synchronisation between Jellox Analog and the myDatanet server again to transmit the altered configuration, i.e. the new value for "Trimming", first to the Jellox Analog and, when using "remote sensors", subsequently to the sensor module.
21. If a zero point adjustment is required, repeat all of the steps from step 14 "Wait until some measurement values have been recorded".
22. Then compare the calculated average value of the measurement values of the relevant senor (i.e. for the sensor module or the sensor with mA output) with the corresponding reference measurement again If the values are still different, complete the zero point adjustment again.

    Note: *The current value of the "Trimming" configuration parameter must now be taken into consideration when calculating the difference between the determined average and the reference measurement. Information on how the "Trimming" parameter influences the calculation of the water level is provided in the relevant user manual of the sensor module. For sensors with mA output, the value of the parameter "trimming" is added to the sensor measurement value.*

9.5 Testing communication with the device

9.5.1 Testing communication between Jellox Analog and myDatanet server (mobile network connection)

1. Within the desired customer, create a new site/application for operation of the Jellox Analog on the myDatanet server (see "Creating the site" on page 163).

2. Configure the created site/application according to your requirements (see "Site configuration" on page 89).

   The following settings should be carried out if you also want to test the communication with the sensor module for level measurement at the same time:

   1. Check or enter the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module (see "Remote sensor module of type Gauge" on page 112) in the relevant input field.
   2. Check or enter the value for the zero point adjustment in the input field for "Trimming" (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112).

   The following settings should be carried out if you also want to test the communication with the sensor module for surface velocity measurement at the same time:

   1. Check or enter the mounting angle and flow direction (upstream or downstream) of the sensor module in the corresponding input field. (siehe "Remote sensor module of type VEL-R-5" on page 113).

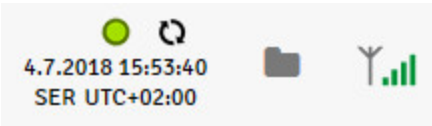
   The following settings should be made if you also want to test the measurement value acquisition at the mA input:

   1. If already known, enter the required offset in the corresponding input field (see "Universal input" on page 100).
   2. Ensure that the parameter "trimming" is set to 0 (see "Universal input" on page 100)

3. Connect the antenna (see "Connecting the mobile network antenna " on page 63).

The following step is only necessary if you also want to test the measurement value acquisition at the mA input at this time:

4. Connect the sensor (see "Connecting the sensor" on page 60).
5. To establish a connection, activate setup mode (see "Setup mode" on page 43) using the reed switch. In doing so, the configuration of the site is also transferred to the Jellox Analog .
6. Wait until it is indicated in the list of sites/applications that the device is connected to the server (rotating arrows).

   The Jellox Analog is only for a very short time connected to the server. You can therefore check if the time stamp of the last connection (under the green status symbol) has been updated.

The following steps are only necessary if you also want to test the measurement value acquisition and the data transmission at this time.

7. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Device settings " on page 98)
8. Trigger setup mode again to transmit the determined measurement values to the myDatanet server.

9. Click on the "Direct Report" symbol in the list of sites/applications to display the data saved on the myDatanet server.

10. Check whether all of the data up to the point of the synchronisation is present and plausible (especially the "Remote measurement channels" and "GSM" measurement values). Complete a zero point adjustment, if the measurement values (sensor modules and/or sensor with mA output) do not meet the expectations (see "Zero point adjustment" on page 56).

9.5.2 Testing communication between Jellox Analog and myDatanet server (local radio connection)

1. Within the desired customer, create a new site/application for operation of the Jellox Analog on the myDatanet server (see "Creating the site" on page 163).
2. Use the "OnSite Companion" smartphone app to synchronise the Jellox Analog and the myDatanet server (see "Synchronisation with the myDatanet server" on page 156). Select "Synchronise device", use the magnifying glass icon to search for compatible devices and click on the desired device in the list displayed.

   The application can also be accessed as a progressive web app at the following address (https://companion.microtronics.com/). This means that a PC or laptop can also be used instead of a smartphone. However, in this case, the search for devices within range is not available. The serial number must be entered manually or scanned using the camera icon.

3. Configure the created site/application according to your requirements (see "Site configuration" on page 89).

   The following settings should be made out if you also want to test the communication with the sensor module for level measurement at the same time:

   1. Check or enter the installation height (see "Remote sensor module of type LVL-R-5" on page 105) or the offset of the sensor module (see "Remote sensor module of type Gauge" on page 112) in the relevant input field.
   2. Check or enter the value for the zero point adjustment in the input field for "Trimming" (see "Remote sensor module of type LVL-R-5" on page 105 or "Remote sensor module of type Gauge" on page 112)

   The following settings should be made out if you also want to test the communication with the sensor module for surface velocity measurement at the same time::

   1. Check or enter the mounting angle and flow direction (upstream or downstream) of the sensor module in the corresponding input field. (siehe "Remote sensor module of type VEL-R-5" on page 113).

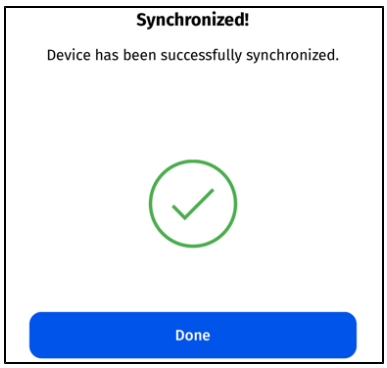
   The following settings should be made if you also want to test the measurement value acquisition at the mA input:

   1. If already known, enter the required offset in the corresponding input field (see "Universal input" on page 100).
   2. Ensure that the parameter "trimming" is set to 0 (see "Universal input" on page 100)

4. Trigger the synchronisation between Jellox Analog and the myDatanet server again to transmit the configurations of the site to the Jellox Analog .

The following step is only required if you also want to test the measurement value at the mA input at this time:

5. Connect the sensor (see "Connecting the sensor" on page 60).
6. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Device settings " on page 98)
7. Trigger the synchronisation between Jellox Analog and the myDatanet server again to transmit the recorded measurement values to the myDatanet server.
8. Wait until the "OnSite Companion" smartphone app indicates that the synchronisation process is completed.



Synchronisation completed

9. Click on the "Direct Report" symbol in the list of sites/applications to display the data saved on the myDatanet server.



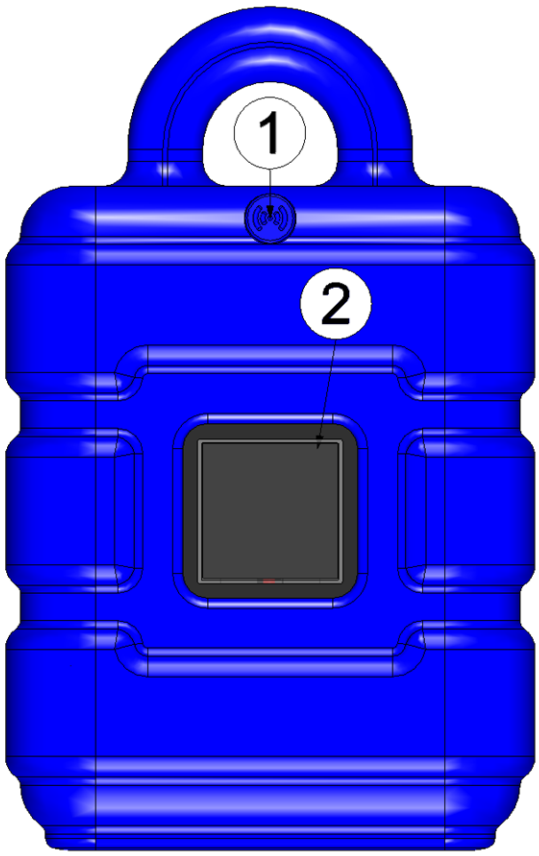
10. Check whether all of the data up to the point of the synchronisation is present and plausible (especially the "Remote measurement channels" and "GSM" measurement values). Complete a zero point adjustment, if the measurement values (sensor modules and/or sensor with mA output) do not meet the expectations (see "Zero point adjustment" on page 56).

Chapter 10 User interfaces

The configuration of the Jellox Analog is carried out via the web interface on the myDatanet server (see "User interface on the myDatanet server" on page 86), which your responsible sales partner will provide to you.

10.1 User interface on the Jellox Analog

10.1.1 Operating elements



Operating elements

1 Reed switch	**2** Display

10.1.1.1 Reed switch

The MDN Magnet (206.803) included in the scope of delivery is required for operating the reed switch. The reed switch can be used to activate setup mode, to manually initiate the search for remote sensors, to switch on the display of the Jellox Analog for 20 sec. or to switch between the tabs on the screen if the display is switched on. The "detected hold of the reed switch" symbol is displayed in the status bar of the display for as long as the MDN Magnet is held to the Jellox Analog (see "Status bar" on page 82)

Display	Operation by the user	Device response	Operation after releasing the reed switch
off	press briefly (approx. 1 sec.)	display is activated for 20 sec.	display of the current operating state (see "Display" on page 80)
off	press and hold for 3 sec.	setup mode is activated [1)]	---
on	press briefly (approx. 1 sec.)	switches to the next tab on the screen	When pressing briefly the first time after activating the display, automatic switching between the tabs is deactivated.
on	press and hold for 3 sec.	setup mode is activated [1)]	---

[1)] If the local radio connection between Jellox Analog and a sensor module is lost (E003, see "Error codes" on page 85), the search for remote sensors is initiated before establishing a mobile network connection when setup mode is activated.

The display of the Jellox Analog is activated as soon as the reed switch is pressed. If the display is active, the tabs with information about the Jellox Analog itself, the mA input and the sensor modules are shown subsequently (see "Display" on page 80). When pressing briefly the first time while the display is active, automatic switching between the tabs is deactivated. After that, you can switch between the tabs when pressing the switch again. The remaining time the display is active for is reset to 20 sec. every time the reed switch is pressed.

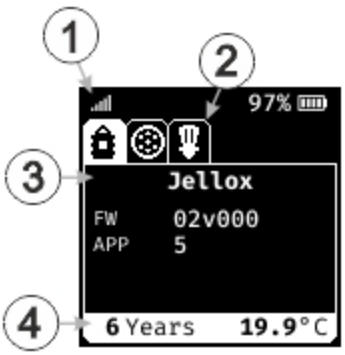
10.1.1.2 Display

Important note:

- *Do not touch the display with sharp objects, such as the tip of a pen.*
- *Do not stand or place any objects on the display as this could scratch it.*

10.1.1.2.1 General

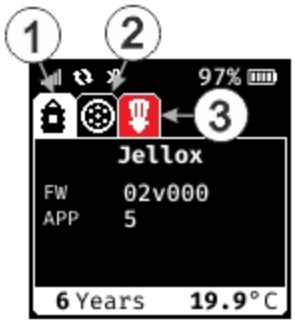
The display of the Jellox Analog is only designed to show the current measurement values and various status information. The device cannot be operated via the display. The display is activated by briefly holding the magnet (approx. 1 sec.) to the reed switch (see "Reed switch" on page 80). The display then remains active for 20 sec. , showing first the boot screen for 1 sec. (see "Boot screen" on page 82) and then consecutively the tabs with information about the Jellox Analog itself, the mA input and the sensor modules.Using the reed switch you can disable automatic switching between the tabs and switch manually between the display screens (see "Reed switch" on page 80). The "detected hold of the reed switch" symbol is displayed in the status bar for as long as the MDN Magnet (206.803) is held to the corresponding position on the Jellox Analog (see "Operating elements" on page 79).



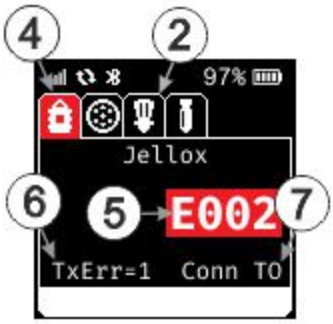
General structure of the display

1	Status bar	**3**	Information about the current tab
2	Display of the available tabs with specific information	**4**	Footer of the current tab

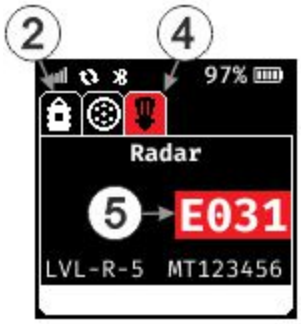
The tab on which information is currently shown on the display is highlighted by a white background. The background of the other tabs is black, provided no error has occurred with the respective components (Jellox Analog , mA input or sensor module) of which they contain the information. The fact that one of the tabs not currently displayed contains an error code can be recognised by the red background. If the display is switched to a tab that contains an error code, the colour of the icon in the tab changes from white to black. A list of possible error codes is provided in chapter "Error codes" on page 85.



Tab with valid information



Jellox tab with error code



Sensor module tab with error code

1	Current tab with valid informationen	**5**	Error code (see "Error codes" on page 85)
2	Inactive tab with valid informationen	**6**	TxError code (only applies to error code E002)
3	Inactive tab with error code	**7**	Brief description of TxError code or EMM Reject Cause (only applies to error code E002)
4	Current tab with error code		

10.1.1.2.2 Boot screen

The boot screen is shown for 1 sec. after activating the display by briefly actuating (approx. 1 sec.) the reed switch (see "Reed switch" on page 80).



Boot screen

10.1.1.2.3 Status bar

The status bar is located at the top border of the display and shows information about the network connection, mobile network connection, radio connection and the state of charge.

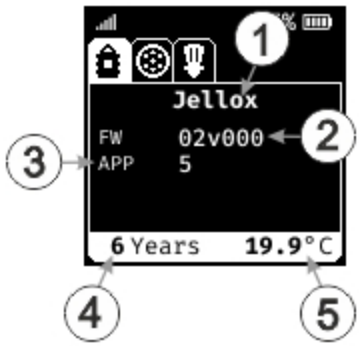


Sections of the status bar

1	Information about the nework connection	
		field strength of the mobile network signal during the last connection
		transport mode activated
2	Status of the mobile network connection	
		mobile connection disconnected; wait for next connection establishment
	 (blinking)	connecting
		connection to the myDatanet server established
		last connection failed
3	Status of the local radio connection	
		establishing local radio connection to the sensor modules

4	Status of the reed switch	
		reed switch not actuated
		detected hold of the reed switch
5	current state of charge of the battery of the Jellox Analog . To the left, the state of charge (SOC) is displayed in %	
		State of Charge >= 90 %
		State of Charge >= 40 %
		State of Charge >= 10 %
		State of Charge < 9 %

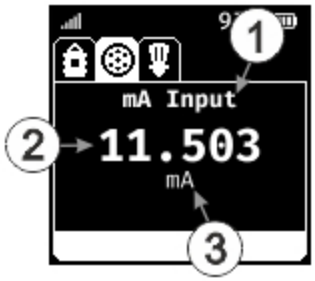
10.1.1.2.4 Information about the Jellox Analog



Display of the information on the Jellox Analog

1	Brief designation of the IoT application installed on the device	**4**	remaining time until the next battery replacement of the Jellox Analog
2	Current software version installed on the measurement controller	**5**	Temperature inside the housing of the device
3	Version number of the IoT application that is currently installed on the device		

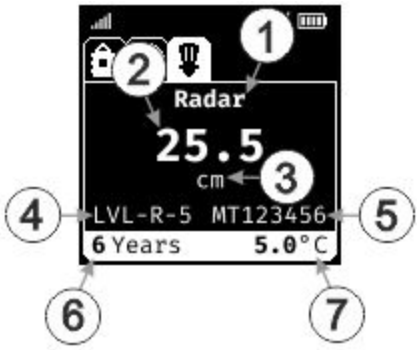
10.1.1.2.5 Information about the mA input



Display of the information on the mA input

1	indicates that the information on the mA input is currently displayed	**3**	Unit of the measurement value set via the server interface
2	measurement value on the mA input (scaled measurement value with offset and trimming taken into consideration)		

10.1.1.2.6 Information about the remote sensor modules



Display of the information on a sensor module type "LVL-R-5 "

1	Indicates sensor category (e.g. velocity sensor) of the sensor module for which the information is displayed	**5**	Serial number of the sensor module
2	Current level[1)]	**6**	Remaining time until the next battery replacement of the sensor module
3	Unit of length (mm, cm or m) selected via the server interface	**7**	Temperature of the electronics of the sensor module
4	Product designation of the sensor module (as indicated on the type plate)		

[1)] If the firmware of the sensor module is being updated, the message "Update" is displayed instead of the level.

10.1.1.2.7 Error codes

<table>
<tr><th>Error code</th><th>Description</th></tr>
<tr><td>E001</td><td>sensor configuration not permitted for this variant</td></tr>
<tr><td>E002</td><td>last mobile network connection failed

The following table contains a breakdown of the TxError codes that explain the cause of the failure in more detail. If the mobile network returns an EMM Reject Cause, the display shows the EMM Reject Cause instead of the brief description.

<table>
<tr><th>TxError</th><th>Short descr.</th><th>Explanation</th></tr>
<tr><td>1</td><td>Conn TO</td><td>Timeout during connection establishment</td></tr>
<tr><td>2</td><td>DataTO</td><td>Timeout during synchronisation in online mode</td></tr>
<tr><td>3</td><td>IrrOff</td><td>Connection to the server terminated unexpectedly</td></tr>
<tr><td>4</td><td>Srv NA</td><td>Server not available</td></tr>
<tr><td>5</td><td>SrvCom</td><td>Error during communication with server</td></tr>
<tr><td>10</td><td>Modem</td><td>Internal error</td></tr>
<tr><td>11</td><td>ModemTO</td><td>Internal error</td></tr>
<tr><td>12</td><td>noModem</td><td>Internal error</td></tr>
<tr><td>13</td><td>HW</td><td>Internal error</td></tr>
<tr><td>14</td><td>ModInt</td><td>Internal error</td></tr>
<tr><td>15</td><td>Uns Rst</td><td>unexpected modem restart (e.g. due to insufficient power supply)</td></tr>
<tr><td>16</td><td>RstLoop</td><td>Internal error</td></tr>
<tr><td>17</td><td>UV</td><td>Undervoltage detected at modem</td></tr>
<tr><td>18</td><td>ovrHeat</td><td>Modem overheat detected</td></tr>
<tr><td>30</td><td>SIM</td><td>Internal error</td></tr>
<tr><td>36</td><td>SIMothr</td><td>Internal error</td></tr>
<tr><td>50</td><td>Network</td><td>Error relating to the mobile network.</td></tr>
<tr><td>51</td><td>BandSel</td><td>No mobile network could be found on any of the supported bands</td></tr>
<tr><td>52</td><td>NetLock</td><td>Error during registration on the mobile network (e.g. not permitted)</td></tr>
<tr><td>53</td><td>Pos Upd</td><td>Error when determining GSM position data</td></tr>
<tr><td>54</td><td>PDP Ctx</td><td>The device is registered on the network but was unable to establish a data connection</td></tr>
<tr><td>70</td><td>TCP</td><td>TCP error (e.g. timeout, no server available, ...)</td></tr>
<tr><td></td><td>EmmRc=#</td><td>The mobile network has reported an EMM Reject Cause, where ‘#’ indicates the cause value</td></tr>
</table>
</td></tr>
<tr><td>E003</td><td>radio connection to remote sensor/actuator not possible</td></tr>
<tr><td>E013</td><td>unambiguous selection of the sensor for the measurement channel not possible</td></tr>
</table>

Error code	Description
E014	state of charge of the internal rechargeable buffer battery too low for a mobile network connection to be established (recharging automatically may take up to 4 hours)
E020	>no valid measurement value
E100	hardware error (contact the manufacturer)
E110	analogue input faulty (contact the manufacturer)
E120	sensor cable between Gauge and pressure sensor damaged
E140	setpoint output not possible as the current loop is interrupted

10.2 User interface on the myDatanet server

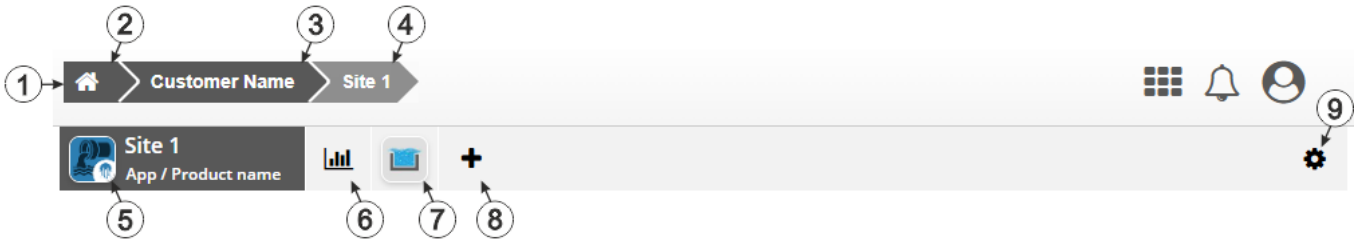
> ***Note:*** *Depending on the respective user level, some of the configuration fields mentioned in the following sub-chapters may be hidden. In this case, please contact the administrator of the myDatanet server.*

Configuration of the Jellox Analog is done via the web interface on the myDatanet server. It is essentially divided into configuration of the site and configuration of the device. The corresponding input screens are opened via the list of sites / applications in the "Sites / Applications" area (see ""Sites / Applications" area at customer level" on page 162). The title bar displayed at the top of the input screen is always the same, regardless of whether

- the specific input screen for configuring the site (click on the name of the site or on the icon),
- the default input screen for configuring the site (click on the pencil symbol),
- the input screen for configuring the device (click on the serial number) or
- the report template for displaying the measurement data (click on the symbol for displaying the measurement data) has been opened.

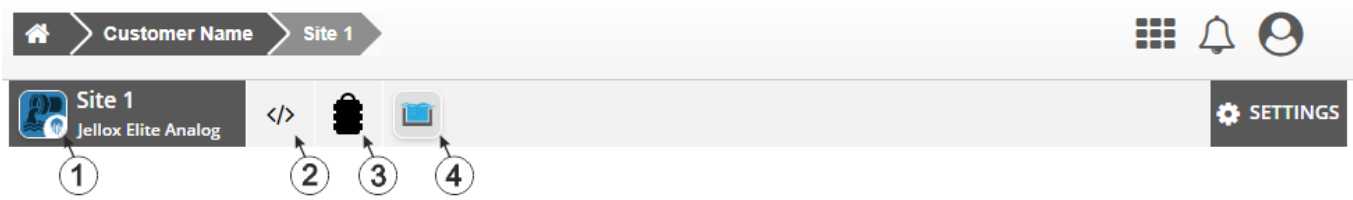
How-To-Video: How to use the new title bar

The title bar can be used to switch between the input screens of the site which are connected to the configuration of the site, without having to return to the list of sites first. Furthermore add-ons can be added to the site via the "+" symbol. Add-ons can be used to extend the functional scope of a site. The application-specific or generic input screens can be opened via the title bar. To switch between the buttons displaying the application specific or the generic input screens in the title bar, you can use the cogwheel symbol.



Title bar displaying the buttons to open the application specific input screens

1	Breadcrumb navigation; shows the path via which the current input screen was called up.
2	Closes the current input screen and returns to the main level (This segment is only available if you are authorised to manage multiple customers.) Depending how the customer displayed after the house symbol was reached, one of the following areas of the main level is opened: • Customers • Sites / Applications • Devices
3	Displays the name of the customer that is currently open. By clicking on the segment, the currently open input screen is closed and you return to the overview of the customers. Depending on the input screen that has been opened, one of the following areas of the customers level will then be displayed: • Sites / Applications • Devices
4	Depending on the input screen that is currently open, one of the following elements may be displayed: • Name of the site • Name of the report • Serial number of the device
5	Opens the specific input screen for configuring the site (see "Specific input screen for configuring the site" on page 89)
6	Opens the report template for displaying the measurement data
7	Opens the specific input screen for configuring an add-on that has been added to the site Multiple add-ons can be added to a site. A dedicated button is added to the title bar for each add-on.
8	Opens the wizard for adding new add-ons to the site that is currently open
9	Cogwheel symbol for selecting whether the buttons to open the application specific input screens or the buttons to open the generic input screens are displayed in the title bar.

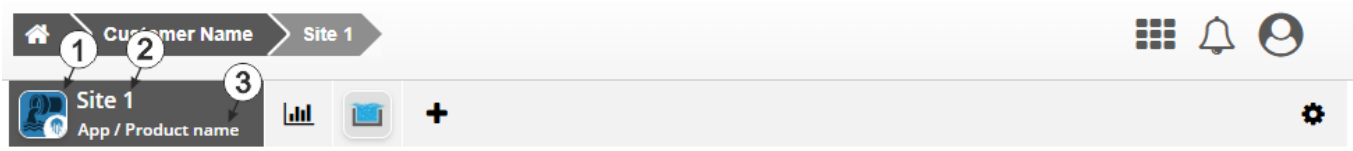


Title bar displaying the buttons to open the generic input screens

1	Opens the default input screen for configuring the site (see "Default input screen for configuring the site" on page 127)
2	Opens the default input screen for configuring the site in development mode (see "Default input screen for configuring the site in development mode" on page 137)
3	Opens the input screen for configuring the device connected to the site (see "Device configuration" on page 139)
4	Opens the default input screen for configuring the add-on

Buttons of the title bar in more detail

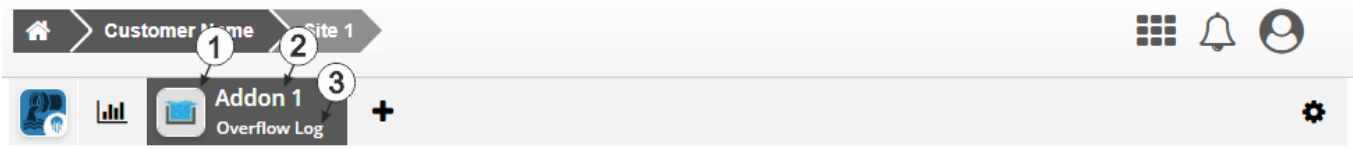
When clicking on the icon, the relevant button is expanded and shows additional information next to the Icon. The following screen shot shows the expanded button for opening the application specific input screen for configuring the site. The expanded button for opening the default input screen for configuring the site contains the same information.



Button to open the input screen for configuring the site in detail

1	Icon of the IoT application based on which the site has been created
2	Name of the site
3	Name of the IoT application based on which the site has been created or product name as indicated on the type plate (if stored in the device)

The following screen shot shows the expanded button for opening the application specific input screen for configuring the add-on. The expanded button for opening the default input screen for configuring the add-on contains the same information.



Button to open the input screen for configuring the add-on in detail

1	Icon of the add-on that has been added to the site
2	Freely selectable name for the add-on that has been added (Allows to distinguish the add-ons in case several of the same type are added to a site)
3	Name of the add-on defined by the add-on developer

10.2.1 Site configuration

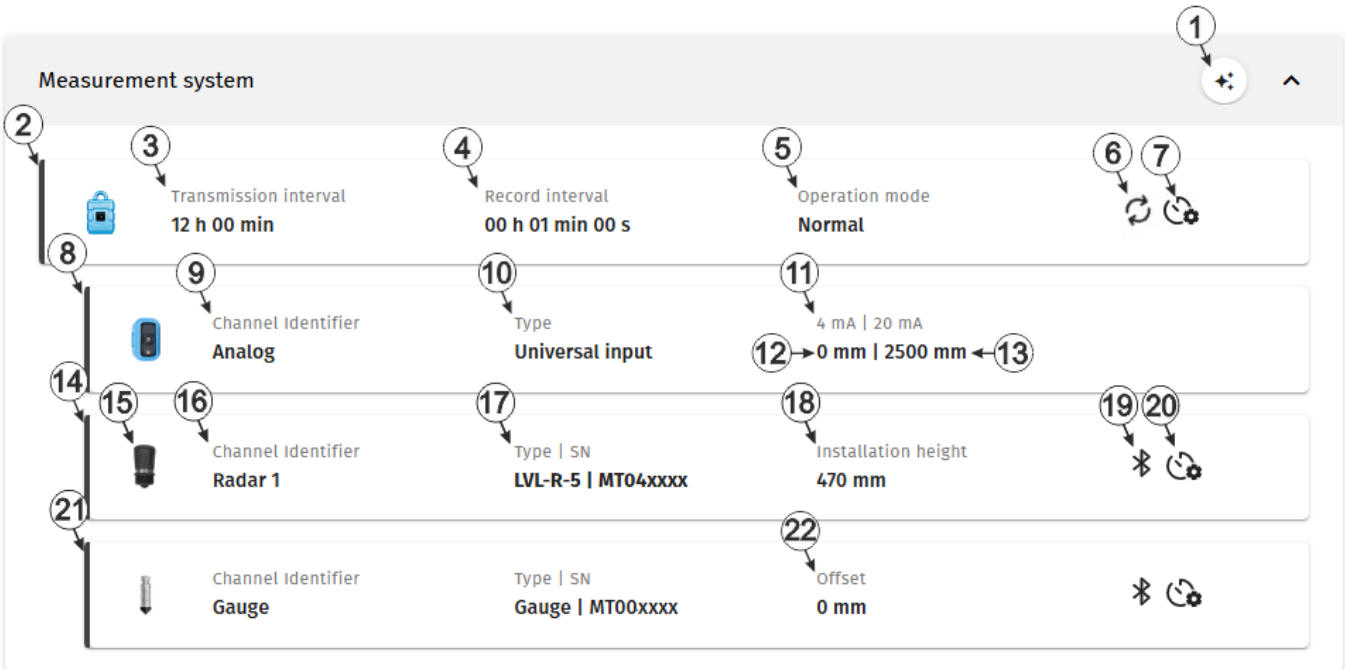
Click on the name of the site in the list of sites to open the specific input screen for configuring the site. Clicking on the symbol to edit the site will take you to the default input screen for configuring the site (see "myDatanet Server Manual " 805002).

10.2.1.1 Specific input screen for configuring the site

You can access the specific input mask for configuring the site by clicking on the name of the site in the list of sites. The configuration sections contained therein are specific to the IoT application on which the site was created and are explained in detail below.

10.2.1.1.1 Measurement system

This configuration section is used to configure the basic settings of the device as well as the settings for the mA input and the up to 4 remote sensor modules.



Configuration section "Measurement system"

Information about the device

1	Opens the input screen for the guided commissioning process (see ""Guided commissioning" input screen " on page 137).	
2	Status information about the site linked to Jellox Analog . The input window for the basic settings of the device is opened by clicking on this section (see "Device settings " on page 98).	
3	Time between transmissions	
4	Time between measurement data recordings	
5	Current operaing mode of the device	
	normal	Operation in accordance with the configuration
	transport	Transport lock activated. This means that all of the operations (measurement, recording, transmission, etc.) are stopped to minimise energy consumption during transport or storage.
6	This symbol is shown if the device is currently connected to the server and is transmitting data.	
7	When you move the mouse pointer over this symbol, the time remaining until the next battery replacement of the device is displayed as a tooltip.	

Information about the mA input

8	Status information about the mA input of the Jellox Analog The input window for the configuration of the mA input is opened by clicking on this section (see "Universal input" on page 100).	
9	Variable part of the name for the measurement values determined using the mA input of the Jellox Analog Several measurement values are recorded using the mA input. Their name is made up of the variable part and a fixed part ("myName - Value", "myName - Vsens", "myName - Warmup Time", etc.).	
10	Measurement channel type	
11	Basic settings for the measurement channel.	
	Mode	Measurement channel deactivated
	0 mA | 20 mA	Valid input signal range 0...20 mA (0 mA = 0 %, 20 mA = 100 %)
	4 mA | 20 mA	Valid input signal range 4...20 mA (4 mA = 0 %, 20 mA = 100 %)
12	Start of the measurement range in the measurement unit or "off" if the measurement channel is deactivated	
13	End of the measurement range in the measurement unit or "off" if the measurement channel is deactivated	

Information about the remote sensor modules

14 Status information about the sensor module currently linked to the first measurement channel

The input window for the configuration of the sensor module is opened by clicking on this section (see "Remote sensor module of type LVL-R-5" on page 105 and "Remote sensor module of type Gauge" on page 112).

15 Icon of the sensor module that is linked to the measurement channel

For the sensor module types "LVL-R-5" and "VEL-R-5", the colour of the colour cap used can be specified via the configuration of the sensor module. The selected colour is also displayed on the icon.

16 Variable part of the name for the measurement values determined using the sensor module assigned to this measurement channel.

Several measurement values are recorded for each of the remote measurement channels. Their name is made up of the variable part and a fixed part which depends on the type of sensor module it is assigned to (e.g. "myName - Level", "myName - Distance", etc. for sensor modules of the type "LVL-R-5").

17 Type and serial number of the sensor module.

When hovering over this section with the cursor, the version number of the firmware installed on the sensor module is displayed as tooltip.

18 Value for the installation height (module of the type "LVL-R-5")

19 Status of the local radio connection between device and sensor module

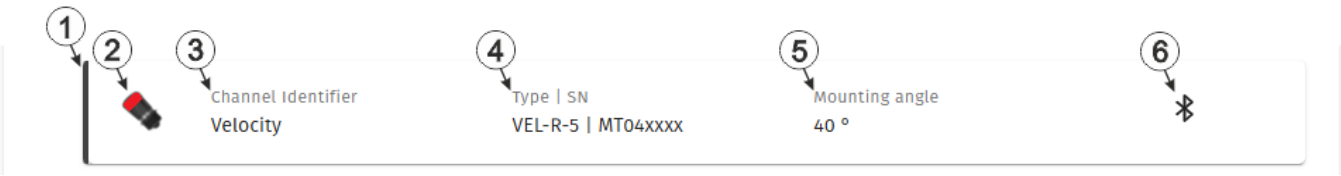
 (blinking)	• Device is searching for sensor module or • Device is establishing a connection to the sensor module • The firmware of the sensor module is being updated
	• Device and sensor module is correctly paired • Device and sensor module is correctly paired but last measurement could not be carried out (Error code E020 is additionally displayed).
	• Sensor module couldn't be found when trying to pair it. • Local radio connection between device and sensor module has been lost. • The measurement system has been deactivated.

20 When hovering over this symbol with the cursor, the remaining time until the next battery replacement of the sensor module is displayed as tooltip.

21 Status information about the sensor module that is currently linked to the second measurement channel

The input window for the configuration of the sensor module is opened by clicking on this section (see "Remote sensor module of type LVL-R-5" on page 105 and "Remote sensor module of type Gauge" on page 112).

22 Value for the offset (modul of the type "Gauge")



Configuration section "Measurement system, status information "VEL-R-5 sensor module"

Information about a remote sensor module of type "VEL-R-5 "

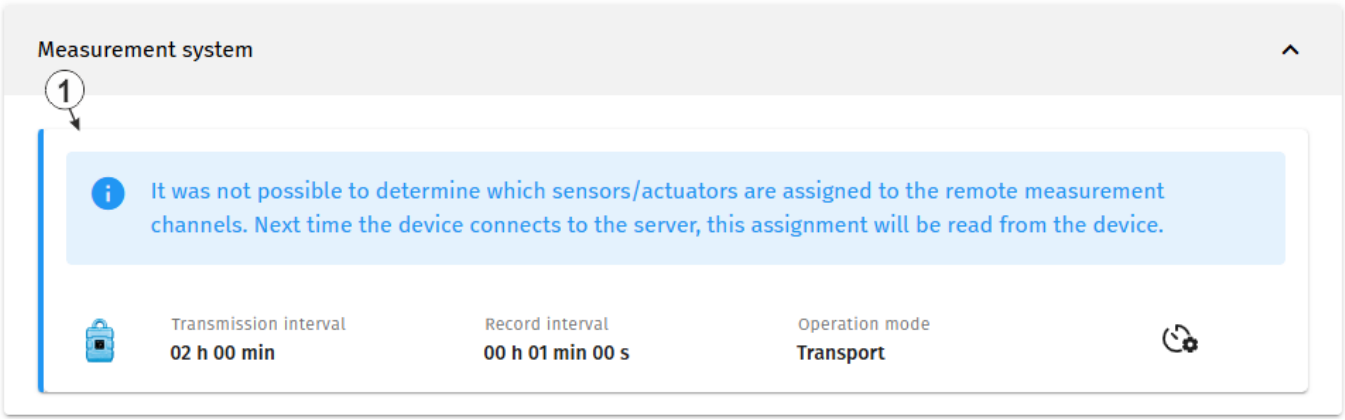
1	Status information about a sensor module of type "VEL-R-5 " that is linked to a measurement channel A click on this area opens the input window for configuring the sensor moudule (see "Remote sensor module of type VEL-R-5" on page 113).
2	Icon of the sensor module that is linked to the measurement channel For the sensor module types "LVL-R-5" and "VEL-R-5", the colour of the colour cap used can be specified via the configuration of the sensor module. The selected colour is also displayed on the icon.
3	Variable part of the name for the measurement values determined using the sensor module assigned to this measurement channel. Several measurement values are recorded for each of the remote measurement channels. Their name is made up of the variable part and a fixed part which depends on the type of sensor module it is assigned to (e.g. "myName - Level", "myName - Distance", etc. for sensor modules of the type "LVL-R-5").
4	Type and serial number of the sensor module. When hovering over this section with the cursor, the version number of the firmware installed on the sensor module is displayed as tooltip.
5	Value for the mounting angle
6	Status of the local radio connection between device and sensor module

(blinking)	• Device is searching for sensor module or • Device is establishing a connection to the sensor module • The firmware of the sensor module is being updated
	• Device and sensor module is correctly paired • Device and sensor module is correctly paired but last measurement could not be carried out (Error code E020 is additionally displayed).
	• Sensor module couldn't be found when trying to pair it. • Local radio connection between device and sensor module has been lost. • The measurement system has been deactivated.

10.2.1.1.1.1 Errors and notifications

If certain operating states or errors occur, corresponding messages are displayed in the areas with status information about the device, to the mA input or to the sensor modules. Notifications are always displayed in blue, while errors are displayed in red.

Assignment of sensors/actuators unknown

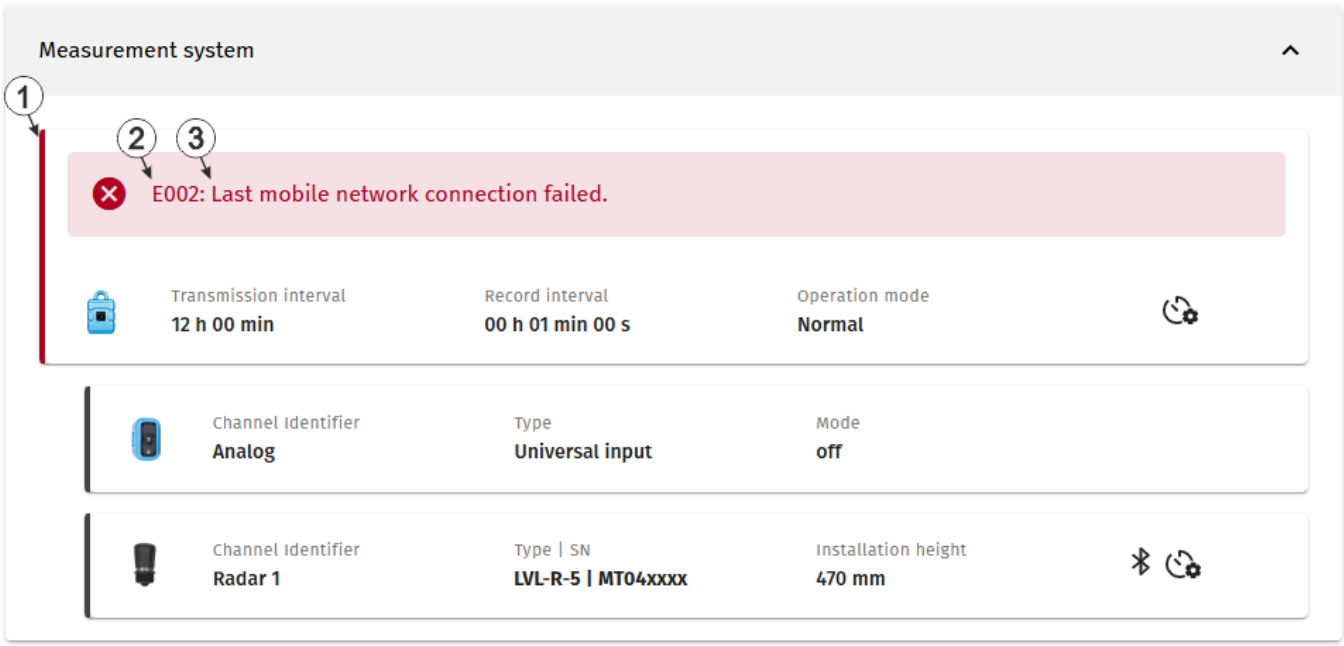


Assignment of sensors/actuators to the remote measurement channels unknown

1	Assignment of sensors/actuators to the remote measurement channels unknown

The notification shown above is displayed if the myDatanet server was unable to determine which sensors/actuators are assigned to the remote measurement channels when the site was created. When the device connects to the myDatanet server, this assignment is read from the device. Therefore, use the reed switch to activate the setup mode (see "Setup mode" on page 43) or wait for the next scheduled transmission. As long as the notification is displayed, the status information about the mA input and to the sonsor modules are hidden. It is therefore not possible to configure the mA input and the sensor modules.

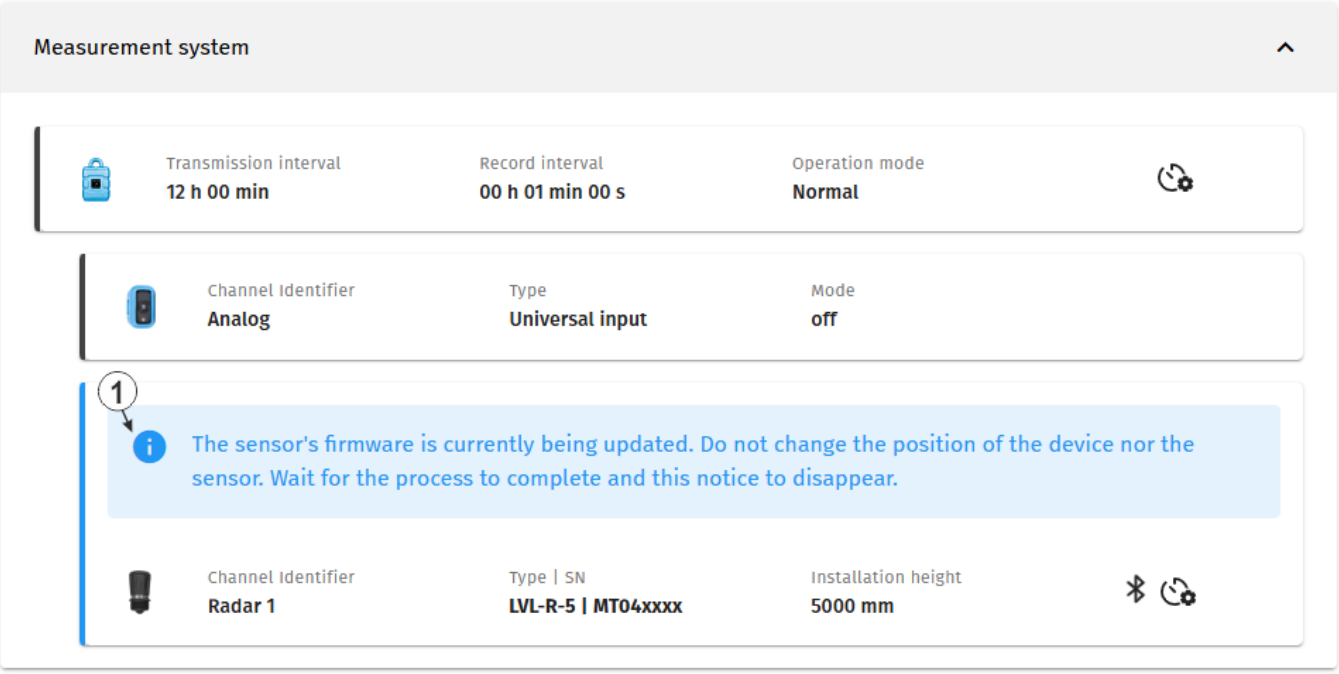
Errors on the device



Error occurred on the device

1	Status information about the Jellox Analog currently linked to the site
2	Error code An exhaustive list of possible error codes is provided in under "Error codes" in chapter "Display" on page 80
3	Error description

Firmware update



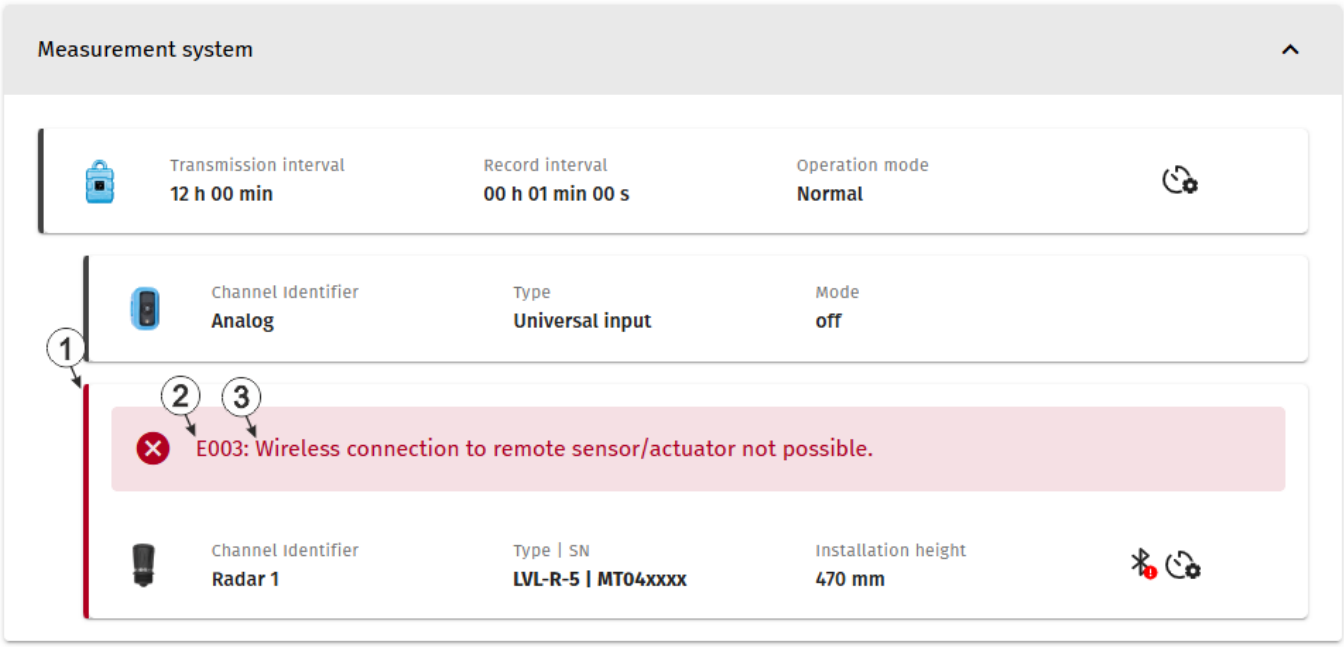
Firmware of the sensor module is being updated

1	Firmware of the sensor module is being updated

If required, the update for all LVL-R-5 and VEL-R-5 sensor modules linked to a measurement channel of the Jellox Analog is executed automatically. No user interaction is required. The update process may take several minutes. If a LVL-R-5 firmware is updated, "NaN" is recorded for all measured values of all remote sensors because the update process blocks communication with the other sensor modules. The update of a VEL-R-5 sensor module however doesn't affect the communication with other sensor modules. Even a VEL-R-5 sensor module of which the firmware is being updated continues providing valid measurement values. If the myDatanet server interface is accessed during the update, the message shown in the figure above is displayed in the configuration section "Measurement system". A corresponding notification is also displayed on the display of the Jellox Analog in the tab of the respective sensor module.

> ***Note:*** *Gauge sensor modules have to be updated using the DeviceConfig configuration programme (see ""Firmware" tab" on page 152).*

Error on the sensor module



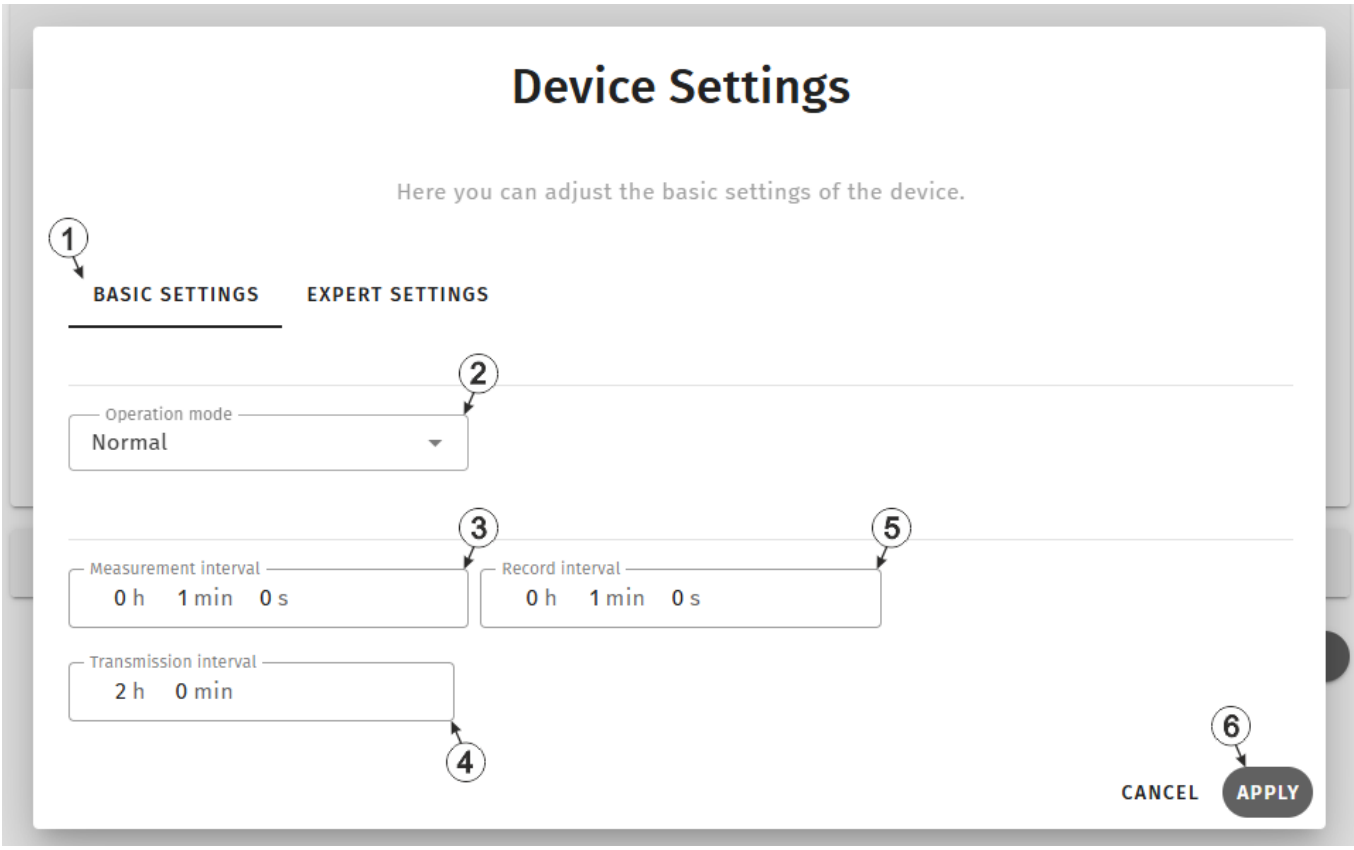
Error occurred on one of the sensor modules

1	Status information about the sensor module currently linked to the first measurement channel
2	Error code An exhaustive list of possible error codes is provided in under "Error codes" in chapter "Display" on page 80
3	Error description

The error codes are displayed separately for each sensor module in the status information section of the respective sensor module.

10.2.1.1.1.2 Device settings

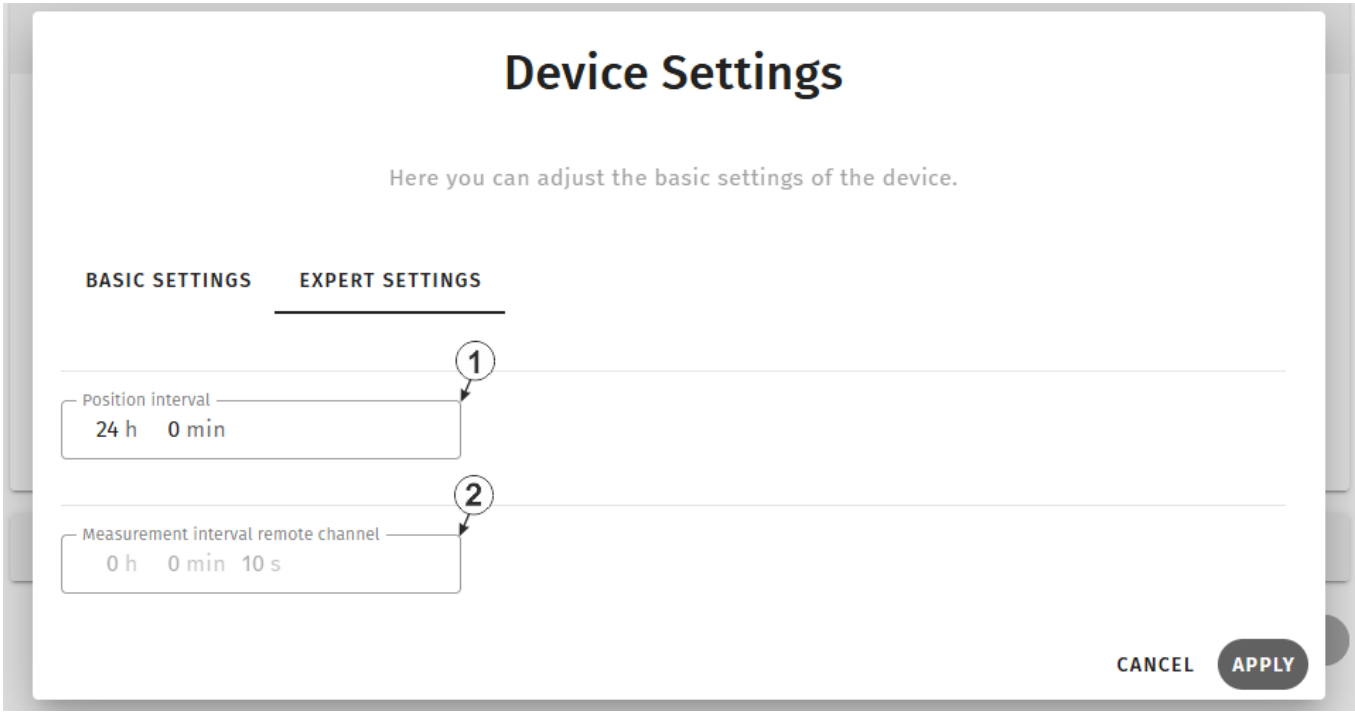
Basic settings



Input window "Device settings", tab "Basic settings"

1	Buttons for switching between the individual tabs of the input window	
2	Selection of the operating mode	
	normal	Operation in accordance with the configuration
	transport	Transport lock activated. This means that all of the operations (measurement, recording, transmission, etc.) are stopped to minimise energy consumption during transport or storage.
3	Interval the measurement value on the mA input and the internal measurement values are determined in. (00:00 same as record interval) This interval is used to monitor the conditions under which a "Smart Action" is triggered that uses either the measurement value on the mA input or one of the internal measurement values. ***Note:*** *If the measurement interval is selected to be longer than the record interval, the measurements are carried out in the record interval.*	
4	Time between transmissions	
5	Time between measurement data recordings	
6	Button to apply the settings ***Note:*** *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*	

Expert settings

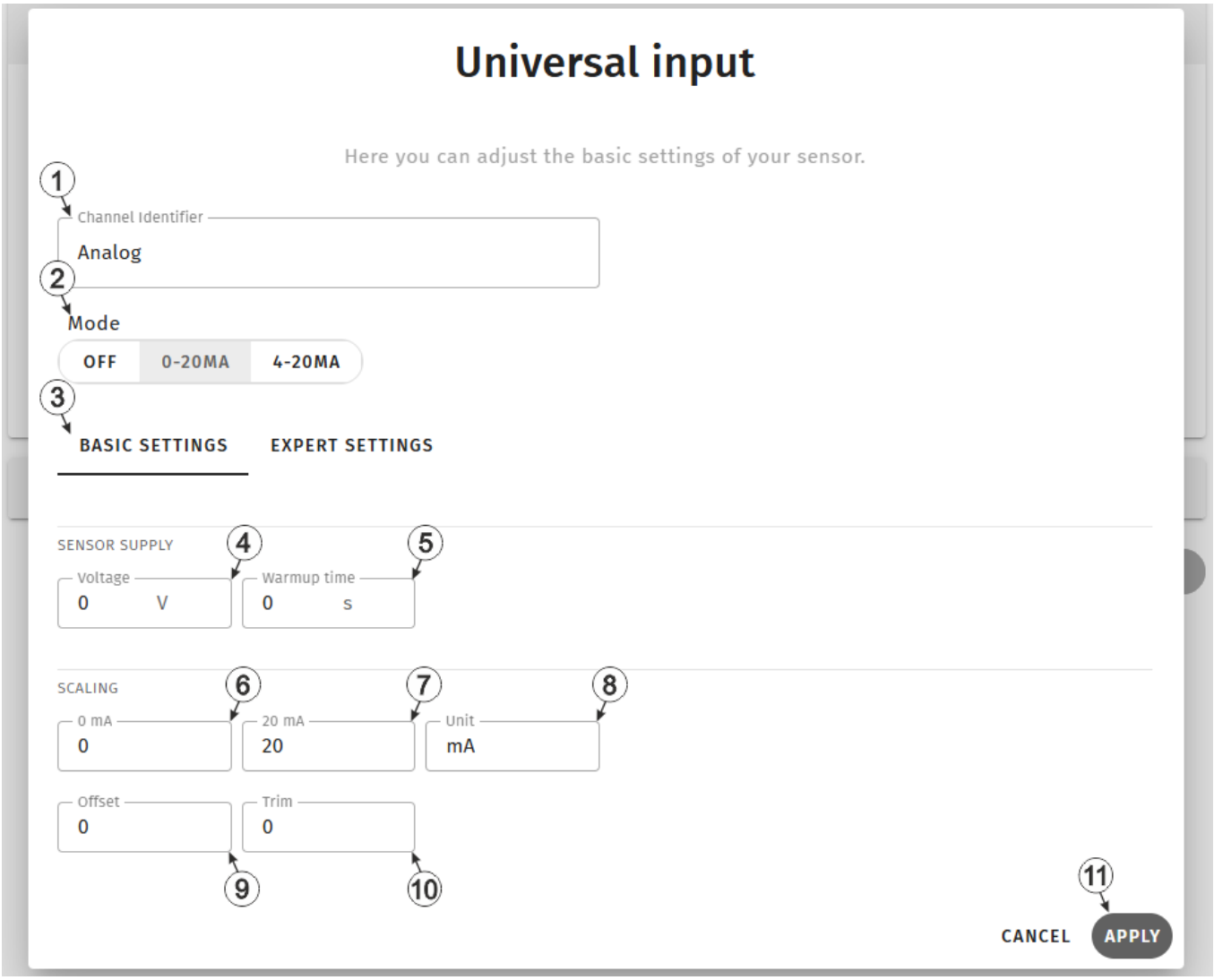


Input window "Device settings", tab "Expert settings"

1	Position update interval (00:00 positioning is completed with every connection)
2	Interval in which the sensor modules carry out measurement. (Read Only) This interval is used to monitor the conditions under which a "Smart Action" is triggered that uses the primary measured value of one of the sensor modules.

10.2.1.1.1.3 Universal input

Basic settings



Input window "Universal input", tab "Basic settings"

1	Freely selectable, variable part of the designation for the measurement values determined via the mA input on the Jellox Analog . Several measurement values are recorded using the mA input. Their name is made up of the variable part and a fixed part ("myName - Value", "myName - Vsens", "myName - Warmup Time", etc.).

2 Buttons for selecting the mode for the measurement channel

Note: *When selecting the mode, the values for "Start of the measurement range in the measurement unit" and "End of the measurement range in the measurement unit" are automatically set to 0 mA | 20 mA (mode 0-20 mA) or 4 mA | 20 mA (mode 4-20 mA). During commissioning, the current signal supplied by the sensor is displayed directly. The values can of course be overwritten manually.*

Off	Measurement channel deactivated
0-20 mA	Valid input signal range 0...20 mA (0 mA = 0 %, 20 mA = 100 %)
4-20 mA	Valid input signal range 4...20 mA (4 mA = 0 %, 20 mA = 100 %)

3 Buttons for switching between the individual tabs of the input window

4 Selection of the output voltage for the sensor supply

5 specifies the time (in 0,1 sec.) for which the sensor supply is switched on before the measurement (see "Technical details about the sensor supply" on page 65)

6 Start of the measurement range in the measurement unit

7 End of the measurement range in the measurement unit

8 String that is used as a measurement unit by all of the server display elements [0-8 characters]

9 Allows for correction of the measurement value by an offset value (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102)

10 Is used to adjust the zero point (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 102)

Note: *Additional explanations on the zero point adjustment (i.e. taking triming into account) can be found in the user manual of the relevant sensor module.*

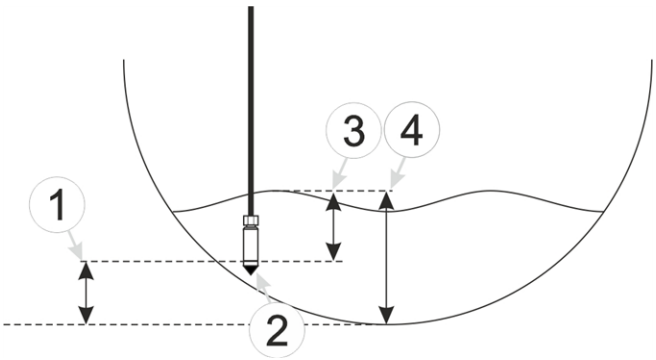
11 Button to apply the settings

Note: *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*

Note:

Additional explanation on the zero point adjustment and installation height of the sensor

Assumption: *Measurement range of the 4-20 mA pressure sensor 0-5 m*



Installation situation of the pressure sensor

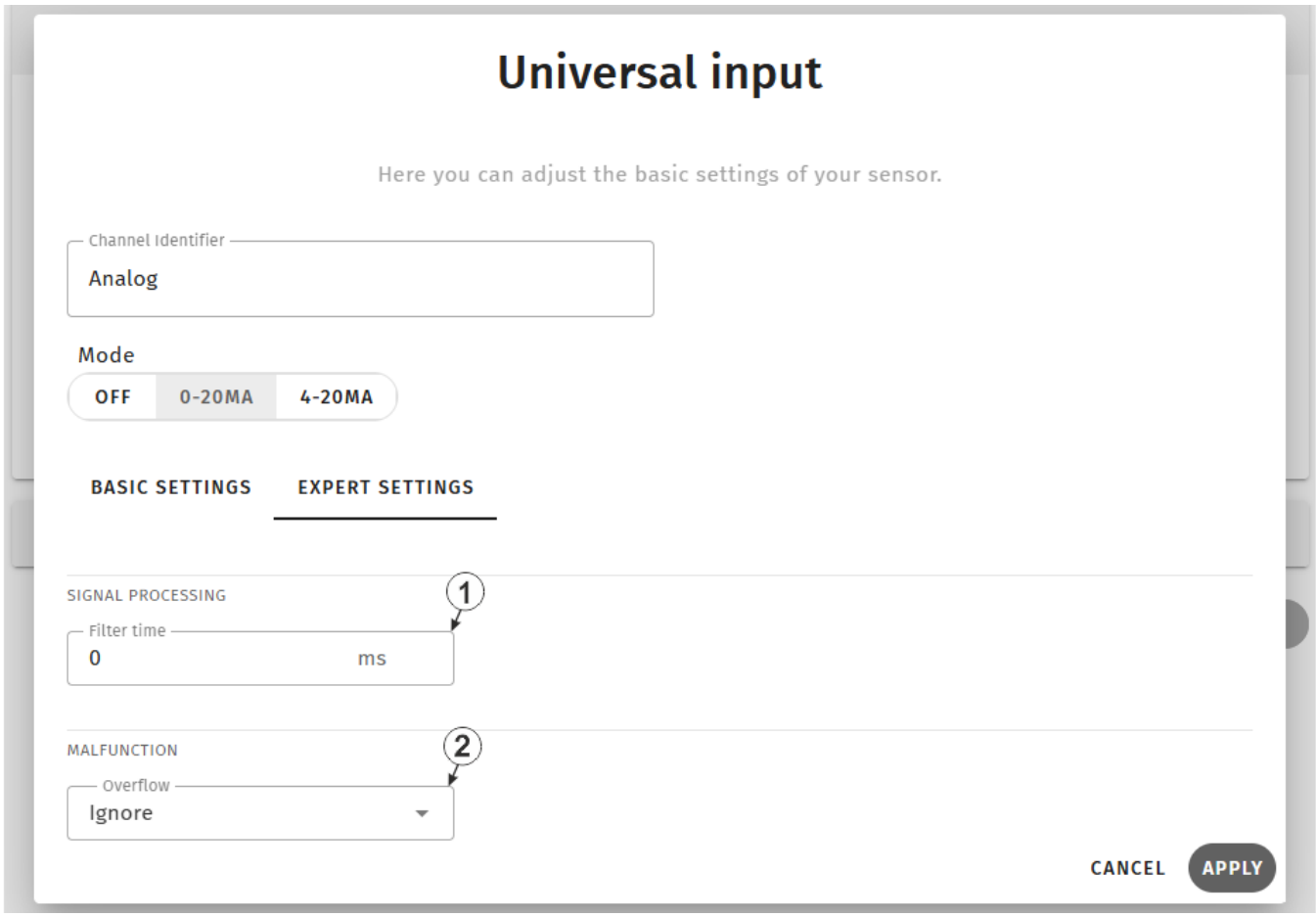
1 *Installation height: 15 cm*	**3** *Output value of the sensor: 6 cm*
2 *Pressure sensor*	**4** *Measured fill level: 20 cm*

Required configuration

Parameter	***Value***
Mode	*4-20 mA*
0 %	*0*
100 %	*5*
Trim	*-0.01*
Offset	*0.15*
Unit	*m*

Explanation: *When comparing the measured fill level with the output value of the sensor taking the installation height into consideration, it was determined that the value was 1 cm too high. As the "Trim" and "Offset" parameters are added to the scaled measurement value, this error can be balanced out by setting the "Trim" parameter value to -0.01 m.*

Expert settings



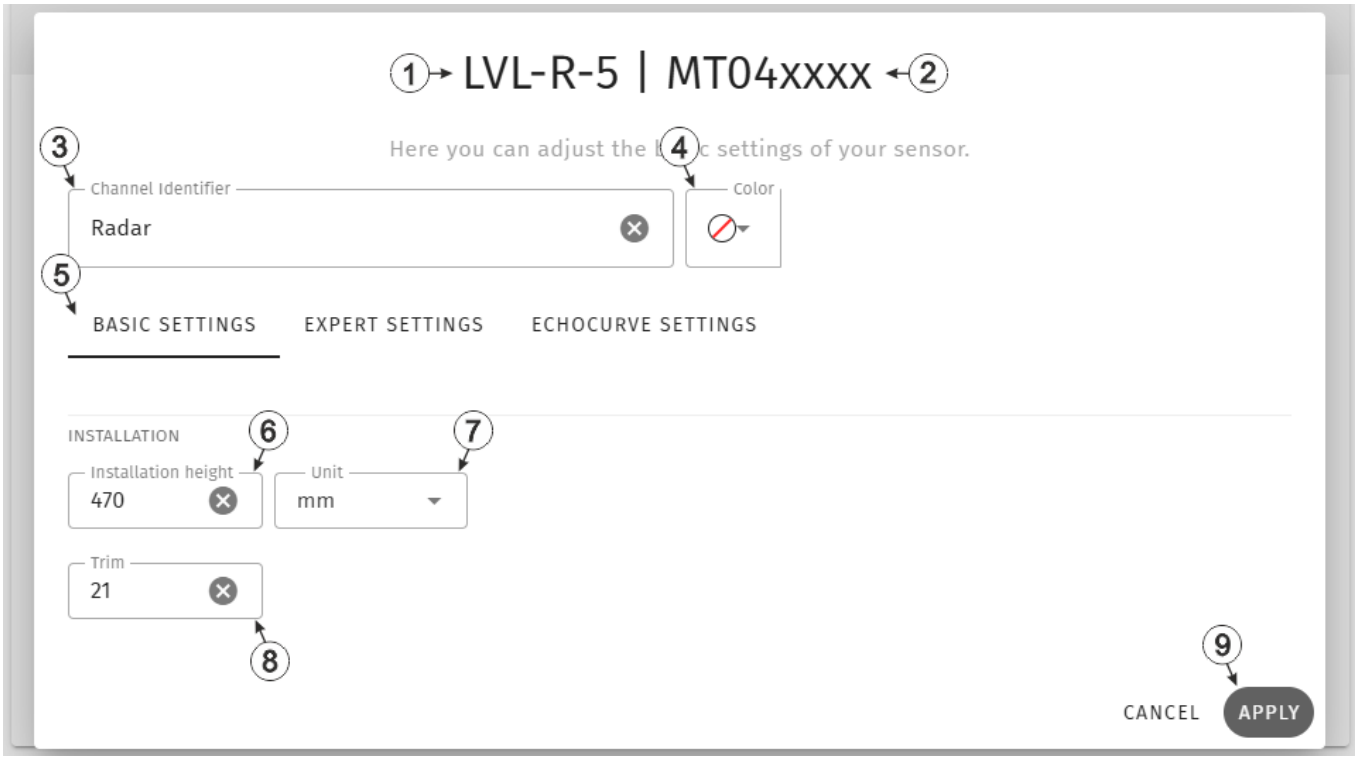
Input window "Universal input", tab "Expert settings"

1	Time in [ms], during which the analogue signal is averaged for signal smoothing, is designed to suppress signal noise (see "Example to explain the filter time in conjunction with the Ext. warmup time" in chapter "Technical details about the sensor supply" on page 65)

2	Procedure in the event of measurement range violations	
	Ignore	The measurement value is calculated beyond the range limits.
	Silent cutoff	The measurement value is truncated at the range limits.
	NAMUR	0...20 mA mode: • The error value "OF" (overflow) is issued if the measurement value is between 20.1 mA and 21 mA. • If the measurement value exceeds 21 mA, the error value "SC" (Short Circuit) is generated, a fault alarm is triggered and a transmission is initiated. 4...20 mA mode: • If the measurement value falls under 3,6 mA, the error value "OL" (Open Loop) is generated, a fault alarm is triggered and a transmission is started. • The error value "OL" (open loop) is issued, if the measurement value is below 3.6 mA. • The error value "UF" (underflow) is issued, if the measurement value is between 3.6 mA and 3.9 mA. • The error value "OF" (overflow) is issued if the measurement value is between 20.1 mA and 21 mA. • If the measurement value exceeds 21 mA, the error value "SC" (Short Circuit) is generated, a fault alarm is triggered and a transmission is initiated.

10.2.1.1.1.4 Remote sensor module of type LVL-R-5

Basic settings

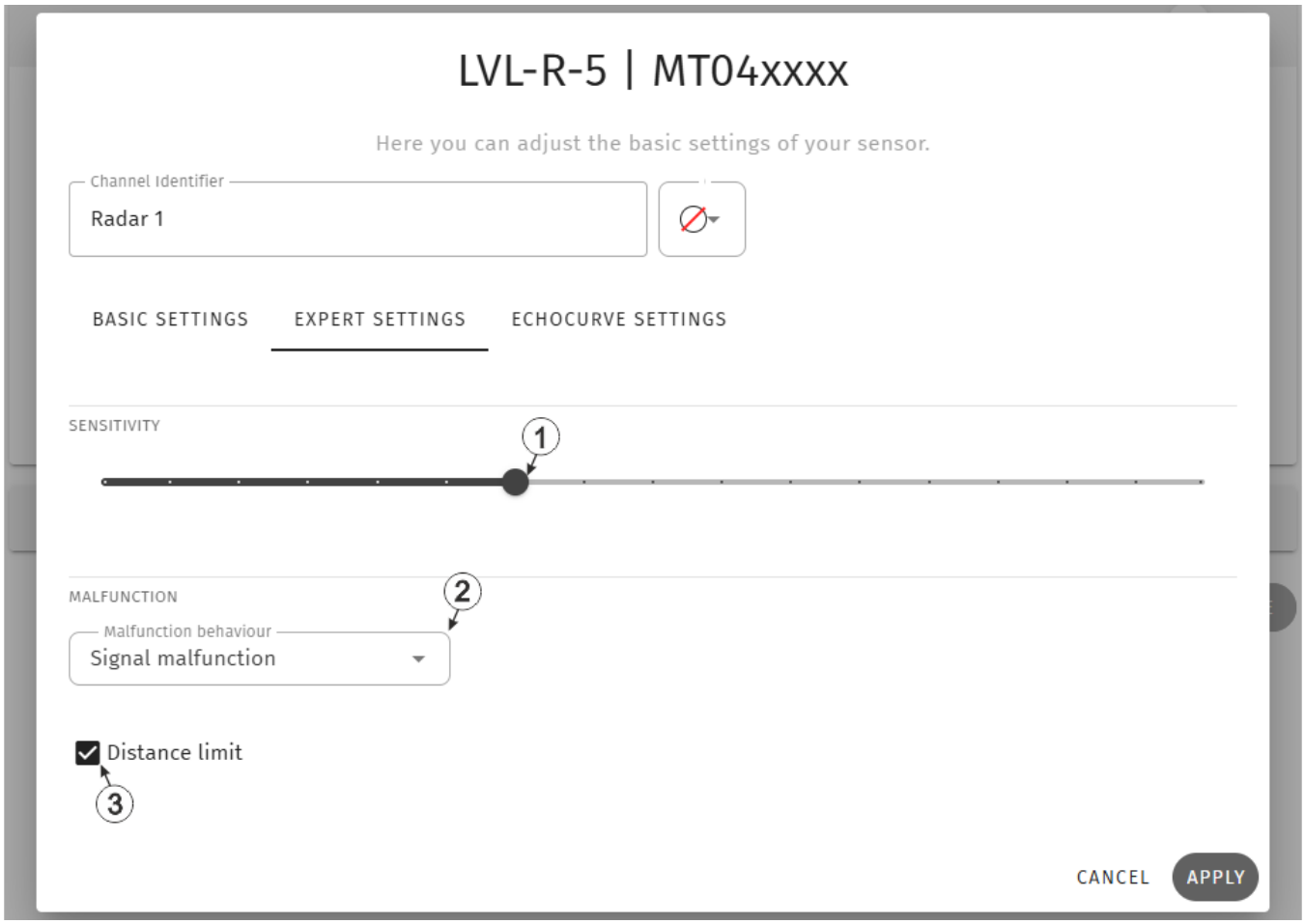


Input window "Remote sensor module of type LVL-R-5", tab "Basic settings"

1	Type of the sensor module used for determining the measurement value LVL-R-5 (400411): module for determining water levels of fresh, dirty and gray water via distance measurement using a radar sensor. Radar (301443): Predecessor of the LVL-R-5 . Function and configuration are identical for the LVL-R-5 . The LVL-R-5 has a revised housing and a larger battery.
2	Serial number of the sensor module used for determining the measurement value
3	Freely selectable, variable part of the designation for the measurement values recorded via the sensor module assigned to the measuring channel Several measurement values are recorded for each of the remote measurement channels. Their name is made up of the variable part and a fixed part which depends on the type of sensor module it is assigned to (e.g. "myName - Level", "myName - Distance", etc. for sensor modules of the type "LVL-R-5").
4	Selection of the colour of the colour cap used The selected colour is also The selected colour is also displayed in the "Measurement System" configuration section via the icon photo in the sensor module status information area. The colour caps make it easier to distinguish sensor modules of the same type when several are used
5	Buttons for switching between the individual tabs of the input window

6	Specifies the installation height of the sensor. ***Note:*** *Additional explanations on calculating the water level taking the installation height into account can be found in the user manual of the sensor module.*
7	Selection of the length unit (mm, cm or m) used by all of the server display elements
8	Is used to adjust the zero point ***Note:*** *Additional explanations on the zero point adjustment (i.e. taking triming into account) can be found in the user manual of the sensor module.*
9	Button to apply the settings ***Note:*** *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*

Expert settings

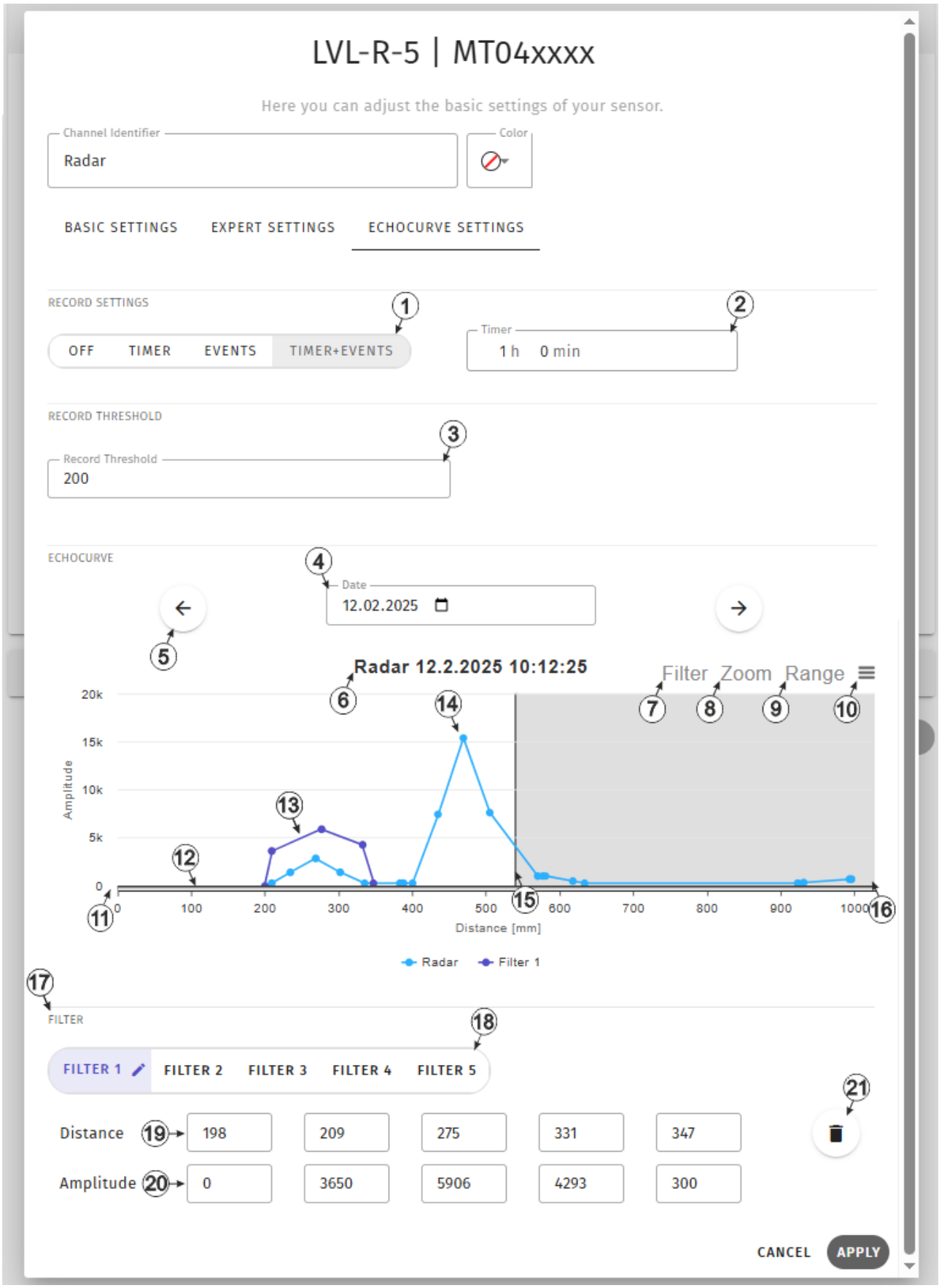


Input window "Remote sensor module of type LVL-R-5", tab "Expert settings"

1	Selection of the sensitivity of the signal recognition (CFAR sensitivity) Sensitivity is increased by moving the slider to the right. For larger distances or poorly reflective surfaces (empty overflow basin covered with mud), this can improve the reliability of the measurement. For short distances or highly reflective surfaces, however, reducing the sensitivity may improve the reliability of the measurement.	
2	Selection of the value the LVL-R-5 should supply in case the level couldn't be determined.	
	Signal malfunction	The malfunction is signalled as "UF" (Underflow)
	Hold last measurement value	The measurement value is held until a valid value for the level can be determined again.
	Set level to 0	The level is set to 0

3	Selection whether the distance supplied by the sensor should be limited to the mounting height plus 20 cm or not	
	Selected	The search range for the working point is limited to the mounting height plus 20 cm. This suppresses distance readings caused by multiple reflections that would correspond to a position below the ground. The 20 cm tolerance makes it possible to detect minor deviations between the configured and actual mounting heights using negative level values, and subsequently to correct them by means of trimming.
	Not selected	There are no restrictions on the area in which the working point is searched. Multiple reflections may result in distance values corresponding to a position below the ground. If the distance measured by the sensor exceeds the configured mounting height, negative levels are calculated.

Echocurve



Input window "Remote sensor module of type LVL-R-5", tab "Echocurve"

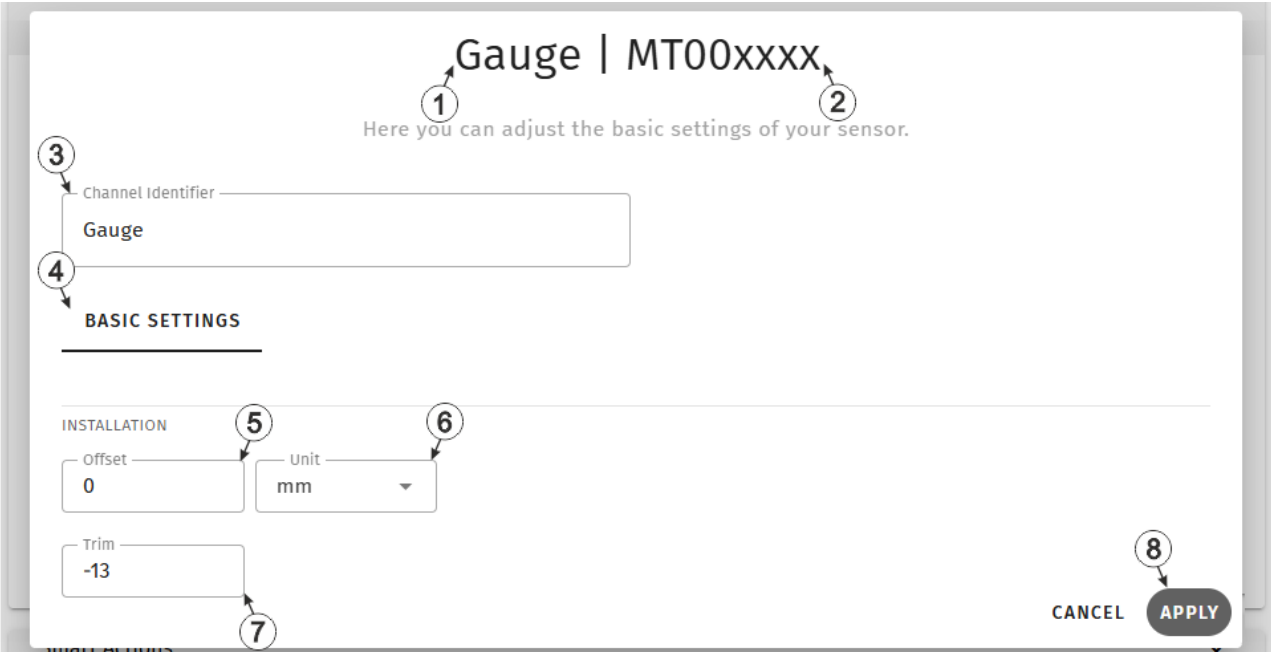
1	Mode for recording the echo curve	
	Off	Echo curve recording deactivated
	Timer	Echo curves are recorded in the interval selected under "Timer"
	Events	Echo curves are recorded if a work point has been lost. Possible causes for loosing the work point:: • No sufficiently high amplitude deflections • Distance could not be determined (underflow detected) • The starting point of the measurement window has jumped to the start of the measurement range
	Timer + Events	Echo curves are being recorded in the intervall selected under "Timer" if a work point has been lost
2	Interval in which the echo curves should be recorded (only visible if the modes "Timer" or "Timer + Event" have been selected)	
3	Only amplitude values that exceed this threshold are included in the echo curves. The threshold value is displayed as a black horizontal line in the echo curve display area.	
4	Selection of the day the echo curve should be displayed for. When making your selection, the echo curves for the two days before and after the selected date are also loaded. You can then use the arrow icons to switch between the loaded echo curves. The echo curve created closest to the time selected using the date selection control (click on the calendar icon next to the date) is displayed first. In the date selection control, the days for which echo curves have been loaded are highlighted in blue, with the selected day marked in a darker shade of blue.	
5	Switches to the privious/next echo curve	
6	Designation of the selected measurement channel and time at which the echo curve was recorded	
7	Activates the mode for automated creation of filter curves. By clicking and holding the mouse button, a section can be selected within which an automated filter curve will be created. The next available filter will be used for that. If all 5 filters are already used, no action is carried out. When creating the filter curve, the 5 reference points are first distributed symmetrically on the x-axis (distance). The amplitude (y-axis) of the 5 reference points is set to the value that corresponds to the echo curve at the x-position of the respective reference point. The reference points can be adjusted further by clicking and moving them in the graphic or by entering the distance and amplitude values in the area for manual input of the reference points..	
8	Activates the zoom function. By clicking and holding the mouse button, you can select an area to be enlarged. The zoom can be cancelled using the "Reset zoom" button displayed under the "Magnifying glass" symbol.	
9	Expands the displayed area of the echo curve to the complete range of the distance-axis (0-5000 mm) The area displayed by default depends on the configured mounting height. Parts of the echo curve (underneath the configured mounting height) may not be displayed.	
10	Opens a context menu in which full-screen mode can be activated for instance.	
11	Area for displaying the echo curves and the filters set for the interference signal suppression	

12	Recording threshold Only amplitude values above this threshold are included in the echo curves.
13	Filter curve The 5 reference points can be adjusted by clicking and holding the mouse button, provided the zoom function or the mode for the automated creation of filter curves are deactivated.
14	Echo curve (light blue measurement curve)
15	Distance at which the ground should be located (according to configured installation height)
16	Area of the echo curve which is located underneath the ground (according to configured installation height). Parts of the echo curve displayed here are usually the result of multiple reflections and should be suppressed using the filter curve.
17	Area for manual input of the reference points
18	Selection for which of the 5 filters the input windows are displayed in the area for manual input of the reference points. The selected filter is highlighted by changing the background colour. If the filter is not in use, the dot next to the name is grey. If the filter is in use, the colour of the dot corresponds to the colour of the filter curve in the graphic. A pencil symbol is also displayed next to the name. After clicking again on an already selected filter, the name of the filter can be changed.
19	Input fields for the distance value (x-axis) of the 5 reference points of the filter
20	Input fields for the amplitude (y-axis) of the 5 reference points of the filter
21	Deletes the filter

The "Echocurve" tab is used to select the conditions under which the echo curve should be recorded, to display the recorded echo curves and to configure the filters that can be used to suppress interference signals.

How-To-Video: Suppressing interference signals

10.2.1.1.1.5 Remote sensor module of type Gauge



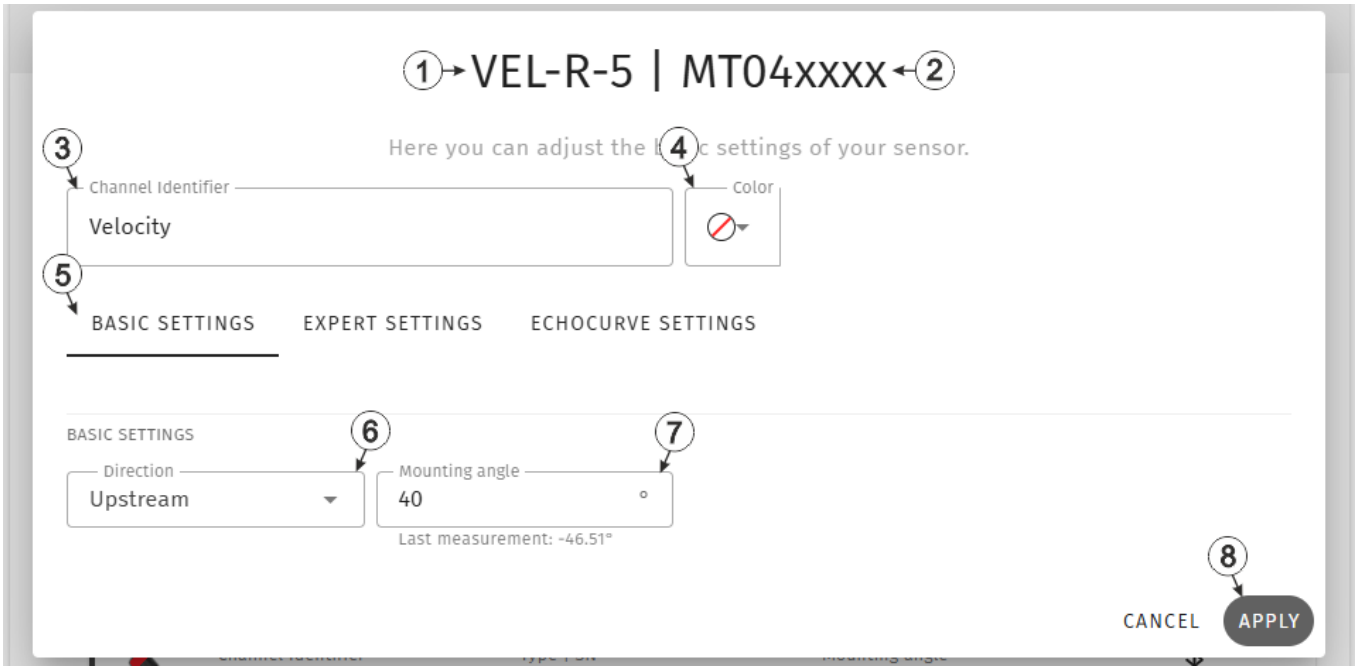
Input window "Remote sensor module of type Gauge"

1	Type of the sensor module used for determining the measurement value Gauge (300893 + pressure probe)[1)]: module for determining fill levels of fresh, dirty and gray water using a piezoresistive pressure sensor.
2	Serial number of the sensor module used for determining the measurement value
3	Freely selectable, variable part of the designation for the measurement values recorded via the sensor module assigned to the measuring channel Several measurement values are recorded for each of the remote measurement channels. Their name is made up of the variable part and a fixed part which depends on the type of sensor module it is assigned to (e.g. "myName - Level", "myName - Distance", etc. for sensor modules of the type "LVL-R-5").
4	Buttons for switching between the individual tabs of the input window
5	specifies the sensor offset. ***Note:*** *Additional explanations on calculating the water level taking the offset into account can be found in the user manual of the sensor module.*
6	Selection of the length unit (mm, cm or m) used by all of the server display elements
7	Is used to adjust the zero point ***Note:*** *Additional explanations on the zero point adjustment (i.e. taking triming into account) can be found in the user manual of the sensor module.*
8	Button to apply the settings ***Note:*** *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*

[1)] The required pressure probe must be specified when ordering the Gauge .

10.2.1.1.1.6 Remote sensor module of type VEL-R-5

Basic settings

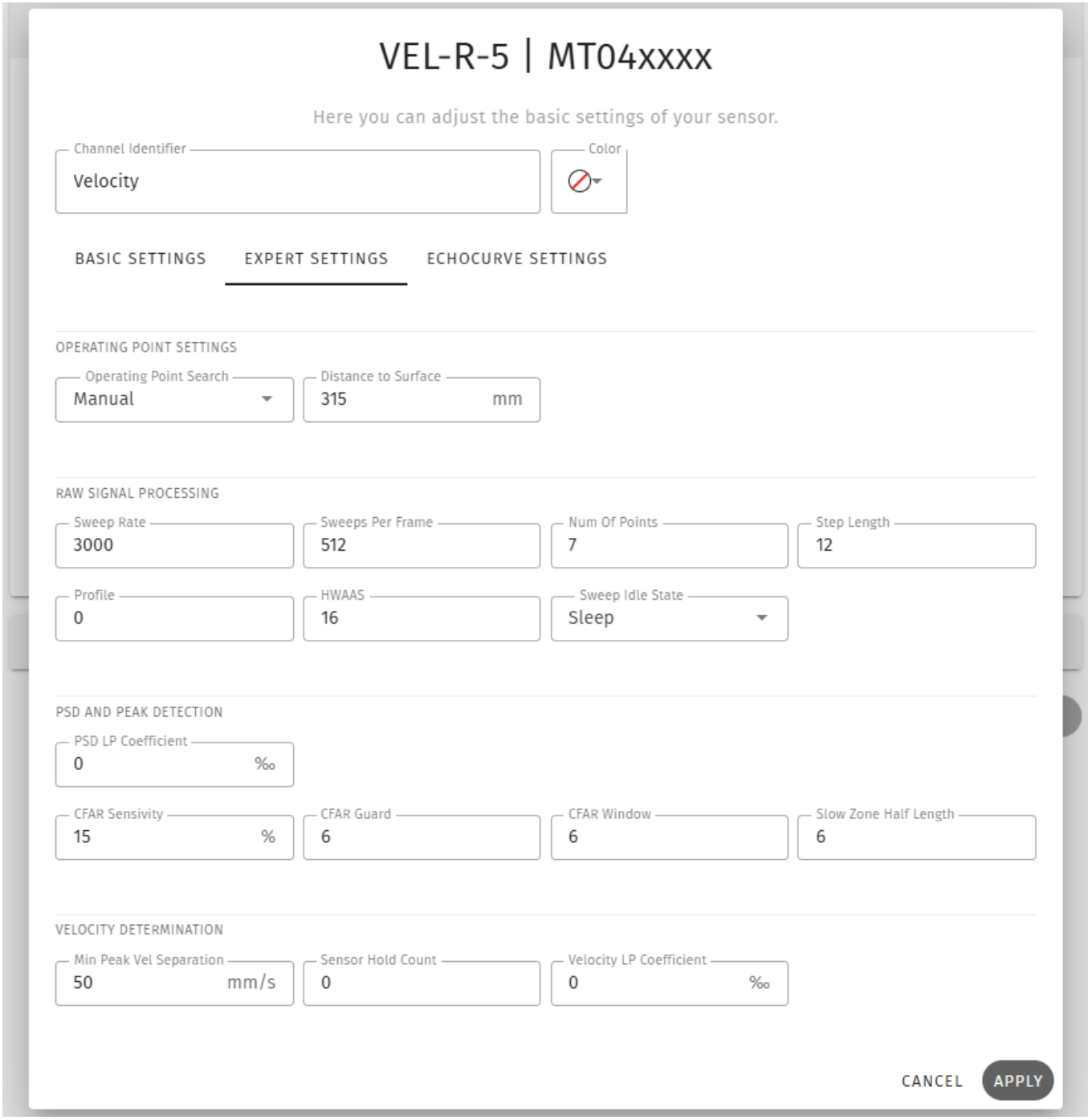


Input window "Remote sensor module of type VEL-R-5 ", tab "Basic settings"

1	Type of the sensor module used for determining the measurement value VEL-R-5 (400416): Module for determining the surface velocity of fresh, dirty and gray water in water shafts and sewers using a radar sensor.	
2	Serial number of the sensor module used for determining the measurement value	
3	Freely selectable, variable part of the designation for the measurement values recorded via the sensor module assigned to the measuring channel Several measurement values are recorded for each of the remote measurement channels. Their name is made up of the variable part and a fixed part which depends on the type of sensor module it is assigned to (e.g. "myName - Level", "myName - Distance", etc. for sensor modules of the type "LVL-R-5").	
4	Selection of the colour of the colour cap used The selected colour is also The selected colour is also displayed in the "Measurement System" configuration section via the icon photo in the sensor module status information area. The colour caps make it easier to distinguish sensor modules of the same type when several are used	
5	Buttons for switching between the individual tabs of the input window	
6	Selection of how the sensor module is aligned relative to the flow	
	Upstream	The sensor points against the direction of flow. (recommended)
	Downstream	The sensor points in the direction of flow.

7	Input field for the mounting angle (i.e. angle of inclination between water surface and sensor) The angle of inclination determined by the sensor module itself is displayed below the input field. For verification purposes, it can be compared to the entered mounting angle, whereby the negative sign should be ignored. The mounting angle entered in the field is used to calculate the actual surface velocity. (see "Taking the mounting angle into consideration" on page 38).
8	Button to apply the settings ***Note:*** *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*

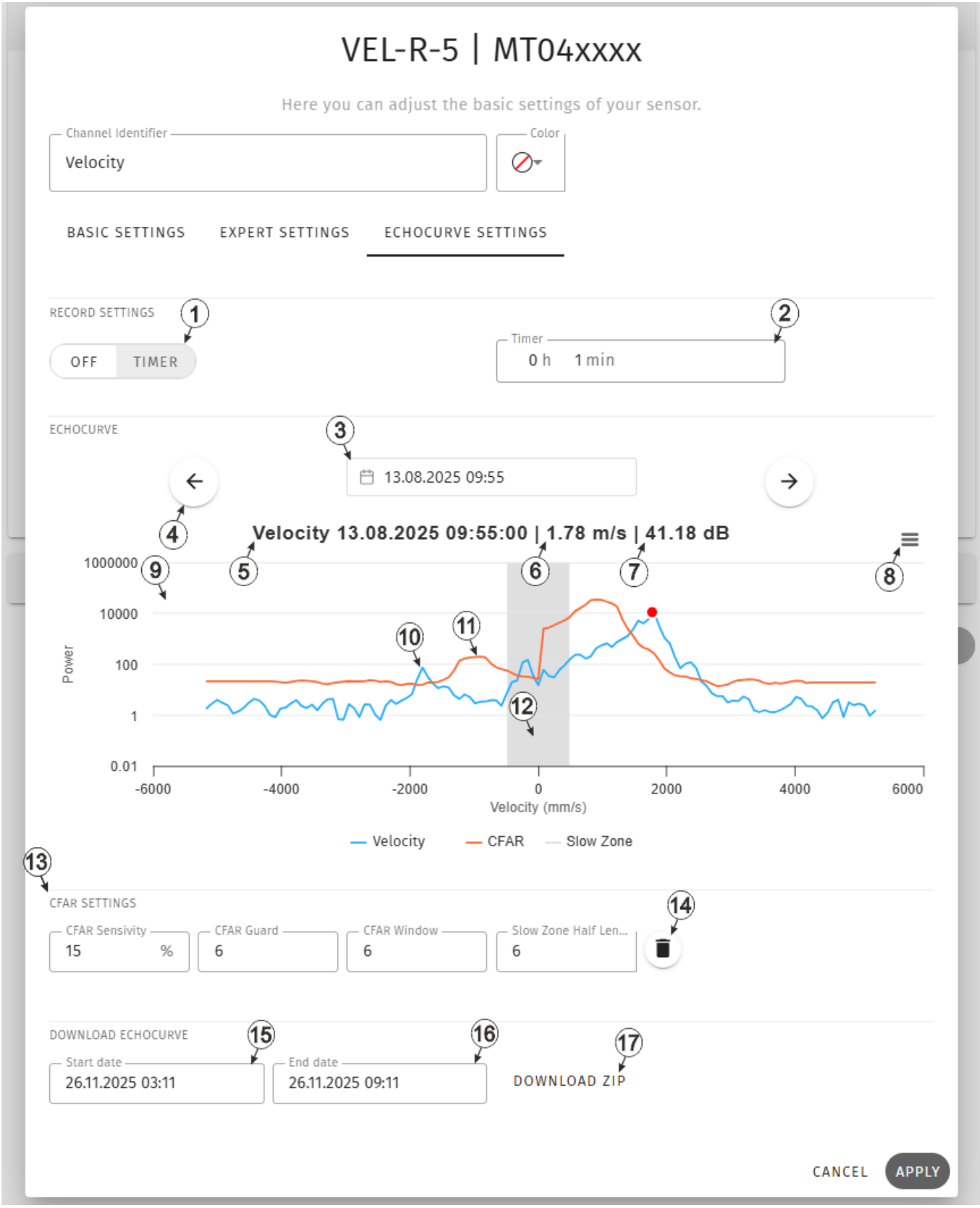
Expert settings



Input window "Remote sensor module of type VEL-R-5 ", tab "Expert settings"

Note: *The values of the parameters displayed in this input window have been optimised by the manufacturer to ensure that the VEL-R-5 delivers the best possible results in most operating situations. They should only be adjusted in consultation with the manufacturer. VEL-R-5 .*

Echocurve settings



Input window "Remote sensor module of type VEL-R-5 ", tab "Echocurve settings"

1	Mode for recording the echo curve	
	Off	Echo curve recording deactivated
	Timer	Echo curves are recorded in the interval selected under "Timer"
2	Interval in which the echo curves should be recorded (only visible if the modes "Timer" or "Timer + Event" have been selected)(can only be edited if "Timer" mode was selected)	
3	Selection of the day the echo curve should be displayed for. When making your selection, the echo curves for the two days before and after the selected date are also loaded. You can then use the arrow icons to switch between the loaded echo curves. The echo curve created closest to the time selected using the date selection control (click on the calendar icon next to the date) is displayed first. In the date selection control, the days for which echo curves have been loaded are highlighted in blue, with the selected day marked in a darker shade of blue.	
4	Switches to the privious/next echo curve Once you have reached the end of the period for which the echo curves were loaded in advance, a new period must be selected using the date selection.	
5	Designation of the selected measurement channel and time at which the echo curve was recorded	
6	Determined surface velocity It is also shown in the echo curve display area by the red dot on the echo curve.	
7	Signal-to-noise ratio (SNR) SNR is a quality indicator for the velocity measurement value.	
8	Opens a context menu in which full-screen mode can be activated for instance.	
9	Area for displaying the echo curve and the CFAR filter curve	
10	Echo curve (light blue measurement curve)	
11	CFAR filter curve (orange measuring curve)	
12	Slow zone, i.e. the area around zero, in which the measurement is of poor reliability	
13	Area for entering the parameters for the CFAR filter and the slow zone The parameters entered here only affect the CFAR filter curve displayed in the echo curve display area and the slow zone. This allows the CFAR filter curve resulting from the application of the filter parameters to the respective echo curve to be visualised. The graphical representation makes it easier to select the appropriate CFAR filter parameters. To adjust the CFAR filter and slow zone stored in the VEL-R-5 , the corresponding parameters must be changed in the "Expert settings" tab.	
14	Resets the parameters for the CFAR filter curve and slow zone displayed in the echo curve display area to the values saved in the "Expert settings" tab.	
15	Time from which the echo curves are required.	
16	Time until which the echo curves are required.	
17	Downloads the echo curve created during the specified period (i.e. between the start and end dates) as a zip file. The zip file contains a separate *.tsv file for each of the echo curves created during the specified period. By default, the start and end dates are set so that the echo curves from the last 6 hours are downloaded.	

The "Echo curve" tab is used to select the interval at which the echo curve is to be recorded, to display the recorded echo curves and to visualise the CFAR filter curves..

10.2.1.1.2 Smart Actions

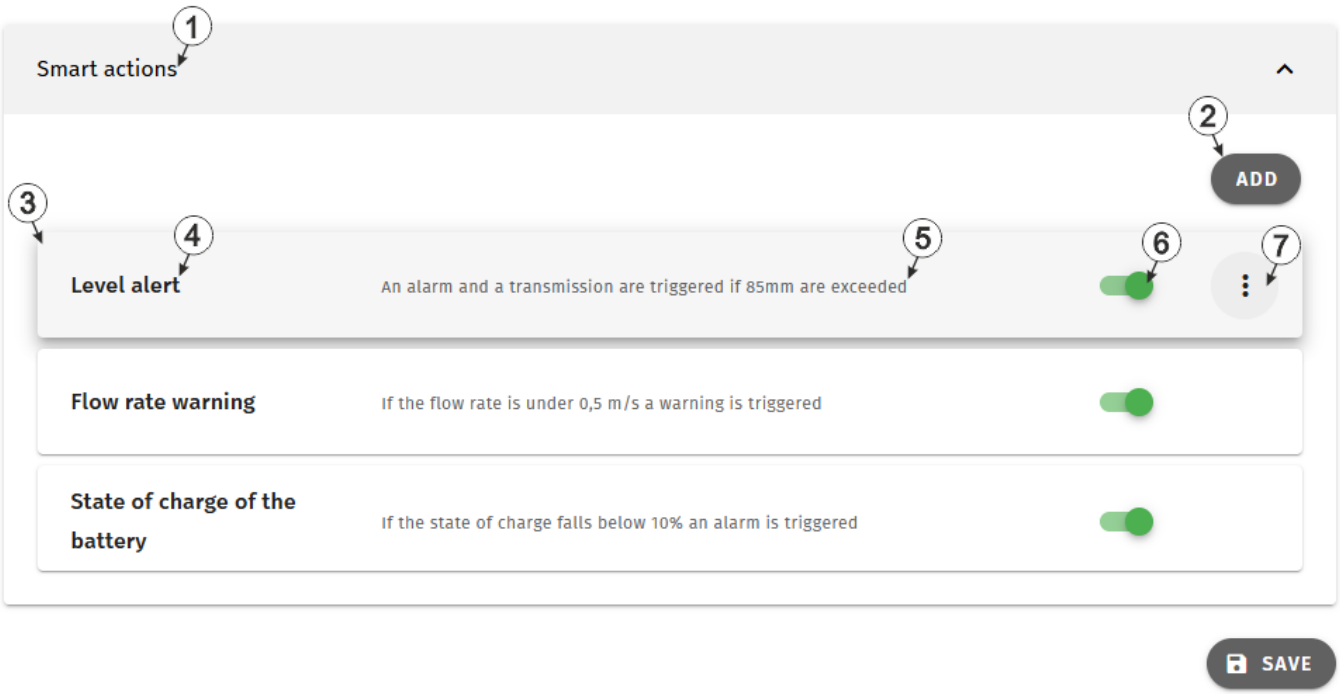
This configuration section can be used to manage the Smart Actions. This includes creating new Smart Actions and activating/deactivating, configuring or deleting existing Smart Actions.

Smart Actions can be used to automatically trigger certain actions or change the behaviour of the data logger depending on the current measurement value. This allows a response to events such as excessive flow rates. The actions to be carried out or the alternative behaviour can be defined individually. Actions, such as triggering a transmission, are carried out when the measurement value falls outside the normal range. An alternative behaviour, such as a shortened transmission interval or an active warning message, is retained as long as the measurement value is outside the normal range. To ensure fast response times, all operations required for Smart Actions are carried out directly on the data logger.

Smart actions are therefore rules that the user can create individually to define the data logger's reactions to specific events. These rules relate to the recording, transmission and creation of warning and alarm messages.



How-To-Video: Introducing "Smart Actions"

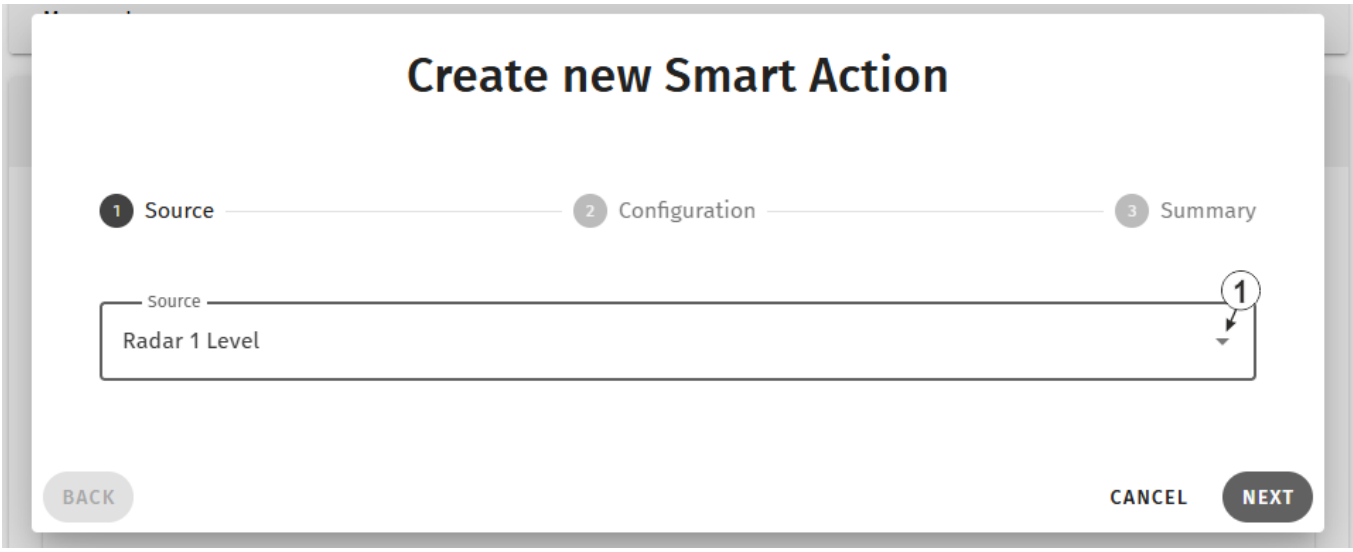


Configuration section "Smart Actions"

1	List of Smart Actions
2	Button to add another Smart Action ***Note:*** *Up to 25 Smart Actions can be created. Once the maximum has been reached, the button is greyed out.*
3	Information about a Smart Action By clicking on tis field, the input window for editing the Smart Action is opened (see "Edit Smart Action" on page 125).
4	Name of the Smart Action
5	Description of the Smart Action
6	Toggle to generally activate/deactivate the Smart Action. When a Smart Action is deactivated, all active actions are withdrawn (e.g. all-clear for alarm/warning). ***Note:*** *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*
7	Opens the context menu where the Smart Action can be removed. If a Smart Action is removed, active actions are cancelled (e.g. all-clear for alarm/warning).

10.2.1.1.2.1 Creating new Smart Actions

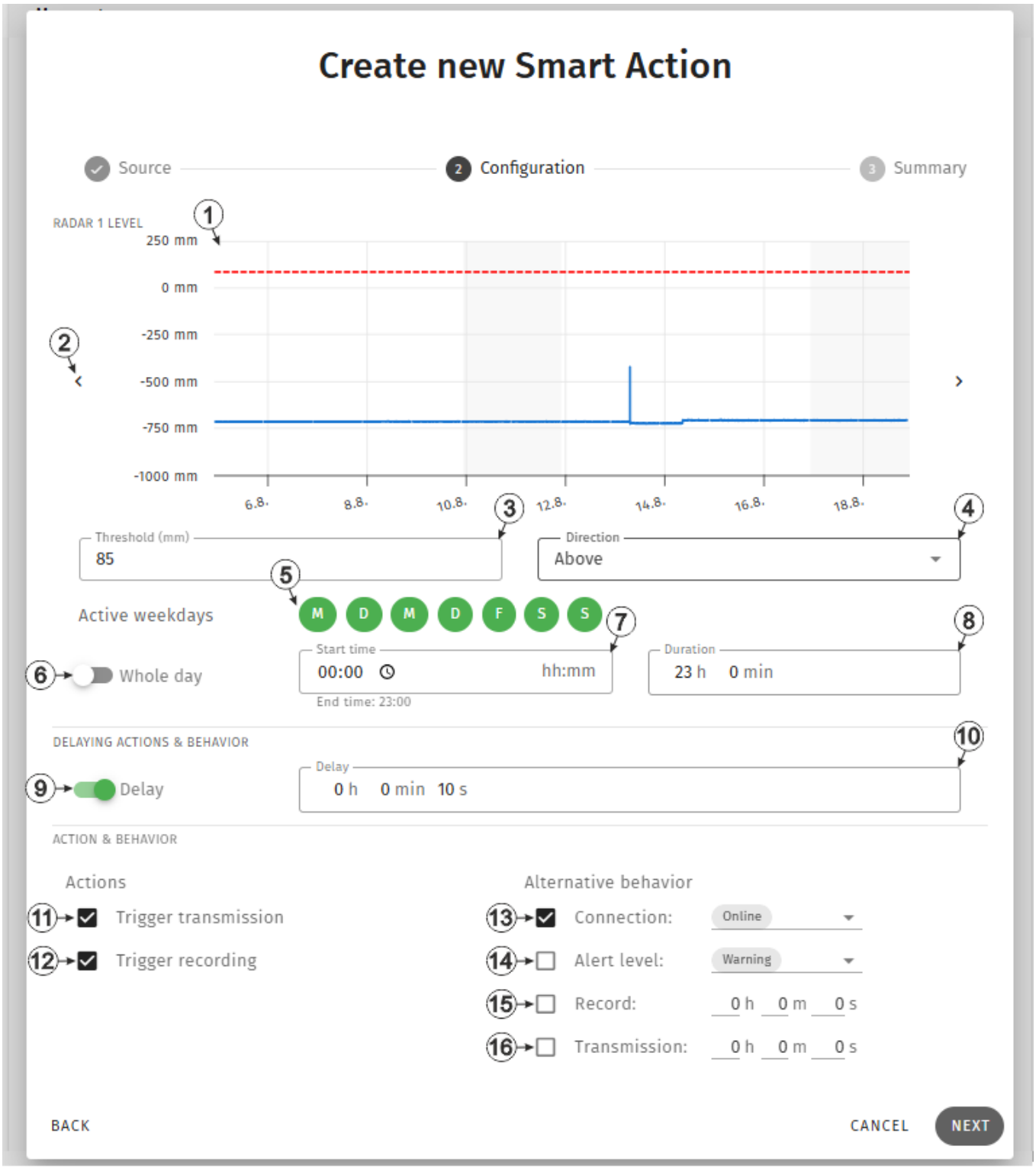
Source



Input window "Create new Smart Action", Source

1	Selection of the measurement value the condition is to be applied to ***Note:*** *One measurement value can be used by a max. of 4 Smart Actions. If the max. number is reached, the measurement value in this drop down list is grayed out and a corresponding note is displayed under the designation of the measurmenent value.*

Configuration



Input window "Create new Smart Action", Configuration

1	Section displaying the measuring curve of the measurement value to which the condition is to be applied. A course of two weeks is always displayed, whereby the period displayed always starts with the Monday of the previous week. This means that, depending on the current day of the week, no data is available for a certain area of the chart as this is in the future. However, the displayed period can be shifted by two weeks using the arrow symbols on the sides of the chart.	
2	Shifts the displayed period by two weeks into the past or future	
3	Thresholds for triggering the actions. The hysteresis for revoking the actions (e.g. all-clear for alarm/warning) is 5% and cannot be changed (e.g. trigger action at 100 -> all clear at 95). The threshold is displayed as a red, dashed line in the section showing the measuring curve of the measurement value.	
4	Condition under which the selected actions are triggered.	
	Below	If the measurement value meets or falls below the threshold for triggering the action, the actions are triggered.
	Above	If the measurement value meets or exceeds the threshold for triggereing the action, the actions are triggered.
5	Selection of the weekdays the Smart Action should be active on Green: Smart Action is active on that day Grey: Smart Action is inactive	
6	Selection of whether the Smart Action should be active all day (on the days selected under "Active weekdays")	
7	Selection of the time from which the Smart Action should be active (on the days selected under "Active weekdays")[1)]. The end time ("Start time" + "Duration") is displayed below the input field.	
8	Selection of the duration for which the Smart Action should be active, strarting from the "Start time" (on the days selected under "Active weekdays")[1)]	
9	Selection of whether the action should only be triggered once the condition is fulfilled for a certain period of time.	
10	The actions are only triggered if the condition is fulfilled for longer than the time selected here. (Only visible if "Delay" is set to "on")	
11	Selection of whether a transmission is to be triggered at the time the condition is fulfilled for the first time. A transmission is then also triggered at the time the condition is no longer fulfilled for the first time.	
12	Selection of whether a recording is to be triggered at the time the condition is fulfilled for the first time. A recording is then also triggered at the time the condition is no longer fulfilled for the first time.	
13	Selection whether an alternative connection type should be used for as long as the conditions are met. The alternative connection type can be selected via the dropdown list.	

14 Selection of whether an alarm or a warning is to be signalled as long as the condition is fulfilled. You can use the drop-down list to choose between "Alarm" and "Warning".

When signalling is activated, suitable actions are also activated automatically. If a warning is to be signalled when a condition is fulfilled, the "Trigger recording" action is activated. If an alarm is to be signalled when a condition is fulfilled, the "Trigger transmission" and "Trigger recording" actions are activated. Actions that have already been activated are not deactivated when the signalling is changed or deactivated.

15 Selection if instead of the record interval determined in the "Device settings" (see "Device settings " on page 98) an alternative record interval is to be used. This alternative record interval can be set via the input fields next to the checkbox.

Note:

If several Smart Actions have been created for which the same measurement value but different thresholds are used, the alternative record interval of the Smart Action with the highest exceeded threshold (for "Direction" "Above") or the lowest value below the threshold (for "Direction" "Below") is used.

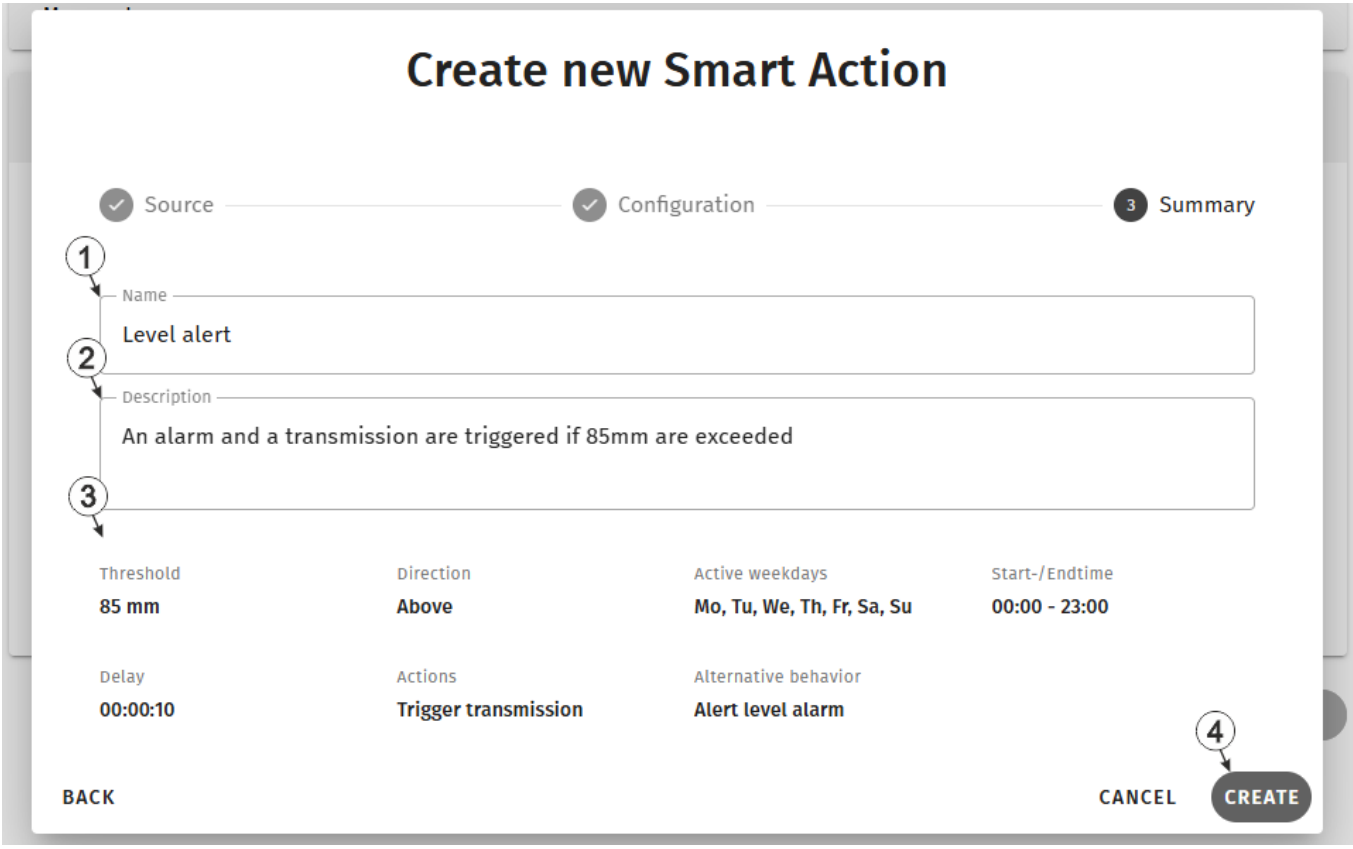
If an alternative record interval has been defined for several Smart Actions that use different measurement values, the shortest of the intervals is used. For the Smart Actions using the same measurement value, a valid alternative record interval is first determined in the manner described above before the other Smart Actions are considered.

16 Selection if instead of the transmission interval determined in the "Device settings" (see "Device settings " on page 98) an alternative transmission interval is to be used. This alternative transmission interval can be set via the input fields next to the checkbox.

Note: *Which of the alternative transmission intervals defined via the Smart Action is ultimately used is determined in the same way as for the record interval.*

1) Only visible if the Smart Action should not be active all day

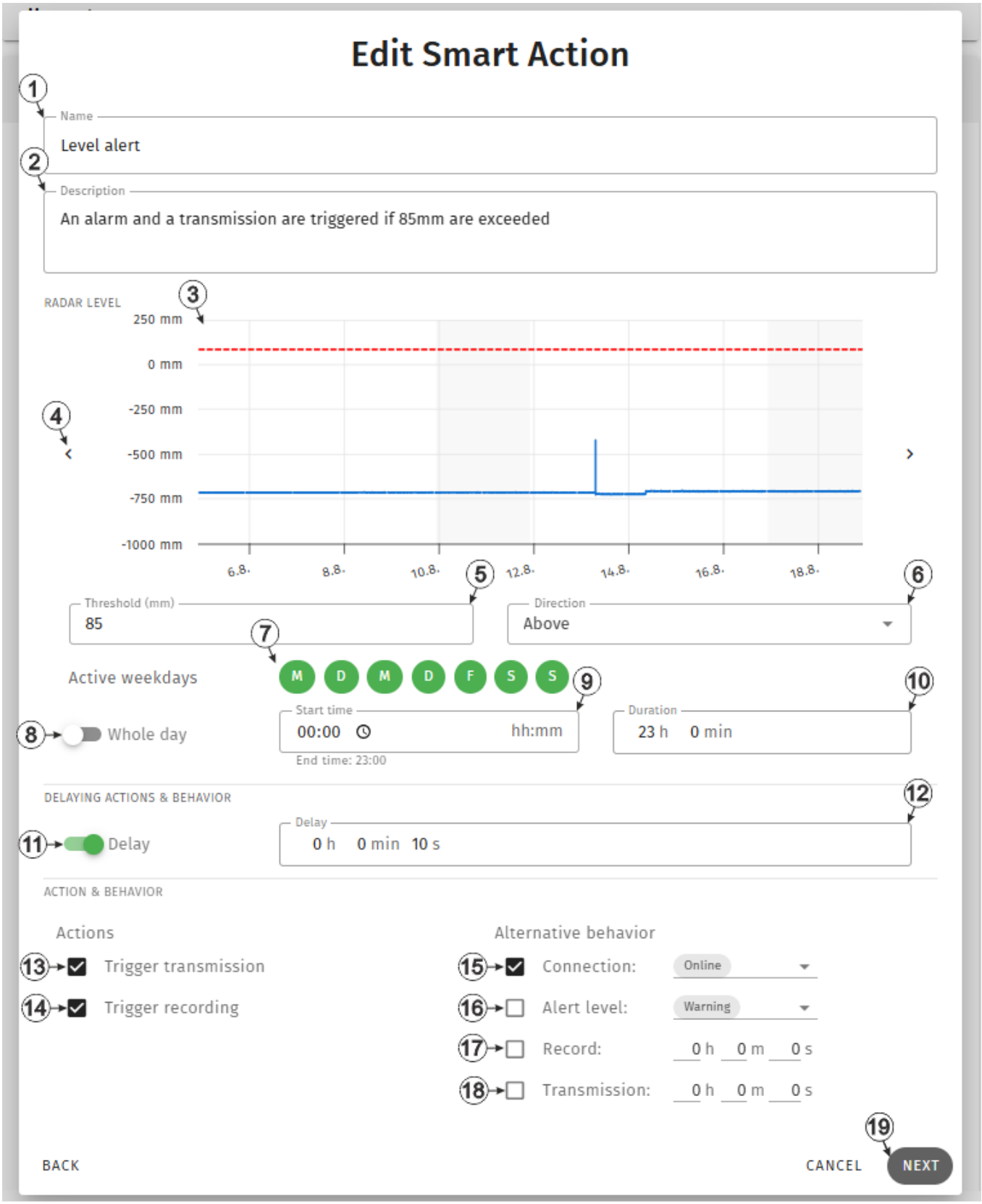
Summary



Input window "Create new Smart Action", Summary

1	Freely selectable name for the Smart Action
2	Freely selectable description for the Smart Action. ***Note:*** *The description is displayed in the list of Smart Actions. It should clearly explain the purpose or function of the Smart Action.*
3	Section in which the most important settings defined in step "Configuration" are summed up.
4	Button to create the Smart Action ***Note:*** *To save the Smart Action, the "Save" button underneath the configuration section "Smart Actions" also has to be clicked.*

10.2.1.1.2.2 Edit Smart Action



Input window "Edit Smart Action"

1	Freely selectable name for the Smart Action	
2	Freely selectable description for the Smart Action. ***Note:*** *The description is displayed in the list of Smart Actions. It should clearly explain the purpose or function of the Smart Action.*	
3	Section displaying the measuring curve of the measurement value to which the condition is to be applied. A course of two weeks is always displayed, whereby the period displayed always starts with the Monday of the previous week. This means that, depending on the current day of the week, no data is available for a certain area of the chart as this is in the future. However, the displayed period can be shifted by two weeks using the arrow symbols on the sides of the chart.	
4	Shifts the displayed period by two weeks into the past or future	
5	Thresholds for triggering the actions. The hysteresis for revoking the actions (e.g. all-clear for alarm/warning) is 5% and cannot be changed (e.g. trigger action at 100 -> all clear at 95). The threshold is displayed as a red, dashed line in the section showing the measuring curve of the measurement value.	
6	Condition under which the selected actions are triggered.	
	Below	If the measurement value meets or falls below the threshold for triggering the action, the actions are triggered.
	Above	If the measurement value meets or exceeds the threshold for triggereing the action, the actions are triggered.
7	Selection of the weekdays the Smart Action should be active on Green: Smart Action is active on that day Grey: Smart Action is inactive	
8	Selection of whether the Smart Action should be active all day (on the days selected under "Active weekdays")	
9	Selection of the time from which the Smart Action should be active (on the days selected under "Active weekdays")[1)]. The end time ("Start time" + "Duration") is displayed below the input field.	
10	Selection of the duration for which the Smart Action should be active, strarting from the "Start time" (on the days selected under "Active weekdays")[1)]	
11	Selection of whether the action should only be triggered once the condition is fulfilled for a certain period of time.	
12	The actions are only triggered if the condition is fulfilled for longer than the time selected here. (Only visible if "Delay" is set to "on")	
13	Selection of whether a transmission is to be triggered at the time the condition is fulfilled for the first time. A transmission is then also triggered at the time the condition is no longer fulfilled for the first time.	
14	Selection of whether a recording is to be triggered at the time the condition is fulfilled for the first time. A recording is then also triggered at the time the condition is no longer fulfilled for the first time.	
15	Selection whether an alternative connection type should be used for as long as the conditions are met. The alternative connection type can be selected via the dropdown list.	

16 Selection of whether an alarm or a warning is to be signalled as long as the condition is fulfilled. You can use the drop-down list to choose between "Alarm" and "Warning".

When signalling is activated, suitable actions are also activated automatically. If a warning is to be signalled when a condition is fulfilled, the "Trigger recording" action is activated. If an alarm is to be signalled when a condition is fulfilled, the "Trigger transmission" and "Trigger recording" actions are activated. Actions that have already been activated are not deactivated when the signalling is changed or deactivated.

17 Selection if instead of the record interval determined in the "Device settings" (see "Device settings " on page 98) an alternative record interval is to be used. This alternative record interval can be set via the input fields next to the checkbox.

Note:

If several Smart Actions have been created for which the same measurement value but different thresholds are used, the alternative record interval of the Smart Action with the highest exceeded threshold (for "Direction" "Above") or the lowest value below the threshold (for "Direction" "Below") is used.

If an alternative record interval has been defined for several Smart Actions that use different measurement values, the shortest of the intervals is used. For the Smart Actions using the same measurement value, a valid alternative record interval is first determined in the manner described above before the other Smart Actions are considered.

18 Selection if instead of the transmission interval determined in the "Device settings" (see "Device settings " on page 98) an alternative transmission interval is to be used. This alternative transmission interval can be set via the input fields next to the checkbox.

Note: *Which of the alternative transmission intervals defined via the Smart Action is ultimately used is determined in the same way as for the record interval.*

19 Button to apply the settings

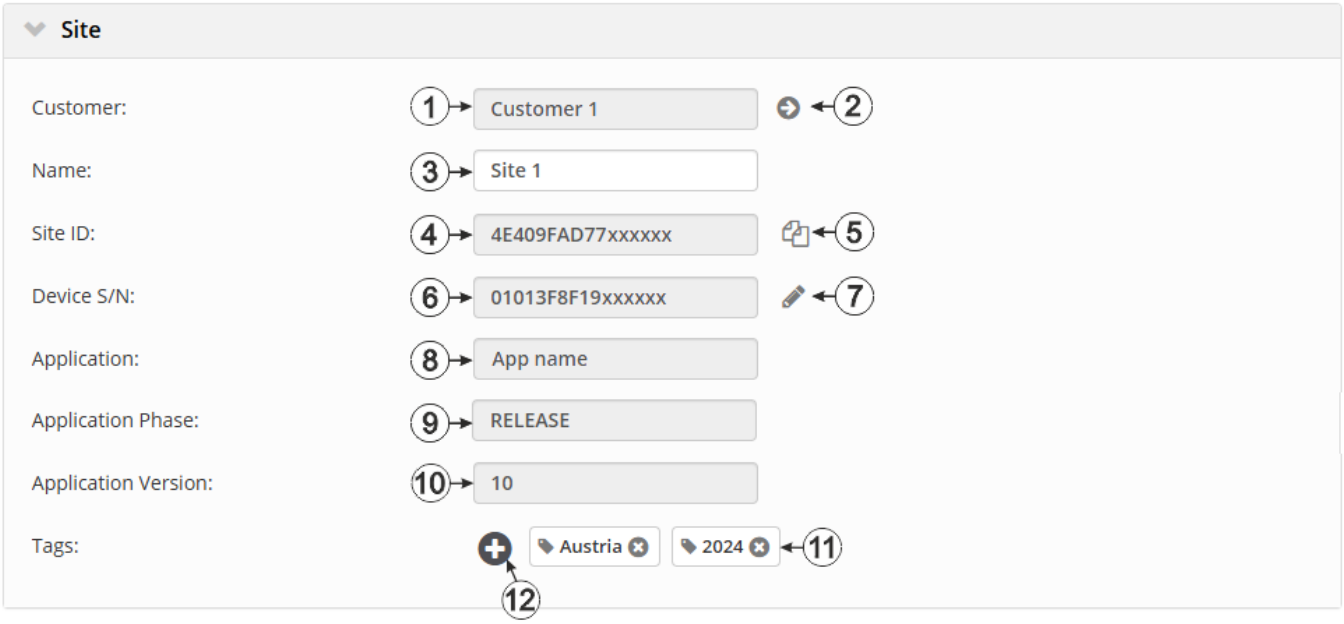
Note: *To save the settings, the "Save" button below the "Smart Actions" configuration section must also be clicked.*

[1)] Only visible if the Smart Action should not be active all day

10.2.1.2 Default input screen for configuring the site

The default input mask for configuring the site is opened by clicking on the pencil icon in the list of sites. The configuration sections contained therein are identical for all rapidM2M -based devices and are explained in detail below.

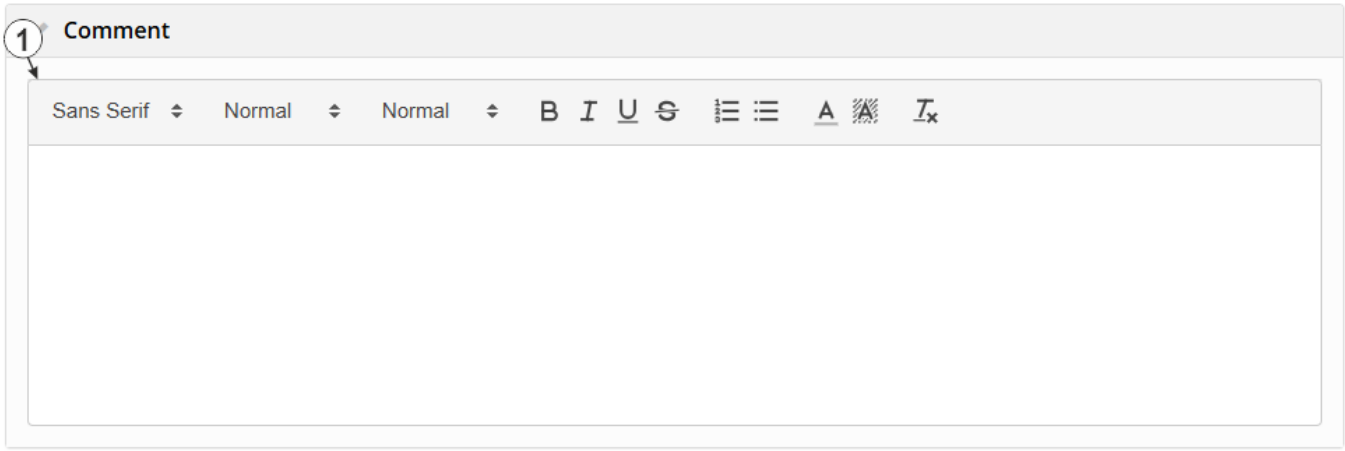
10.2.1.2.1 Site



Confiuration section "Site"

1	Specifies to which customer the site is assigned
2	Assign site to another customer
3	Site designation (not relevant for the device or data assignment) [2-50 characters]
4	Unique ID of the site. It is required to access the site via REST API or OPC UA.
5	Copies the unique ID of the site to the clipboard
6	Serial number of the device that is linked to the site (device assignment!)
7	Opens the input screen to edit the link. It can be used to assign another device or generally cancel the assignment (i.e. the site is then no longer linked to any device) The measurement data is assigned to the site and not to the linked device. If a device is replaced, all data (measurement values and configurations) are retained. The site is only assigned a different device by changing the serial number. From this moment on, the site receives the measurement data from the newly assigned device.
8	Name of the IoT application based on which the site was created
9	Release process phase of the currently used version of the IoT application
	RELEASE: The version is released for all customers.
	RC: All internal tests have been successfully completed. However, the version is only released for selected test customers.
10	Version number of the IoT application that is currently installed on the site. If the version number of the site is not the same as the version number of the device logic installed on the device then the version number of the device logic installed on the device is displayed in addition to the version number of the site.
11	List of tags already assigned to the site. The assignment can be cancelled by clicking on the cross next to the name of the tag.
12	Opens the input screen for assigning tags

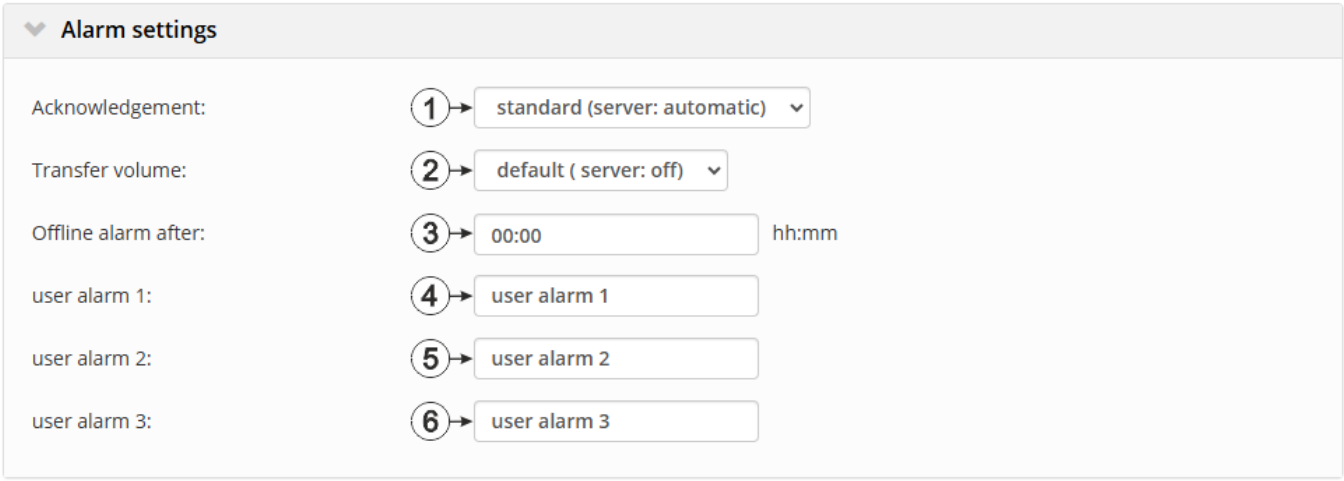
10.2.1.2.2 Comments



Configuration section "Comments"

1	Free comment field (is also displayed below the device type in the site/application list)

10.2.1.2.3 Alarm settings



Configuration section "Alarms"

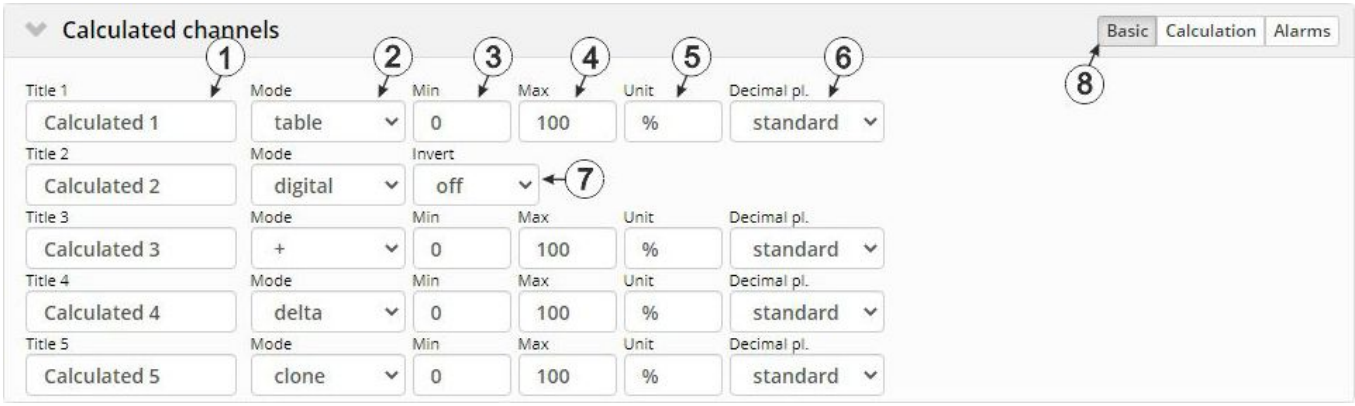
1	Selection of how the alarms should be aknowledged	
	Standard	The global server setting is used to determine whether alarms must be acknowledged automatically or manually
	automatic	Alarms are acknowledged automatically as soon as all of the messages have been sent. If SMS that have a tariff with a delivery confirmation function have also been sent, acknowledgement is provided after delivery confirmation.
	manual	Alarms must be acknowledged by the user.
2	Selection of how the alarm for the transfer volume should be handled	
	Standard	The setting for the transfer volume alarm is taken from the global server settings
	off	The transfer volume alarm is deactivated.
	individuell	The level at which the transfer volume alarm should be triggered can be entered in the adjacent field in KiB.
3	alarm in the event that the device does not report for longer than the set time (00:00 alarm deactivated).	
4	Freely selectable title for user-defined alarm 1. If the user-defined alarm 1 is triggered by a device connected to the site, the server will use this text to signal the alarm. The same applies to user-defined alarm 2 and 3.	
5	Freely selectable title for user-defined alarm 2	
6	Freely selectable title for user-defined alarm 3	

10.2.1.2.4 Calculated channels

In the "Basic" tab, the basic settings are configured and in the "Calculation" tab the advanced configurations are set, whereas the parameters to configure depend on the "mode" selected in the "Basic" tab.

> ***Note:*** *The values of the calculated channels are directly calculated for every data output (display on the server or download from the server). They are not saved in the server database.*

10.2.1.2.4.1 Basic

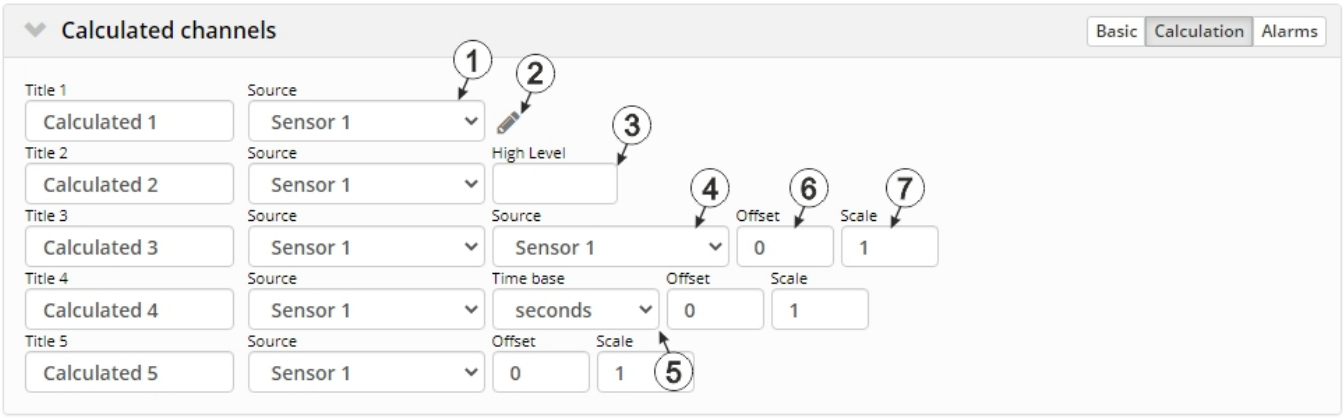


"Calculated channels" configuration section, "Basic" tab

1	Freely selectable channel title for the calculated channels [0-16 characters]	
2	Possible calculation modes for the calculated channels	
	Off	Calculated channel deactivated
	Table	Determines the value for the calculated channel by searching for the row corresponding to the value of a measurement channel in the reference point table. Such a row is made up of the "Measurement channel value" and "Output value for calculated channel" pair of values. Linear interpolation is carried out between the table rows; linear extrapolation is used for values outside the defined table.
	Digital	Converts an analogue value into a digital value. The threshold from which an analogue value is interpreted as "high" can be selected via the "High level" parameter in the "Calculation" tab. In addition the determined digital value can be inverted via the "Invert" parameter.
	+, -, x, /	Links the values of two measurement channels using a mathematic operation (addition, subtraction, multiplication or division)
	Delta	Determines the difference between two measurement values and divides the result by the time difference between the time stamps of the measurement values. The time unit (value/sec., value/min., ...) for the result can be selected via the "Time basis" parameter located in the "Calculation" tab. It is thus possible to convert counter readings (m^3) of the source into a flow rate (m^3/min.) (see "Additional explanation: Delta mode" on page 133).
	clone	Creates a clone of a measurement channel. This ensures it is possible to rename channels, to select different ends of the scale for the pointer instruments, to determine a new string as a measurement unit and to adjust the number of decimal places. The measurement values (numerical value without unit) correspond exactly to those of the source.
3	Defines the lower scale end of the pointer instruments	
4	Defines the upper scale end of the pointer instruments in reports	
5	String that is used as a measurement unit by all of the server display elements [0-16 characters]. It has no direct influence on the values	
6	Number of decimal places that are used by all of the server display elements	

7	Inverts the input signal (only for calculated channels in "Digital" mode)
8	Buttons to switch between the individual tabs of the configuration section

10.2.1.2.4.2 Calculation



"Calculated channels" configuration section, "Calculation" tab

"Table" calculation mode

1	Selection of the channel from which the input data is used
2	Opens the screen for entering the reference point table (the table rows are interpolated linearly, values outside of the defined table are extrapolated linearly.)

"Digital" calculation mode

1	Selection of the channel from which the input data is used
3	Signal recognition level

Calculation mode "+", "-", "x" or "/"

1	Selection of the channel from which the input data is used
4	Selection of the second channel from which the input data is used
6	Offset that is added following multiplication with the "Factor" parameter
7	Factor with which the result of the mathematical operation (+, -, x, /) is multiplied. The "Offset" parameter is then added.

"Delta" calculation mode

1	Selection of the channel from which the input data is used
5	Specifies the desired time unit (value/sec., value/min., ...) for the result
6	Offset that is added following multiplication with the "Factor" parameter. The result is converted in to the desired time unit before multiplication with the "Factor" parameter.
7	Factor with which the result is multiplied once it has been converted into the desired time unit. The "Offset" parameter is then added.

"Clone" calculation mode

1	Selection of the channel from which the input data is used
6	Offset that is added following multiplication with the "Factor" parameter
7	Factor with which the value of the measurement channel to be cloned is multiplied. The "Offset" parameter is then added.

Note:

Additional explanation: Delta mode

Assumption: *The source channel contains the counter reading of an infinite counter in m^3. The calculated channel 1 should contain the flow rate in m^3/s and calculated channel 2 should contain the flow rate in l/h.*

Required configuration

Parameter	*Value channel 1*	*Value channel 2*
Basis -> mode	*Delta*	*Delta*
Basis -> unit	*m^3/s*	*l/h*
Calculation -> time basis	*Seconds*	*Hours*
Calculation -> offset	*0*	*0*
Calculation -> factor	*1*	*1000*

Source		*Calculated channel 1*	*Calculated channel 2*
Date/time	*Infinite counter [m^3]*	*Flow rate [m^3/s]*	*Flow rate [l/h]*
26.03.2013 12:50	*900*	*0 [1)]*	*0 [1)]*
26.03.2013 12:51	*960*	*1*	*3,600,000*
26.03.2013 12:52	*990*	*0.5*	*1,800,000*
26.03.2013 12:53	*1005*	*0.25*	*900,000*
26.03.2013 12:54	*1065*	*1*	*3,600,000*

[1)] Calculation not possible as there is no measurement value before 12:50.

Explanation: *No values can be determined for the measurement at 12:50 for the calculated channels as there is no previous value and the difference between the counter readings cannot be determined. For the measurement at 12:51, the difference to the counter reading is 60 m^3 and the time difference is 60 sec.*

Result = { (value difference / time difference [sec.]) * time basis [sec] * factor } + offset

The result for calculated channel 1 (time basis "Seconds", offset "0" and factor "1") is calculated as follows:

Channel 1 = { (60 m^3 / 60 sec.) * 1 * 1 } + 0 = 1 m^3/s

The result for calculated channel 2 (time basis "Hours", offset "0" and factor "1000") is calculated as follows:

Channel 2 = { (60 m^3 / 60 sec.) * 3600 * 1000 } + 0 = 3,600,000 l/h

10.2.1.2.4.3 Alarms

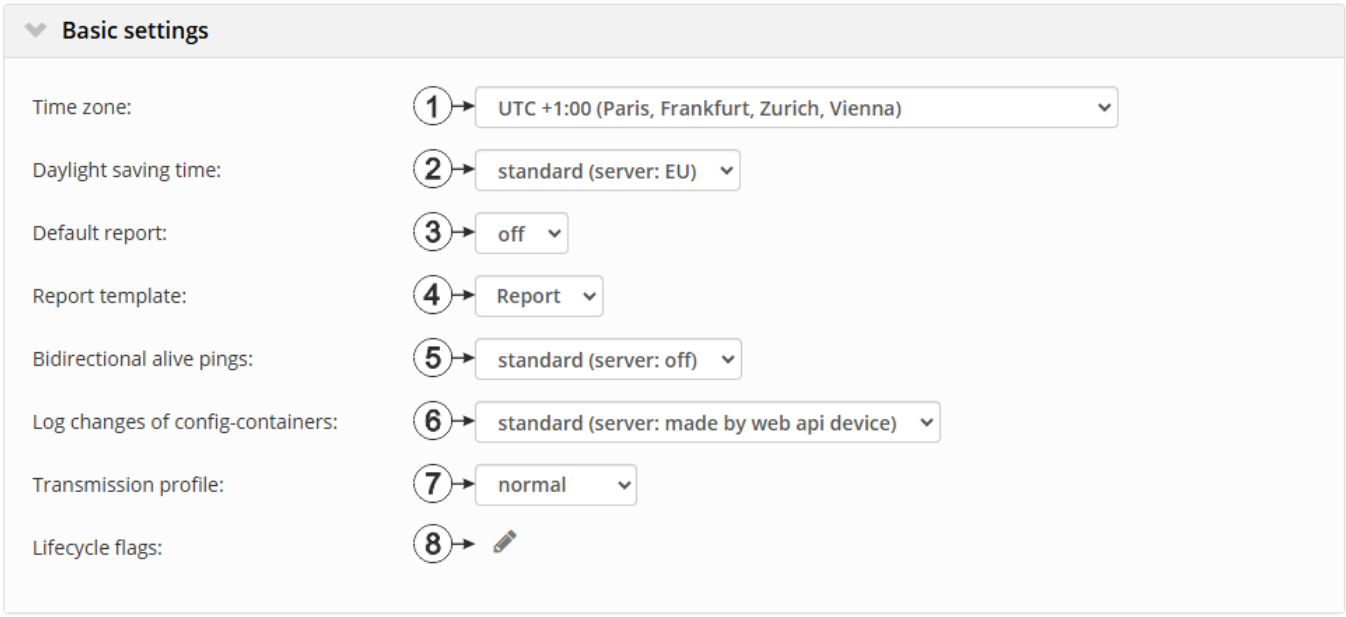
Note: *The evaluation of the alarm thresholds for calculated channels can only occur if the device has transferred the measurement data to the myDatanet server.*



"Calculated channels" configuration section, "Alarms" tab

1	An alarm is triggered, if the measurement value drops to or below this value.
2	An alarm is triggered, if the measurement value meets or exceeds this value.
3	Hysteresis for all-clear in event of alarm/warning (e.g. Hyst = 5 %, alarm at 100 -> all-clear at 95)

10.2.1.2.5 Basic settings



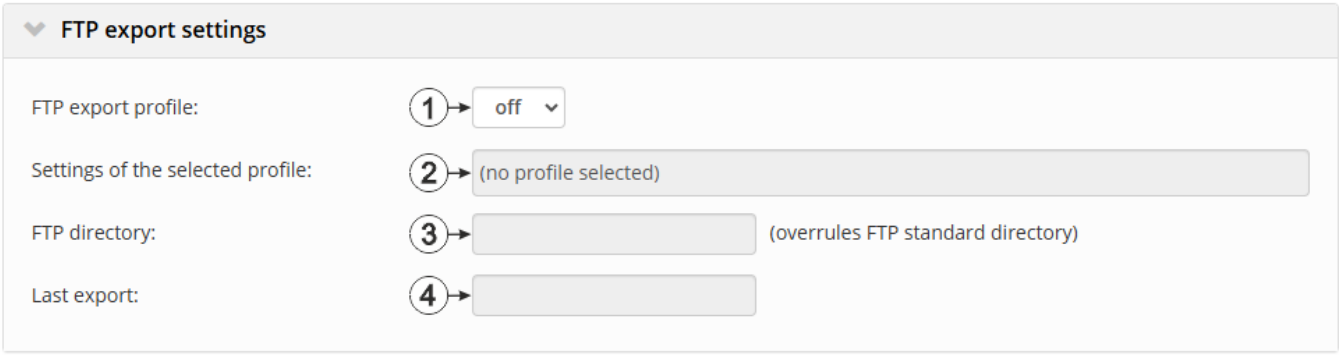
Configuration section "Basic settings"

1	Regional settings (not relevant for raw measurement data as this is stored in UTC)	
2	Configuration for automatic time adjustment (only displayed if a time zone other than "Standard" has been selected)	
	Standard	The configuration for the time adjustment is adopted by the global server setting.
	Off	Automatic time adjustment deactivated
	USA	Predefined setting for the American area
	EU	Predefined setting for the European area
3	Selection of the report that is loaded by clicking on the device link in the maps	
	Off	No report is loaded.
	"Name of a report"	The selected report is loaded.
4	Selection of the report template used to display the data when clicking on the symbol to display the measurement data, which is located in the list of sites/applications. Only the report templates in which the site/application type of the first wild card is compatible with the site/application that is currently being edited are displayed in the dropdown list. The symbol to display the measurement data is only displayed in the list of sites/applications if a report template has been selected.	
	(not assigned)	The symbol to display the measurement data is not displayed in the list of sites/applications.
	"Name of a report template"	Name of the report template used to display the measurement data

5	Using "Bidirectional alive ping", both the device and the server can easily recognise whether the online connection is still active.	
	standard	The configuration for the bidirectional alive ping is adopted from the global server settings
	off	"Bidirectional alive ping" is deactivated
	on	"Bidirectional alive ping" is activated. I.e. the server responds correspondingly to each keep alive ping of the device.
6	Selection of which changes to the configurations should be logged	
	web api	Changes that were implemented via the server interface or REST-API are logged.
	web device api	Changes that were implemented via the server interface, by the device itself or the REST-API are logged.
7	The site can be customised to specific requirements (energy consumption, error diagnosis, connection stability) via the transmission profiles. In addition to operations carried out purely by the server (e.g. requesting the device log during synchronisation), the setting also affects procedures stored in the device firmware (e.g. retry behaviour in the event of connection interruptions). The procedures in the firmware that are affected by the selected transmission profile depend on the device type and the respective firmware version.	
	Normal	Operation by default
	ECO	Low energy consumption, low data volume
	Diagnosis	Extended logging for troubleshooting
	Adaptive	Stable connection even at the expense of energy consumption
8	Lifecycle flags that are currently set. The input window for setting or deleting the lifecycle flags is opened via the pencil symbol.	

10.2.1.2.6 FTP export settings

> ***Note:*** *This configuration section is only visible if the "FTP Agent Extended" licence for the myDatanet server has been enabled.*



Configuration section "FTP-export settings"

1	Selection of the profile that is used for the measurement data transmission to the FTP server.	
	off	FTP export deactivated
	"Name of an FTP export profile"	List with the FTP export profiles that were created on the myDatanet server (for creating an FTP export profile, see "myDatanet Server Manual " 805002).
2	Shows an overview of the most important parameters of the selected FTP export profile	
3	Makes overwriting the standard directory of the selected FTP export profile possible [0-100 characters]	
4	Time stamp of the last FTP export	

10.2.1.3 Default input screen for configuring the site in development mode

This input screen can only be accessed via the "settings" submenu of the title bar of the input screen for configuring the site. Furthermore it is not available for all user levels. The functionality of the contained configuration sections "Site", "Comment", "Alarms", "Calculated channels", "Basic settings" and "FTP-Export settings" corresponds to the functionality of the default input screen for configuring the site (see "Default input screen for configuring the site" on page 127). The difference is that additional configuration sections are displayed between the "Comment" and "Alarm" configuration sections, which can be used to edit the application-specific parameters directly without using the specific input screen for configuring the site. The name and number of configuration sections and the parameters they contain depend on the respective IoT application.

> ***Note:*** *Direct editing of the application-specific parameters via this input screen is not recommended, as there may be dependencies between the parameters depending on the IoT application. This could result in invalid configurations, which could make the application unstable or lead to unexpected behaviour.*

10.2.1.4 "Guided commissioning" input screen

This input screen is opened by clicking on the icon with the three stars, which is located on the right-hand side of the title bar in the "Measurement System" configuration section of the site.

For the guided commissioning process an active connection between the Jellox Analog and the myDatanet server is required. Therefore, you are first prompted to initiate a transfer by pressing the magnetic switch for at least 3 seconds (see "Reed switch" on page 80). After that, the list of components to be configured is

displayed. Should an update be required for the firmware or the IoT application, this will be carried out immediately after the connection has been established. In this case, the input screen displays a corresponding message until the update is complete. Only then will the list of components that need to be configured be displayed. This list contains one entry for the measurement system, one entry for the universal input and one entry for each remote sensor module linked to a measurement channel.

Once the guided commissioning process has been initiated and the connection has been established, the Jellox Analog will remain connected to the myDatanet server for 10 minutes. Once the timeout has expired or when the commissioning process is complete, the online connection between the Jellox Analog and the myDatanet server is terminated.



List of components to be configured

1	Opens the wizard for the basic configuration of the measurement system
2	Opens the wizard to configure the universal input
3	Opens the wizard to configure a remote sensor module of type LVL-R-5
4	Opens the wizard to configure a remote sensor module of type Gauge
5	Opens the wizard to complete the commissioning process

10.2.1.4.1 Recommended procedure

> ***Note:*** *Not every component needs to be configured immediately. For example, if you do not wish to use the universal input at this time, you can configure it later via the "Universal input" input window (see "Universal input" on page 100) or restart the guided commissioning process.*

1. To configure the individual components, open the relevant wizards one by one.
2. Follow the instructions in the wizards.

   When clicking on "Next", the entries made in the current step are saved immediately.

3. Open the wizard to complete the commissioning process.

10.2.2 Device configuration

Note: *Several of the configuration fields in the following sub chapters may possibly be hidden depending on the respective user level. In this case, contact the myDatanet server administrator.*

You can reach the input screen for configuring the device by clicking on the serial number in the list of sites/applications (see "myDatanet Server Manual " 805002) or by clicking on the device name in the device name list (see "myDatanet Server Manual " 805002).

10.2.2.1 Comments

Comments

Free comment field (is also displayed below the site name in the site/application list)

10.2.2.2 Measurement instrument

Customer	Name of the customer to whom the measurement instrument is assigned	
Tags	List of the tags that are already assigned to the measurement instrument. This assignment can be cancelled by clicking on the cross next to the title of the tag. The input screen for assigning the tags is opened by clicking on the plus symbol. This enables existing tags to be assigned and new tags to be created.	
Serial number	Serial number of the instrument	
Device class	The instrument class of the site and instrument must match for an instrument to be able to be connected to a site. Once the instrument has been created via the server interface, the instrument class can only be changed up until the first connection of the instrument to the server. If an instrument class, that does not match the actual class of the instrument, is selected when the instrument is created it is automatically corrected during the first connection.	
Lifecycle state:	Phase of the lifecycle the device is currently in In order to meet the requirements of RED Article 3.3 regarding cybersecurity of radio equipment, the device must at least be in the "provisioned" phase. The device can be moved to this state using the "Provision" button. To ensure compliance, the function of the local interfaces is restricted from this phase onwards. The button is only displayed if the device is in the " " (not set) or "preprovisioned" phase. Devices that were delivered prior to the enforcement of RED Article 3.3 on 1 August 2025 are not automatically transitioned to the "provisioned" phase.	
	not supported	Display of life cycle phases is not supported
	" "	Lifecycle state not set
	preprovisioned	Device ready for handover to partner (firmware installed)
	provisioned	Device ready for handover to end customer (firmware and application installed)
	claimed	Device assigned to a server
	fielded	Device assigned to a server and linked to a site
	decomissioned	Device was defective and was decommissioned

Lifecycle flags:	Lifecycle flags that are currently set The lifecycle flags that will be transferred to the device during the next synchronisation are displayed to the left of the arrow symbol. A plus sign in front of the name indicates that the lifecycle flag will be set. A minus sign indicates that it will be deleted. The arrow symbol is only displayed if the state of at least one lifecycle flag is to be changed. The pencil icon opens the input window for setting or deleting lifecycle flags.	
Telephone number	Telephone number of the SIM card. The control SMS messages (e.g. wakeup) are sent to this number. Format: +43555837465	
Instrument flags	Additional information regarding the instrument class (for internal use)	
Firmware version	Current software version installed on the measurement controller	
Last connection	In each case, the last time stamp of the affected operation	
Last wakeup		
Last disconnection		
Last transmission error		
Last Aloha connection		
Wakeup SMS count	Number of wakeup SMS sent to this device since the last connection. This counter is reset at/during each successfully established connection.	
Device Logic sync	Productive	If the Device Logic installed on the device and saved on the server do not match, the Device Logic saved on the server is loaded in to the device.
	Development (sync)	The Device Logic on the device and server are synchronised. The one with the latest time stamp is transferred to the other one.
	Development (no sync)	The Device Logic on the device and server are not synchronised.
Firmware update	Off	Firmware update is deactivated.
	On	As soon as a new version of the selected firmware type is available, this is installed immediately.
	Even if tag is missing	Firmware is also transferred to the device if the device has not transmitted the current firmware version to the server (NOT RECOMMENDED!).
	Allow downgrade	Facilitates the installation of an older firmware version than the one on the device (NOT RECOMMENDED!)
	Once	Performs a single firmware update. If no new firmware is available or the firmware was installed successfully, the firmware update is automatically switched to "OFF".
	Ignore	The firmware update is deactivated and no information is provided about available firmware updates.

Firmware type	Released	Only firmware versions that have successfully undergone internal and field testing are installed (this practically eliminates malfunctions).
	Release candidate	Only firmware versions that have successfully undergone internal testing are installed (malfunctions cannot be excluded).
	Beta release	Even firmware versions that have not successfully undergone all of the internal tests are installed (malfunctions may occur).
Identification	String specifying the hardware platform implemented in the device and the corresponding hardware version (i.e. the rapidM2M module identification).	
Prod. rev.	Product rev. of the Jellox Analog	
Article Id	Product ID, which consists of the type key specified on the type plate and the product specification stored in the device	
Article revision	Product revision of the Jellox Analog	
Article name	Product name as specified on the type plate of the device	

10.2.2.3 GPRS

SIM tariff
Selected SIM tariff

10.2.2.4 Features

Features
List of activated chargeable features.

Chapter 11 DeviceConfig

11.1 General

The DeviceConfig configuration program can be downloaded free of charge from the following website:

www.microtronics.com/deviceconfig

The tool is used for configuration, maintenance, fault analysis and synchronisation purposes. It is compatible with all myDatanet devices equipped with a USB interface or local radio interface. For devices equipped with a mobile network modem, the function of the local interface (USB and local radio interface) may be restricted depending on the current lifecycle state. Some of the functions described below may therefore not be fully available.

The requirements regarding configuration and maintenance vary depending on the type of device. To ensure simple and intuitive operation, the user interface of the DeviceConfig therefore automatically adjusts to the relevant device that is connected. In addition to the standard functions, the tool also supports device-specific processes (e.g. calibration, zero point adjustment).

The DeviceConfig enables you to complete the following tasks:

- Synchronisation of measurement data and configuration between device and server (specifically for devices without mobile network modem)
- Basic configuration of the device (e.g. measurement and transmission cycle)
- Read out and analysis of the device log
- Calibration, trimming and zero point adjustment (special knowledge and password required)
- Update the firmware (only if the lifecycle state is set to " " (not set) or "preprovisioned")

11.2 Prerequisites

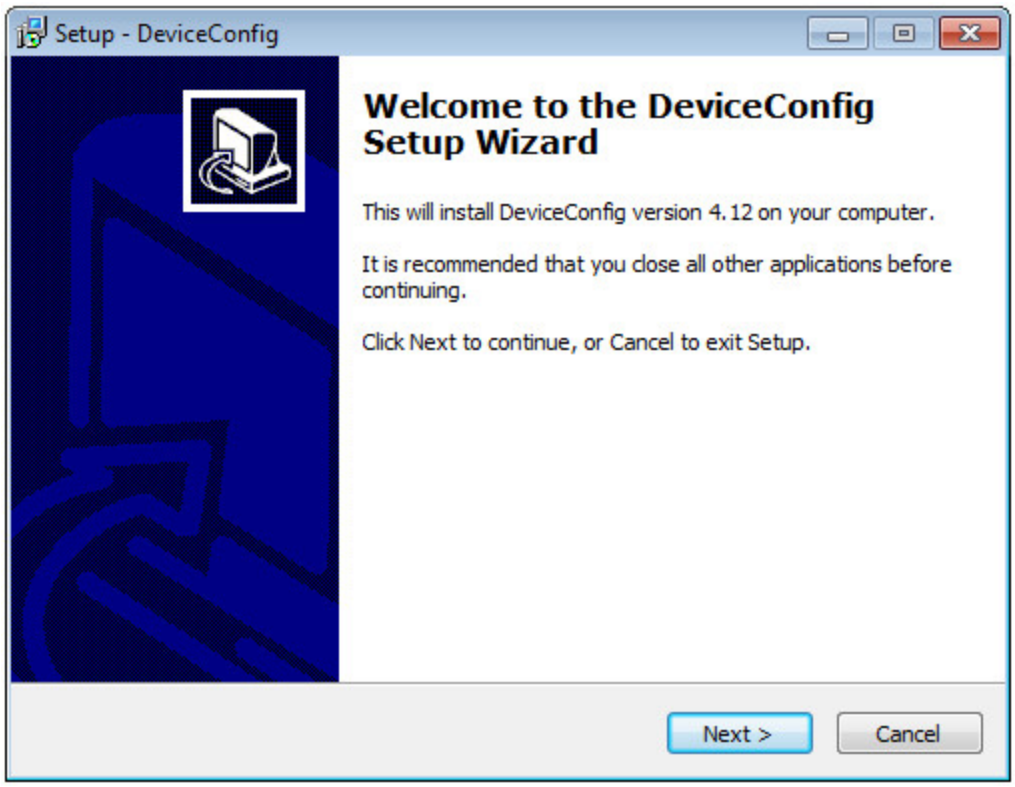
Interfaces	1x USB
Operating system	Windows 10 Windows 11
Internet connection	Recommended
Required disk space	approx. 50 MB

11.3 Installation

The following chapter describes the installation process in Windows 7.

1. Execute the *"InstDeviceConfig.exe"* file to start the installation process.

   Note: *Only connect the device or USB Adapter (300685) to your PC once the installation process has completed as the required drivers are only installed during this process.*



DeviceConfig setup wizard

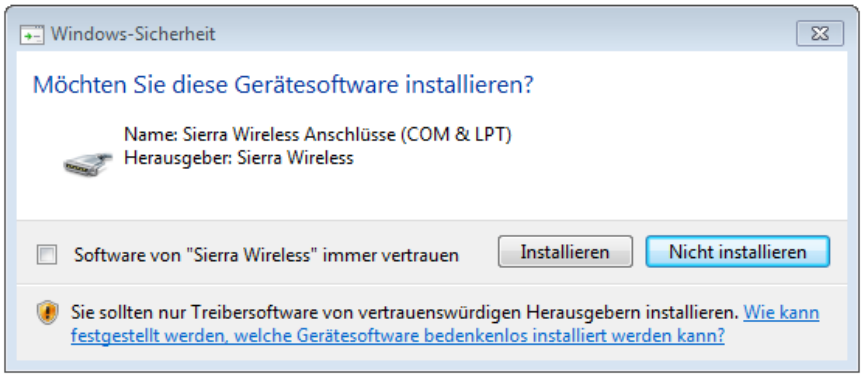
2. Follow the instructions of the setup wizard until the following screen is displayed. The following drivers must be installed to ensure correct operation.



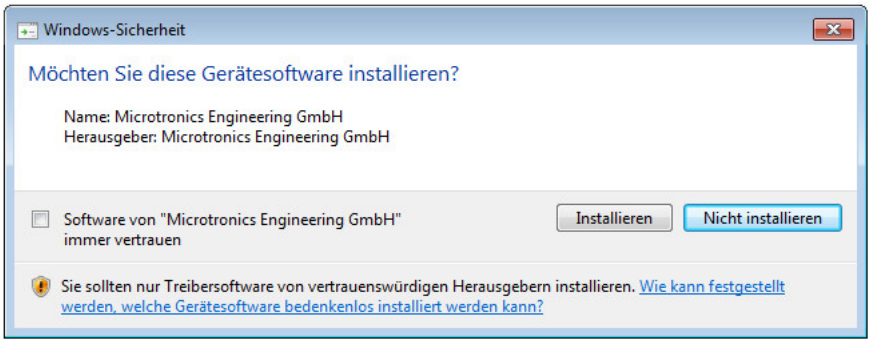
Installation of the USB drivers for the devices



Installation of the drivers for the USB Adapter

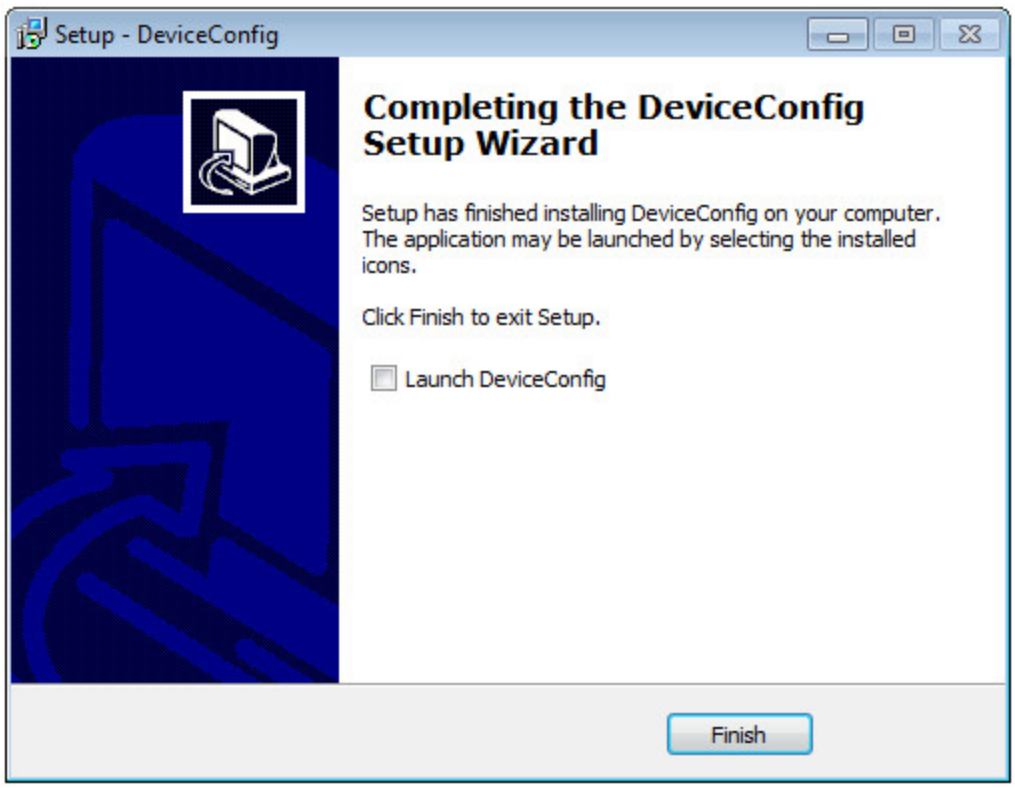


Installation of the USB drivers for the devices on a M1 basis



Installation of the USB drivers for the devices on a M2/M3 basis

3. Once the following screen is displayed, close the installation process by clicking on the *"Finish"* button.



Complete the setup

11.3.1 Installing USB Adapter driver

Note: *Information on the USB Adapter (300685) is provided in chapter "USB Adapter " on page 149.*

The following chapter describes the installation process in Windows 7.

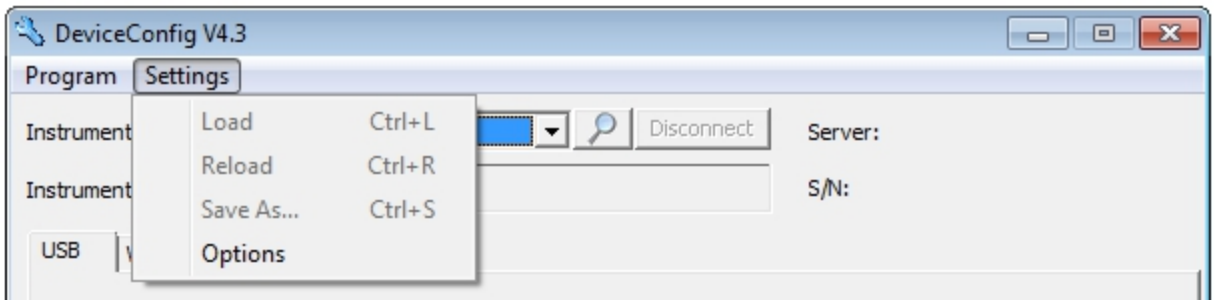
1. Complete all of the steps described in chapter "Installation" on page 144.
2. Close the DeviceConfig configuration program, if, when completing the installation, you selected the option for the program to be started following completion of the installation process.
3. Connect the USB Adapter (300685) to a free USB port on your PC. From Windows Vista onwards, the driver will be installed automatically. Instructions on installing the driver on older versions of Windows are included in the user manual for the DeviceConfig ("myDatanetDeviceConfig Manual " 805004).

   Note: *If possible, always use the same USB port, as the driver will have to be installed for every USB port used to connect the USB Adapter (300685) to the PC for the first time.*

4. Wait until the driver installation process is complete. This can take several minutes depending on the performance of your PC.

11.4 Menu of the DeviceConfig

11.4.1 Settings

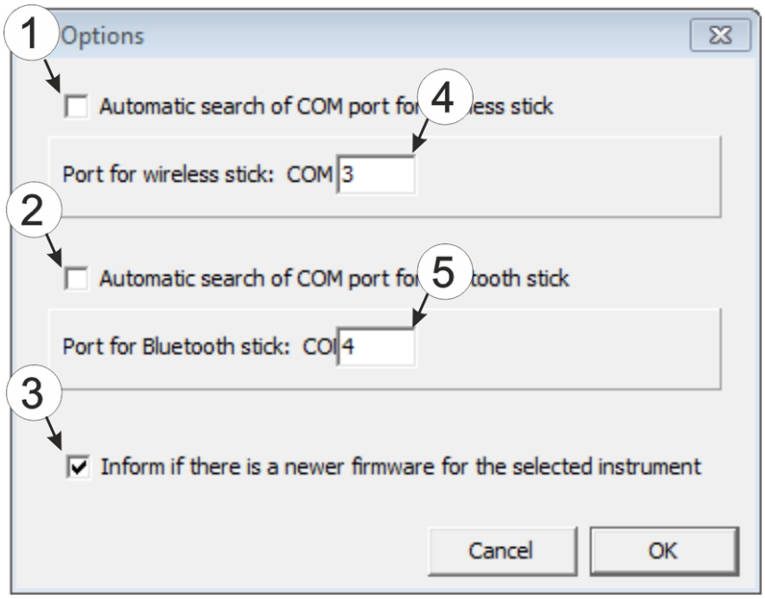


"Settings" menu item

11.4.1.1 Options

The settings for the COM ports to which the USB radio transmitter (206.657) or the USB Adapter (300685) are connected can be specified and the automatic search for the available firmware versions can be activated or deactivated via the "Settings -> Options" menu item.

The USB radio transmitter (206.657) is required for myDatanet devices that are connected to the PC via a wireless M-bus, while the USB Adapter (300685) is required for devices that are connected to the PC via local radio connection. Information on whether your device supports one of these connection methods is provided in the user manual for the respective device.

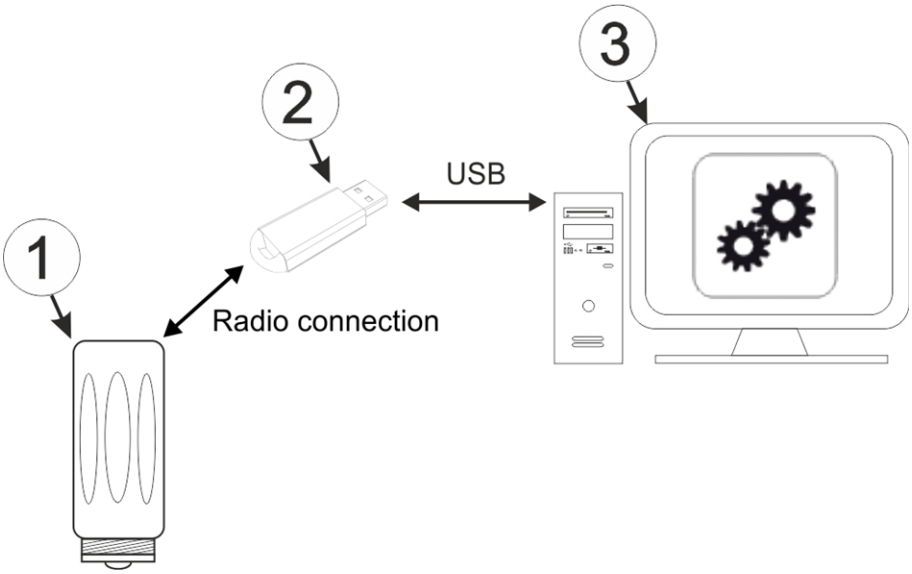


"Settings -> Options" menu item

1	Activates/deactivates the automatic search for the USB radio transmitter (206.657) on all of the available COM ports	**4**	COM port that is connected with the USB radio transmitter (206.657) (only visible when the automatic search is deactivated)
2	Activates/deactivates the automatic search for the USB Adapter (300685) on all of the available COM ports	**5**	COM port that is connected with the USB Adapter (300685) (only visible when the automatic search is deactivated)
3	Activates/deactivates the automatic search for available firmware versions		

11.5 Functional principle (communication with a sensor module)

The following description refers specifically to the use of the DeviceConfig configuration program in combination with a sensor module.



Functional principle

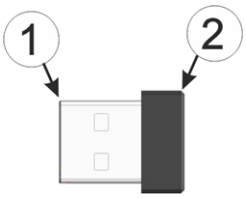
1 Sensor module	**3** PC with DeviceConfig configuration program installed
2 USB Adapter	

The DeviceConfig configuration program communicates wirelessly via USB Adapter (300685) with the sensor module. The functions provided via the DeviceConfig configuration program include:

- Update the firmware(see ""Firmware" tab" on page 152)

11.5.1 USB Adapter

The USB Adapter (300685) is not included in the scope of delivery of the Jellox Analog . It is required because standard PCs and laptops often do not have an appropriate radio interface that is necessary for communication with the Jellox Analog .



USB Adapter

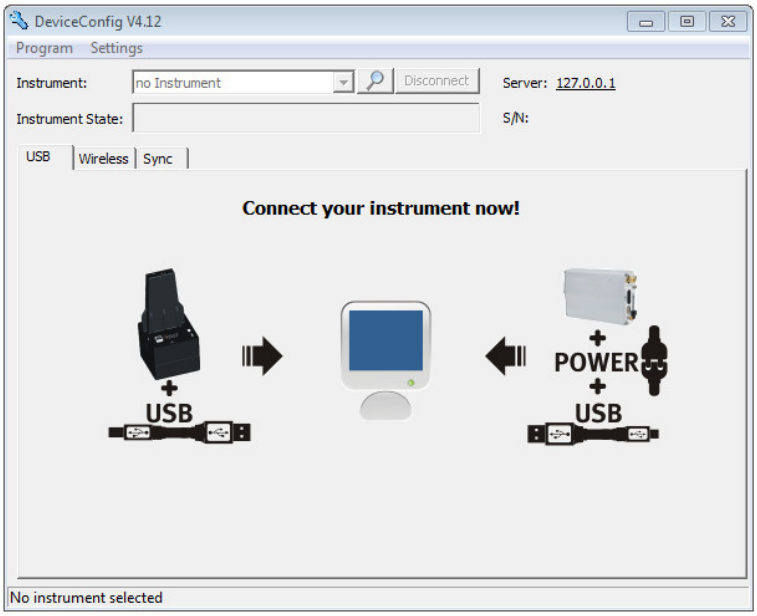
1 USB connector (type A)	**2** Antenna

The use of USB extension cables of up to 180 cm is possible without any problems.

11.5.2 Establishing a connection to a sensor module with local radio interface

The USB Adapter (300685) is required to establish a connection to a sensor module with a local radio interface. First of all complete the steps described in chapter "Installing USB Adapter driver" on page 146 to install the drivers required to operate the USB Adapter .

1. Connect the USB Adapter (300685) to the USB interface of your PC.
2. Start the DeviceConfig configuration program.



DeviceConfig

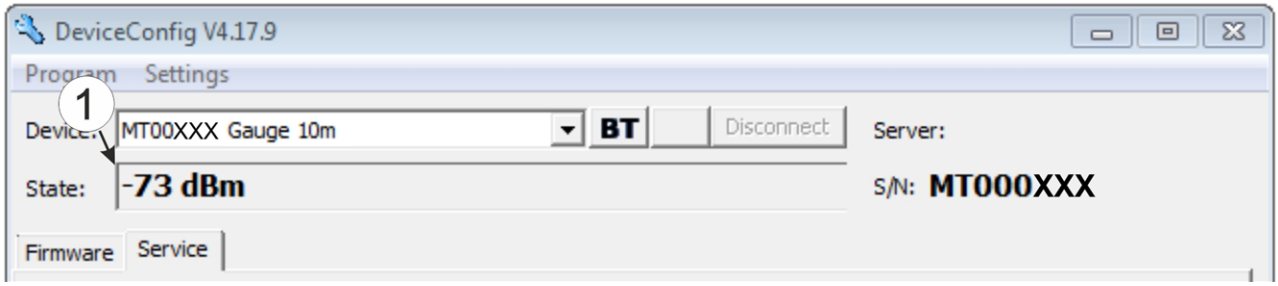
3. Select your sensor module based on the serial number from the list of devices found.

> ***Important note:*** *Sensor modules that are successfully coupled with a Jellox Analog are not displayed by the DeviceConfig .*



List of devices found

4. Wait until the DeviceConfig has received the configuration of the sensor module. Depending on the sensor module, additional tabs may be displayed.



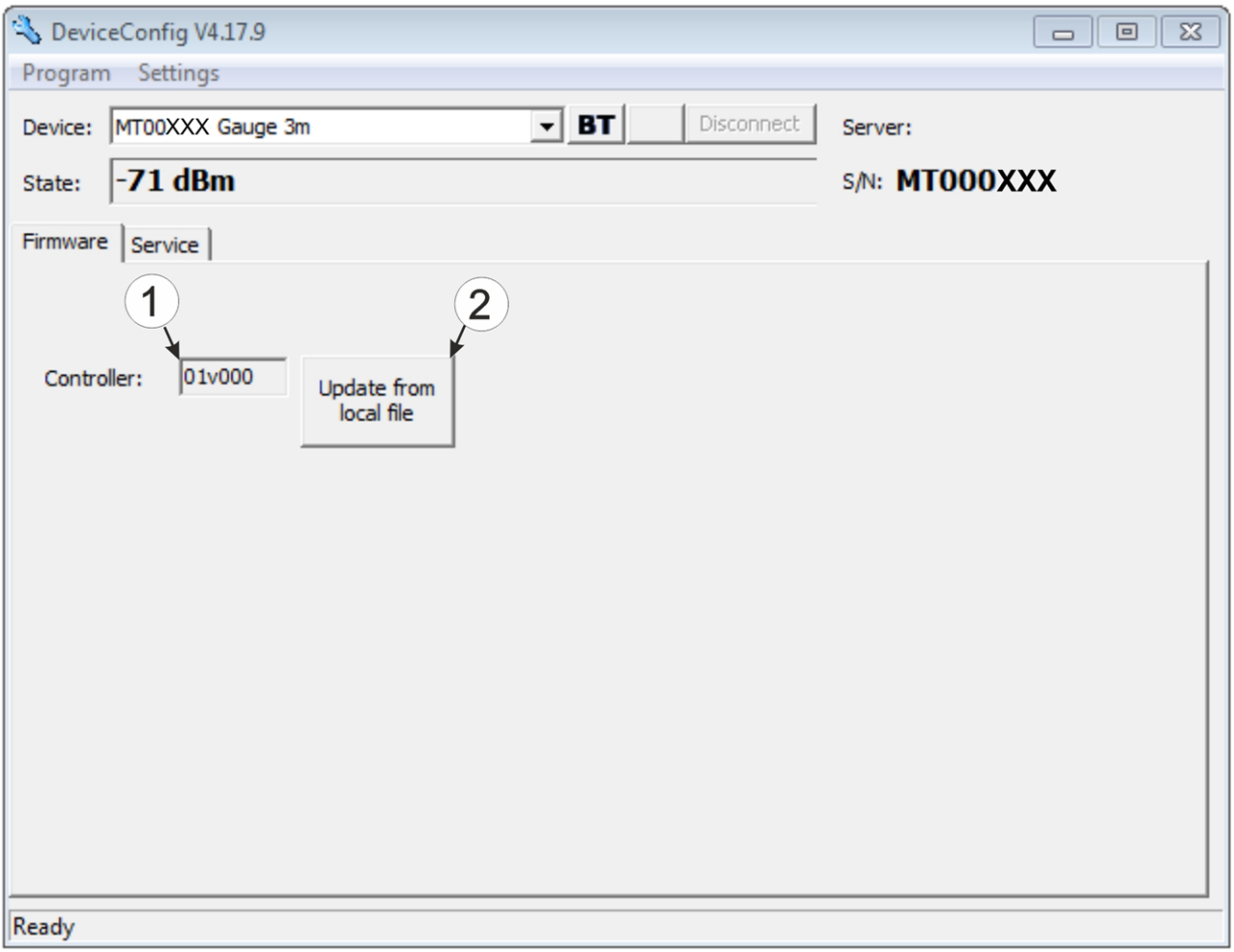
"Instrument" tab when actively connected to the sensor module

1 Radio signal strength [dBm]	

Note: *To ensure a stable connection, the wireless signal level should be higher than -90 dBm , i.e. for example -85 dBm . This is achieved by reducing the distance between the sensor module and the USB Adapter , and avoiding obstacles such as walls and similar.*

11.5.3 "Firmware" tab

This tab enables firmware to be installed directly via the local radio interface.



"Firmware" tab

1 Currently installed software version	**2** Button to install a previously downloaded firmware package

Chapter 12 OnSite Companion

12.1 General

The smartphone app "OnSite Companion" is available both for Android and iOS and can be downloaded free of charge via "Google Play" (Android) or Apple "App Store" (iOS). In addition, the application can be called up as a progressive web app via the following address:

https://companion.microtronics.com/

This is a tool for data synchronisation and commissioning. The application is compatible with all versions of Jellox Analog .

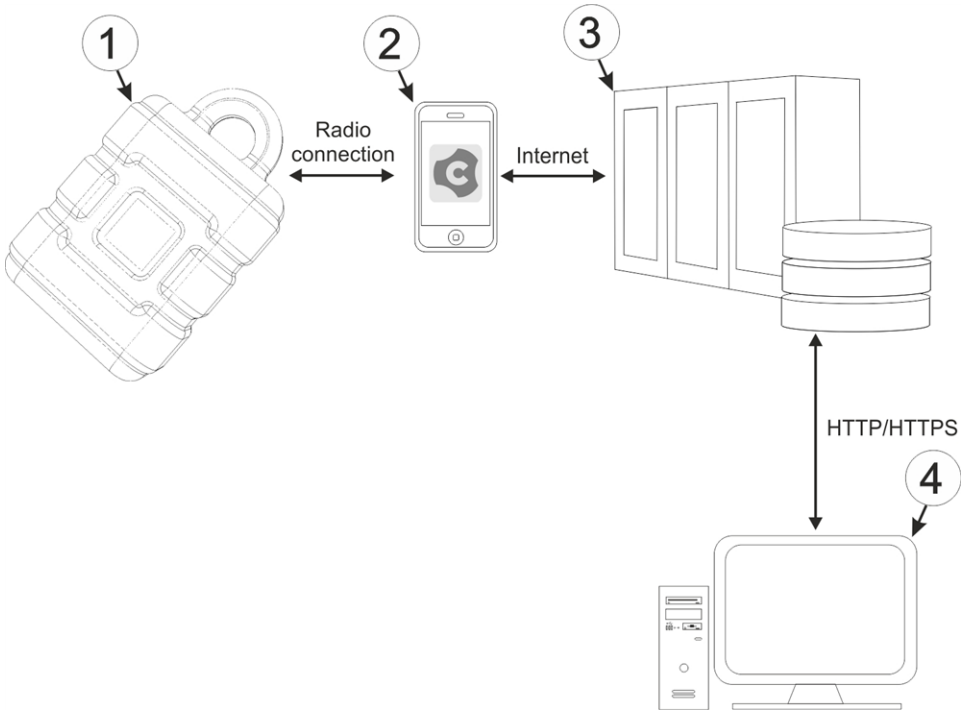
The application "OnSite Companion" enables you to perform the following tasks:

- Scan for compatible devices within range
- Commission compatible devices
- Synchronise measurement data and configuration between device and Server

12.2 Prerequisites

Operating system	Apple iOS 14.0 or higher Android 8.0 or higher
Internet connection	required
Required disc space	approx. 20 MB (iOs) approx. 20 MB (Android)

12.3 Functional principle



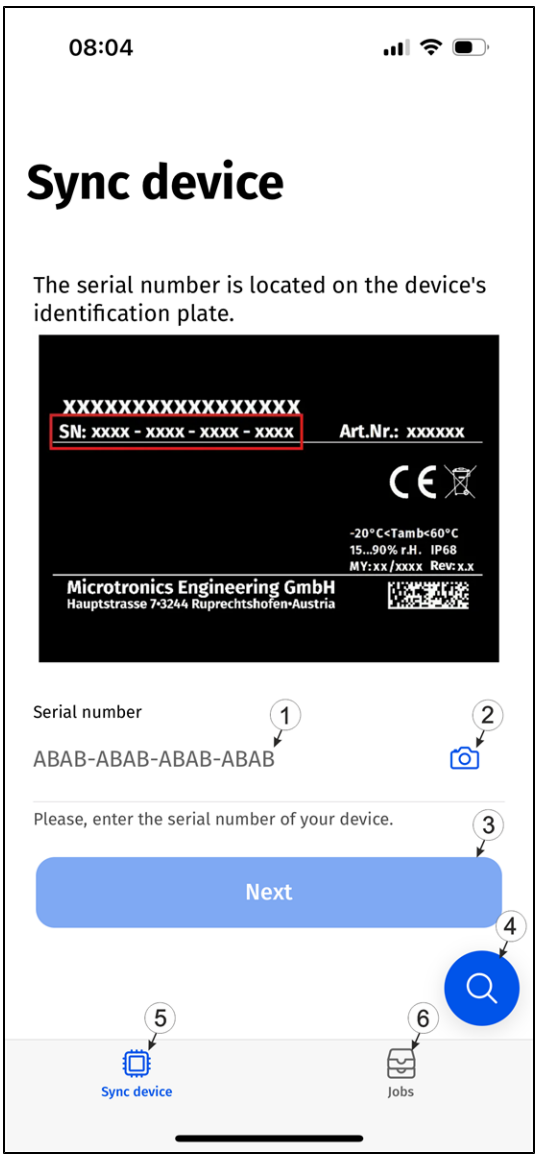
Use in conjunction with a Jellox Analog

1	Jellox Analog	**3**	myDatanet server
2	Smartphone with installed smartphone app "OnSite Companion"	**4**	Client that accesses the interface of the myDatanet server via the web browser

Communication between the "OnSite Companion" smartphone app and the Jellox Analog is realised wirelessly via local radio connection. One of the main functions is to synchronise measurement data and configuration between the device and the server (see "Synchronisation with the myDatanet server" on page 156). As soon as the data has been transferred to the myDatanet server, it is available in the same way as the data from all other myDatanet devices via all interfaces of the server (e.g. HTTP/HTTPS as shown in the functional principle above).

12.4 Overview

The "OnSite Companion" smartphone app enables communication with all variants of the Jellox Analog .



Home screen

1	Field to enter the serial number manually
2	Activates the camera and enables scanning the serial number
3	Button to start synchronising
4	Scan for compatible devices within range
5	Opens the screen for synchronising device and server
6	Opens the screen for managing

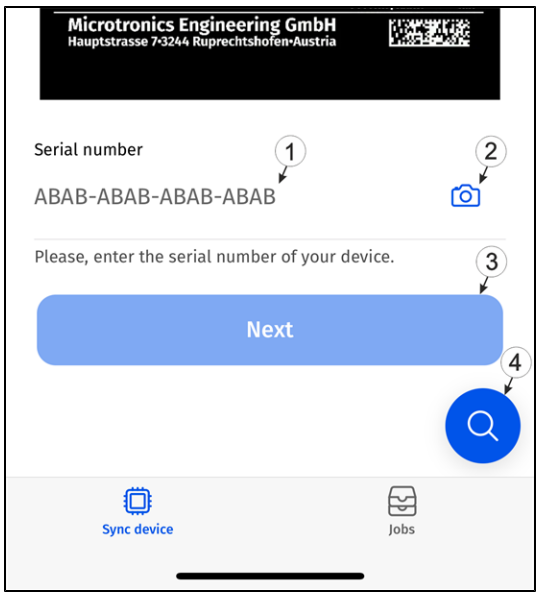
12.5 Synchronisation with the myDatanet server

Using the "OnSite Companion" smartphone app, the measruement data and configuration can be synchronised between the Jellox Analog and the myDatanet server. It is read out via a local radio connection and forwarded to the myDatanet server via the smartphone's Internet connection. The server allocation is also checked as part of this process. The smartphone app does not offer the option of temporarily storing the data, i.e. the smartphone used must have an active Internet connection while the data is being read out at the measurement site.

1. Open the "OnSite Companion" smartphone app.
2. Click on the magnifying glass icon to search for compatible devices within range.

   Alternatively you can manually enter the serial number of the device or use the camera to scan it.

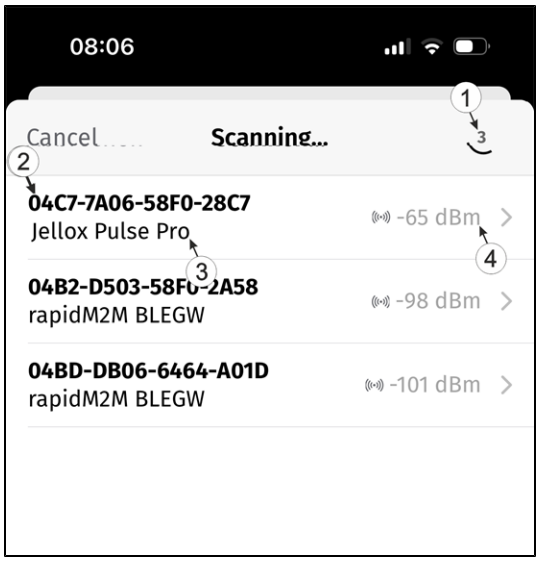
   Note: *If you have accessed the application as a progressive web app via your browser, the search for devices within range is not available.*



Display for synchronising device and server

1	Field to enter the serial number manually
2	Activates the camera and enables scanning the serial number
3	Button to start synchronising
4	Scan for compatible devices within range

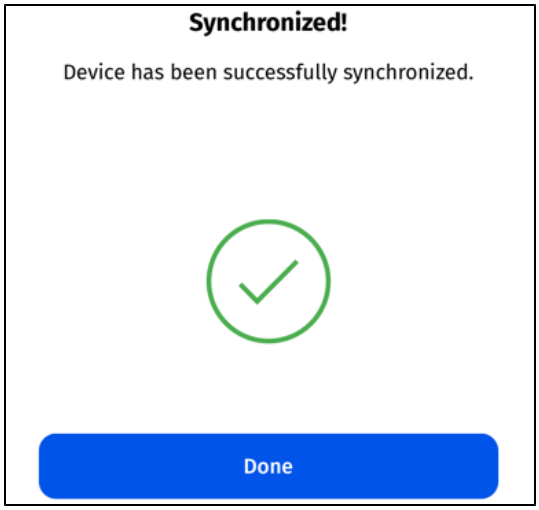
3. Click on the desired device in the list of devices within range to start synchronisation.
   If you have entered the device's serial number manually or scanned it using the camera, click on the "Continue" button to start synchronisation.



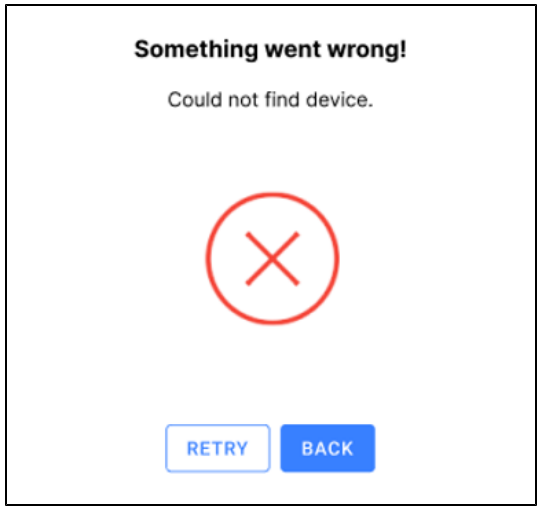
List of devices within range

1	Number of devices found
2	hardware platform installed in the device or product designation as indicated on the type plate of the device (if stored in the device)
3	Serial number
4	Radio signal strength between smartphone and Jellox Analog

4. Wait until the smartphone app indicates that the synchronisation process has been completed. An active synchronisation process is indicated by an animation that shows the transfer of information from the device to the cloud. If the process was completed successfully, this is indicated by a tick. If an error occurs, a cross is displayed. In this case, restart the synchronisation process.



Synchronisation completed successfully

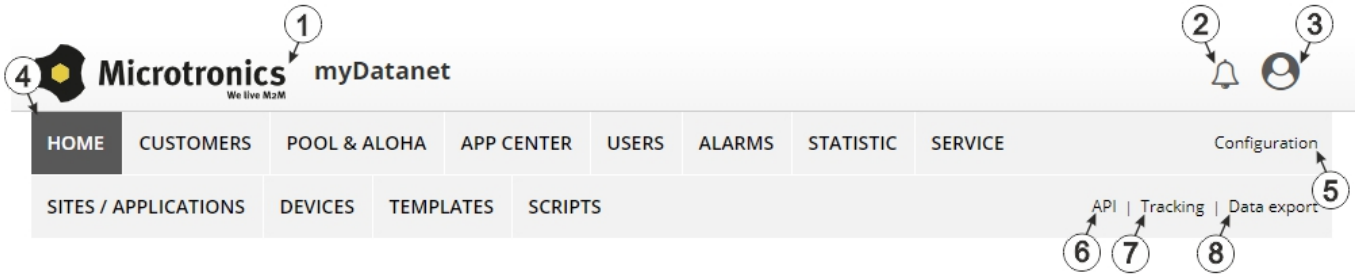


Error during synchronisation

Chapter 13 myDatanet server

Note: *All of the screenshots show version 54v00x of the myDatanet server using the standard colour scheme. Newer versions may include minor changes to the appearance of the server.*

13.1 Overview



Overview of the myDatanet server

1	Freely selectable logo	**5**	Opens the screen to input the global settings for the server
2	Opens the window in which the notifications created by the system and intended for the currently logged-in user are summarized	**6**	Opens the rapidM2M Playground
3	Displays the menu for adjusting the user settings and for logging out the currently active user	**7**	Switches to the "Data exports" area to configure the data export. This tab is only visible if at least the licence for one export variant is available.
4	Tabs to switch between the individual server areas	**8**	Opens the input screen to upload a XML file. This tab is only visible if the licence for the XML import is available.

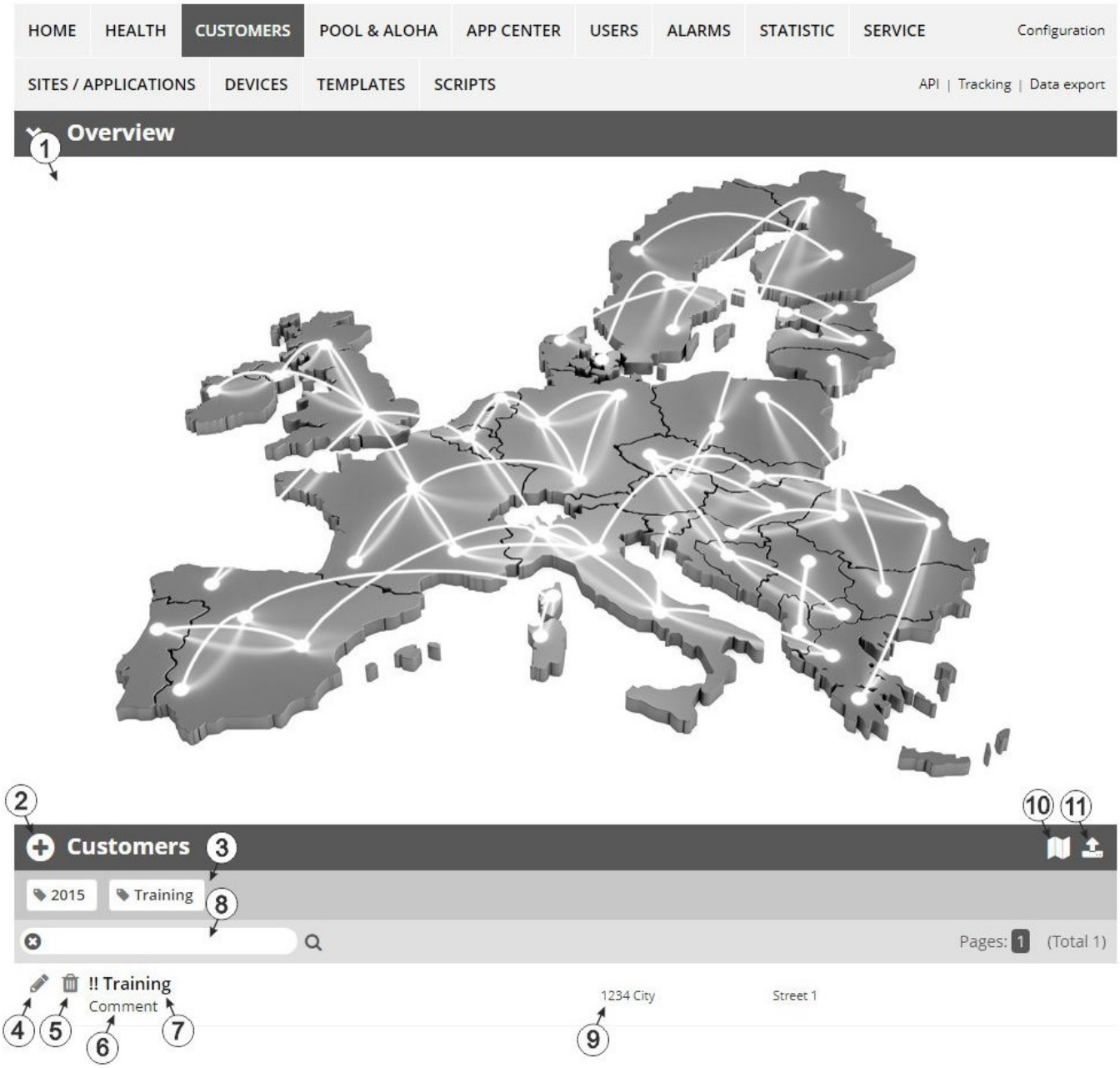
13.1.1 Explanation of the symbols


Adds a new entry to the current list (reports, sites, users, etc.).


Deletes the adjacent element (report, site, user, etc.) from the list.


Calls up the input screen to edit the adjacent element (report, site, user, etc.).

13.2 "Customer" area

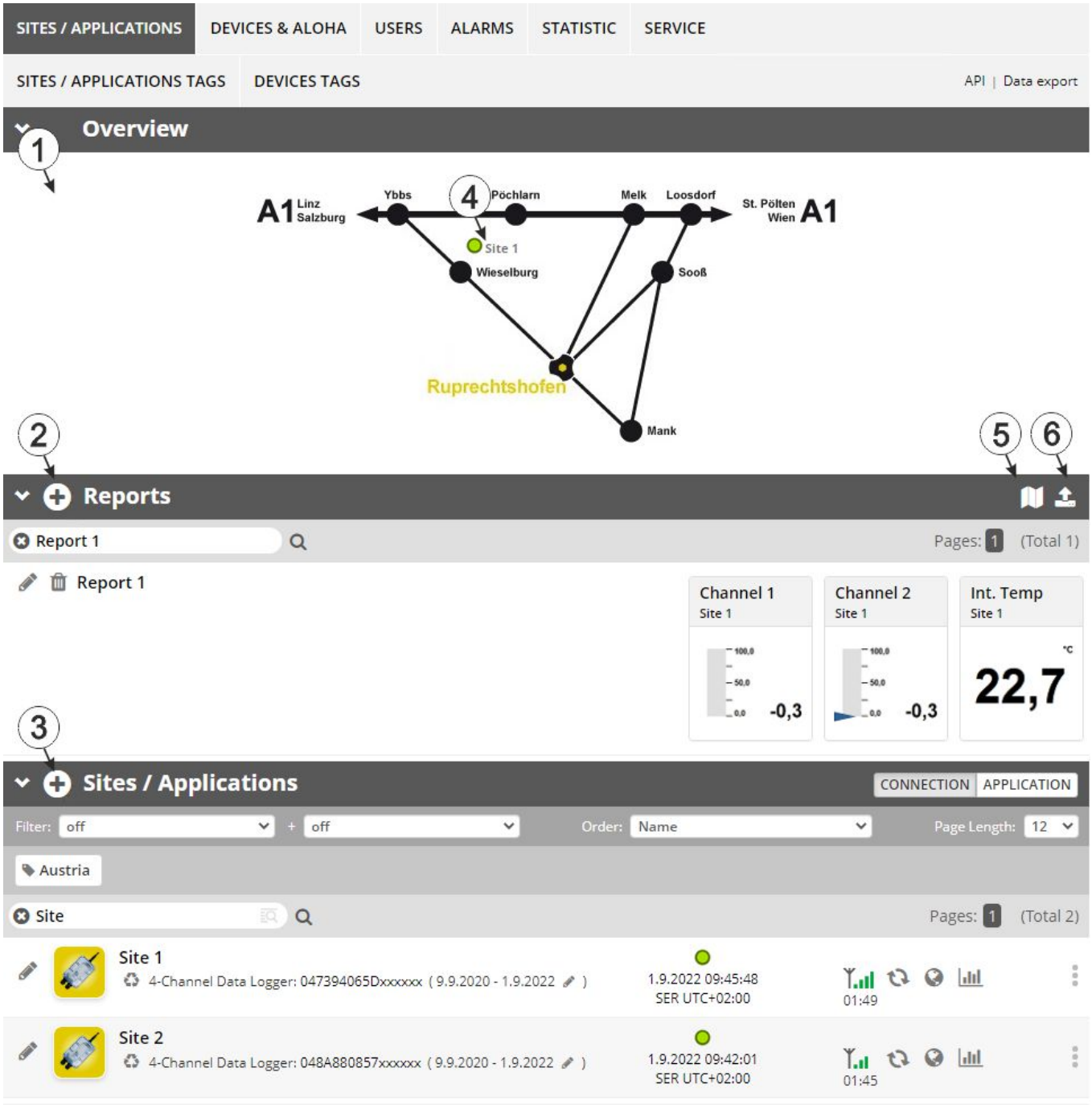


Overview of the "Customer" area

1	Area where an image file can be displayed as a "Map" and/or the OpenStreetMaps map can be displayed The sites can be manually placed on the image file used as a "map". In the OpenStreetMaps map, the sites are only displayed once GPS coordinates have been assigned to the site.
2	Adds a new customer

3	List of tags that are assigned to at least one of the customers displayed in the list of customers. If the list of customers was limited by the search field or selection of a tag, this is taken into consideration when creating the list of tags. A cross is added to the end of the list of tags as soon as the list of customers is limited by the selection of a tag. Clicking on this cross will reset the selection of all tags and the restriction is cancelled. By clicking on one of the tags with the left mouse button only those customers who have been assigned the corresponding tag are displayed in the list of customers and the selected tag is highlighted in colour. By clicking on one of the tags with the right mouse button all of the customers who have been assigned the corresponding tag are hidden, the selected tag is highlighted in colour and the title of the tag is crossed out. Clicking the same mouse button again will remove the restriction.
4	Opens the input screen for configuring the customer
5	Deletes the customer
6	Comment that can be entered in the configuration of the customer
7	If a default report was defined, the default report is accessed by clicking on the name of the customer. Otherwise the "Sites / Applications" area at customer level is opened by clicking on the name of the customer (see ""Sites / Applications" area at customer level" on page 162 or "Reports" on page 163).
8	Search field to filter the customer list
9	Customer's address that can be entered via the input screen for configuring the customer
10	Symbol via which a OpenStreetMaps map, on which the sites are displayed, can be loaded. (see "Map view" on page 163)
11	Symbol via which an image file can be loaded on to the server as an "Overview map" To remove the "Map" again, open the upload dialogue again and click on "Submit" without selecting an image file beforehand.

13.3 "Sites / Applications" area at customer level



Overview of the "Sites / Applications" area at customer level

1	Area where an image file can be displayed as a "Map" and/or the OpenStreetMaps map can be displayed The sites can be manually placed on the image file used as a "map". In the OpenStreetMaps map, the sites are only displayed once GPS coordinates have been assigned to the site.

2	List of reports (see "Reports" on page 163)
3	List of sites/applications
4	Symbol that represents a site on the "Map"
5	Symbol via which a OpenStreetMaps map, on which the sites are displayed, can be loaded. (see "Map view" on page 163)
6	Symbol via which an image file can be loaded on to the server as a "Map" To remove the "Map" again, open the upload dialogue again and click on "Submit" without selecting an image file beforehand.

13.3.1 Reports

The reports provide a variety of options to display graphs of the data on the web interface of the myDatanet server or to download the data from the myDatanet server. Detailed instructions on creating and handling the reports is provided in myDatanet Server Manual (805002).

13.3.2 Map view

The map view provides an overview of the geographic position of the sites. Detailed instructions on operating and configuring map view are provided in myDatanet Server Manual (805002).

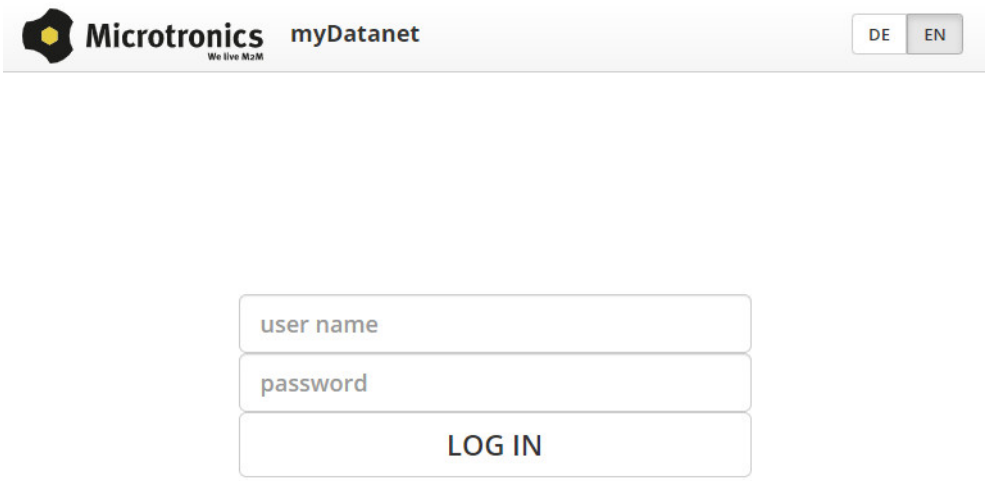
13.4 Recommended procedure

13.4.1 Creating the site

> ***Note:*** *Some of the fields mentioned in the following chapters may be hidden depending on the respective user level. In this case, please contact the administrator of the myDatanet server.*

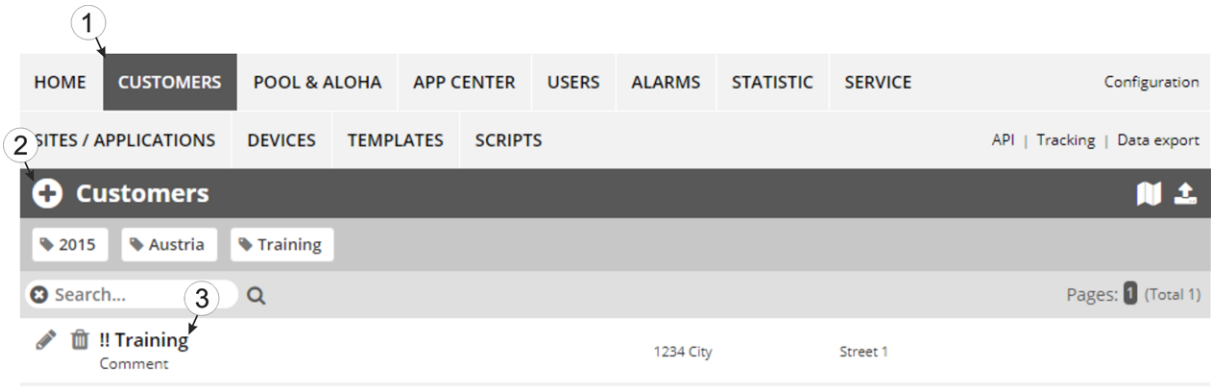
Detailed instructions on creating a new site are provided in myDatanet Server Manual (805002).

1. Log in via the web interface on the myDatanet server. You will receive the web address from your responsible sales partner.



Login form of the myDatanet server

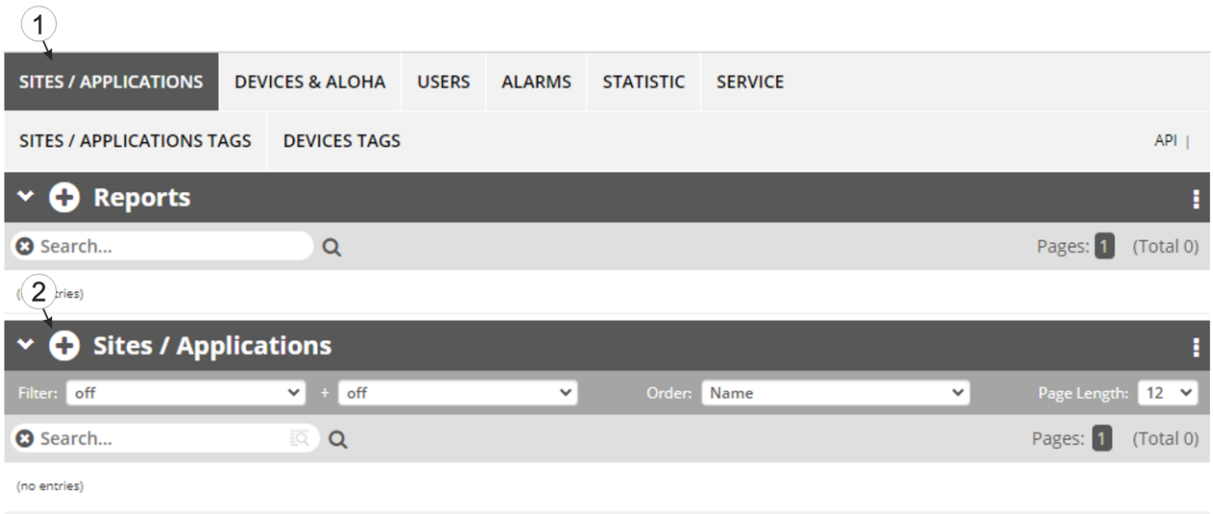
2. Click on the "Customer" menu item of the myDatanet server to call up the list of available customers. Select an existing customer or create a new customer.



Selecting the customer

1 Menu item to call up the list of customers	**3** List of available customers
2 Creating a new customer	

3. Click on the "Sites / Applications" menu item of the myDatanet server to call up the list of existing sites / applications. Then open the wizard for creating a new site by clickeng the "Add new site / application" symbol.

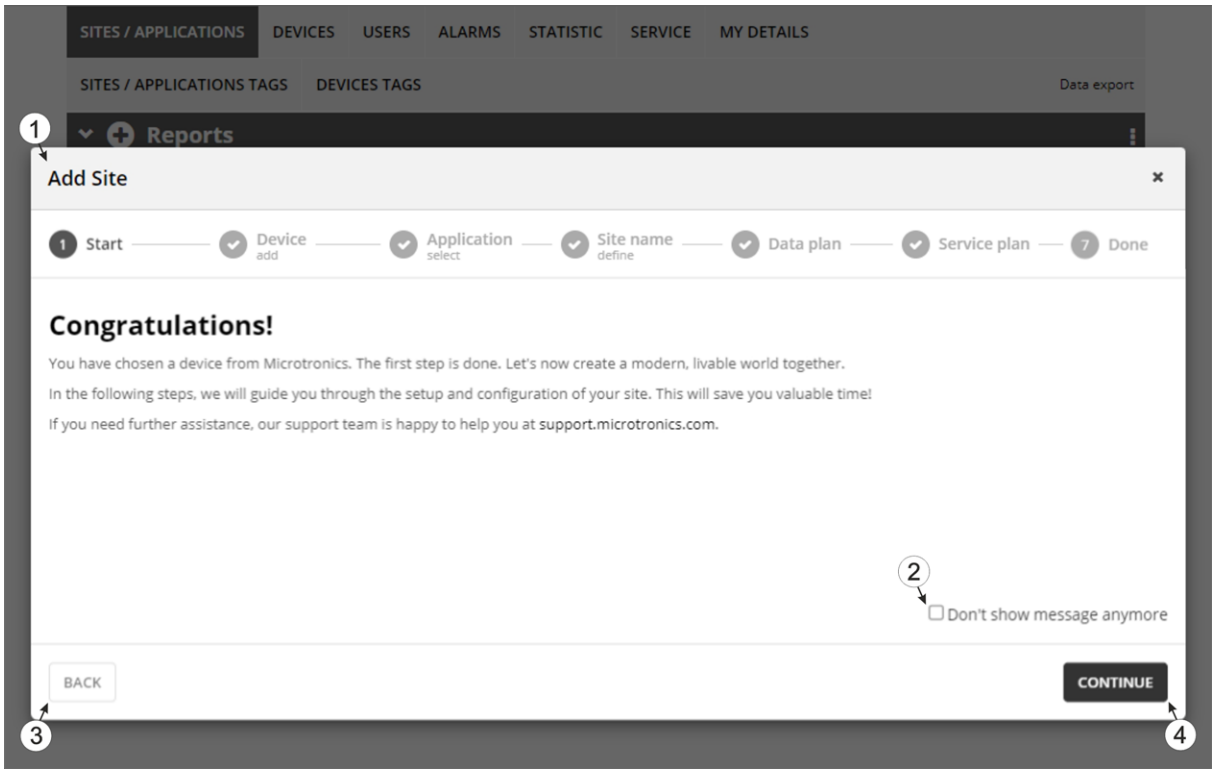


Opening the wizard for creating a site

1 Menu item to call up the list of existing sites / applications	**2** "Add new site / application" symbol

4. Follow the instructions of the wizard until you can see the button "create site". By clicking the button "back" you can always return to the previous step and modify the your chosen settings.

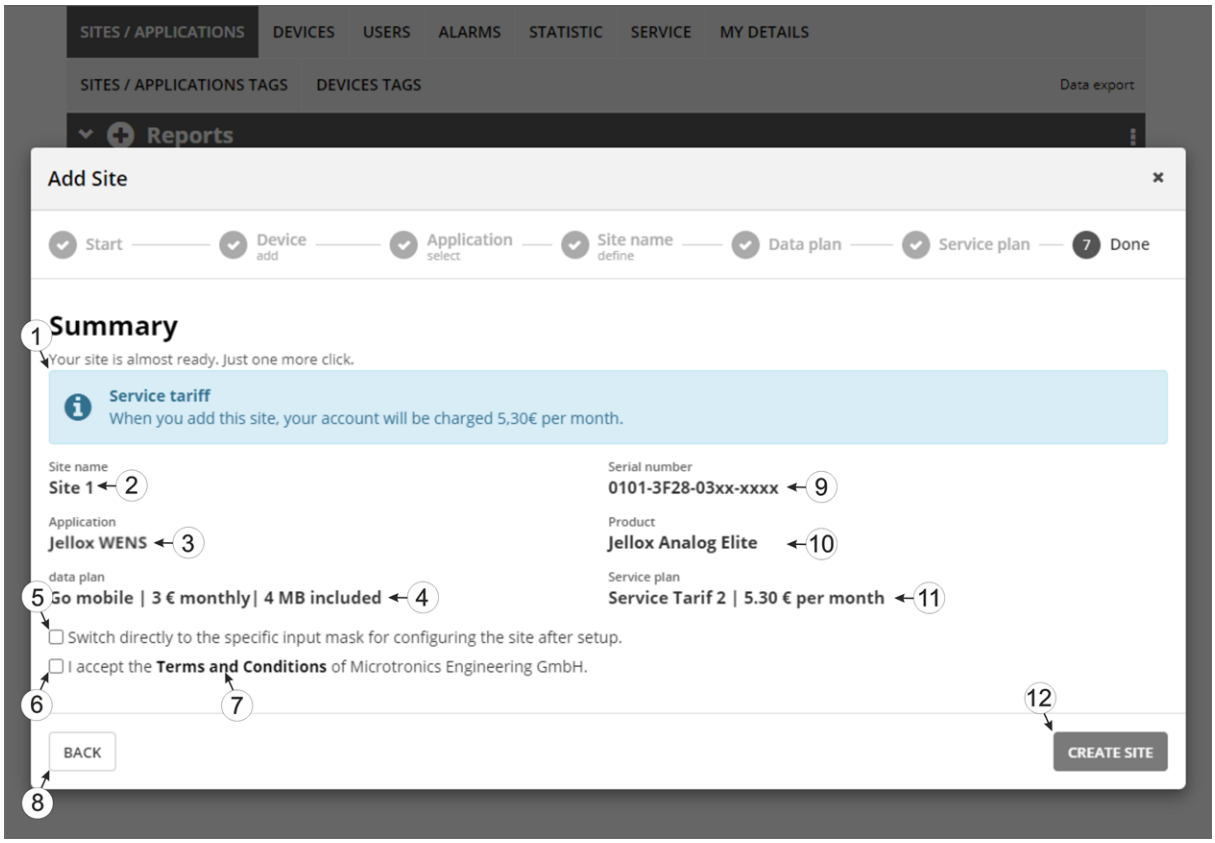
   Note: *Depending on the functions activated on the myDatanet server, some of the steps in the following illustration may not be required and are therefore not displayed.*



Create site using the wizard

1	Wizard for creating a new site	**3**	"Back" button (return to previous step of wizard)
2	Do not display welcome message again next time the wizard is run	**4**	"Continue" button (continue to next step of wizard)

5. Verify the information in the summary, read the general terms and conditions and tick the checkbox to accept the general terms and conditions. Then click on the "Create site" button to finalise the process.



Completing site creation

1	This amount is debited from the customer's account for this site immediately upon creation and subsequently on a monthly basis. (Only displayed if the account module or the billing module is activated on the server)
2	Name defined for the site, which is then also displayed in the list of sites
3	Application selected
4	Data plan selected (Only displayed if the account module is activated on the server)
5	Checked: After clicking "create site", the specific input mask for configuring the site is opened. Not checked: After clicking "create site", you return to the list of sites.
6	Checkbox to accept the general terms and conditions
7	Link to the general terms and conditions
8	"Back" button (Allows for modifying the chosen settings)
9	Serial number of the device connected to the site
10	Product name as specified on the type plate of the device (Only displayed if the information is stored in the device)
11	Service plan selected (Only displayed, if the billing module is activated on the server)
12	"Create site" button

Chapter 14 API

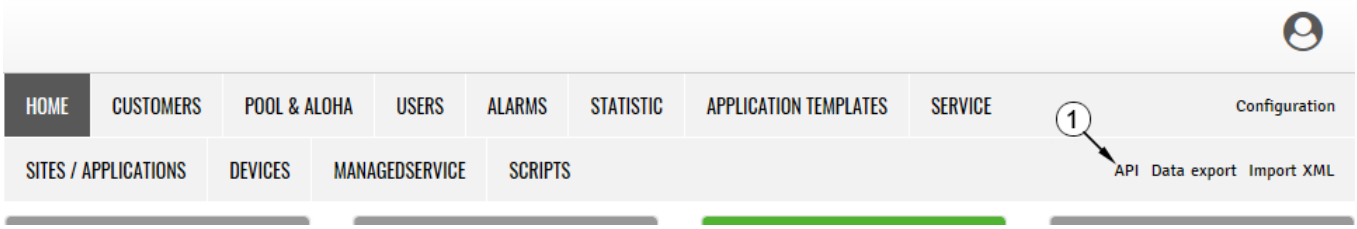
Important note: *The relevant licences are required on the myDatanet server to use the API (Application Programming Interface). For future information contact your responsible sales partner.*

14.1 Backend API

The API is provided to export data from and import data to the myDatanet server. However, this is not just limited to the pure measurement data but includes all of the data provided by myDatanet server (e.g. configurations). It is therefore possible for the customer to completely dispense with the interface of the myDatanet server and to create his own user interface. A specially developed PC program or web interface can, for example, be used for this purpose.

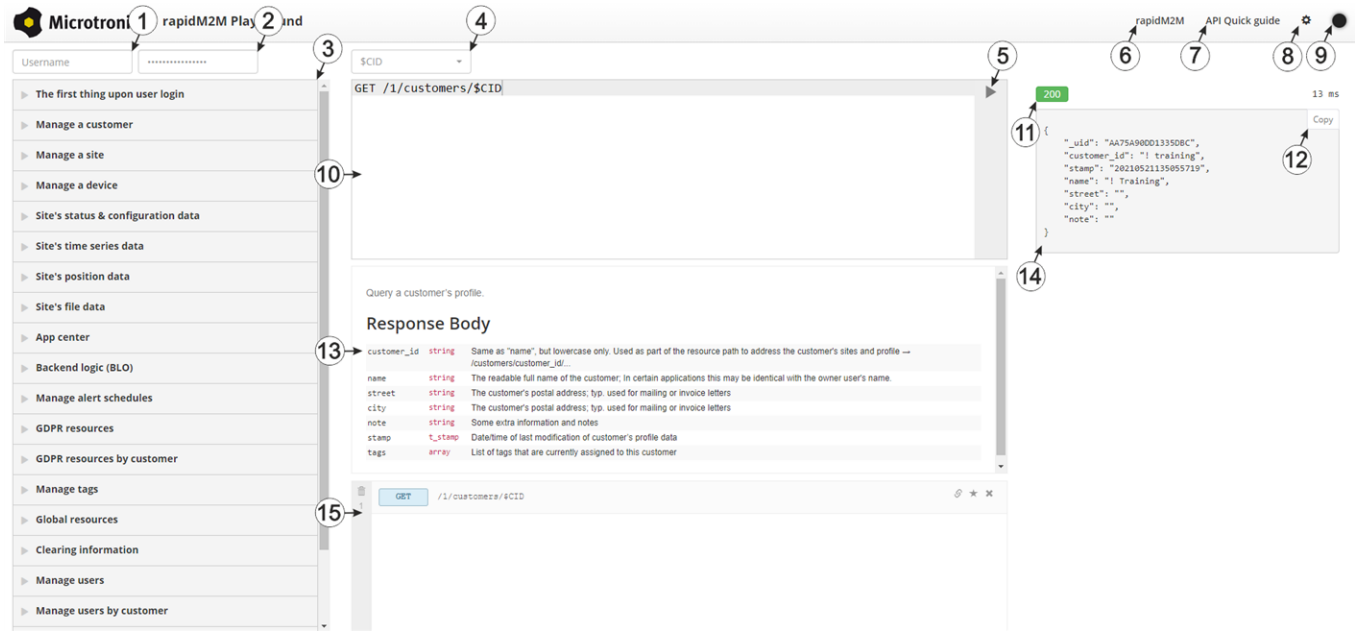
14.2 rapidM2M Playground

The rapidM2M Playground enables you to familiarise yourself with the API of the myDatanet server and to test the provided functions. One click on the "API" button will take you to rapidM2M Playground .



1	Opens the rapidM2M Playground

14.2.1 Overview



rapidM2M Playground

1	Input field for the user name
2	Input field for the password
3	List of the available HTTP commands. The HTTP commands are grouped according to their fields of application.
4	Depending on the selected HTTP command, the drop down lists for selecting the customer, user and site that should replace the corresponding wild cards ("$CID"...customer , "$UID"...user, "$SID"...site) in the resource path of the HTTP command are displayed.
5	Button to execute the HTTP command
6	Opens the website "http://rapidm2m.com/" that includes additional information for developers
7	Opens the quick guide for the API
8	Button for displaying the menu that contains the global settings
9	Button to change the colour scheme of the rapidM2M Playground
10	Window displaying the selected HTTP command
11	Response code sent by the myDatanet server as an answer to the HTTP command
12	Copies the JSON object generated as a response to the HTTP command on to the clipboard
13	Window displaying the documentation for the selected HTTP command. Depending on the selected command, this includes a description of the action being executed, information that must be observed and a description of the request body and response body.
14	Window displaying the JSON object that is generated as a response to the HTTP command
15	Window displaying the last executed HTTP commands

Chapter 15 Maintenance

Important note: *To prevent any damage to the device, the work described in this section of the instructions must only be performed by qualified personnel.*

The device must be deenergised before any maintenance, cleaning and/or repair work.

15.1 General maintenance

- Regularly check the Jellox Analog for mechanical damage.
- Check all of the connections for leaks or corrosion on a regular basis.
- Check all of the cables for mechanical damage at regular intervals.
- Clean the Jellox Analog with a soft, moist cloth. Use a mild cleaning agent, if necessary.

Important note: *Due to the electrostatic effects, the Jellox Analog must not be rubbed with cloths in the Ex zone.*

15.2 Maintenance of the Jellox Analog

Important note: *Only the manufacturer is permitted to open the enclosure to carry out maintenance work, which must also be completed strictly outside the Ex area.*

The Jellox Analog itself does not require any cyclic maintenance work other than the actions listed in chapter "General maintenance" on page 169 and replacement of the batteries after max. 10 years. In the event of unfavourable environmental conditions (e.g. low temperatures), it may occur that the battery capacity is depleted before this period of time has elapsed. The remaining time until the next battery replacement is shown on the display of the Jellox Analog (see "Display" on page 80). The batteries must only be replaced by the manufacturer (see "Contact information" on page 205) or a certified service partner. The device must be returned in its original packaging for this purpose. Dehumidification (i.e. reduction of humidity in the housing) is always carried out as part of the battery replacement process.

The current humidity level inside the housing can be checked at any time using the internal "rH" measurement value (see "List of determined measurement values " on page 33). If it exceeds 95 %, the Dehumidification (301736) service can be used as a separate service from the battery replacement. This service is offered by the manufacturer (see "Contact information" on page 205) and certified service partners. The device must be returned in its original packaging for this purpose.

15.3 Maintenance of the sensor module

Information on the maintenance of the sensor module is provided in the user manual of the relevant sensor module.

15.4 Services

Microtronics Engineering GmbH offers the following maintenance services for the Jellox Analog :

Description	Order number
Inspection fee	206.395
Cleaning flat	206.355
Software Update	206.555
Battery replacement	300661
HLC replacement	301078
Display replacement	300964
Sensor holder replacement	301181
Replacement of housing cover with display window	301396
Dehumidification	301736

Chapter 16 Repair & return

Microtronics products are manufactured using quality-assured processes. The Microtronics Engineering GmbH production site is ISO 90001 certified. All products are tested and/or calibrated before being shipped to the customer. This ensures that Microtronics Engineering GmbH products perform to their full capacity upon delivery.

Despite Microtronics Engineering GmbH's most rigurous quality assurance measures, malfunctions may occur as well within as outside the warranty period. In some cases, however, it is not necessary to return the product. Some issues can be resolved remotely by the Support & Service Centre (e.g. via OTA firmware update). If your device shows unexpected behaviour or malfunctions, please proceed as follows:

1. Contact the support & service center (support.microtronics.com)

   In the Microtronics Help Center, select the category "Technical support (device)" to create a ticket. Please describe the problem in as much detail as possible to help our staff diagnose the issue. One of our staff members will then contact you and attempt to resolve the problem remotely with you.

2. Wait for the completed RMA form you will receive in response

   If it was not possible to resolve the problem remotely, you will receive a completed RMA form that you must enclose with the return shipment. At the bottom of the form, you will also find more detailed information on how to return the product.

3. Return the Jellox Analog

   Do not dispatch the device until you have received the RMA form and the RMA number noted on it. Microtronics will not reject shipments that arrive without a clearly indicated RMA number or without the enclosed RMA form. However, processing will take significantly longer in such cases.

If you return the Jellox Analog for repair under warranty or outside of warranty, check with your national customs/tax authorities for applicable regulations, procedures and necessary documentation for tax-free return of products. Special customs tariff numbers are usually available to confirm that the item is being returned for repair and has no commercial value.

The customs invoice/shipping documents should clearly state: "Goods being returned to manufacturer for repair – No commercial value". It is mandatory that any returned goods are accompanied by a commercial invoice on headed paper. Microtronics reserves the right to charge the customer for time spent rectifying incorrect customs documents.

> ***Note:*** *Ensure that the Jellox Analog is packed carefully and securely. Damage incurred during transport is not covered by the warranty and may be subject to a charge.*

Chapter 17 Removal & disposal

Material separation only by qualified personnel!

- Be careful when disassembling the device, you may injure yourself.
- Take the separated components to the appropriate recycling.

Incorrect disposal can cause environmental hazards.

Dispose of the device components and packaging material in accordance with the locally valid environmental regulations for electronic products (e.g. according to European waste code 16 02 14).

1. Disconnect any connected cables using a suitable tool.



Logo of the EU WEEE Directive

This symbol indicates that the requirements of Directive 2012/19/EU regarding the scrap disposal of waste from electric and electronic equipment must be observed. Microtronics Engineering GmbH supports and promotes recycling and environmentally friendly, separate collection/disposal of waste from electric and electronic equipment in order to protect the environment and human health. Observe the local laws and regulations on disposal of electronic waste at all times.

Microtronics Engineering GmbH releases goods brought onto the market in Austria from the obligations via ERA, which means that collection points that cooperate with ERA Elektro Recycling Austria GmbH (https://www.era-gmbh.at/) can be used for disposal in Austria.

The device includes a battery or rechargeable battery (lithium) that must be disposed of separately.

Chapter 18 Troubleshooting and repair

18.1 General problems

Problem	Cause/solution
Device does not respond (nothing appears on the display).	• Battery pack is completely discharged
Communication problems (between Jellox Analog and myDatanet server)	• Evaluate the error code shown on the display (see "Display" on page 80). • Use the "OnSite Companion" smartphone app to synchronise the device log with the myDatanet server and open the device log on the myDatanet server. • The capacity of the battery pack is virtually depleted.
Synchronisation between device and server not possible via the "OnSite Companion" smartphone app	• Reduce the distance between the Jellox Analog and the smartphone and try to avoid obstacles such as walls and similar. • Check the internet connection of the smartphone • Check whether the most recent version of the "OnSite Companion" app is installed on the smartphone "OnSite Companion" • The capacity of the battery pack is virtually depleted.
Setup mode cannot be activated	• Evaluate the error code shown on the display (see "Display" on page 80). • Use the "OnSite Companion" smartphone app to synchronise the device log with the myDatanet server and open the device log on the myDatanet server. • The capacity of the battery pack is virtually depleted.
Status information on the mA input and status information on the sensor modules is not displayed	• When creating the site, the myDatanet server was unable to determine which sensors/actuators are assigned to the remote measurement channels. Solution: Activate setup mode or wait for the next cyclical transmission.
Not all or no data is available on the server.	• The connection was aborted during the transmission, which is indicated by a time-out entry in the connection list (see "myDatanet Server Manual " 805002). Solution: Activate setup mode or wait for the next cyclical transmission • The assignment of the device and site is not correct (see "Site" on page 128 or "Creating the site" on page 163). • The measurement data and configurations have not been synchronised between the Jellox Analog and the myDatanet server using the "OnSite Companion" smartphone app (only relevant, if no suitable mobile network coverage is available at the operating site of the Jellox Analog)

Problem	Cause/solution
The data on the mA input is not plausible.	• Check the cable connections (see "Connecting the sensor" on page 60). • Check whether the output signal of the sensor used is compatible with the electrical characteristics of the mA input (see "Technical details about the universal input" on page 65 • Check whether the configuration of the mA input is suitable for the output signal of the sensor (see "Universal input" on page 100). • Check the filter settings of the universal input (see "Universal input" on page 100). • Check whether the ext. warmup time chosen is suitable for the sensor used (see "Universal input" on page 100).

Communication problems (between Jellox Analog and sensor module)	• Reduce the distance between the Jellox Analog and the sensor module, and try to avoid obstacles such as walls and similar
	• The capacity of the battery of the sensor module is virtually depleted. Check on the display the number of remaining days until the next time the battery needs to be replaced (see "Display" on page 80).
	• The Jellox Analog has lost the connection to the sensor module and was unable to re-establish it immediately. Solution:
	  • Wait until the Jellox Analog tries to re-establish the connection. For the benefit of low energy consumption, this is only done every 2 hours.
	  • Activate setup mode (see "Setup mode" on page 43) to manually initiate the search for remote sensors.

Water level is not plausible.	• Check the values for "Installation height" and "trimming" (module type "LVL-R-5")/ for "offset" and "trimming" (module type "Gauge") currently saved in the sensor module. • Check whether the values for "Installation height" and "trimming" (module type "LVL-R-5")/ for "offset" and "trimming" (module type "Gauge") correspond to the current installation situation. • The capacity of the battery of the sensor module is virtually depleted. • Information on further possible error sources and corresponding solution approaches are provided in chapter "Troubleshooting and repair" in the manual of the relevant sensor module.
Surface velocity is not plausible.	• Check the values for "Mounting angle" and "Direction" currently saved in the sensor module. • Check whether the values for "Mounting angle" and "Direction" correspond to the current installation situation. • The capacity of the battery of the sensor module is virtually depleted. • Information on further possible error sources and corresponding solution approaches are provided in chapter "Troubleshooting and repair" in the manual of the relevant sensor module.
Alarm state of a measurement value was not detected.	• Increase the measuring interval (see "Device settings " on page 98). Note: Only the interval for recording the measurement value from the mA input and the internal measurement values can be adjusted. The interval for recording the measurement values of the remote sensor modules is 10 sec. and cannot be changed.

Problem	Cause/solution
Alarm state was not transferred although the data is present.	• Check the confiurations of the "Smart actions" (see "Edit Smart Action" on page 125) • The connection was aborted during the transmission, which is indicated by a time-out entry in the connection list (see "myDatanet Server Manual " 805002). Solution: Activate setup mode or wait for the next cyclical transmission.
Alarm message was not sent although the alarm was signalled.	• Check the settings of the alarm schedule (see "myDatanet Server Manual " 805002). • Check the address data of the alarm schedule (see "myDatanet Server Manual " 805002).

18.2 Log entries and error codes

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1000	POWER ON	0	---	Restart following a power failure
		4	---	Watchdog reset (e.g. because of an exception)
		6	---	Reset was initiated by the device itself (e.g. in event of firmware update)
		##	--	Restart for another reason. There may be a hardware problem if the "POWER ON" log entry with a parameter code that is not equal to 0 or 6 is contained in the device log several times. Contact the manufacturer in this case (see "Contact information" on page 205).
1030	UV LOCKOUT	---	---	The device switches to energy saving mode and terminates all of the operations as the rechargeable battery or battery voltage is too low. Only the charge controller, if present, remains active.
1031	UV RECOVER	---	---	The rechargeable battery or battery voltage once again suffices to guarantee reliable operation. This is achieved by replacing the rechargeable battery or battery pack.The device resumes normal operation in accordance with the configuration.
1034	CONTROLLER UPDATE	##	---	Controller firmware update was completed successfully This entry is always duplicated in the device log. In the first entry, the parameter specifies the major version number (e.g. 3 for 03v011), while in the second entry it specifies the minor version number (e.g. 11 for 03v011).
1035	EXCEPTION	##	---	An internal system error was detected that caused the device to restart. The parameter specifies the type of system error. Contact the manufacturer if the device log contains this error with the same parameter code several times (see "Contact information" on page 205).
1036	EXCEPTION ADDR 1	##	---	This log entry may be shown in the device log together with the log entry "EXCEPTION" in the event of an internal system error. The parameter provides additional information for analysing the cause of the system error.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1037	EXCEPTION ADDR 2	##	---	This log entry may be shown in the device log together with the log entry "EXCEPTION" in the event of an internal system error. The parameter provides additional information for analysing the cause of the system error.
1038	UV MODEM LOCKOUT	---	---	The device deactivates the modem because the rechargeable battery or battery voltage is too low. A connection cannot be established now.
1039	UV MODEM RECOVER	---	---	The rechargeable battery or battery voltage once again suffices to guarantee a stable connection. This is achieved by replacing the rechargeable battery or battery pack.
1046	CONTROLLER UPDATE ERROR	##	---	Error updating the firmware of the controller
		0	CRC	The CRC of the firmware pack couldn't be verified
		1	SIGNATURE	The signature of the firmware pack couldn't be verified
		2	TLV	The data structure of the firmware pack is invalid
		3	FW INFO	The firmware pack is not suitable for this device
		4	MIN VERSION	The version of the firmware package is below the minimum version stored in the firmware currently installed on the device.
1126	MODEM COPS MODE	---	---	The modem has changed the mode for the operator selection. Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1161	LOG REFORMATFILE	##	---	Errors in file system have been resolved. This can result in data being lost (data and/or log entries). The parameter contains more information on the problem. Contact the manufacturer if the device log contains this error with the same parameter code several times (see "Contact information" on page 205).
1192	FUTURE TIMESTAMP	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1194	RTC TIME SET BY DLO	---	---	The system time has been set manually via the device logic.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1195	RTC TIME SET BY SERVER	---	---	A manually set system time has been overwritten during the sync with the server with the time received from the server.
1196	RTC TIME INVALID	---	---	When starting the module, it was recognised that the system time is invalid.
1200	MODEM ERROR			Modem error (see "Modem error" on page 185)
1201	MODEM NOT FOUND	---		Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1202	MODEM CMME ERROR	##	---	The mobile network modem indicates a +CME error. The parameter specifies the type of error.
1203	SELECTED NETWORK	##	---	A new mobile network was selected. The parameter specifies the MCC (Mobile Country Code) and the MNC (Mobile Network Code) of the selected mobile network.
1207	GSM NETWORK REGISTRATION	0	NOT REGISTERED	Not registered, modem is currently not looking for any new operators to register
		1	HOME	Registered, home network
		2	SEARCHING	Not registered, but the modem is currently looking for a new operator with which it can register
		3	DENIED	Registration denied
		4	UNKNOWN	Unknown (e.g. outside the GERAN/UTRAN/E-UTRAN cover)
		5	ROAMING	Registered, roaming
1208	GPRS NETWORK REGISTRATION	0	NOT REGISTERED	Not registered, modem is currently not looking for any new operators to register
		1	HOME	Registered, home network
		2	SEARCHING	Not registered, but the modem is currently looking for a new operator with which it can register
		3	DENIED	Registration denied
		4	UNKNOWN	Unknown (e.g. outside the GERAN/UTRAN/E-UTRAN cover)
		5	ROAMING	Registered, roaming
1212	ERROR MODEM IRREGULAR OFF	##	---	Indicates a faulty connection. The parameter includes a counter that indicates how many consecutive connections have not worked.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1219	LTE NETWORK REGISTRATION	0	NOT REGISTERED	Not registered, modem is currently not looking for any new operators to register
		1	HOME	Registered, home network
		2	SEARCHING	Not registered, but the modem is currently looking for a new operator with which it can register
		3	DENIED	Registration denied
		4	UNKNOWN	Unknown (e.g. outside the GERAN/UTRAN/E-UTRAN cover)
		5	ROAMING	Registered, roaming
1227	WC NWREG PAUSED	0	---	A corresponding log entry is generated again for each change of state of the network registration.
		1	---	The limit for the log entries for the changes of state of the network registrations has been reached. From this point onward, a maximum of one log entry per hour is generated.
1228	EMM REJECT CAUSE	##	---	Device has been rejected by the network. The parameter indicates the reason for the rejection.
1252	MODEM TO CON	##	---	Timeout while a connection is being established. The parameter specifies the reason for the timeout. Contact the manufacturer if the device log contains this error with the same parameter code several times (see "Contact information" on page 205).
1255	MODEM TO EVAL	---	---	Timeout evaluating the connection quality
1281	ZLIB STREAMPROCESS ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1282	ZLIB STREAMFINISH ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1284	BYTE STUFF PENDING	---	---	internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1317	RADIO CONNECTED	---	---	Radio connection to a PC or smartphone established

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1318	RADIO DISCONNECTED	---	---	Radio connection was terminated
1325	RADIO ADVERTISING	0	RADIO ADVERTISING OFF	Advertising deactivated
		1	RADIO ADVERTISING ON	Advertising has been activated
1328	RADIO POWER ON	---	---	Supply of the radio module (local radio interface) has been activated.
1329	RADIO POWER OFF	---	---	Supply of the radio module (local radio interface) has been deactivated.
1335	LOG_SHT2X_ STATE	0	SHT2X SENSOR OK	The internal temperature and air humidity sensor is returning valid values again
		1	SHT2X RH ERROR	A communication error occured when reading the air humidity value from the internal temperature and air humidity sensor.
		2	SHT2X TEMP ERROR	A communication error occured when reading the temperature value from the internal temperature and air humidity sensor.
		3	SHT2X RH+TEMP ERROR	A communication error occured when reading the measurement value from the internal temperature and air humidity sensor.
		4	SHT2X PLAUSIBILITY ERROR	The values received from the internal temperature and air humidity sensor are not plausible (rH <0% rH or >100% rH or temperature <-40°C or >125°C)
1336	SHT2X COM ERR	---	---	Communication with the internal temperature and air humidity sensor is not possible (sensor not present or faulty)
1337	SHT2X COM ERR1	---	---	Starting the internal temperature measurement failed
1338	SHT2X COM ERR2	---	---	Starting the internal air humidity measurement failed
1339	SHT2X TEMP RAW	##	---	Temperature raw value (register value from the internal temperature and air humidity sensor) if a plausibility error (SHT2X PLAUSIBILITY ERROR) was detected
1340	SHT2X RH RAW	##	---	Air humidity raw value (register value from the internal temperature and air humidity sensor) if a plausibility error (SHT2X PLAUSIBILITY ERROR) was detected

Log entry		Parameter		Description
Code	**Plain text**	**Code**	**Plain text**	
1601	SIM_STATE	0	NONE	SIM state was changed to "NONE" (initial state).
		1	PRODUCTION	SIM state was changed to "PRODUCTION" (a new device is in stock).
		2	HOT	SIM state was changed to "HOT" (valid contract).
		3	COLD	SIM state was changed to "COLD" (end of contract or fair use policy violated).
		4	DISCARDED	SIM state was changed to "DISCARDED" (device has been decommissioned).
1620	TRANSMISSION PROFILE	##	---	Transmission profile has been changed.
		0	NORMAL	Operation by default has been activated.
		1	ECO	Operation with low energy and data consumption has been activated.
		2	DIAGNOSTIC	Extended logging for troubleshooting has been activated.
		3	ADAPTIVE	Adaptive operation has been activated. It enables stable data transmission, even at the expense of energy consumption.
1630	NEW LIFECYCLE STATE	##	---	The Lifecycle state has been changed.
		0	PREPROVISIONED	Device ready for handover to partner (firmware installed)
		10	PROVISIONED	Device ready for handover to end customer (firmware and application installed)
		20	CLAIMED	Device assigned to a server
		30	FIELDED	Device assigned to a server and linked to a site
		100	DECOMMISIONED	Device was defective and was decommissioned
1631	NEW LIFECYCLE FLAGS	##	---	One of the Lifecycle flags has been set or deleted. This entry always appears twice in the device log. In the first entry, the parameter indicates the current status of the application-specific lifecycle flags, while in the second entry it indicates the status of the system-specific lifecycle flags.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1640	DEGRADED MODE	##	---	Degraded mode has been changed.
		0	NONE	Normal operation
		1	MINOR	Minor limitation (e.g. connectivity)
		2	RECOVERY	Recovery mode (connectivity, measurement etc. restricted)
		3	SAFE	Safe mode (only BLE , USB, LED, Button available)
		4	LOCKOUT	Only functions relevant to security are active
1910	ACCU 0 E2PROM ERROR	0	---	Rechargeable battery not available
		1	---	Invalid length of the data structure in the EEPROM of the rechargeable battery
		2	---	No charging profile available in the EEPROM (only with Li-ion rechargeable batteries)
		3	---	Error when reading the SoC-value
		4	---	Error when writing the SoC-value
		5	---	The charging profiles of the rechargeable batteries inserted do not match (only with devices that support the simultaneous use of multiple rechargeable batteries)
		6	---	• Permissible charging time exceeded • When restarting the device, it was recognised that the rechargeable battery currently in use has already exceeded the permissible charging time once. The battery is probably defective and should be checked by the manufacturer.
1950	CHARGE START	---	---	Charging has been started.
1951	CHARGE STOP	0	---	Charging has been stopped.
		1	---	The maximum permissible charging time has been exceeded. Charging has been stopped for safety reasons.
1960	SOC	##	---	State of charge in [0.00 %]
1961	VBATT	##	---	Internal battery or rechargeable battery voltage in [mV]
1962	VIN	##	---	External supply or charging voltage in [mV]
1963	IACCU	##	---	Charging or discharging current in [mA]
1964	TEMP	##	---	Temperature in [0.00°C]
1965	RH	##	---	Air humidity in [0.0 %]

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1966	VDD	##	---	stabilised internal system voltage in [mV]
1967	SYS BUTTON INTERRUPTS	##	---	Number of interrupts registered as a result of the magnetic switch or button being actuated (before debouncing)..
2000 - 2199	MODULE ERR	##	---	reserved for extensions
2200 - 2399	MODULE WARNING	##	---	reserved for extensions
2400 - 2599	MODULE INFO	##	---	module-specific information on the current operating status (see "Module-specific information about the current operating status" on page 187)
2600 - 2799	MODULE DEBUG	##	---	reserved for extensions
3000 - 3099	SCRIPT ERROR	##	--	Internal system error If these errors appear several times with the same parameter code in the device log, contact the manufacturer (see "Contact information" on page 205).

18.2.1 Modem error

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
GPRS error				
1200	BEARER GPRS FAILED	-988	---	GPRS setup error • Try to improve the position of the antenna. • Check whether the device is in the coverage area.
1200	BAND SEL FAILED	-969	---	A network could not be found on the GSM900/1800 or on the GSM850/1900 band. • Try to improve the position of the antenna. • Check whether the device is in the coverage area.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1200	NETLOCK ERROR	-966		Error when selecting the network. Check whether the device is in the coverage area.
TCP channel error				
1200	CHANNEL ABORTED	-965	---	An attempt is being made to write to/read a TCP client that is no longer available. Try again later
	TCP DNS FAILURE	-958	---	The name could not be resolved in an IP address. Internal error
	CHANNEL REFUSED	-955	---	The TCP connection has been refused by the server. Try again later
	CHANNEL HOST UNREACHABLE	-954	---	No route to the host. Try again later
	CHANNEL NETWORK UNREACHABLE	-953	---	No network available Try again later
	CHANNEL PIPE BROKEN	-952	---	TCP connection interrupted Try again later
	CHANNEL TIMEOUT	-951	---	Timeout (DNS request, TCP connection, ping response, etc.) Try again later
1200	MODEM POSITION UPDATE ERROR	-943	---	Timeout during determination of the GSM position data
1200	MODEM NETINFO STALL	-941	---	Error detected during online connection Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1200	MODEM RESETLOOP	-940	---	Restart loop on modem detected. Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 205).
1200	MODEM UNDERVOLTAGE	-939	---	Undervoltage on the modem detected. The power supply should be checked.
1200	MODEM OVERHEAT	-938	---	Overheating of the modem detected.

18.2.2 Module-specific information about the current operating status

Log entry		Parameter		Description
Code	**Plain text**	**Code**	**Plaintext**	
2402	MODULE INFO (402)	##/##	---	Serial number of the sensor module linked to the measurement channel 1. It is displayed in the parameter field as follows: the highest 16 bits of the serial number / the lowest 16 bits of the serial number
2403	MODULE INFO (403)	##/##	---	Serial number of the sensor module linked to the measurement channel 2. It is displayed in the parameter field as follows: the highest 16 bits of the serial number / the lowest 16 bits of the serial number
2404	MODULE INFO (404)	##/##	---	Serial number of the sensor module linked to the measurement channel 3. It is displayed in the parameter field as follows: the highest 16 bits of the serial number / the lowest 16 bits of the serial number
2405	MODULE INFO (405)	##/##	---	Serial number of the sensor module linked to the measurement channel 4. It is displayed in the parameter field as follows: the highest 16 bits of the serial number / the lowest 16 bits of the serial number
2410	MODULE INFO (410)	0	---	Reed switch was released again after being pressed
		1	---	Reed switch pressed

18.3 App log entries

The app log is opened via the context menu, which is displayed by clicking on the three-dot symbol in the list of sites.

In the following table, the placeholder "<ch>" represents the number of the remote measurement channel starting at "1" for the first measurement channel.

<table>
<tr><th>Code</th><th>Plain text</th><th>Description</th></tr>
<tr><td>AppFlash</td><td>changed</td><td>Note: The following actions can currently only be carried out by the manufacturer.

• A remote sensor has been added,
• a remote sensor has been removed or
• a remote sensor has been replaced.</td></tr>
<tr><td rowspan="2">BLE Adin</td><td>BLE: Connection established</td><td>The measurement channel (0/4...20 mA input) is configured and ready for use</td></tr>
<tr><td>BLE: Connection closed</td><td>The internal radio connection to the measurement channel (0/4...20 mA input) has been disconnected</td></tr>
<tr><td>BLE ConnDebug</td><td>xxx</td><td>Debug infomation about the wireless connection between a remote sensor module and the device</td></tr>
<tr><td rowspan="2">BLE Gauge</td><td>BLE: Connection established (<ch>)</td><td>The radio connection to a remote sensor of the type "Gauge" has been established, the sensor is configured and ready for use</td></tr>
<tr><td>BLE: Connection closed (<ch>)</td><td>The radio connection to a remote sensor of the type "Gauge" has been disconnected</td></tr>
<tr><td rowspan="2">BLE Radar</td><td>BLE: Connection established (<ch>)</td><td>The radio connection to a remote sensor of the type "LVL-R-5" has been established, the sensor is configured and ready for use</td></tr>
<tr><td>BLE: Connection closed (<ch>)</td><td>The readio connection to a remote sensor of the type "LVL-R-5" has been disconnected</td></tr>
<tr><td>BLE Radar</td><td>Sensor (<ch>) last reset <time>s ago because of 0x<reason></td><td>Reason for the last resetof a remote sensor module of type "LVL-R-5" as well as time that has passed since the last reset. This app log entry is generated as soon as the local radio connection to a remote sensor of type "LVL-R-5" has been established.

<table>
<tr><th><reason></th><th>Explanation</th></tr>
<tr><td>0x00</td><td>PowerOn</td></tr>
<tr><td>0x02</td><td>Watchdog reset detected</td></tr>
<tr><td>0x04</td><td>Soft reset detected</td></tr>
<tr><td>##</td><td>Other reason for the reset</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Code</th><th>Plain text</th><th>Description</th></tr>
<tr><td>BLE Radar</td><td>Sensor (<ch>) id:0x<id>, pc:0x<pc>, line:<line>, file:<file>, error:0x<error></td><td>internal error

If this error occurs several times in the app log, please contact the manufacturer (see "Contact information" on page 205).</td></tr>
<tr><td>BleSensor_ Event</td><td>BLE_SENSOR_EVT_ ERROR</td><td>Internal error

If this error occurs several times in the app log, please contact the manufacturer (see "Contact information" on page 205).</td></tr>
<tr><td rowspan="2">CustomerValues</td><td>Mount ##, Trim ##</td><td>The modifications of the installation height and trimming have been correctly adopted by a sensor module of the type "LVL-R-5"</td></tr>
<tr><td>Offset ##, Trim ##</td><td>The modifications of offset and trimming have been correctly adopted by a sensor module of the type "Gauge"</td></tr>
<tr><td rowspan="2">GaugeStartMeas</td><td>measure error</td><td>Measurement could not be initiated. A sensor module of the type "Gauge" is concerned.</td></tr>
<tr><td>sensor not ready(<ch>) <state></td><td>A sensor module of the type "Gauge" is not ready for initiating a new measurement.

<table><tr><th><state></th><th>Explanation</th></tr><tr><td>6</td><td>Measurement in progress</td></tr></table></td></tr>
<tr><td>HandleTimer</td><td>Retry connection(<ch>)</td><td>The radio connection to a remote sensor has been lost. An attempt is made to re-establish the connection.</td></tr>
<tr><td>Radar</td><td>UpdateStarted(<ch>)</td><td>The process for updating the firmware of a sensor module of the type "LVL-R-5" has been launched.</td></tr>
<tr><td>Radar</td><td>UpdateDone(<ch>) with <result></td><td>The update process has been finished.

<table><tr><th><result></th><th>Explanation</th></tr><tr><td>0</td><td>Update completed</td></tr><tr><td>1</td><td>Firmware was up-to-date. No update has been carried out</td></tr><tr><td>2</td><td>Error when installing the update in the sensor module.</td></tr><tr><td>3</td><td>The firmware package is faulty.</td></tr></table></td></tr>
<tr><td>RdMeasV</td><td>ERROR</td><td>A measurement value could not be read from a sensor module of the type "LVL-R-5".</td></tr>
<tr><td rowspan="2">RadarStartMeas</td><td>measure error</td><td>Measurement could not be initiated. A sensor module of the type "LVL-R-5" is concerned.</td></tr>
<tr><td>sensor not ready(<ch>) <state></td><td>A sensor module of the type "Gauge" is not ready for initiating a new measurement.

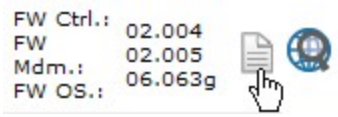
<table><tr><th><state></th><th>Explanation</th></tr><tr><td>6</td><td>Measurement in progress</td></tr></table></td></tr>
</table>

<table>
<tr><th>Code</th><th>Plain text</th><th>Description</th></tr>
<tr><td>RadarUpdate</td><td>Timeout<ch></td><td>A timeout has occured when updating the firmware of a sensor module of the type "LVL-R-5".</td></tr>
<tr><td rowspan="8">SensorEvent</td><td>Sensor <ch> not allowed!</td><td>Sensor type not supported or max. number of permitted remote sensors has been exceeded.</td></tr>
<tr><td>Execute(<ch>) 0x<cmd>, Res = <result></td><td>A special command has been transmitted to the sensor übermittelt
<table><tr><th><result></th><th>Explanation</th></tr><tr><td>0</td><td>Ok</td></tr><tr><td>- 1</td><td>Error, no sensor</td></tr></table></td></tr>
<tr><td>DisconnectSensor(<ch>)</td><td>Connection to the remote sensor has been disconnected intentionally (e.g. when activating transport mode or deactivating the 0/4...20 mA input)</td></tr>
<tr><td>LOGBLE_EVT_BLE_ CONNECTING(<ch>)</td><td>Establishing radio connection to a remote sensor</td></tr>
<tr><td>LOGBLE_EVT_BLE_ CONNECTED(<ch>) <SN></td><td>Radio connection to the remote sensor with the serial number <SN> has been established.</td></tr>
<tr><td>LOGBLE_EVT_BLE_ DISCONNECTED(<ch>)</td><td>Radio connection to a remote sensor has been disconnected.</td></tr>
<tr><td>LOGBLE_EVT_BLE_ ERROR(<ch>): <state></td><td>Error when establishing the radio connection to a remote sensor
<table><tr><th><state></th><th>Explanations</th></tr><tr><td>-1</td><td>Unknown error</td></tr><tr><td>-2</td><td>Radio connection interrupted</td></tr><tr><td>-3</td><td>Sensor not found</td></tr><tr><td>-4</td><td>Error reading data</td></tr><tr><td>-5</td><td>Error writing data</td></tr><tr><td>-6</td><td>Error when setting up a notification</td></tr><tr><td>-7</td><td>Error authenticating or authentication not yet carried out</td></tr><tr><td>-8</td><td>Firmware is being updated</td></tr></table></td></tr>
<tr><td>SensorSupply</td><td>ON</td><td>Measurement channel (0/4...20 mA input) has been enabled</td></tr>
</table>

18.4 Evaluating the device log

18.4.1 Evaluating the device log on the myDatanet server

The last 300 log entries on the myDatanet server can be called up via the button shown below that is located in the measurement device list. As the log entries are sent to the server in the transmission cycle in the same way as the measurement data, only the log entries up to the last server connection are available.



The manual for the server ("myDatanet Server Manual " 805002) includes a detailed description of the evaluation of the device log on the myDatanet server.

Chapter 19 Spare parts and accessories

Use only original spare parts and accessories of the Jellox Analog to avoid negative effects on safety and performance.

19.1 Compatible Addons

Note: *In order for the "Overflow Log" add-on to be available on your platform instance, it must be activated once. Please contact office@microtronics.com for this purpose.*

Description	Quantity	Order number
Overfow Log	1	301708

19.2 Assembly sets

Description	Quantity	Order number
Niro shackle	1	206.330
Anchor clamp 5,5 - 10,5 mm	1	301017
Wall bracket for Jellox with protection casing	1	400109

19.3 Antennas

Description	Quantity	Order number
Flat antenna disc multi band FME-F 2m	1	300629
Multi band antenna with bracket	1	300787
Multi band rod antenna with connection cable 250 mm [1)]	1	400110

[1)] only intended for use in connection with the Wall bracket for Jellox with protection casing

19.4 Cable

Description	Quantity	Order number
Connection cable 7-pins for sensors 2,8 m	1	206.602
Cable connector 7-pins	1	206.654
Pressure compensation tube	1	300131
Clamping tube	1	300256

19.5 Sensors with mA output

Description	Quantity	Order number
REP01-15 End position sensor	1	301500
Radar sensor Vegapuls C21 with connector	1	301233

Microtronics Engineering GmbH is constantly testing various sensors with mA output for compatibility with the Jellox Analog Pro . A list of compatible sensors is provided under the following web address:

https://support.microtronics.com/jellox-analog/compatible-sensors

19.6 Sensor modules

Note: *The required sensor modules must be specified when ordering the Jellox Analog as they have to be paired with the "remote measurement channels" of the Jellox Analog during production. The sensor module cannot be replaced by the user.*

Description	Measuring range	Quantity	Order number
Level sensors (immersed in medium):			
Gauge pressure sensor 0-3m 9W	0-3 m	1	300893+300871
Gauge pressure sensor 0-1m 9W	0-1 m	1	300893+300872
Gauge pressure sensor 0-10m 9W	0-10 m	1	300893+300891
Level sensors (contactless measurement):			
LVL-R-5	0...5 m	1	400411
Surface velocity sensors (contactless measurement):			
VEL-R-5	-5...+5 m/s	1	400416

19.7 Other accessories

Description	Quantity	Order number
MDN Magnet	1	206.803
USB extension cable USB-A/USB-A 1,8m	1	206.664
DeviceConfig	1	300264
Protection casing	1	300662
USB Adapter	1	300685

Chapter 20 Document history

Rev.	Date	Changes
04 (1/2)	14.02.2025 (1/2)	**Various chapters of the user manual** *Internal links adapted to the new design of the specific input screen for configuring the site.* **Chapter "Declaration of conformity" on page 11** *Declaration of conformity updated* **Chapter "General product information" on page 25** *Explanation adapted to account for the fact that the trigger and alarm functions have been replaced by the "Smart Actions".* **Chapter "Determining the water level" on page 35** *Explanation adapted to account for the fact that the trigger and alarm functions have been replaced by the "Smart Actions".* *Schematic diagram adapted to account for the fact that the trigger and alarm functions have been replaced by the "Smart Actions".* **Chapter "Determining the measurement value at the mA input" on page 39** *Explanation adapted to account for the fact that the trigger and alarm functions have been replaced by the "Smart Actions".* *Schematic diagram adapted to account for the fact that the trigger and alarm functions have been replaced by the "Smart Actions".* **Chapter "Alarm/trigger module"** *Chapter removed* **Chapter "Smart Action module" on page 41** *Chapter added* **Chapter "Record module" on page 41** *Explanation adapted to account for the fact that the trigger and alarm functions have been replaced by the "Smart Actions".* **Chapter "Setup mode" on page 43** *Explanation extended to include that the search for remote sensors can be initiated manually by activating setup mode.* **Chapter "Reed switch" on page 80** *Explanation extended to include that the search for remote sensors can be initiated manually by activating setup mode.* **Chapter "Specific input screen for configuring the site" on page 89** *Description adapted to the new design of the interface.* **Chapter "Creating the site" on page 163** *Application name in the illustration of the summary adjusted to "Jellox WENS".* **Chapter "Troubleshooting and repair" on page 175** *Proposed solution for communication problems between the device and sensor module extended to include that the search for the remote sensors can be started manually by activating the setup mode.*

Rev.	Date	Changes
04 (2/2)	14.02.2025 (2/2)	**Chapter "Log entries and error codes" on page 178** *Explanation of the log entries "CHARGE START", "CHARGE STOP", "SOC", "VBATT" and "VIN" added.* **Chapter "App log entries" on page 188** *Explanation of the app log entry "trigger" removed.*
05	05.06.2025	**Chapter "Block diagram" on page 23** *Block diagram adapted to include the connection cable and an energy supply which represents the sensor* **Chapter "Functional principle" on page 31** *Explanation adapted to account for the fact that the USB Adapter is not included in the scope of supply.* **Chapter "User interface on the myDatanet server" on page 86** *Screenshots and description of the title bar adapted to the new design of the server interface* **Chapter "Remote sensor module of type LVL-R-5" on page 105** *Illustration and description of the echo curve settings extended to include the new "Range" button, which is used to extend the displayed area to the full range of the distance axis.* **Chapter "Smart Actions" on page 118** *Link and QR code added referring to the How-To-Video "Introducing "Smart Actions""* **Chapter "Log entries and error codes" on page 178** *Explanation of the log entries "EMM REJECT CAUSE" and "MODEM TO EVAL" added*
06 (1/4)	28.11.2025 (1/4)	**Chapter "Declaration of conformity" on page 11** *EU Declaration of conformity updated* **Chapter "Safety instructions" on page 19** *Note added that modifications to the device must not be made under any circumstances* *Explanation of safety symbols on the device added* **Chapter "General safety instructions" on page 20** *Chapter added* **Chapter "Specific safety instructions" on page 20** *Chapter added* **Chapter "Safety and precautionary measures when entering confined spaces and containers" on page 21** *Chapter added* **Chapter "Intended use" on page 23** *Explanation adapted to the fact that remote sensor modules for surface velocity measurement are now also supported.* **Chapter "Unauthorised use" on page 25** *Note on the permissible alignment of the device added*

Rev.	Date	Changes
06 (2/4)	28.11.2025 (2/4)	**Chapter "General product information" on page 25** *Corrected the names of the measurement values that are recorded.* *Explanation adapted to the fact that for local reading and simultaneous forwarding of data and configurations, the "OnSite Companion" smartphone app now has to be used. The DeviceConfig configuration program is no longer supported.* **Chapter "Functional principle" on page 31** *Explanation adapted to the fact that for local reading and simultaneous forwarding of data and configurations, the "OnSite Companion" smartphone app now has to be used. The DeviceConfig configuration program is no longer supported.* **Chapter "List of determined measurement values " on page 33** *Chapter added* **Chapter "Determining the water level" on page 35** *Improved representation of th pressure probe in the illustration "Installation situation of the pressure probe".* **Chapter "Determining the surface velocity" on page 37** *Chapter added* **Chapter "Setup mode" on page 43** *Link and QR code added referring to the How-To-Video "Triggering the setup mode"* **Chapter "Zero point adjustment using the local radio connection" on page 58** *Explanation adapted to the fact that for local reading and simultaneous forwarding of data and configurations, the "OnSite Companion" smartphone app now has to be used. The DeviceConfig configuration program is no longer supported.* **Chapter "Technical details about the local radio interface" on page 67** *Explanation adapted to the fact that the local radio interface is now only intended for communication with the "OnSite Companion" smartphone app. The DeviceConfig configuration program is no longer supported.* **Chapter "Using the mobile connection and the myDatanet server" on page 69** *Explanation adapted to the fact that remote sensor modules for surface velocity measurement are now also available.* **Chapter "Using the local radio connection and the myDatanet server" on page 72** *Explanation adapted to the fact that remote sensor modules for surface velocity measurement are now also available.* *Explanation adapted to the fact that the local radio interface is now only intended for communication with the "OnSite Companion" smartphone app. The DeviceConfig configuration program is no longer supported.* **Chapter "Testing communication between Jellox Analog and myDatanet server (mobile network connection) " on page 75** *Explanation adapted to the fact that remote sensor modules for surface velocity measurement are now also available.* **Chapter "Testing communication between Jellox Analog and myDatanet server (local radio connection) " on page 77** *Explanation adapted to the fact that remote sensor modules for surface velocity measurement are now also available.* *Explanation adapted to the fact that the local radio interface is now only intended for communication with the "OnSite Companion" smartphone app. The DeviceConfig configuration program is no longer supported.*

Rev.	Date	Changes
06 (3/4)	28.11.2025 (3/4)	**Chapter "Display" on page 80** *Explanation adapted to the fact that only the sensor category and the product designation of the sensor module (as on the type plate) are displayed in the tabs with information on the remote sensor module.* **Chapter "Specific input screen for configuring the site" on page 89** *Note added indicating how the specific input screen for configuring the site is opened and that the configuration sections contained therein are specific to the IoT application based on which the site was created.* **Chapter "Measurement system" on page 90** *Explanation added for the symbolic photo included in the status information section for a sensor module.* *Illustration and explanation of the status information for a remote sensor module of type "VEL-R-5 " added.* **Chapter "Errors and notifications" on page 94** *Explanation of the update process for remote sensor modules of type "VEL-R-5 " added.* **Chapter "Universal input" on page 100** *Improved representation of th pressure probe in the illustration "Installation situation of the pressure probe".* **Chapter "Remote sensor module of type LVL-R-5" on page 105** *Added explanation of the dropdown list for selecting the colour of the colour cap in use.* *Added explanation of the slider button for selecting the sensitivity of the signal recognition.* *Added explanation of the input field for the threshold that the aplitude values need to exceed in order to be included in the echo curve.* **Chapter "Remote sensor module of type Gauge" on page 112** *Illustrations updated* **Chapter "Remote sensor module of type VEL-R-5" on page 113** *Chapter added* **Chapter "Default input screen for configuring the site" on page 127** *Note added indicating how the default input screen for configuring the site is opened and that the configuration sections contained therein are identical for all rapidM2M -based devices.* **Chapter "Site" on page 128** *Note added indicating that the measurement data is assigned to the site and is retained when the device is replaced.* *Explanation of the "Application phase" added. It indicates the phase of the release process that the currently used version of the IoT application is in.* **Chapter "Measurement instrument" on page 139** *Explanation of the fields "Lifecycle state", "Lifecycle flags", "Article Id", "Article revision" and "Article name" added.* **Chapter "DeviceConfig " on page 143** *Explanation extended to specify that, for devices with mobile network modem, the functional scope of the DeviceConfig may be restricted depending on the current lifecycle status.*

Rev.	Date	Changes
06 (4/4)	28.11.2025 (4/4)	**Chapter "Functional principle (Communication with a Jellox Analog)"** *Chapter removed* **Chapter "OnSite Companion" on page 153** *Chapter added* **Chapter "Maintenance of the Jellox Analog " on page 169** *Description extended to include the "Dehumidification" service, that is performed when replacing the batteries but can also be ordered with the individual service Dehumidification (301736).* **Chapter "Services" on page 170** *"Dehumidification " service added* **Chapter "Repair & return" on page 171** *Chapter revised* **Chapter "Troubleshooting and repair" on page 175** *Solution approaches adapted to account for the fact that the DeviceConfig configuration program is no longer supported and that the "OnSite Companion" smartphone app can now be used as an alternative.* *Added solution approach for surface velocity measurement values that are not plausible.* **Chapter "Log entries and error codes" on page 178** *Explanation of the log entries "EXCEPTION ADDR 1", "EXCEPTION ADDR 2", "NEW LIFECYCLE STATE", "NEW LIFECYCLE FLAGS", "IACCU", "TEMP" and "RH" added.* **Chapter "Evaluating the device log using DeviceConfig "** *Chapter removed* **Chapter "Assembly sets" on page 193** *Wall bracket for Jellox with protection casing added* *Item number of the Niro shackle changed to 206.330* **Chapter "Antennas" on page 193** *Multi band rod antenna with connection cable 250 mm added* **Chapter "Sensor modules" on page 194** *VEL-R-5 added*
07	18.02.2026	**Chapter "Wall mounting" on page 51** *Chapter added* **Chapter "Compatible Addons" on page 193** *Chapter added* **Chapter "Antennas" on page 193** *Note added indicating that the Multi band rod antenna with connection cable 250 mm is only intended for use in connection with the Wall bracket for Jellox with protection casing .*
08 (1/2)	03.07.2026 (1/2)	**Chapter "Intended use" on page 23** *Explanation adapted to the fact that the local radio interface is now only intended for communication with the "OnSite Companion" smartphone app. The DeviceConfig configuration program is no longer supported.*

Rev.	Date	Changes
08 (2/2)	03.07.2026 (2/2)	**Chapter "List of determined measurement values " on page 33** *Explanation adapted to the fact that the "Radar " sensor module has been replaced by the follow-up model "LVL-R-5 ".* **Chapter "Determining the water level" on page 35** *Explanation adapted to the fact that the "Radar " sensor module has been replaced by the follow-up model "LVL-R-5 ".* **Chapter "Display" on page 80** *Figure "Jellox tab with error code" added* *Explanation of the TxError codes added. These provide further information on the cause of the mobile connection failure.* **Chapter "Measurement system" on page 90** *Explanation of the icon that opens the input screen for guided commissioning added* *Explanation adapted to the fact that the "Radar " sensor module has been replaced by the follow-up model "LVL-R-5 ".* **Chapter "Remote sensor module of type LVL-R-5" on page 105** *Explanation adapted to the fact that the "Radar " sensor module has been replaced by the follow-up model "LVL-R-5 ".* *Explanation added for the "Distance limit" checkbox.* *Explanation of the date selection control updated and adapted to the modified function.* **Chapter "Creating new Smart Actions " on page 120** *"Change connection type as long as the condition is met" is now also available as an alternative behaviour.* **Chapter "Edit Smart Action" on page 125** *"Change connection type as long as the condition is met" is now also available as an alternative behaviour.* **Chapter ""Guided commissioning" input screen " on page 137** *Chapter added* **Chapter "Troubleshooting and repair" on page 175** *Explanation adapted to the fact that the "Radar " sensor module has been replaced by the follow-up model "LVL-R-5 ".* **Chapter "Log entries and error codes" on page 178** *Explanation of the log entries "MODULE ERR", "MODULE WARNING", "MODULE INFO" and "MODULE DEBUG" added* **Chapter "Module-specific information about the current operating status" on page 187** *Chapter added* **Chapter "App log entries" on page 188** *Explanation of the app log entry "BLE ConnDebug" added* *Explanation adapted to the fact that the "Radar " sensor module has been replaced by the follow-up model "LVL-R-5 ".* **Chapter "Sensor modules" on page 194** *Sensor module "Radar " replaced by the follow-up model "LVL-R-5 "*

Rev.	Date	Changes
09	28.10.2026	**Chapter "Specifications" on page 15** *Specification of the maximum permissible operating altitude and the permissible pollution degree added* **Chapter "Basic settings" on page 135** *Explanation of the area to display and select Lifecycle Flags added* **Chapter "Services" on page 170** *HLC replacement (301078), Display replacement (300964), Sensor holder replacement (301181) and Replacement of housing cover with display window (301396) added* **Chapter "Synchronisation with the myDatanet server" on page 156** *Description updated to specify that the server assignment is also checked during synchronisation.* *Illustration and description of the "List of devices within range" have been updated to specify that the product name is displayed as shown on the type plate, provided it has been stored in the device. Otherwise, the hardware platform installed in the device is displayed.* **Chapter "Log entries and error codes" on page 178** *Explanation of the log entries "RADIO POWER ON", "RADIO POWER OFF", "DEGRADED MODE", "VDD" and "SYS BUTTON INTERRUPTS" added* **Chapter "App log entries" on page 188** *Explanation of the app log entries "BLE Radar-Sensor (<ch>) last reset <time>s ago because of 0x<reason>" and "BLE Radar -Sensor (<ch>) id:0x<id>, pc:0x<pc>, line:<line>, file:<file>, error:0x<error>" added* **Chapter "Glossary" on page 203** *Explanation of the term "Footprint" removed*

Chapter 21 Glossary

App centre

Area of the myDatanet server for the installation and management of the IoT apps. The app models that serve as a basis for the IoT apps are obtained via the rapidM2M Store . When installing an IoT app on the myDatanet server the default settings defined when developing the app models are initially applied. These default settings can then be adjusted. Any number of IoT apps can be created based on a single app model by setting the appropriate default settings.

App model

An app model is developed in the rapidM2M Studio and forms the basis for creating IoT apps. It essentially contains the executable program files (device logic, backend logic, portal view, etc.) from which an IoT is created by adding the default settings. Distribution to the individual myDatanet servers is carried out via the rapidM2M Store . The available app models are displayed in the app centre of the respective myDatanet server.

Device logic

The device logic is the intelligence installed on the device that determines the local functionality of the device. The device logic is part of the app model and is created in a C-like scripting language built on "PAWN".

Hardware ID string

Specifies the hardware platform installed in the device and its hardware version (e.g. rapidM2M M2 HW1.4). The part of the hardware ID string, that specifies the hardware version, is only increased if changes relevant to the rapidM2M firmware have been made to the hardware platform. When developing an app model, it can be specified on which hardware platform the app model can be installed and which version of the hardware platform is required as a minimum. The hardware ID string is displayed in the TESTbed of the rapidM2M Studio or in the "Identification" field of the input screen for configuring the device.

IoT app

IoT apps form the basis for creating sites. They consist of an app model and corresponding default settings that are applied as default values for the site when the site is created. The app centre can be used to create any number of IoT apps based on a single app model by setting the appropriate default settings. This makes sense if several use cases need to be covered by a single app model and they each require a different default site configuration (e.g. if a data logger with different external sensors is to be sold as a package).

NaN value

The myDatanet uses special encoding to display different error statuses in the measurement values, for example. By setting a measurement value to "NaN", it is clearly marked as invalid and is thus not used for any further calculations. In the measurement value graphs, a measurement value that has been set to "NaN" is indicated by an interruption in the graph. When downloading the data, a measurement value set to "NaN" is indicated by an empty data field.

Product revision

Specifies the revision of the product. The revision is increased every time the product is modified (i.e. electronic system, mechanics, etc.) and is marked on the type plate of the product.

rapidM2M Store

Is responsible for distributing the app models to the individual myDatanet servers. When installing and updating IoT apps the myDatanet server access the app models provided in the rapidM2M Store . The developer of the respective app model defines which myDatanet servers are allowed to access an app model via the rapidM2M Studio .

rapidM2M timestamp

Depending on the required accuracy, one of two special encodings can be used for the time stamp in rapidM2M. If the accuracy requirements are moderate, the "stamp32" data type (seconds since 1999-12-31 00:00:00 UTC) can be used. If a higher accuracy is required, the "stamp40" data type (1/256 seconds since 1999-12-31 00:00:00 UTC) can be used. Converting the "stamp32" data type into the UNIX timestamp (seconds since 1970-01-01 00:00:00 UTC) can be achieved by adding 946598400.

Chapter 22 Contact information

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