
User manual myDatalogEx LTE-M

Valid from:

- Firmware version: 01v019
- App. version: 07v000
- Server version: 49v011
- Hardware version: 5.0



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Chapter 2 Declaration of conformity

EU-Konformitätserklärung

EU Declaration of Conformity / Déclaration de conformité UE

Produktbezeichnung: Portabler Datenlogger mit Ex-Zulassung zur Erfassung und Übertragung von analogen und digitalen Signalen
Product:
Désignation du produit:

Type : myDatalogEx LTE-M **Gültig ab:** Rev. 5.0
Type code: Valid from:
Type: Valide à partir de:



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 20 ATEX 120 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 One or more of the associated listed in the Type Examination Certificate SIQ 20 ATEX 120 X standards have been replaced by new editions.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 20 ATEX 120 X étaient remplacées 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+A11:2017
		EMC 3.1b	EN301489-1 V2.2.0
			EN301489-1 V2.1.1 EN301489-17 V3.2.0
Radio spectrum efficiency 3.2	EN300328 V2.1.1 EN300328 V2.2.2		
(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		
	0123 II 2G Ex ib IIB T3 Gb		

Ruprechtshofen, den 22.06.2023

A. Zuser

Hans-Peter Buber

Ort und Datum der Ausstellung
 Place and date of issue
 Lieu et date d'établissement

Andreas Zuser, Ex-Schutzbeauftragter
 Unterschrift
 name and signature of authorised person
 Nom et signature de la personne autorisée

Hans-Peter Buber, Managing Director
 Unterschrift
 name and signature of authorised person
 Nom et signature de la personne autorisée

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 20 ATEX 120 X

Issue: 0



(4) Product: Gateway with BLE and GSM 2G/3G module, type: myDatalogEx

(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.

The examination and test results are recorded in the confidential test report TEx120.2/20.

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

EN IEC 60079-0 : 2018

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:

 **II 2 G Ex ib IIB T3 Gb**

Certification body

Ljubljana, 1 October 2020


Bojan Pečavar

Page 1/4

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, Mašera-Spasičeva ulica 10, SI-1000 Ljubljana, +386 1 4778 221, ex@siq.si



(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number SIQ 20 ATEX 120 X, Issue: 0**

(15) Description of Product

Gateway with BLE and GSM 2G/3G module, type: myDatalogEx, is a data logger for recording and transferring analogue signals, designed in type of protection intrinsic safety 'ib'. The generated measurement data is recorded in an adjustable interval, temporarily saved in the internal data memory and then transferred to a myDatatnet server via a GSM connection or Bluetooth.

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.

Technical data:

Ambient temperature range:	From -20°C to +50°C
Voltage supply:	Two batteries Tadiran type SL-2880 and hybrid layer capacitor Tadiran type HLC-1530
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	Bluetooth Low Energy: Range: 20 m (depending on the environmental conditions) Transmission rate: 120 data records/sec. 2G/3G modem (Europe): 2G GPRS 900MHz / 1800MHz, UMTS B1, B8

(16) Test Report

TEx120.2/20 dated 1 October 2020.

(17) Specific Conditions of Use

- Ambient temperature range $-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$.
- Potential electrostatic charging hazard: Clean the device with moist or electrostatically dissipative cloth.
- The device shall be protected against UV radiation.
- Batteries must be replaced only by manufacturer or authorized service.
- Connector for external sensor shall be always protected by intended plug or connected to sensor.

3.1 Issue one



(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 20 ATEX 120 X

Issue: 1



(4) Product: Gateway with BLE and GSM 2G/3G module, type: myDatalogEx

(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.

The examination and test results are recorded in the confidential test report TEx413/21.

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

EN IEC 60079-0:2018+AC:2020

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:

II 2 G Ex ib IIB T3 Gb

Certification body

Ljubljana, 27 October 2021

Bojan Pečavar

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(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number SIQ 20 ATEX 120 X, Issue: 1**

(15) Description of Product

Gateway with BLE and GSM 2G/3G module, type: myDatalogEx, is a data logger for recording and transferring analogue signals, designed in type of protection intrinsic safety 'ib'. The generated measurement data is recorded in an adjustable interval, temporarily saved in the internal data memory and then transferred to a myDatatnet server via a GSM connection or Bluetooth.

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 armour.

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	Bluetooth Low Energy: Range: 100 m (depending on the environmental conditions) Transmission rate: 120 data records/sec. 2G/3G modem (World): 2G GPRS 850/900MHz & 1800/1900MHz UMTS B1, B2, B5, B8, B19

(16) Test Report

TEx413/21 dated 27 October 2021.

(17) Specific Conditions of Use

- Ambient temperature range $-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$.
- Potential electrostatic charging hazard: Clean the device with moist or electrostatically dissipative cloth.
- The device shall be protected against UV radiation.
- Batteries must be replaced only by manufacturer or authorized service.
- Connector for external sensor shall be always protected by intended plug or connected to sensor.

3.2 Issue two

(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 20 ATEX 120 X**Issue: 2**

- (4) Product: Gateway with BLE, GSM 2G/3G and LTE-M module, types: myDatalogEx and myDatalogEx LTE-M
 (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.

The examination and test results are recorded in the confidential test report TEx153/23.

- (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:

II 2 G Ex ib IIB T3 Gb

Certification body

Ljubljana, 21 July 2023

Bojan Pečavar

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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 20 ATEX 120 X, Issue: 2**

(15) Description of Product

Gateway with BLE, GSM 2G/3G and LTE-M module, types: myDatalogEx and myDatalogEx LTE-M, is a data logger for recording and transferring analogue signals, designed in type of protection intrinsic safety 'ib'. The generated measurement data is recorded in an adjustable interval, temporarily saved in the internal data memory and then transferred to a myDatenet server via a GSM or Bluetooth connection.

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 armour.

Type key:

Type:	Description:
myDatalogEx	BLE gateway with BLE and GSM 2G/3G world module
myDatalogEx LTE-M	BLE gateway with BLE and LTE-M module


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	- Bluetooth Low Energy: Range: 100 m (depending on the environmental conditions) Transmission rate: 120 data records/sec. - 2G/3G modem (World): 2G GPRS 850/900MHz & 1800/1900MHz UMTS B1, B2, B5, B8, B19 - LTE-M module: B1, B2, B3, B4, B5, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B66

(16) Test Report

TEx153/23 dated 21 July 2023.

Chapter 4 Specifications

Voltage supply	Battery: 2 x Li-SOCI2cells with a total of 25,74Ah
Enclosure	Material: Noryl GTX 973 / PC (enclosure/cover) Weight: 730g Protection class: IP66 / IP68 / IP69 IP68: 105 days at an immersion depth of 1m Dimensions (WHD): 106 x 169 x 61mm (with protective armour)
Ex certification	 II 2G Ex ib IIB T3 Gb
Operating temperature	-20...+50°C
Air humidity	15...90%rH non-condensing
Storage and transport temperature	-20...+70°C
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
Universal inputs	1 x analogue Modes: <ul style="list-style-type: none"> • 0...20mA: Resolution 1µA , max. 25,6mA , load 2Ω • 4...20mA: Resolution 1µA , max. 25,6mA , load 2Ω <p>Additional information is provided in "Technical details about universal input" on page 51.</p>
Sensor supply	1 x switchable and adjustable sensor supply (0...22V) <ul style="list-style-type: none"> • U_o : 25,6V • I_o : 82mA • P_o : 0,523W • C_o : 0,31µF • L_o : 1000µH <p>Additional information is provided in "Technical details regarding the sensor supply" on page 52.</p>
Data memory	Internal flash memory for up to 66.856 measurement cycles
Data type	f32 (32Bit floating point)

Data transmission	<p>Bluetooth Low Energy:</p> <p>Range: 20m (depending on the environmental conditions)</p> <p>Transmission rate: 120 data records/sec.</p> <p>LTE-M/NB-IoT modem (World):</p> <p>M1: LTE B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B28, B66</p> <p>NB1/NB2: LTE B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66</p>
SIM	Integrated SIM chip
Monthly data volume	Approx. tbd at 15min. measurement interval and 24h transmission interval
Device operating time	Up to 11 years battery life at 15min. measurement interval, 1sec. heat up and 24h transmission interval

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, as well as software and driver updates are available in the service area of the myDatenet server.*

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-powered, stationary myDatalogEx LTE-M is designed for use in areas with a zone 1 explosive atmosphere.

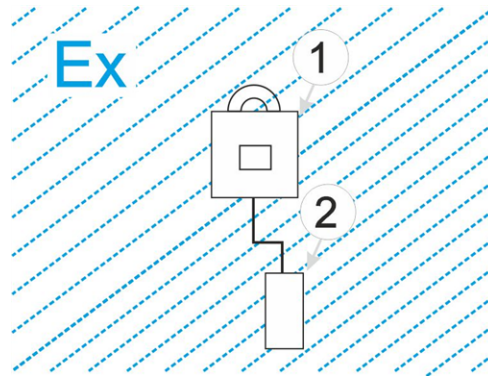
The following conditions must be observed:

- 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**

Important note: The Ex approval is only valid if the corresponding marking is provided on the type plate of the measurement instruments.

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



1 myDatalogEx LTE-M	2 Sensor approved for the Ex zone
---------------------	-----------------------------------

5.5 Safety instructions

For the connection, commissioning and operation of the myDatalogEx LTE-M, 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.

Important note: *The manufacturer's products that are designed for outdoor use include extensive protection against moisture and dust penetration.*

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 General 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 GSM/GPRS modem contained in the device.

5.5.3 Safety and preventative measures for handling GSM/GPRS modems

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



CAUTION:

The mobile radio 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 GSM/GPRS modem for which wireless signals and networks are utilized. The GSM/GPRS modem must be switched on and operated in an area where sufficient signal strength is present.*

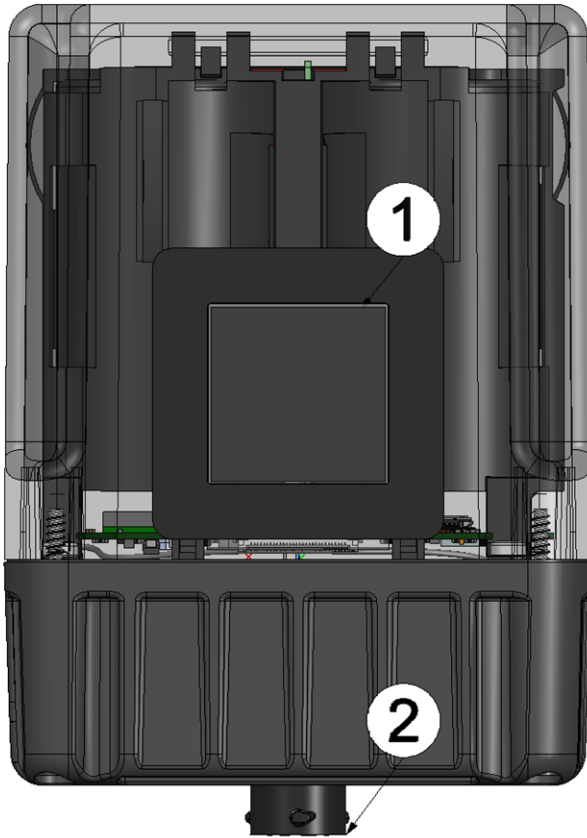
5.5.3.1 Safety and precautionary measures for the GSM/GPRS modem installation

- 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 GSM/GPRS modem can cause interferences if it is located in the vicinity of television sets, radios or computers.
- Do not open the GSM/GPRS modem. Any modification to the device is prohibited and will result in the operating licence being revoked.
- The use of GSM services (SMS 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.

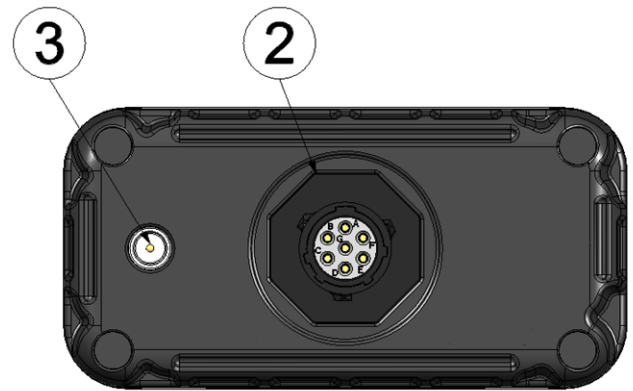
5.5.3.2 Safety measures for installing the antenna

- 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!

5.6 Overview



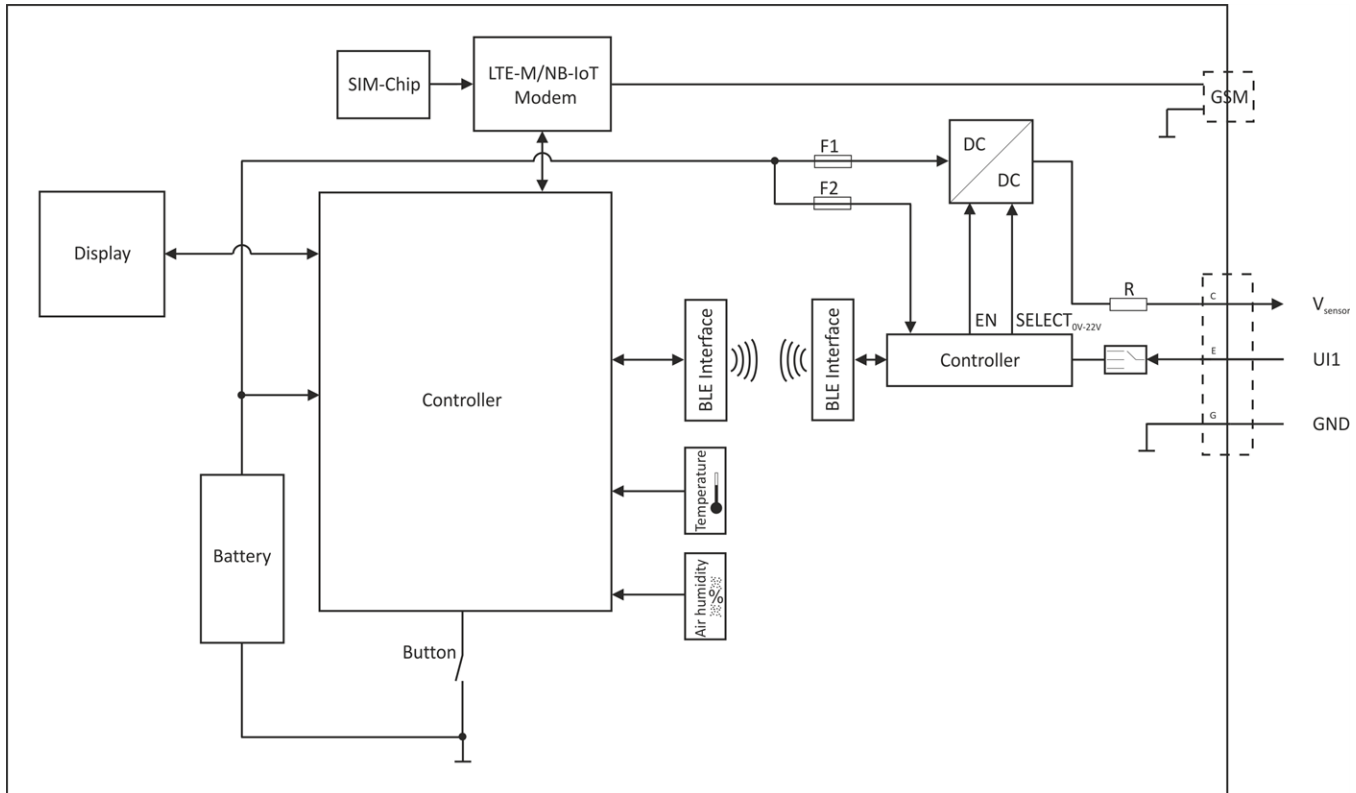
Front of the myDatalogEx LTE-M
(view without protective armour)



Bottom of the myDatalogEx LTE-M
(view without protective armour)

1 Display	3 Antenna connector
2 Sensor connector	

5.6.1 Block diagram



Block diagram of the myDatalogEx LTE-M

5.7 Intended use

The measurement instrument is used to capture analogue signals. The device is battery-operated. The measured and recorded data is stored on a non-volatile memory medium. This stored data is sent via the mobile network to a central server for further processing. The device is equipped with an integrated SIM chip for this purpose. The maximum permissible limit values specified in chapter "Specifications" on page 17 must be observed. The manufacturer shall not be liable for any operational cases that deviate from these limit values and have not been approved by the manufacturer in writing.

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. You can find a list of all supported countries and associated service providers under www.microtronics.com/footprint. 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.

5.8 General product information

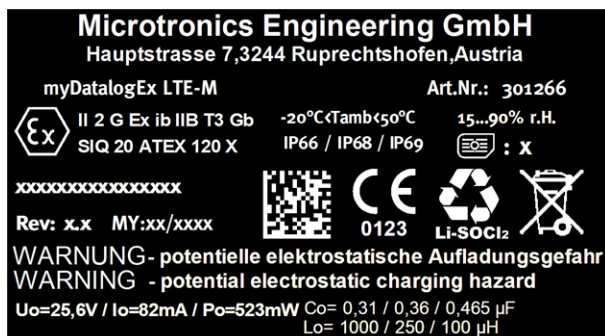
The device is a compact, battery-powered, stationary ATEX data logger for recording and transferring analogue signals. A universal input is available that can be operated in various analogue modes. The device operates without mains power and has an adjustable (0...22V) voltage output to supply the sensors. To save energy, the voltage output can be configured in such a way that it is only activated just before and during a measurement. In addition to the measurement data of the universal input, the internal measurement values "SOC"(State of Charge), "Battery", "Int. Temp", "rH" (relative air humidity in the enclosure), "GSM" (GSM level), "Service" (days remaining before battery replacement) and "Load" (energy consumption between two recordings) are determined. The generated measurement data is recorded in an adjustable interval, temporarily saved in the internal data memory and is then transferred at a freely selected interval to a central myDatanet server via a mobile connection. The device is equipped with an integrated SIM chip for this purpose. The device is configured via the interface of the relevant myDatanet server. More information is provided in the server manual ("myDatanet Server Manual " 805002).

The myDatalogEx LTE-M has a 1,5" OLED display to show the current measurement value at the universal input (incl. unit) and a variety of status information (e.g. remaining days until the battery will next be replaced in the device). The display is activated via the reed switch. Detailed information on this is provided in chapter "Display" on page 62.

5.9 Device labelling

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

- Name and address of the manufacturer
- Type designation
- Item number
- Ex protection designation as specified in chapter "Declaration of conformity" on page 9
- Serial number
- Hardware revision
- Week and year of production
- Environmental conditions during operation
- Protection class
- Country list profile of the SIM chip
- CE marking
- Chemical composition of the installed battery
- Logo for the EU WEEE Directive
- Hazard note regarding electrostatic charge build-up
- Ex parameters as specified in chapter "Ex certification" on page 11



Type plate myDatalogEx LTE-M

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: This symbol indicates the country list profile (see www.microtronics.com/footprint) of the SIM chip installed in the device.

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 myDatalogEx LTE-M, activate the transport mode in the in the input screen of the myDatanel server for configuring the device. Then activate the setup mode (see "Setup mode" on page 31) via the reed switch so that the amended configuration is transferred to the myDatalogEx LTE-M. During this process, all of the data that has not yet been transferred to the myDatanel server is transferred. The sensor cable and antenna can be removed as soon as the GPRS connection has been terminated - indicated by "Transport mode" being shown on the display (see "Display" on page 62). 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 61). Store the myDatalogEx LTE-M in its original packaging. Do not remove the protective armour during this process. When storing the device, the sensor connector has to be covered with the protective cap (Typ "UTS10DCG") included in the scope of delivery.

The myDatalogEx LTE-M is placed in a highly 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 reactivating the setup mode and the myDatalogEx LTE-M resumes operation according to the configuration settings. A connection to the myDatanel 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.

5.12 Warranty

The device has been functionally tested before delivery. If it is used as intended (see "Intended use" on page 24) and the operating instructions, the applicable documents(see "Applicable documents " on page 55) 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 27.

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**.

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

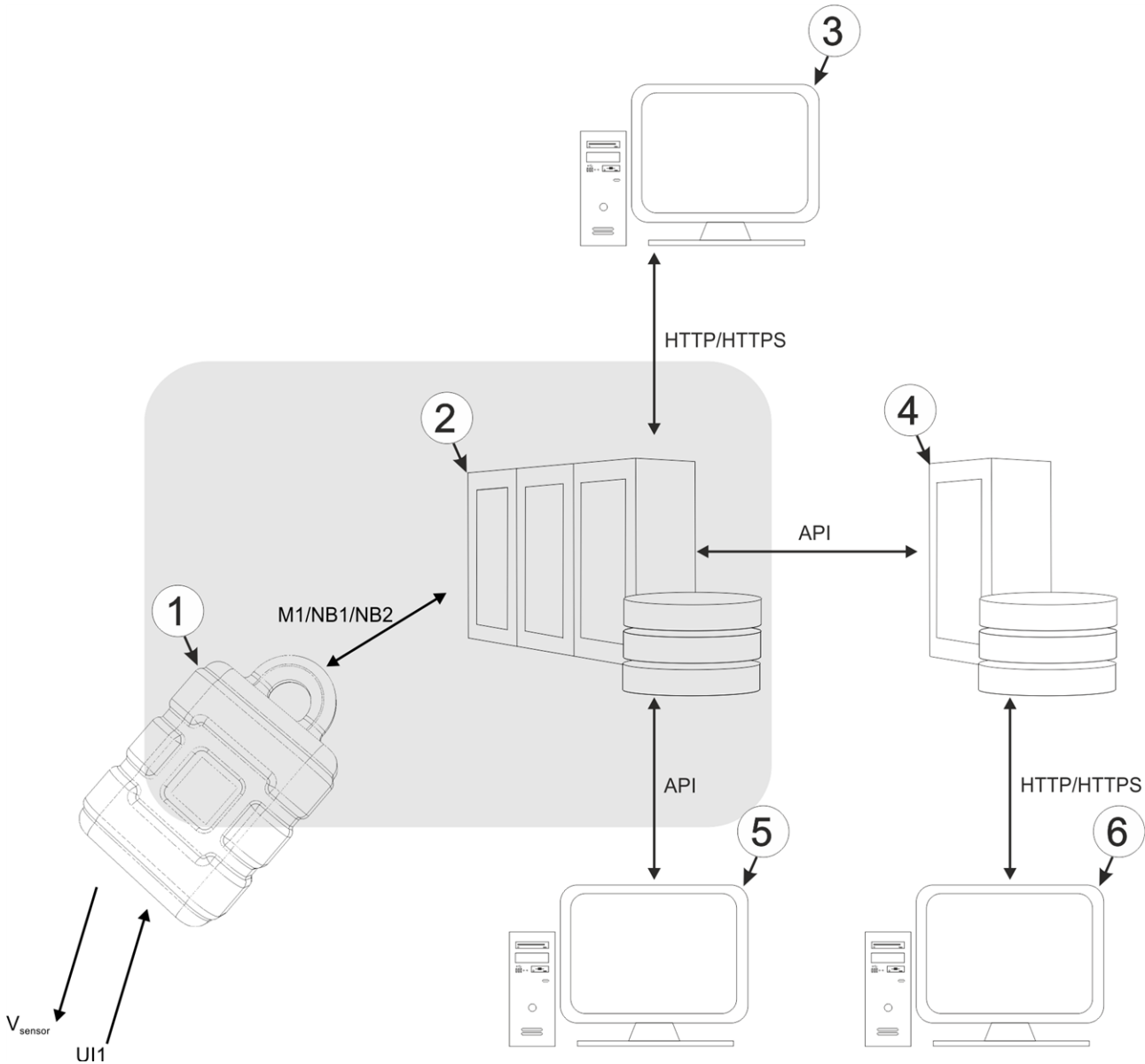
Note: Qualified personnel

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 myDatenet are illustrated in grey. All other components must be provided/created by the customer.



Functional principle

1	myDatalogEx LTE-M with integrated managed service SIM chip
2	myDatenet server to which the data is transferred
3	Client that accesses the interface of the myDatenet server via the web browser
4	Customer-specific server that provides clients with their own interface. The customer-specific server obtains the data via the API interface of the myDatenet server (see "API" on page 95).
5	Client, on which a PC program is running, that obtains its data via the API interface of the myDatenet server (see "API" on page 95)
6	Client that accesses the interface of the customer-specific server via the web browser

Functions and components provided by myDatanet :

- myDatalogEx LTE-M

The device is a measurement instrument approved for Ex zone 1 for connecting a sensor (U11) to the myDatanet server (2G/3G).

- 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 of the server (see "API" on page 95) or web interface of the server.

Functions and components provided by the customer:

- Sensor

Sensor that has an interface that is compatible with the specifications listed in the chapter "Technical details about the universal input" (see "Technical details about universal input" on page 51). If the device is operated in areas with a zone 1 explosive atmosphere, only sensors that are also approved for zone 1 and for which the Ex parameters are compatible with those of the myDatalogEx LTE-M 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 (see "API" on page 95) by the customer-specific server.

6.1 Functionality of the internal data memory

Structure	Circular buffer
Total size	66.856 measurement cycles
Number of sectors	8
Sector size	8.357 measurement cycles

The internal data memory of the myDatalogEx LTE-M is designed as a circular buffer with 8 sectors. If the maximum number of data records (66.856) 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 58.499 cycles, however at most the measurement values of the last 66.856 cycles.

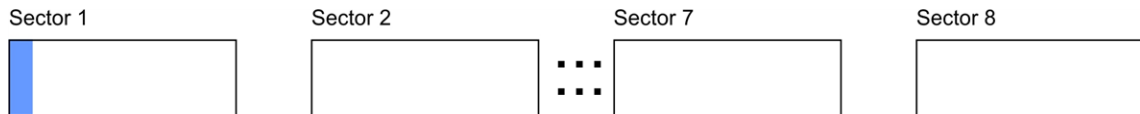
For this reason, it is recommended to coordinate the transmission cycle and record interval in such a way that a maximum of 58.499 measurement cycles have to be recorded between two transmissions. Note, that if the measurement cycle is shorter than the record interval, the record interval still has to 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 the 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.

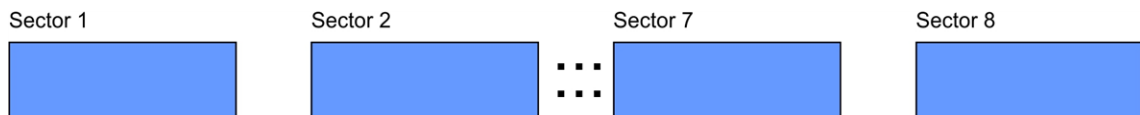
Note:

Additional explanation regarding the functionality of the circular buffer

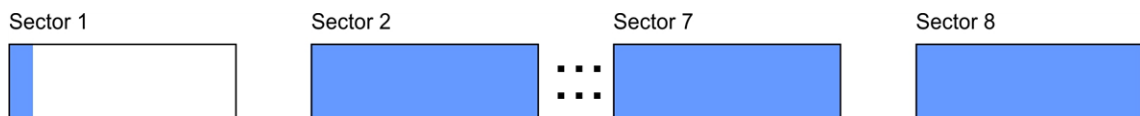
Data memory after the first measurement cycle:



Data memory after 66.856 measurement cycles:



Data memory after 66.856 + 1 measurement cycles:



6.2 Procedure in case of connection aborts

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

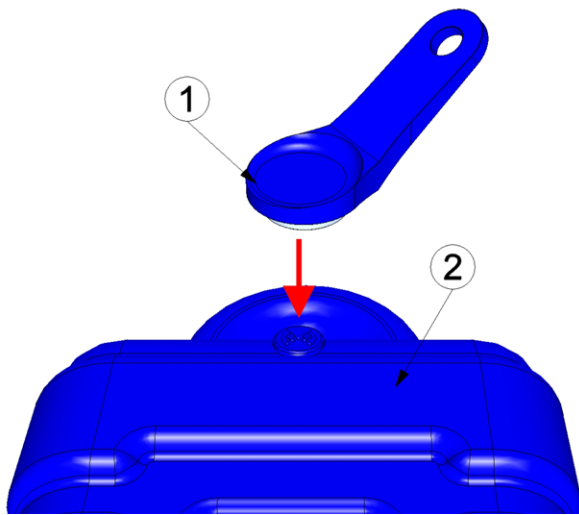
6.3 Setup mode

Setup mode is an operating mode specifically developed for testing the GSM signal quality in the final installation position of the myDatalogEx LTE-M . Setup mode can also be used to execute the zero point adjustment of the sensors (see "Zero point adjustment with the help of setup mode" on page 44). Setup mode is activated by holding the magnet to the reed switch for at least three seconds. (see "Reed switch" on page 61). A connection to the myDatanet server is thus initially established to inform it about setup mode being activated. A speech bubble with the title "Setup" is then displayed for the relevant site in the list of sites/applications (see ""Sites / Applications" area at customer level" on page 90). The myDatalogEx LTE-M then terminates the connection to the server again and starts to measure the GSM level for a period of up to 3min. . During this period, the measurement values of the sensors are also recorded to be able to complete a zero point adjustment, if required. The remaining time until the measurement is terminated is shown on the display of the device and in the "Setup data" configuration section (see "Setup data" on page 67). Once the time has elapsed, the myDatalogEx LTE-M establishes another connection with the myDatanet server to transfer the determined values. These are then displayed in the "Setup data" configuration section. The background colour of the speech bubble with the "Setup" inscription changes from white to red if a new connection cannot be established within the timeout of 5min. , as, for example, the GSM signal quality deteriorates too much when the cover of the sewer, in which the device is located, is closed. In this case, the note "Setup mode failed (enhance antenna position)" is shown above the GSM level display in the "Setup data" configuration section.

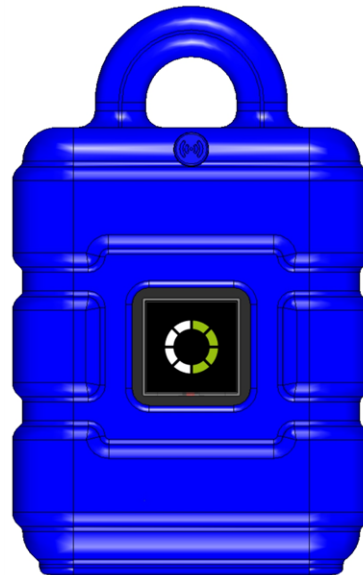
1. Place the device and the antenna in the final installation position (with the shaft lid open).
2. Activate setup mode by pressing the reed switch for at least three seconds. (see "Reed switch" on page 61). The time for which the reed switch was pressed is visualised by a circle on the display in which the segments change from white to green. Setup mode is activated once all of the segments have switched from white to green.



How-To-Video: [Activating the setup mode](#)



Activating setup mode



Visualisation of the time for which the reed switch was pressed

1 MDN Magnet (206.803)	2 myDatalogEx LTE-M
------------------------	---------------------

The first of the two connections to the myDatenet server are completed as part of setup mode. The connection establishment and then the data synchronisation are indicated on the display of the device by means of the relevant graphics.

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 61).

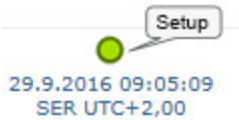


Connection establishment



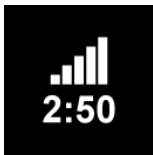
Data synchronisation

- 3. Wait until it is indicated in the list of sites/applications that the device is in setup mode. This is indicated by a speech bubble with the "Setup" inscription.

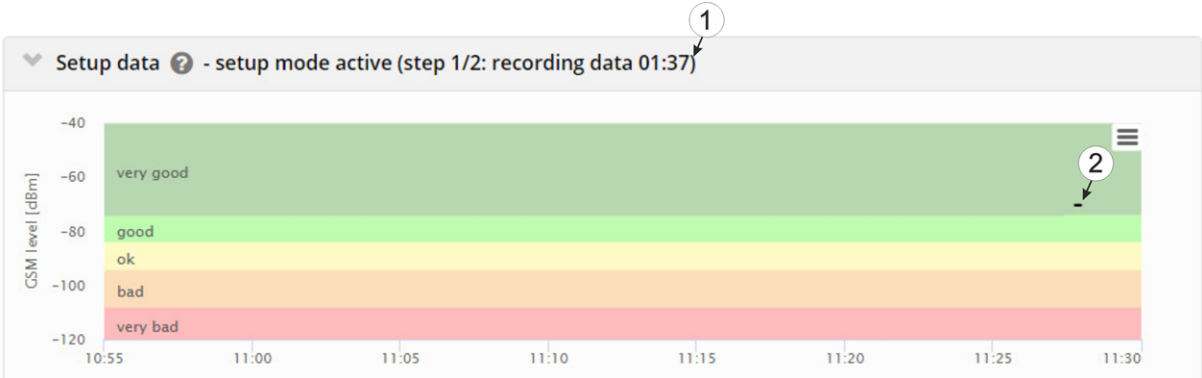


The myDatalogEx LTE-M terminates the connection to the server again and starts to measure the GSM level for a period of up to 3min. . The speech bubble with the "Setup" inscription continues to be displayed during this process. The remaining time until the second connection to the server completed as part of setup mode is shown on the display of the device and in the "Setup data" configuration section.

Note: You must first open the site settings to access the "Setup data" configuration section (see "Site configuration" on page 65).



Current GSM level and remaining duration of the GSM level measurement

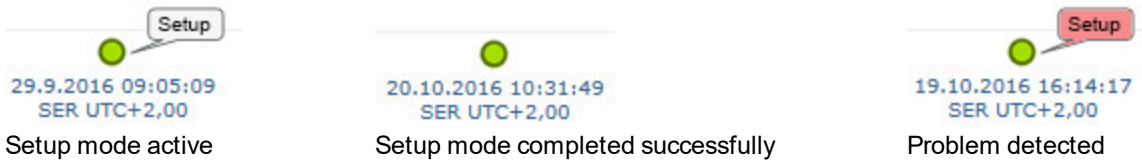


"Setup data" configuration section: Setup mode phase 1 (GSM level measurement)

- | |
|--|
| 1 Remaining duration of the GSM level measurement |
| 2 GSM level values that were already transferred during the first of the two transmissions completed as part of setup mode. |

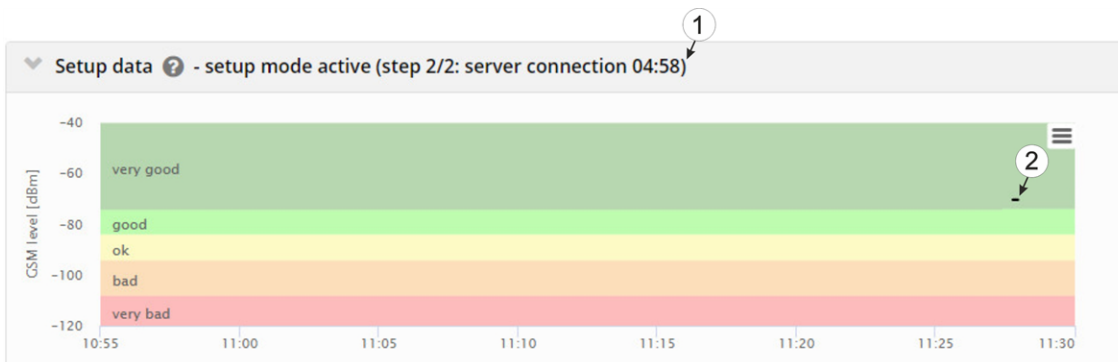
- 4. Close the manhole cover.

5. Either wait until the speech bubble is hidden again (setup mode completed successfully) or until the background colour of the speech bubble changes from white to red (problem detected). In both cases, this can take up to 8min. . If a problem is detected, it is advisable to improve the position of the antenna (see "Optimum antenna positioning for assembly in a shaft" on page 50) and to start setup mode again.



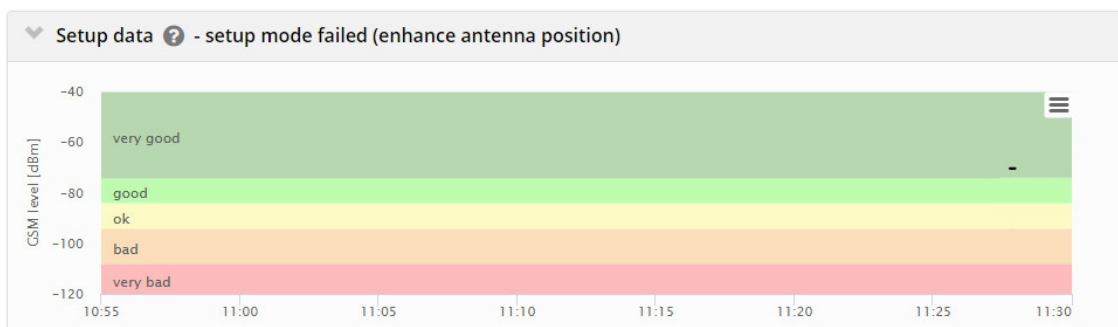
Once the GSM level measurement has been completed, another connection is established to transmit the measurement results to the myDatenet server. The background colour of the speech bubble with the "Setup" inscription changes from white to red and the note "Setup mode failed (enhance antenna position)" is shown in the "Setup data" configuration section if a new connection cannot be established within the timeout of 5min. . In this case, setup mode should be activated again once the position of the antenna has been improved.

Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 50.



"Setup data" configuration section: Setup mode phase 2 (wait for new connection to be established)

- | | |
|---|---|
| 1 | Remaining time during which a new connection must be established |
| 2 | GSM level values that were already transferred during the first of the two transmissions completed as part of setup mode. |

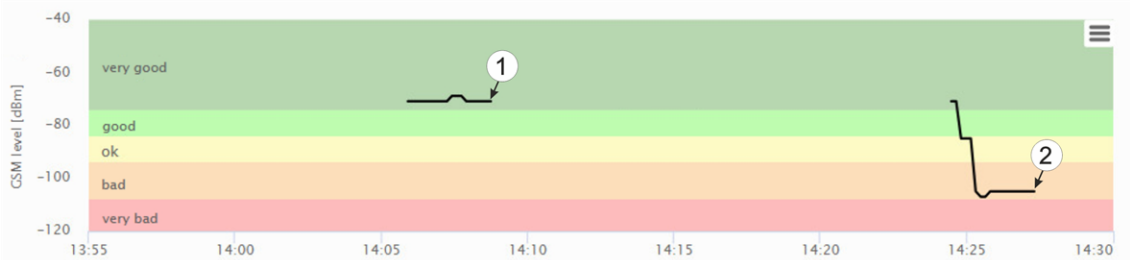


"Setup data" configuration section: Problem detected

6. Open the site settings (see "Site configuration" on page 65) and click on "Setup data" to display the GSM level determined during setup mode.

7. Evaluate the result of setup mode. If setup mode was completed successfully, the determined values for the GSM level are illustrated by the black dots that are connected by a line. If the measurement values are not in the green (very good or good) or yellow (OK) area, we recommend improving the position of the antenna and activating setup mode again. If a problem is detected, the note "Setup mode failed (enhance antenna position)" is shown above the GSM level display.

Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 50.



Display of the GSM level determined during setup mode

1 Position of antenna is OK	2 Position of antenna should be improved
-----------------------------	--

Note: Once terminated, the result of setup mode is shown up for a period of 5min. on the display of the device. 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 61).



Position of antenna is OK.



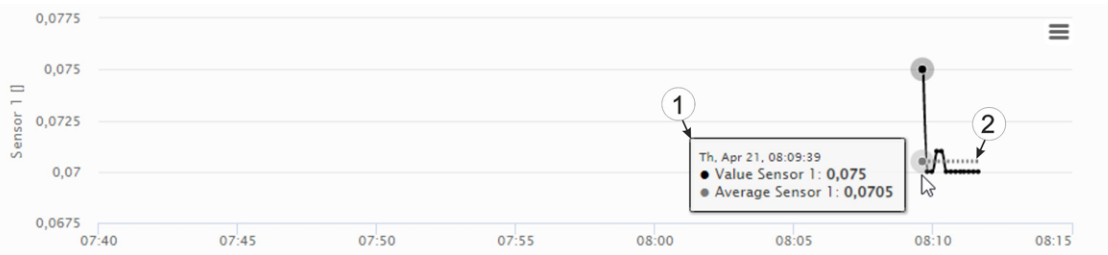
Position of antenna should be improved.



Problem detected

The following step is only necessary, if you also want to complete a zero point adjustment.

- Analyse the sensor values determined during setup mode. If the displayed values 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 determined sensor values and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 68). As the "Trimming" parameter is added to the measurement value of the sensor, a negative prefix must be set for the "Trimming" parameter if the determined value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 69).



Display of the measurement values for a sensor which were determined during setup mode

1 Tool tip that specifies the sensor value at a certain time and indicates the average value	2 Average of the data generated during setup mode.
---	---

6.4 Automatic selection of the GSM network

The GSM network to which the device should register must be selected, as the myDatalogEx LTE-M is equipped with a SIM chip that provides a mobile connection via a variety of international service providers (see www.microtronics.com/footprint). This is completed automatically by the device.

6.5 Determining the GSM/UMTS/LTE signal strength

The GSM/UMTS/LTE signal strength is only updated during the connection establishment. However, the value of the GSM/UMTS/LTE signal strength is copied in the measurement data for every record.

6.6 Determining the position data

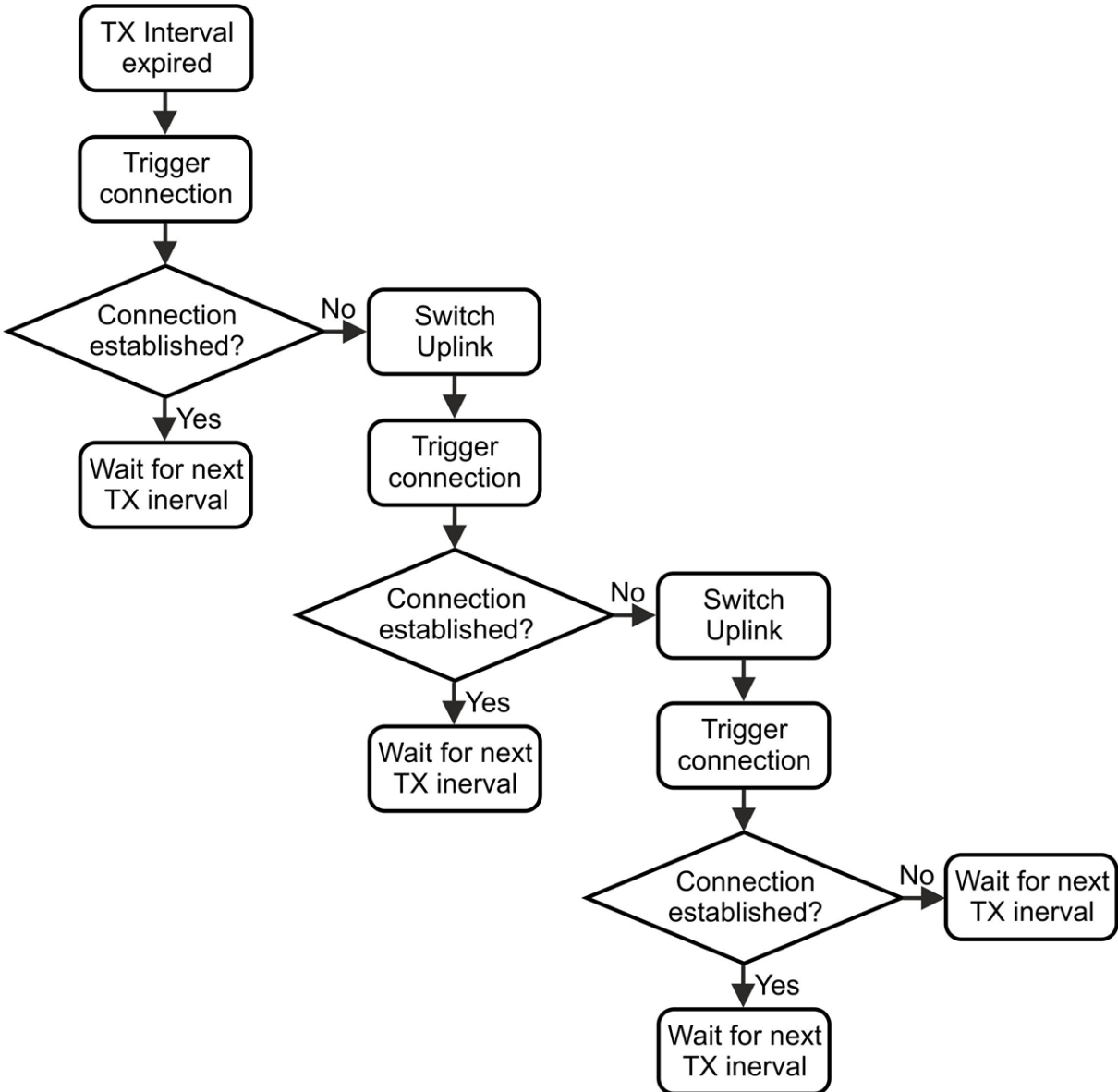
An internal flag is set each time the position cycle expires thus ensuring that the GSM position data will also be determined the next time a connection is established. The position cycle can be selected via the relevant parameter in the "Basic settings" configuration section (see "Basic settings" on page 78). If set to 0, the GSM position data is generated every time a connection is established.

6.7 Automatic switching between the mobile radio technologies "LTE-M" and "NB-IoT"

If a connection to the myDatanet server should be established, the first connection attempt is made via the last used mobile radio technology (e.g. "LTE-M"). If the connection attempt fails, it is automatically switched to the alternative mobile radio technology (e.g. "NB-IoT") for the next connection attempt. If the connection attempt fails again, it is automatically switched back to the mobile radio technology initially used (e.g.

"LTE-M") and the connection attempt is started for the last time. If this third connection attempt fails again, there are no further attempts until the next planned transmission (e.g. after the transmission interval has expired).

If establishing a connection via the last used mobile radio technology (e.g. "LTE-M") failed but after switching to the alternative mobile radio technology (e.g. "NB-IoT") a connection could be established, the next planned transmission (e.g. after the transmission interval has expired) is first attempted via the mobile radio technology now verified as working (e.g. "NB-IoT").



Sequence of automatic switching between the mobile radio technologies

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 GmbH in 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 119).

Note: Any claims received thereafter will not be accepted.

7.2 Scope of supply

The standard scope of delivery of the myDatalogEx LTE-M (301487) includes:

- myDatalogEx LTE-M with pre-installed device logic "myDatalogEx"
- BLE Gateway MDN Protection casing (300662)
- MDN Magnet (206.803)
- Connection cable 7-pins for sensors 2,8m (206.602)
- Dust protective cap of type "UTS10DCG"

Check additional accessories, such as installation kit, antennae, etc., based on the order and against the delivery slip.

7.3 Storage

The following storage conditions must be adhered to:

myDatalogEx LTE-M	Storage temperature	-20...+70°C
	Humidity	15...90%rH

Important note: During storage the sensor connector has to be covered with the protective cap (type "UTS10DCG") included in the scope of delivery.

Note: The battery remains in the myDatalogEx LTE-M 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 myDatalogEx LTE-M against heavy shocks, bumps, impacts or vibrations. The original packaging must always be used for transport.

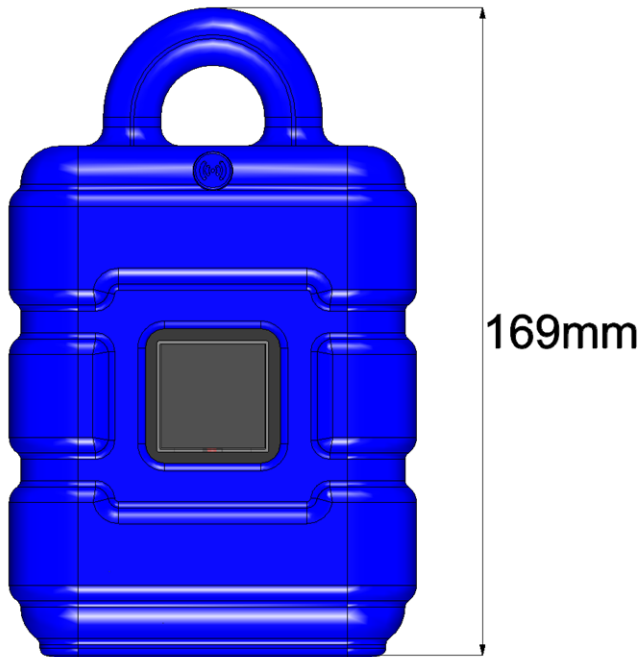
7.5 Return

Every return must be accompanied by a fully field-out return form. This return form is available in the service area of the myDatanet server. An RMA number is mandatory for any returns and can be obtained from the Support & Service Centre (see "Contact information" on page 119). The return shipment of the myDatalogEx LTE-M must occur in the original packaging and with freight and insurance paid to Microtronics Engineering GmbH (see "Contact information" on page 119). Insufficiently cleared return shipments will otherwise not be accepted!

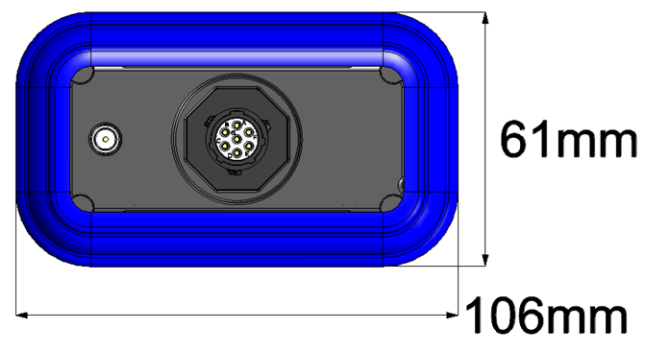
Chapter 8 Installation

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 myDatalogEx LTE-M

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 myDatalogEx LTE-M 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:

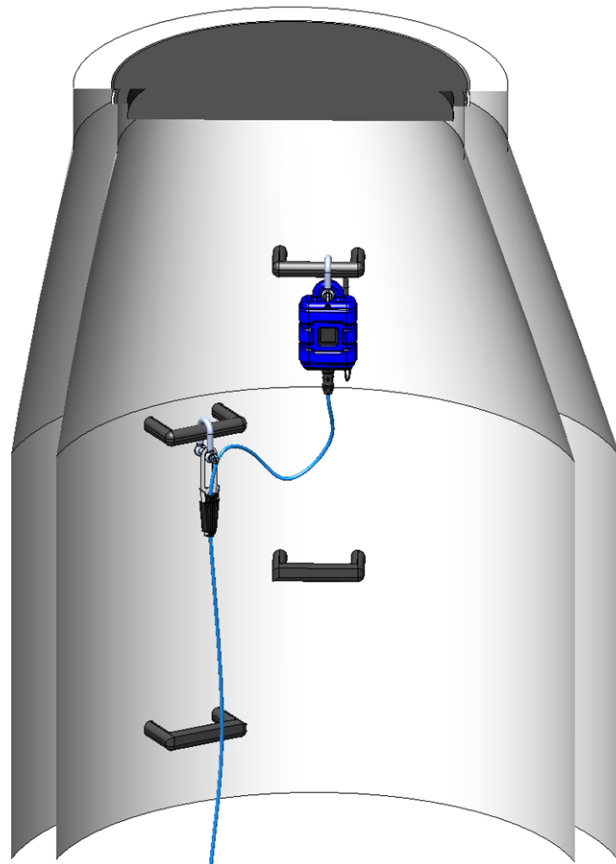
- Direct sunlight
- Direct influence of weather (rain, snow, ...)
- Objects that radiate intense heat (maximum ambient temperature: -20...+50°C)
- Objects with a strong electromagnetic field (frequency converter or similar)
- Corrosive chemicals or gases
- Mechanical impacts
- Direct installation on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

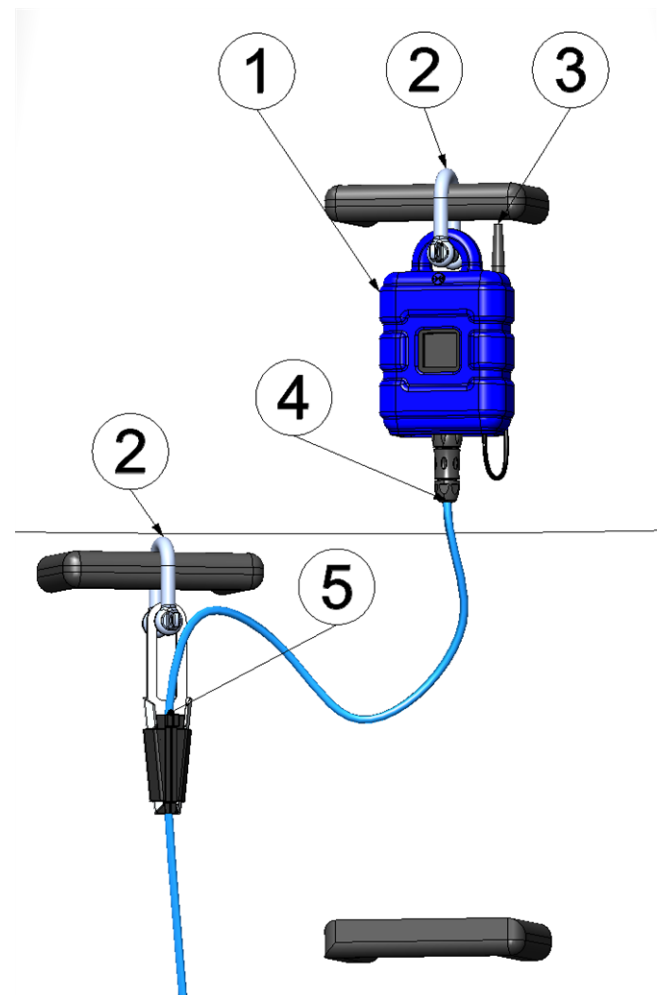
8.2.1 Suspended installation

The following optional accessory sets are required for suspended installations.

- 2 x Niro shackle (206.325)
- 1 x Anchor clamp 5,5 - 10,5mm (301017)
- 1 x Multi band antenna with bracket (300787)



Suspended installation



Detailed view of a suspended installation

1 myDatalogEx LTE-M	4 Connection cable of the sensor (e.g. Connection cable 7-pins for sensors 2,8m 206.602)
2 Niro shackle (206.325)	5 Anchor clamp 5,5 - 10,5mm (301017)
3 Multi band antenna with bracket (300787)	

1. Attach the Multi band antenna with bracket (300787) on the rear side of the myDatalogEx LTE-M.
2. Use the Niro shackle (206.325), to attach the myDatalogEx LTE-M 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 43.

-
3. Use the Niro shackle (206.325) and the Anchor clamp 5,5 - 10,5mm (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 43 .

Important note: *The sensor connection of the myDatalogEx LTE-M 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 myDatalogEx LTE-M .

Important note: *If you use a clamping tube to connect the Connection cable 7-pins for sensors 2,8m (206.602) with the actual sensor cable, the clamping tube must be located between the Anchor clamp 5,5 - 10,5mm (301017) and the sensor connection of the myDatalogEx LTE-M (see "Use of the clamping tubes" on page 49).*

8.2.2 Zero point adjustment

The zero point adjustment serves to compensate deviations of the sensor values from a reference measurement without having to adjust the configuration of the installation height (see "Sensor offset" parameter in the "Measurement channels" on page 68 configuration section).

8.2.2.1 Zero point adjustment with the help of setup mode

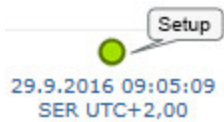
Note: *As the data is only generated every 10sec. during setup mode, this process is only suitable if the value to be measured is as consistent as possible during the zero point adjustment.*

1. In the "Measurement channels" configuration section activate the mode that is suitable for the output signal of your sensor (see "Measurement channels" on page 68).
2. Connect your sensor with the universal input of the myDatalogEx LTE-M (see "Connecting the sensor" on page 46).
3. Place the sensor (e.g. pressure sensor) in the final installation position.
4. Enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 68).
5. Ensure that the "Trimming" parameter is set to 0 (see "Measurement channels" on page 68).
6. To establish a connection, activate setup mode (see "Setup mode" on page 31) using the solenoid switch. With this connection, the configuration of the site is transferred to the device.

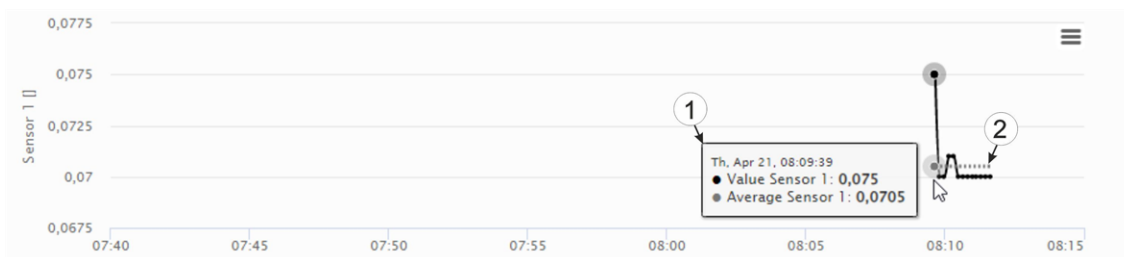


How-To-Video: [Activating the setup mode](#)

7. Wait for setup mode to be completed. That a device is in setup mode is indicated in the list of sites/applications by a speech bubble with the "Setup" inscription. The speech bubble is hidden again if setup mode was completed successfully. The background colour of the speech bubble changes from white to red if a problem is detected. In both cases, this can take up to 8min. .



8. Open the site settings (see "Site configuration" on page 65) and click on "Setup data" to display the GSM level and fill level determined during setup mode.
9. Analyse the sensor values determined during setup mode. If the displayed values 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 sensor values determined by the myDatalogEx LTE-M and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 68). As the "Trimming" parameter is added to the measurement value of the myDatalogEx LTE-M, a negative prefix must be set for the "Trimming" parameter if the determined sensor value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 69).



Display of the fill level determined during setup mode.

<p>1 Tool tip that specifies the fill level at a certain time and indicates the average value</p>	<p>2 Average of the data generated during setup mode.</p>
--	--

10. Activate setup mode again if zero point adjustment was required. During the initial connection established during setup mode, the changed configuration, i.e. the new "Trimming" value, is transmitted to the myDatalogEx LTE-M .
11. Wait until setup mode is terminated and then compare the determined sensor values with the reference measurement again. If the values are still not the same, 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 sensor values and the reference measurement.

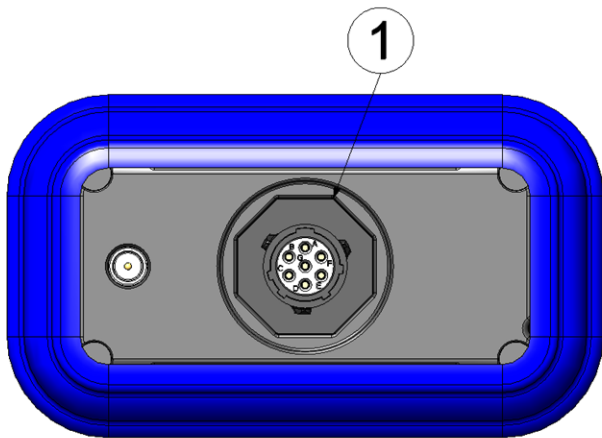
8.3 Electrical installation

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

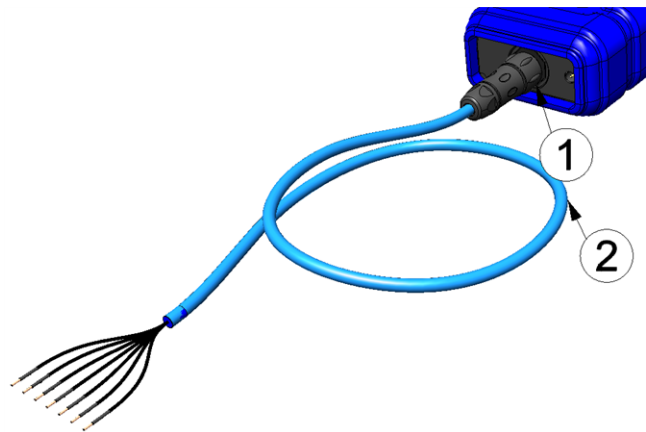
8.3.1 Connecting the sensor

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.
- 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.



Connecting the sensors

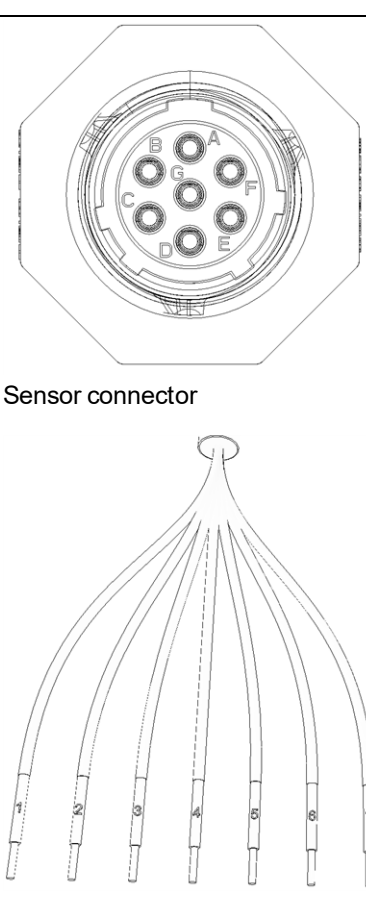


Connecting the sensors when using the Connection cable 7-pins for sensors 2,8m (206.602)

1 Sensor connector (7-pin MIL connector)

2 Connection cable 7-pins for sensors 2,8m (206.602)

Sensor connector

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

1. Connect your sensors to the sensor connector. You can use the Connection cable 7-pins for sensors 2,8m (206.602) or Cable connector 7-pins for myDatalogMobile (206.654) included in the scope of delivery. Further accessories are detailed in the chapter "Spare parts and accessories" on page 109.

Important note: If you operate the myDatalogEx LTE-M 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 2,8m (206.602) with your sensors (e.g. distances between the signal lines). The same applies if you use the Cable connector 7-pins for myDatalogMobile (206.654).

Important note: If you use the Connection cable 7-pins for sensors 2,8m (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 49).

2. Connect the antenna (see "Connecting the mobile network antenna" on page 49).

3. Activate setup mode using the reed switch (see "Setup mode" on page 31). Afterwards, the symbol for connecting should be displayed on the device display.



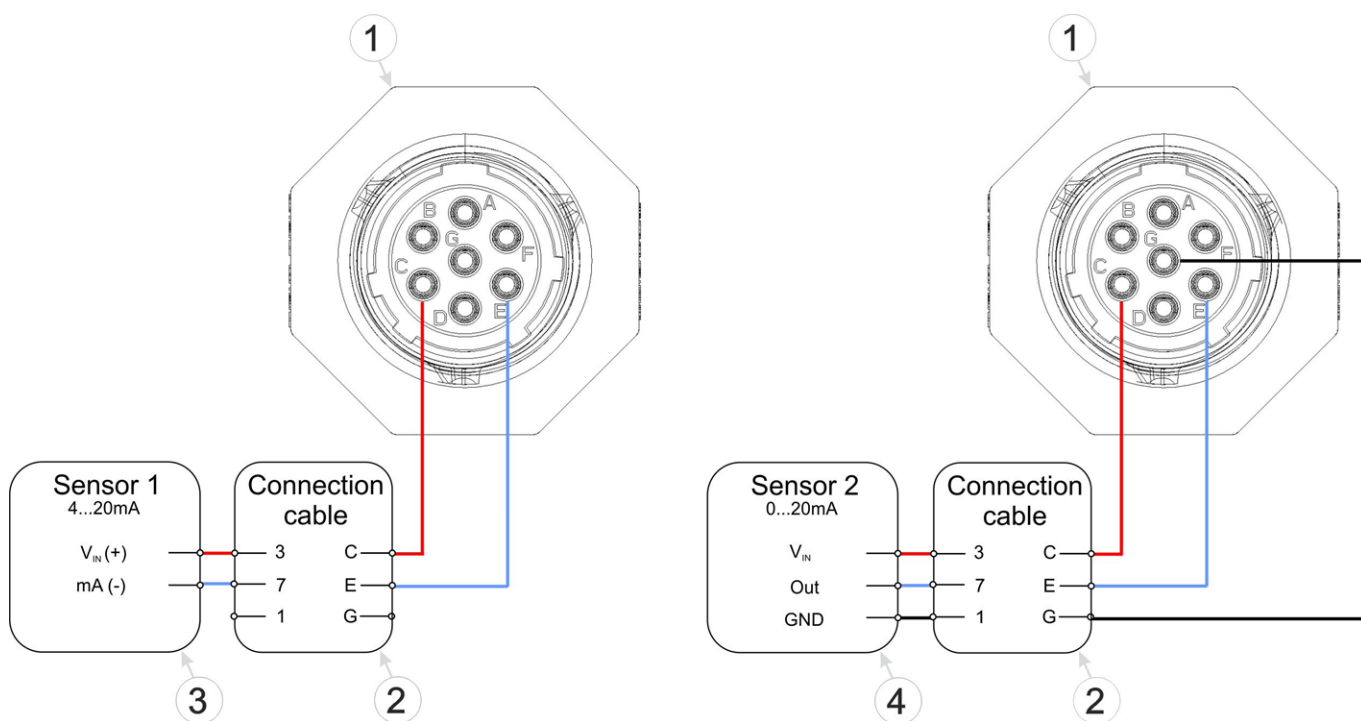
Note: If the myDatalogEx LTE-M is still in transport mode, the transport lock is deactivated by activating setup mode and the device resumes operation according to the configuration settings.

The following step is not mandatory.

4. Check whether the connection to the myDatanet has worked correctly (see "Testing communication with the device" on page 58).

8.3.1.1 Connection examples

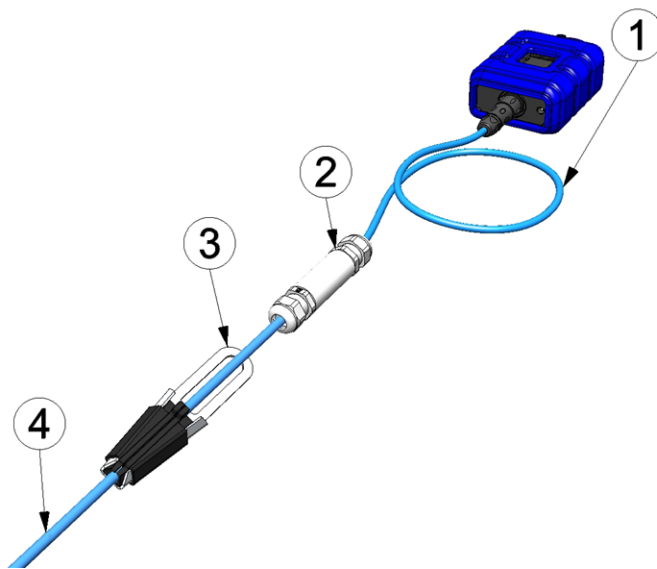
Important note: This only applies if the sensor is also approved for operation in areas with a zone 1 explosive atmosphere and if the ATEX requirements (e.g. distances between the signal lines) are observed and maintained when the sensor is connected.



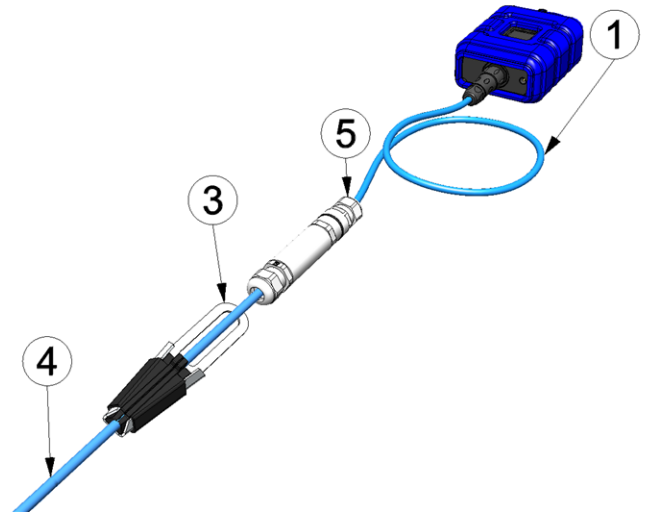
Connection examples

1 myDatalogEx LTE-M	3 2-wire mA sensor
2 Connection cable 7-pins for sensors 2,8m (206.602)	4 3-wire mA sensor

8.3.1.2 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 2,8m (206.602)	4 Connection cable of the sensor
2 Clamping tube(300256)	5 Pressure compensation tube (300131)
3 Anchor clamp 5,5 - 10,5mm (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.

The standard antenna is directly connected to the antenna connector (see "Overview" on page 23) of the myDatalogEx LTE-M .

1. Connect the connection cable of the antenna directly to the antenna connector of the myDatalogEx LTE-M (see "Overview" on page 23).

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 58).








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

Note: Practical example:

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

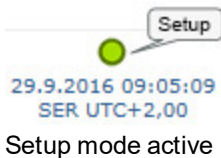
8.3.2.1.2 Possibilities for improving the signal quality

- 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

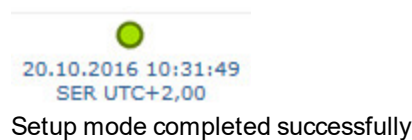
8.3.2.1.3 Procedure for determining the optimum position of the antenna

1. Install the myDatalogEx LTE-M as described in chapter "Installing the myDatalogEx LTE-M" on page 42. During this process, also observe the notes regarding the influences on the signal quality (see "Typical influences on the signal quality" on page 50).
2. Activate setup mode (see "Setup mode" on page 31).

- Wait until it is indicated in the list of sites/applications that the device is in setup mode. This is indicated by a speech bubble with the "Setup" inscription.

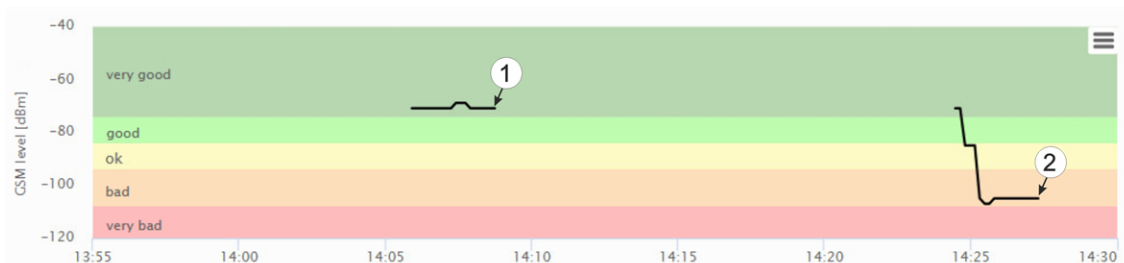


- Either wait until the speech bubble is hidden again (setup mode completed successfully) or until the background colour of the speech bubble changes from white to red (problem detected). In both cases, this can take up to 8min. .



- Open the site settings (see "Site configuration" on page 65) and click on "Setup data" to display the GSM level determined during setup mode.
- Evaluate the result of setup mode. If setup mode was completed successfully, the determined values for the GSM level are illustrated by the black dots that are connected by a line. If the measurement values are not in the green (very good or good) or yellow (OK) area, we recommend improving the position of the antenna and activating setup mode again. If a problem is detected, the note "Setup mode failed (enhance antenna position)" is shown above the GSM level display.

Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 50.



Display of the GSM level determined during setup mode

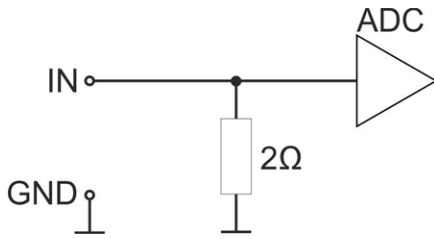
1 Position of antenna is OK	2 Position of antenna should be improved
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8.3.3 Technical details about universal input

Note: The universal input is not galvanically isolated.

Important note: If the myDatalogEx LTE-M 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...22V voltage output of the device.

The myDatalogEx LTE-M is equipped with a 16 bit ADC.

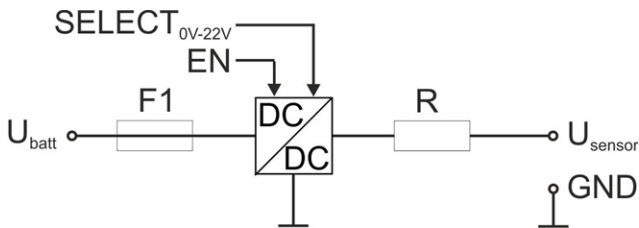


Schematic diagram of an universal input

8.3.3.1 0/4...20mA mode

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

8.3.4 Technical details regarding the sensor supply



Schematic diagram of the sensor supply

U _{batt}	Internal supply voltage
F	Electronic fuse
R	330Ω
U _{Sensor}	0...22V

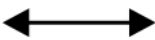


Ex parameter

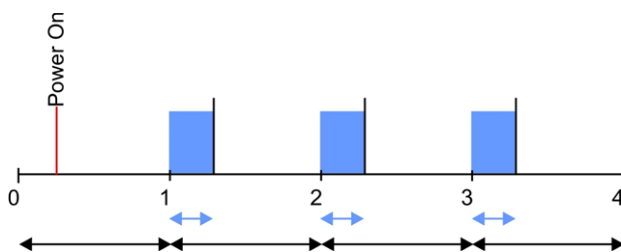
U _o	25,6V	
I _o	82mA	
P _o	0,523W	
	L_o [μH]	C_o [μF]
	1000	0,31
	250	0,36
	100	0,465

The sensor supply is activated by setting the warmup time in the "Measurement channels->Configuration" configuration section (see "Configuration" on page 70). The warmup time specifies how long the sensor supply is switched on before the measurement. If the setting is 0 seconds, the sensor supply is not activated before or 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.

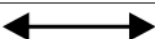


Note: Example to explain the relationship between the warmup time and the record interval (warmup time < record interval):

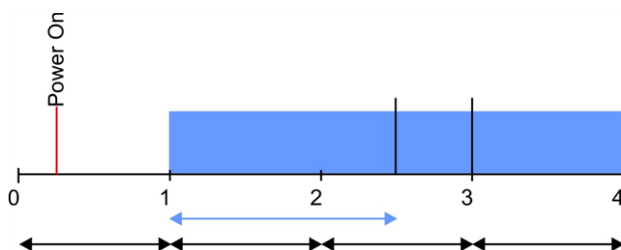
Basic settings		Record interval	1 min.
Measurement channels->Configuration		Warmup time	20 sec.
Output on the device		Sensor supply	



Explanation: The sensor supply is activated once the record interval has elapsed. The actual measurement and recording is only completed once the warmup time has elapsed, i.e. in the current example 20 seconds after the record interval has elapsed.

Note: Example to explain the relationship between the warm up time and record interval (warmup time > record interval):

Basic settings		Record interval	1min.
Measurement channels -> Configuration		Warmup time	90sec.
Output on the device		Sensor supply	



Explanation: The sensor supply is activated when the time for the first recording following the PowerOn is reached. As the warmup time is longer than the record interval, a measurement and recording cannot be completed at this time. In the current example, a measurement and recording can only be completed after the second point in time for the recording. As the sensor supply in this example is permanently active for the recording following the first point in time, the measurement and recording are always completed at the exact recording time from the third point in time.

Chapter 9 Initial Start-Up

9.1 User information

Before you connect the myDatalogEx LTE-M 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 myDatalogEx LTE-M .

Contact Microtronics Engineering GmbH(see "Contact information" on page 119) 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 myDatalogEx LTE-M and the input screens of the myDatenet server before you begin with the configuration.

9.4 Placing the system into operation

9.4.1 Using the mobile connection (LTE-M/NB-IoT) and the myDatenet server

Note: It is recommended that the myDatalogEx LTE-M is first placed into operation in the office before moving the device to the place of use. During this process, you should set a site for subsequent operation on the myDatenet server (see "myDatenet Server Manual " 805002) and determine the site settings (see "Site configuration" on page 65). 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 the myDatalogEx LTE-M 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. Based on the "myDatalogEx" application, create a new site/application for operation on the myDatanet server within the selected customer (see "Creating the site" on page 91).
3. Configure the created site/application according to your requirements (see "Site configuration" on page 65).
4. Connect the antenna (see "Connecting the mobile network antenna" on page 49).
5. To establish a connection, activate setup mode (see "Setup mode" on page 31) using the solenoid switch. With this connection, the configuration of the site is transferred to the device. The myDatalogEx LTE-M is supplied with the transport mode activated (measurement and transmission "OFF") and should also always be stored in this state (see "Storage of the product" on page 26). Activating setup mode deactivates transport mode and the myDatalogEx LTE-M starts operation according to the stored configuration settings.

Note: You can also skip this step, as a connection should be established during the installation on site, which transfers the configuration to the device at the same time.



How-To-Video: [Activating the setup mode](#)

6. Remove the antenna again.

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

7. Complete all of the steps detailed in the chapter "Connecting the sensor" on page 46.
8. If you intend to install the myDatalogEx LTE-M in a shaft, you must check that the device can also establish a GPRS connection in the final installation position when the manhole cover is closed before you leave the worksite.

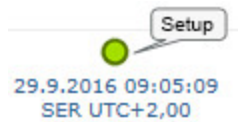
Proceed as follows during this process:

1. Place the device and the antenna in the final installation position (with the shaft lid open).
2. Activate setup mode using the solenoid switch (see "Setup mode" on page 31).
3. Wait until the symbol for the connection establishment is displayed on the device.



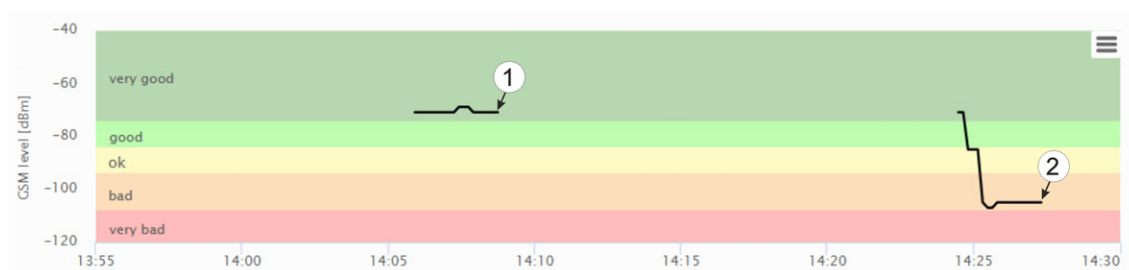
4. Close the shaft lid.

- Wait for setup mode to be completed. That a device is in setup mode is indicated in the list of sites/applications by a speech bubble with the "Setup" inscription. The speech bubble is hidden again if setup mode was completed successfully. The background colour of the speech bubble changes from white to red if a problem is detected. In both cases, this can take up to 8min. .



- Open the site settings (see "Site configuration" on page 65) and click on "Setup data" to display the GSM level determined during setup mode.
- Evaluate the result of setup mode. If setup mode was completed successfully, the determined values for the GSM level are illustrated by the black dots that are connected by a line. If the measurement values are not in the green (very good or good) or yellow (OK) area, we recommend improving the position of the antenna and activating setup mode again. If a problem is detected, the note "Setup mode failed (enhance antenna position)" is shown above the GSM level display.

Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 50.

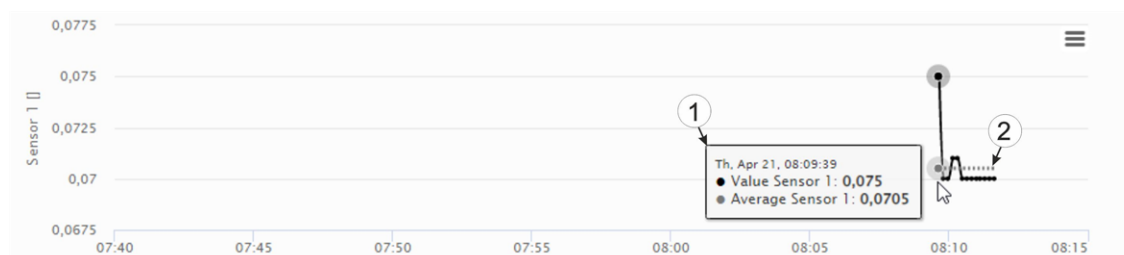


Display of the GSM level determined during setup mode

1 Position of antenna is OK

2 Position of antenna should be improved

- Analyse the sensor values determined during setup mode. If the displayed values 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 determined sensor values and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 68). As the "Trimming" parameter is added to the measurement value of the sensor, a negative prefix must be set for the "Trimming" parameter if the determined value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 69).



Display of the fill level determined during setup mode.

1 Tool tip that specifies the fill level at a certain time and indicates the average value	2 Average of the data generated during setup mode.
---	---

- Activate setup mode again if zero point adjustment was required. During the initial connection established during setup mode, the changed configuration, i.e. the new "Trimming" value, is transmitted to the myDatalogEx LTE-M .
- Wait until setup mode is terminated and then compare the determined sensor values with the reference measurement again. If the values are still not the same, 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 sensor values and the reference measurement.

9.5 Testing communication with the device

9.5.1 Testing communication between the myDatalogEx LTE-M and the myDatanet server (mobile connection)

- Based on the "myDatalogEx" application, create a new site/application for operation on the myDatanet server within the selected customer (see "Creating the site" on page 91).
- Configure the created site/application according to your requirements (see "Site configuration" on page 65).
- Connect the antenna (see "Connecting the mobile network antenna" on page 49).

The following step is only necessary, if you also want to test the same measurement value acquisition.

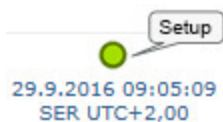
- Connect the sensor (see "Connecting the sensor" on page 46).

- To establish a connection, activate setup mode (see "Setup mode" on page 31) using the solenoid switch. With this connection, the configuration of the site is transferred to the device. The myDatalogEx LTE-M is supplied with the transport mode activated (measurement and transmission "OFF") and should also always be stored in this state (see "Storage of the product" on page 26). Activating setup mode deactivates transport mode and the myDatalogEx LTE-M starts operation according to the stored configuration settings.



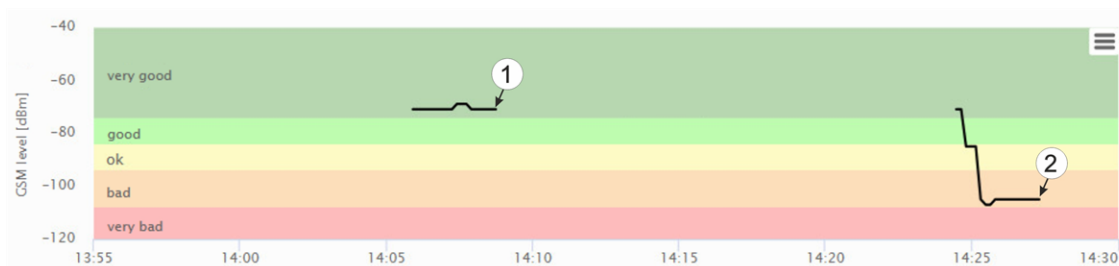
How-To-Video: [Activating the setup mode](#)

- Wait until it is indicated in the list of sites/applications that the device is in setup mode. This is indicated by a speech bubble with the "Setup" inscription.



- Either wait until the speech bubble is hidden again (setup mode completed successfully) or until the background colour of the speech bubble changes from white to red (problem detected). In both cases, this can take up to 8min. .
- Open the site settings (see "Site configuration" on page 65) and click on "Setup data" to display the GSM level determined during setup mode.
- Evaluate the result of setup mode. If setup mode was completed successfully, the determined values for the GSM level are illustrated by the black dots that are connected by a line. If the measurement values are not in the green (very good or good) or yellow (OK) area, we recommend improving the position of the antenna and activating setup mode again. If a problem is detected, the note "Setup mode failed (enhance antenna position)" is shown above the GSM level display.

Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 50.

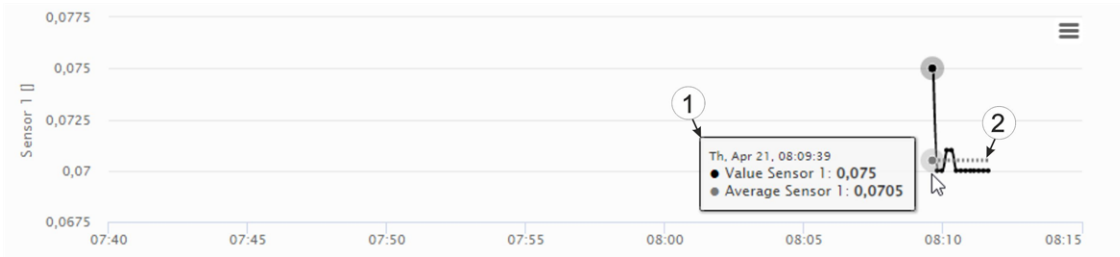


Display of the GSM level determined during setup mode

1 Position of antenna is OK

2 Position of antenna should be improved

- Check whether the sensor values determined during setup mode are plausible. If necessary, complete a zero point adjustment following the current check of the communication with the device (see "Zero point adjustment with the help of setup mode" on page 44).



Display of the fill level determined during setup mode.

<p>1 Tool tip that specifies the fill level at a certain time and indicates the average value</p>	<p>2 Average of the data generated during setup mode.</p>
--	--

- Close the site settings again.

The following steps are only necessary, if you simultaneously want to test the measurement value acquisition and data transmission.

- Wait until some measurement values have been recorded. The delay is dependent on the set record interval.
- To establish a connection, activate setup mode (see "Setup mode" on page 31) using the reed switch.
- Click on the "Direct Report" symbol in the measurement instrument list to display the data saved on the myDatenet server.



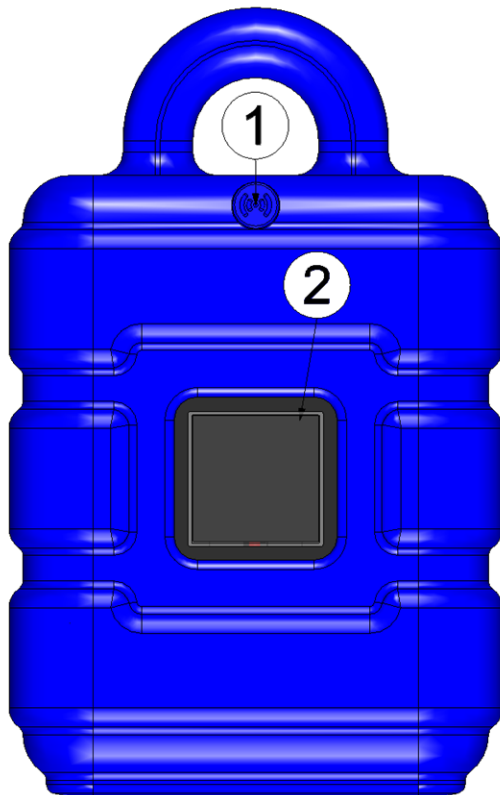
- Check whether all of the data up to the point of the synchronisation is present and plausible.

Chapter 10 User interfaces

The configuration of the myDatalogEx LTE-M is carried out via the web interface on the myDatanet server (see "User interface on the myDatanet server" on page 65), which your responsible sales partner will provide to you.

10.1 User interface on the myDatalogEx LTE-M

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 or to switch on the display of the myDatalogEx LTE-M for 20sec. .

Operation by the user	Device response	Operation after releasing the reed switch
Press briefly (approx. one second)	Display is activated for 20sec.	Displaying of the information about the installed software followed by displaying the current operating state (see "Display" on page 62)
Press and hold for three seconds	Setup mode is activated	---

The display of the myDatalogEx LTE-M is activated as soon as the reed switch is pressed. The time for which the reed switch was pressed is visualised by a circle in which the segments change from white to green. Setup mode is activated once all of the segments have switched from white to green, i.e. the reed switch has been pressed for at least three seconds (see "Setup mode" on page 31).



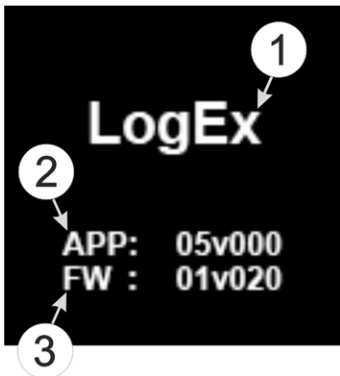
Visualisation of the time for which the reed switch was pressed

10.1.1.2 Display

Important note:

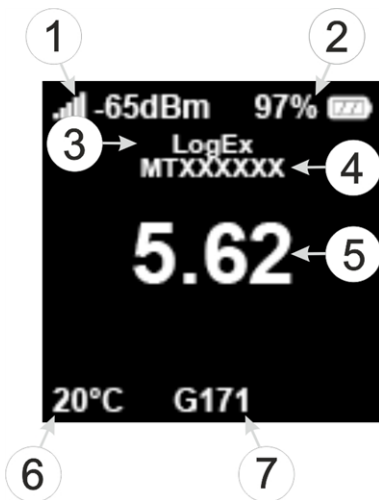
- Do not touch the display with a sharp object, such as the tip of a pen.
- Do not stand or place any objects on the display as this could scratch it.

The display of the myDatalogEx LTE-M is only designed to show the current measurement values. 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 61). The display then remains active for 20sec. , first showing information about the installed software for 3sec. and then the current operating state.



Display of the information regarding the installed software

<p>1 Brief designation of the IoT application installed on the device</p>	<p>3 Current software version installed on the measurement controller</p>
<p>2 Version number of the IoT application that is currently installed on the device</p>	



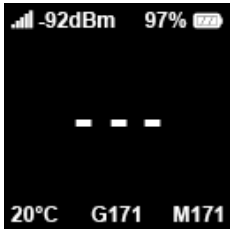





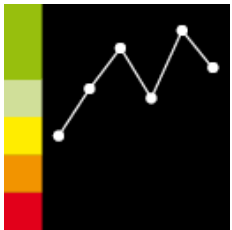

Status indication during normal operation

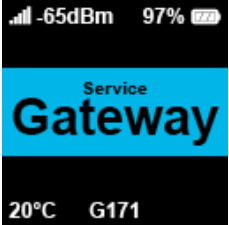
1 GSM level during last connection	5 Current value (incl. unit)
2 Current state of charge in % (SOC)	6 Internal device temperature in °C
3 Type designation of the internal module for measured value acquisition	7 Remaining days until the batteries for the device need to be replaced
4 Serial number of the internal module for measured value acquisition	

Note: Additional explanation on the display of the current state of charge

- If SOC \geq 90% the battery icon is displayed as fully charged.
- If SOC 89 - 40% the battery icon is displayed 2/3 full.
- If SOC 39 - 10% the battery icon is displayed 1/3 full.
- If SOC 9 - 5 % the battery icon is displayed as depleted.
- If SOC $<$ 5% the battery icon is displayed as depleted and is displayed in red.

In addition to the display of the information about the installed software and the status indication during normal operation, as described in detail above, the following operating states are also shown on the display:

Display	Explanation
	Transport mode
	Reed switch activated
	Connecting to the myDatenet server
	Data synchronisation with the myDatenet server in progress
	In the event of a connection abort, wait until the next connection is established
	Setup mode, the current GSM level and remaining duration of the GSM level measurement
	Result of the setup mode (i.e. the determined values of the GSM field strength) displayed for a duration of 5min.
	Error <ul style="list-style-type: none"> • E02 ... last connection failed • E14 ... Charge state of the internal rechargeable buffer battery is too low to establish a mobile radio connection (automatic recharge can take up to 4 hours)

Display	Explanation
	The batteries of the myDatalogEx LTE-M need to be replaced

10.2 User interface on the myDatanet server

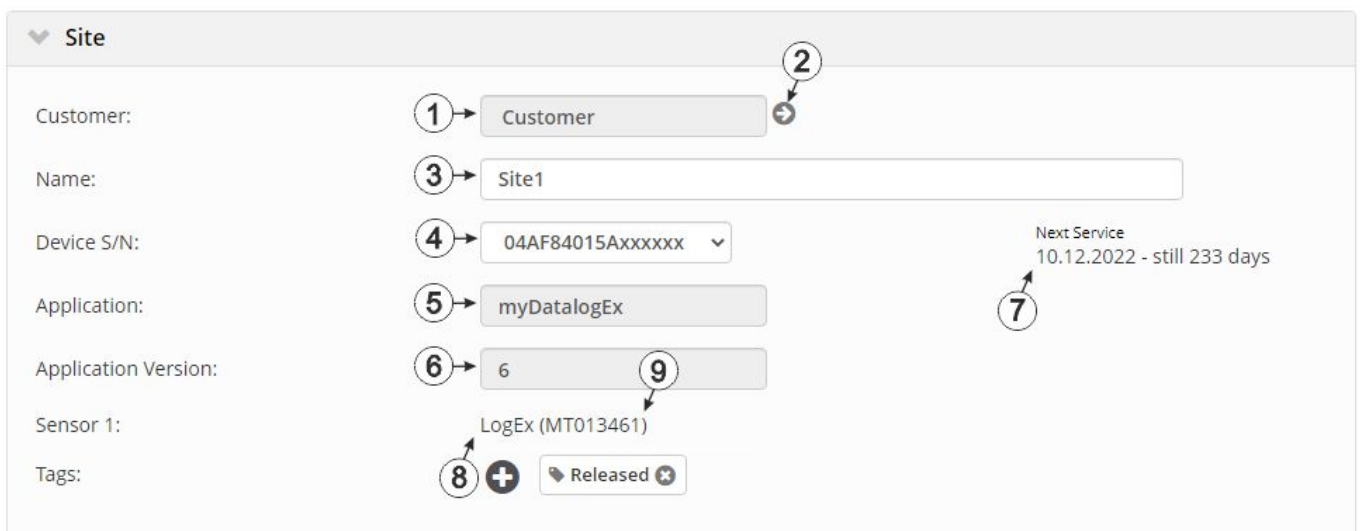
10.2.1 Site configuration

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.

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

10.2.1.1.1 Site



The screenshot shows the 'Site' configuration interface with the following fields and callouts:

- 1**: Customer field (text input)
- 2**: Assign site to another customer icon (circular arrow)
- 3**: Name field (text input, value: Site1)
- 4**: Device S/N field (dropdown menu, value: 04AF84015Axxxxxx)
- 5**: Application field (text input, value: myDatalogEx)
- 6**: Application Version field (text input, value: 6)
- 7**: Next Service notification (10.12.2022 - still 233 days)
- 8**: Add tag icon (+)
- 9**: Remove tag icon (x)

Other visible elements include 'Sensor 1: LogEx (MT013461)' and 'Tags: Released'.

"Site" configuration section during normal operation

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	Serial number of the device that is linked to the site (device assignment!)
5	Name of the IoT application based on which the site was created

- 6** 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.
- 7** Date when the batteries of the myDatalogEx LTE-M are likely to need replacing and days remaining until this date
- 8** Type designation of the internal module currently assigned to the measurement channel and used for the measurement value acquisition
- 9** Serial number of the internal module currently assigned to the measurement channel and used for the measurement value acquisition
- 10** Liste der Tags, die der Site bereits zugewiesen sind. Durch einen Klick auf das Kreuz neben der Bezeichnung des Tags kann diese Zuweisung wieder aufgehoben werden. The input screen for assigning tags can be opened by clicking on the plus symbol.

Site

Customer:

Name:

Device S/N: Next Service
10.12.2022 - still 233 days

Application:

Application Version:

Operation mode: 1 2

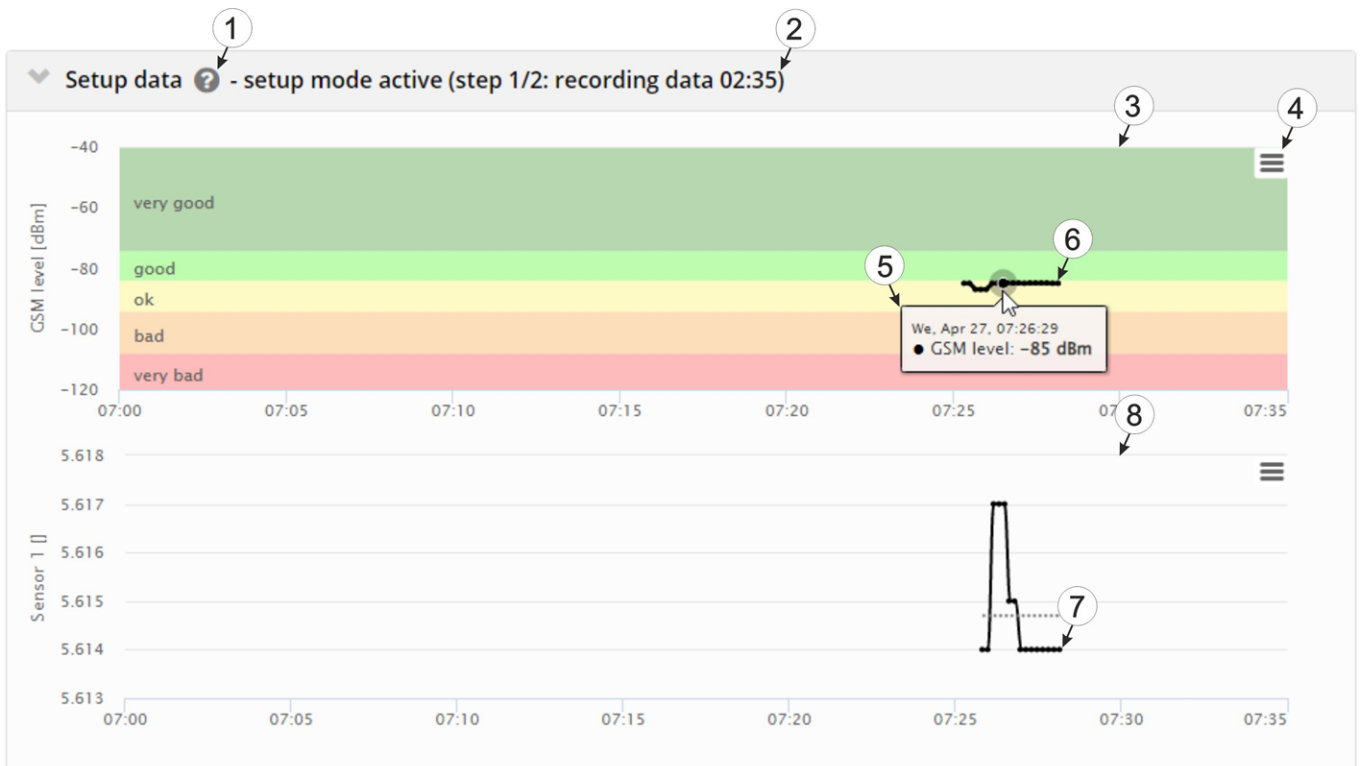
Sensor 1:

Tags:

"Site" configuration section when transport mode is activated

- 1** Transport mode activated. This means that all of the operations (measurement, recording, transmission, etc.) are stopped to minimise energy consumption during transport or storage.
- 2** Indicates that transport mode, that has been activated via the "Basic settings" configuration section (see "Basic settings" on page 78), has not yet been transmitted to the myDatalogEx LTE-M .

10.2.1.1.2 Setup data



"Setup data" configuration section

1	Opens an illustration to explain the progress of setup mode
2	Status information on the currently active or last executed setup mode
3	Visualisation of the GSM level values measured in the last 35 minutes. The graph may therefore contain the results of several executed setup modes.
4	Opens the context menu of the graphic to visualise the GSM level values measured in the last 35 minutes.
5	Tool tip that specifies the GSM level at a certain time
6	Visualisation of the GSM level values measured during a single setup mode
7	Visualisation of the measurement values determined for sensor 1 during a single setup mode
8	Visualisation of the measurement values determined for sensor 1 in the last 35 minutes

10.2.1.1.3 Comments



"Comments" configuration section

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

10.2.1.1.4 Measurement channels

10.2.1.1.4.1 Basis

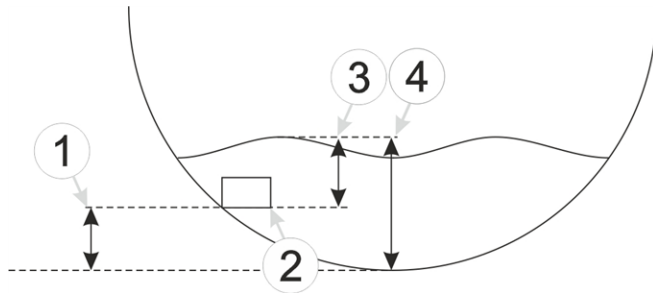
"Measurement channels" configuration section, "Basis" tab

1	Freely selectable channel designation						
2	Selection of the mode used to assign the internal module to the corresponding measurement channel (reserved for extension)						
	<table border="1"> <tr> <td>automatic</td> <td>The internal module, for which the serial number has already been stored in the myDatalogEx LTE-M during production, should be used to acquire the measurement values.</td> </tr> </table>	automatic	The internal module, for which the serial number has already been stored in the myDatalogEx LTE-M during production, should be used to acquire the measurement values.				
automatic	The internal module, for which the serial number has already been stored in the myDatalogEx LTE-M during production, should be used to acquire the measurement values.						
3	Serial number of the internal module used to acquire the measurement values (reserved for extension)						
4	Drop down list to select the mode for the measurement channel						
	<table border="1"> <tr> <td>Off</td> <td>Measurement channel deactivated</td> </tr> <tr> <td>0...20mA</td> <td>Valid input signal range 0...20mA (0mA = 0%, 20mA = 100%)</td> </tr> <tr> <td>4...20mA</td> <td>Valid input signal range 4...20mA (4mA = 0%, 20mA = 100%)</td> </tr> </table>	Off	Measurement channel deactivated	0...20mA	Valid input signal range 0...20mA (0mA = 0%, 20mA = 100%)	4...20mA	Valid input signal range 4...20mA (4mA = 0%, 20mA = 100%)
Off	Measurement channel deactivated						
0...20mA	Valid input signal range 0...20mA (0mA = 0%, 20mA = 100%)						
4...20mA	Valid input signal range 4...20mA (4mA = 0%, 20mA = 100%)						
5	Start of the measurement range in the measurement unit						
6	End of the measurement range in the measurement unit						
7	Provided to adjust the zero point (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 69)						
8	Specifies the installation height of the sensor (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 69)						
9	String that is used as a measurement unit by all of the server display elements [0-8 characters]						
10	Number of decimal places that are used by all of the server display elements						
11	Buttons to switch between the individual tabs of the configuration section						

Note:

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

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



Installation situation of the pressure sensor

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

Required configuration

Parameter	Value
Mode	4-20mA
0%	0
100%	5
Trim	-0.01
Sensor 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 1cm too high. As the "Trim" and "Sensor offset" parameters are added to the scaled measurement value, this error can be balanced out by setting the "Trim" parameter value to -0.01m.

10.2.1.1.4.2 Configuration

Measurement channels configuration section, "Configuration" tab

"Measurement channels" configuration section, "Configuration" tab

1 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.
Out of range	<p>0...20mA mode:</p> <ul style="list-style-type: none"> If the measurement value is above 20.1 mA, the error value "SC" (short circuit) is issued. <p>4...20mA mode:</p> <ul style="list-style-type: none"> The error value "OL" (open loop) is issued, if the measurement value is below 3.9mA. If the measurement value is above 20.1 mA, the error value "SC" (short circuit) is issued.
NAMUR	<p>0...20mA mode:</p> <ul style="list-style-type: none"> The error value "OF" (overflow) is issued if the measurement value is between 20.1mA and 21mA. If the measurement value is above 21mA, the error value "SC" (short circuit) is issued. <p>4...20mA mode:</p> <ul style="list-style-type: none"> The error value "OL" (open loop) is issued, if the measurement value is below 3.6mA. The error value "UF" (underflow) is issued, if the measurement value is between 3.6mA and 3.9mA. The error value "OF" (overflow) is issued if the measurement value is between 20.1mA and 21mA. If the measurement value is above 21mA, the error value "SC" (short circuit) is issued.
2	specifies the time (in 0, 1sec.) for which the sensor supply is switched on before the measurement (see "Technical details regarding the sensor supply" on page 52)
3	Selection of the output voltage for the sensor supply
4	Time in [ms], during which the analogue signal is averaged for signal smoothing, is designed to suppress signal noise

10.2.1.1.4.3 Alarms

Measurement channels configuration section, "Alarms" tab

Basic Configuration **Alarms** Trigger

Title Sensor 1
Sensor 1

Warning: Value low (1) Value high (2)

Alarm: Value low (3) Value high (4)

Hyst % (5) 5

"Measurement channels" configuration section, "Alarms" tab

- | | |
|---|---|
| 1 | A warning is triggered, if the measurement value drops to or below this value. |
| 2 | A warning is triggered, if the measurement value meets or exceeds this value. |
| 3 | An alarm is triggered, if the measurement value drops to or below this value. |
| 4 | An alarm is triggered, if the measurement value meets or exceeds this value. |
| 5 | Hysteresis for all-clear in event of alarm/warning (e.g. hyst = 5%, alarm or warning at 100 -> all-clear at 95) |

10.2.1.1.4.4 Trigger

There are two types of triggers:

- Event trigger (RI, XM)

The relevant operation (e.g. initiate transmission) is only executed once when the trigger event occurs.

- Level trigger (RA, QX)

The relevant operation (e.g. use alternative record interval) is executed as long as the trigger is active.

"Measurement channels" configuration section, "Trigger" tab

1	Execute recording immediately
2	Initiate transmission
3	The alternative record interval should be used.
4	The alternative transmission cycle should be used.
5	Selection of whether the corresponding action should be completed when the value exceeds or drops below the value in the "Threshold" field
Greater or equal	<p>Event trigger (RI, XM): The trigger is initiated, if the measurement value meets or exceeds this value.</p> <p>Level trigger (RA, QX): The trigger is active as long as the measurement value is higher than the level or equal to the level.</p>
Less or equal	<p>Event trigger (RI, XM): The trigger is initiated, if the measurement value drops to or below this value.</p> <p>Level trigger (RA, QX): The trigger is active as long as the measurement value is lower than the level or equal to the level.</p>
6	Levels for initiating the trigger. The hysteresis is used to determine the level to reset the trigger.
7	Hysteresis for revoking the trigger (e.g. hyst=5%, level = greater or equal, trigger at 100 -> reset at 95)
Note: The same hysteresis is used for all of the triggers.	

10.2.1.1.5 Internal channels

10.2.1.1.5.1 Basis

Internal channels configuration section, "Basis" tab

"Internal channels" configuration section, "Basis" tab

1 Freely selectable channel designation for:

SOC	State of charge of the internal battery of the myDatalogEx LTE-M
Battery	Internal battery voltage of the myDatalogEx LTE-M
Int. temp	Internal device temperature of the myDatalogEx LTE-M
rH	Air humidity in the housing of the myDatalogEx LTE-M
GSM	GSM level
Service	Remaining days until the batteries of the myDatalogEx LTE-M need to be replaced
Load	Energy consumption between two recordings

2 String that is used as a measurement unit by all of the server display elements

3 Buttons to switch between the individual tabs of the configuration section

10.2.1.1.5.2 Alarms

Internal channels configuration section, "Alarms" tab

"Internal channels" configuration section, "Alarms" tab

1 A warning is triggered, if the measurement value drops to or below this value.

2 A warning is triggered, if the measurement value meets or exceeds this value.

3 An alarm is triggered, if the measurement value drops to or below this value.

4 An alarm is triggered, if the measurement value meets or exceeds this value.

5 Hysteresis for all-clear in event of alarm/warning (e.g. hyst = 5%, alarm or warning at 100 -> all-clear at 95)

10.2.1.1.6 Alarm settings

Alarm settings

Acknowledgement: standard (server: automatic) ▾ -1 KB (valid only with 1kByte packaging)

Offline alarm: off ▾

Transfer volume: default (off) ▾ -1 KB (valid only with 1kByte packaging)

"Alarm settings" configuration section

1 Selection of how alarms should be acknowledged	
Standard	The global server setting is used to determine whether alarms must be acknowledged automatically or manually (see "myDatanet Server Manual " 805002).
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 Alarm in case the device does not respond for longer than the set number of transmission cycles. An additional tolerance of 10 min. is granted per transmission cycle to take any retries when establishing a connection into consideration.	
Example: Transmission cycle: 60 min; 3x transmission cycles -> Alarm after > 03:30	
3 Selection of the how the transfer volume alarm should be handled	
Standard	The setting for the transfer volume alarm is taken from the global server settings (see "myDatanet Server Manual " 805002)
Off	The transfer volume alarm is deactivated.
individual	The level at which the transfer volume alarm should be triggered can be entered in the adjacent field in KiB.

10.2.1.1.7 Calculated channels

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

10.2.1.1.7.1 Basis

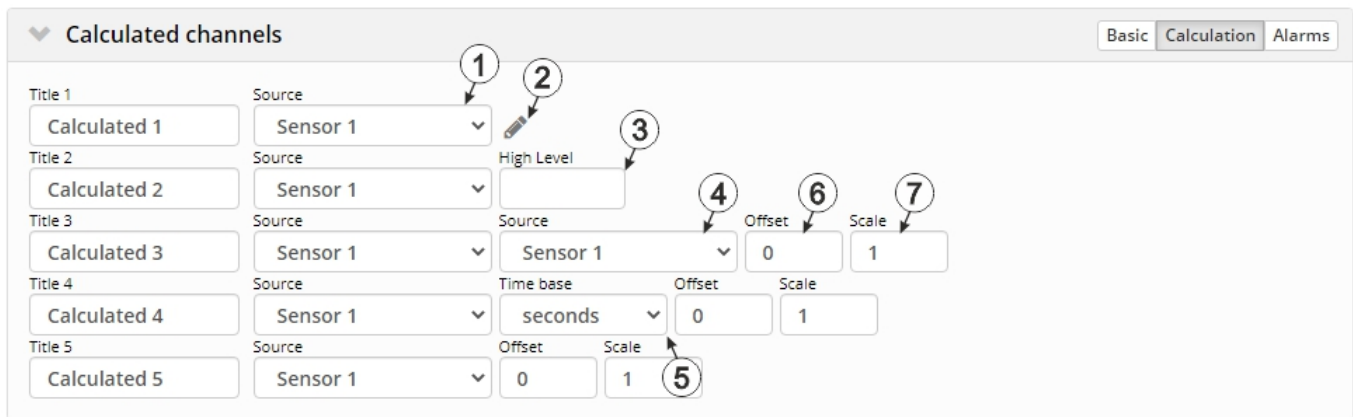
The screenshot shows the 'Calculated channels' configuration section in the 'Basis' tab. It features five rows of configuration for calculated channels. Each row has a title field (1), a mode dropdown (2), and various parameters like Min (3), Max (4), Unit (5), and Decimal pl. (6). Row 2 also has an 'Invert' dropdown (7). At the top right, there are tabs for 'Basic' (8), 'Calculation', and 'Alarms'.

"Calculated channels" configuration section, "Basis" 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 the counter reading (m ³) of the source in to a flow rate (m ³ /min.) (see "Additional explanation: Delta mode" on page 83).
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
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

10.2.1.1.7.2 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 that should be cloned
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.

10.2.1.1.7.3 Alarms

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

Calculated channels configuration section, "Alarms" tab

Title	Alarm low	Alarm high	Hyst %
Calculated 1			5
Calculated 2			5
Calculated 3			5
Calculated 4			5
Calculated 5			5

"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 or warning at 100 -> all-clear at 95)

10.2.1.1.8 Basic settings

Basic settings

Operation mode: 1 → normal ▾

Transmission cycle: 2 → 24:00 hh:mm

Transmission cycle quick: 3 → 04:00 hh:mm

Record interval: 4 → 5 min

Record interval alternative: 5 → 1 min

Time zone: 6 → standard (server: UTC +1:00 (Paris, Frankfurt, Zurich, Vienna)) ▾

Daylight saving time: 7 → standard (server: EU) ▾

Position cycle: 8 → 00:00 hh:mm

Default report: 9 → off ▾

Report template: 10 → (not assigned) ▾

"Basic settings" configuration section

1 Selection of the operating mode	
normal	Operation according to configuration
transport	Transport mode activated. This means that all of the operations (measurement, recording, transmission, etc.) are stopped to minimise energy consumption during transport or storage.
2 Time between transmissions	
3 Time between the transmissions, if a alternative transmission cycle should be used because of a trigger being initiated	
4 Time between measurement data recordings	
5 Time between measurement data recordings, if an alternative record interval should be used because of a trigger being initiated	
6 Regional settings (not relevant for raw measurement data as this is stored in UTC)	
7 Configuration for automatic time adjustment	
Standard	The configuration for the time adjustment is adopted by the global server setting (siehe "myDatatnet Server Manual " 805002).
Off	Automatic time adjustment deactivated
USA	Predefined setting for the American area
EU	Predefined setting for the European area
8 Position update interval (00:00 positioning is completed with every connection)	

9 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.
10 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

10.2.1.2 Default input screen for configuring the site

10.2.1.2.1 Site

Customer

Specifies to which customer the site is assigned



symbol

Assign site to another customer

Name

Site designation (not relevant for the device or data assignment) [2-50 characters]

Device S/N

Serial number of the device that is linked to the site (device assignment!)

Application

Name of the IoT application based on which the site was created

Application version

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.

Tags

Liste der Tags, die der Site bereits zugewiesen sind. Durch einen Klick auf das Kreuz neben der Bezeichnung des Tags kann diese Zuweisung wieder aufgehoben werden. The input screen for assigning tags can be opened by clicking on the plus symbol.

10.2.1.2.2 Comments

Comments

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

10.2.1.2.3 Alarm settings

Acknowledgement	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.
Transfer volume	Standard	The setting for the transfer volume alarm is taken from the global server settings.
	off	The transfer volume alarm is deactivated.
	individual	The level at which the transfer volume alarm should be triggered can be entered in the adjacent field in KiB.
Offline alarm after	alarm in the event that the device does not report for longer than the set time (00:00 alarm deactivated).	
Title user alarm 1	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.	
Title user alarm 2	Freely selectable title for user-defined alarm 2	
Title user alarm 3	Freely selectable title for user-defined alarm 3	

10.2.1.2.4 Calculated channels

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

10.2.1.2.4.1 Basis

Title 1-5


Freely selectable channel title for the calculated channels [0-16 characters]

Mode

Possible calculation modes for the calculated channels

<i>Off</i>	<i>---</i>	<i>Calculated channel deactivated</i>
<i>Table</i>	<i>Min</i>	<i>Defines the lower scale end of the pointer instruments</i>
	<i>Max</i>	<i>Defines the upper scale end of the pointer instruments</i>
	<i>Unit</i>	<i>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</i>
	<i>Decimal places</i>	<i>Number of decimal places that are used by all of the server display elements</i>
<i>Digital</i>	<i>Invert</i>	<i>Inverts the input signal</i>
<i>+, -, x, /</i>	<i>Min</i>	<i>Defines the lower scale end of the pointer instruments</i>
	<i>Max</i>	<i>Defines the upper scale end of the pointer instruments</i>
	<i>Unit</i>	<i>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</i>
	<i>Decimal places</i>	<i>Number of decimal places that are used by all of the server display elements</i>
<i>Delta</i>	<i>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 the counter reading (m³) of the source in to a flow rate (m³/min.) (see "Additional explanation: Delta mode" on page 83).</i>	
	<i>Min</i>	<i>Defines the lower scale end of the pointer instruments</i>
	<i>Max</i>	<i>Defines the upper scale end of the pointer instruments</i>
	<i>Unit</i>	<i>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</i>
	<i>Decimal places</i>	<i>Number of decimal places that are used by all of the server display elements</i>
<i>Clone</i>	<i>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.</i>	
	<i>Min</i>	<i>Defines the lower scale end of the pointer instruments</i>
	<i>Max</i>	<i>Defines the upper scale end of the pointer instruments</i>
	<i>Unit</i>	<i>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</i>
	<i>Decimal places</i>	<i>Number of decimal places that are used by all of the server display elements</i>

10.2.1.2.4.2 Calculation

Off	---	Calculated channel deactivated
Table	Source	Selection of the channel from which the input data is used
		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	Source	Selection of the channel from which the input data is used
	High level	Signal recognition level
+, -, x, /	Source	Selection of the channel from which the input data is used
	+, -, x, /	
	Source	Selection of the second channel from which the input data is used
	Offset	Offset that is added following multiplication with the "Factor" parameter.
	Factor	Factor with which the result of the mathematical operation (+, -, x, /) is multiplied. The "Offset" parameter is then added.
Delta	Source	Selection of the channel from which the input data is used
	Time basis	Specifies the desired time unit (value/sec., value/min., ...) for the result
	Offset	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.
	Factor	Factor with which the result is multiplied once it has been converted into the desired time unit. The "Offset" parameter is then added.
Clone	Source	Selection of the channel that should be cloned
	Offset	Offset that is added following multiplication with the "Factor" parameter.
	Factor	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 $60m^3$ and the time difference is 60sec.

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:

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

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

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

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 myDatatnet server.

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

10.2.1.2.5 Basic settings

Time zone	Regional settings (not relevant for raw measurement data as this is stored in UTC)	
Daylight saving time	Configuration for automatic time adjustment	
	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
Default report	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.
Report template	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
Change log configuration	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.

10.2.1.2.6 FTP export settings

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

FTP export profile	off	FTP export deactivated
	"Name of an FTP export profile"	List with the FTP export profiles that were created on the myDatenet server (for creating an FTP export profile, see "myDatenet Server Manual " 805002).
Settings of the selected profile	Shows an overview of the most important parameters of the selected FTP export profile	
FTP directory	Makes overwriting the standard directory of the selected FTP export profile possible [0-100 characters]	
Last export	Time stamp of the last FTP export	

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
Instrument 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.
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).	
Hardware version	Hardware version of the myDatalogEx LTE-M	

10.2.2.3 GPRS

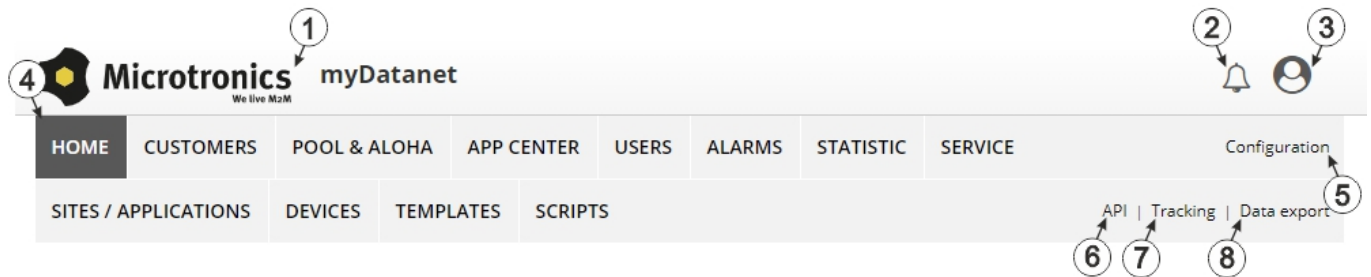
SIM tariff

Selected SIM tariff

Chapter 11 myDatanel server

Note: All of the screenshots show version 49v011 of the myDatanel server using the standard colour scheme. Newer versions may include minor changes to the appearance of the server.

11.1 Overview



Overview of the myDatanel 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.

11.1.1 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.).

11.2 "Customer" area

HOME HEALTH **CUSTOMERS** POOL & ALOHA APP CENTER USERS ALARMS STATISTIC SERVICE Configuration

SITES / APPLICATIONS DEVICES TEMPLATES SCRIPTS API | Tracking | Data export

1 Overview

2 + Customers 3 **10 11**

2015 Training **8**

Pages: **1** (Total 1)

4 **5** **6** **7** **9**

1234 City Street 1

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

<p>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.</p> <p>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.</p> <p>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.</p> <p>Clicking the same mouse button again will remove the restriction.</p>
<p>4 Opens the input screen for configuring the customer</p>
<p>5 Deletes the customer</p>
<p>6 Comment that can be entered in the configuration of the customer</p>
<p>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 90 or "Reports" on page 91).</p>
<p>8 Search field to filter the customer list</p>
<p>9 Customer's address that can be entered via the input screen for configuring the customer</p>
<p>10 Symbol via which a OpenStreetMaps map, on which the sites are displayed, can be loaded. (see "Map view" on page 91)</p>
<p>11 Symbol via which an image file can be loaded on to the server as an "Overview map"</p> <p>To remove the "Map" again, open the upload dialogue again and click on "Submit" without selecting an image file beforehand.</p>

11.3 "Sites / Applications" area at customer level

SITES / APPLICATIONS | DEVICES & ALOHA | USERS | ALARMS | STATISTIC | SERVICE

SITES / APPLICATIONS TAGS | DEVICES TAGS API | Data export

1 **Overview**

2 **Reports** 5 6

Report 1 Pages: 1 (Total 1)

Report 1

Channel 1 Site 1	Channel 2 Site 1	Int. Temp Site 1
 -0,3	 -0,3	22,7 °C

3 **Sites / Applications** CONNECTION APPLICATION

Filter: off | Order: Name | Page Length: 12

Austria

Site Pages: 1 (Total 2)

Site	Status	Last Update	Actions
Site 1 4-Channel Data Logger: 047394065Dxxxxxx (9.9.2020 - 1.9.2022)	●	1.9.2022 09:45:48 SER UTC+02:00	
Site 2 4-Channel Data Logger: 048A880857xxxxxx (9.9.2020 - 1.9.2022)	●	1.9.2022 09:42:01 SER UTC+02:00	

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 91)
3	List of sites/applications (see "Site" on page 79)
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 91)
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.

11.3.1 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).

11.3.2 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).

11.4 Recommended procedure

11.4.1 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).

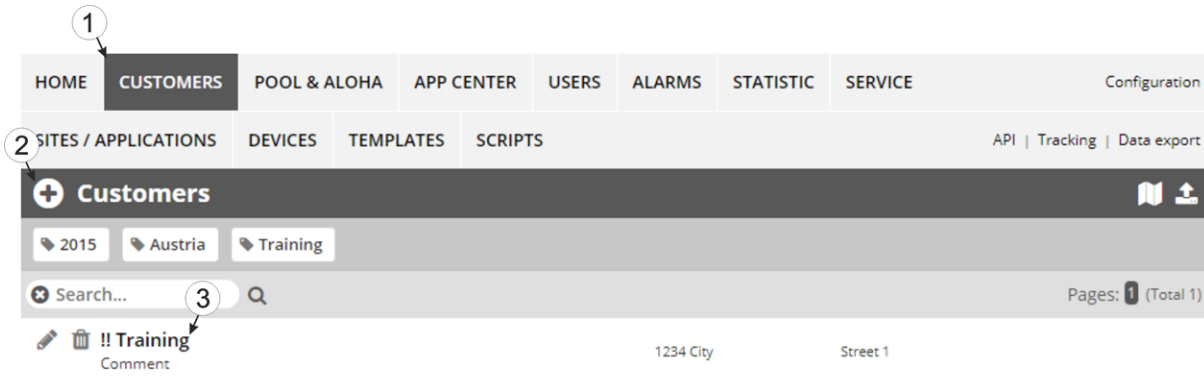
1. Log in via the web interface on the myDatanet server. You will receive the web address from your responsible sales partner.



user name
password
LOG IN

Login form of the myDatanet server

- 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.

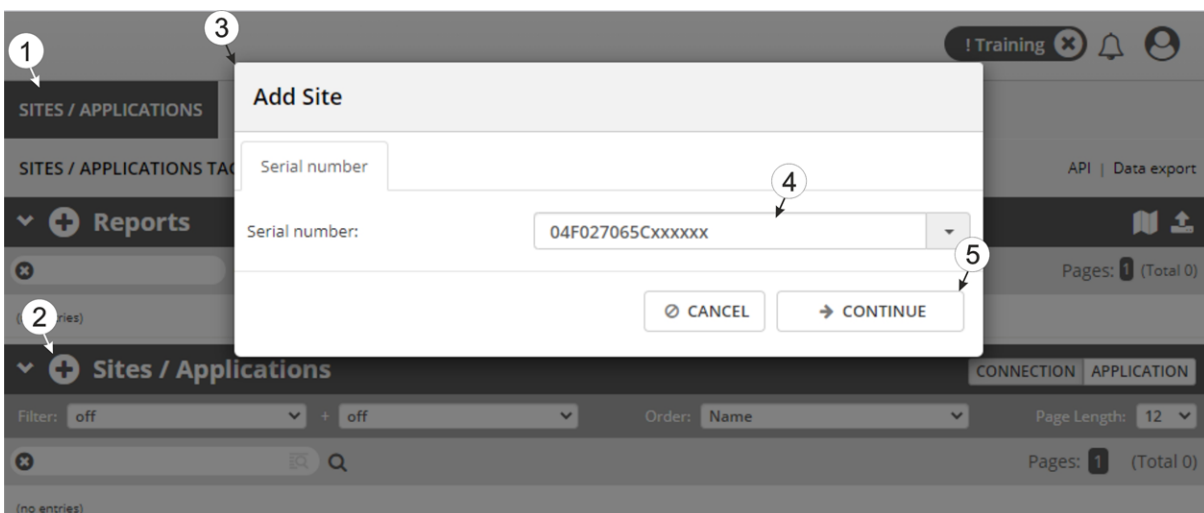


Selecting the customer

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

- Click on the "Sites / Applications" menu item of the myDatanet server to call up the list of existing sites / applications. Open the input window for creating a new site by clicking the "Add new site / application" symbol, enter the serial number of your device in the appropriate field and then click the "Continue" button.

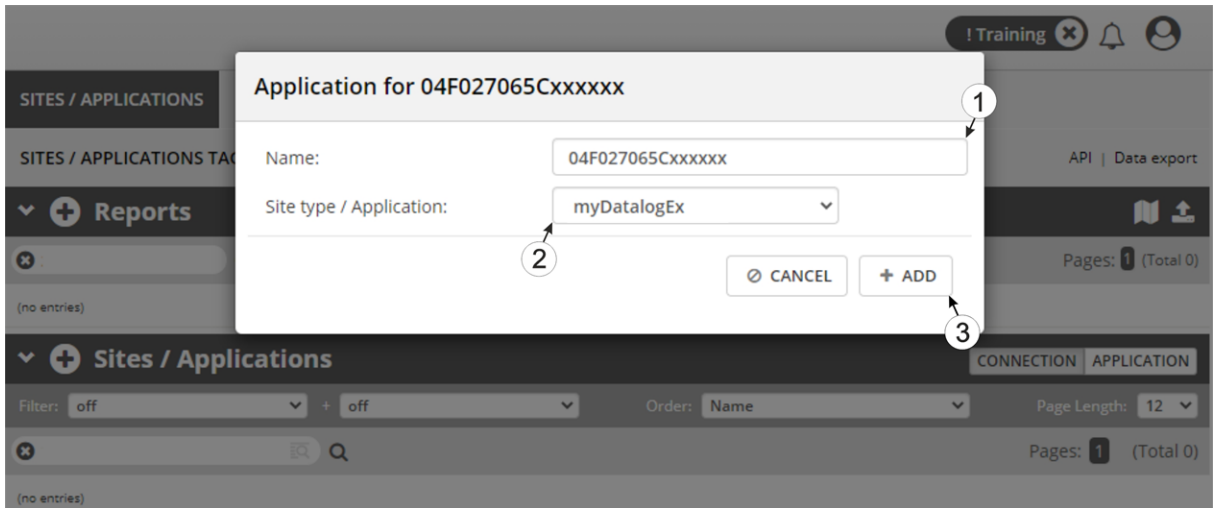
Note: The serial number is on the type plate of the device (see "Device labelling" on page 25)



Creating the site

1 Menu item to call up the list of existing sites / applications	4 Field for entering the serial number
2 "Add new site / application" symbol	5 "Continue" button
3 Input window for creating a new site	

4. If necessary, change the suggested name of the site, select the desired site type or the desired application from the drop-down list and then click the "Add" button.



Completing site creation

1 Name of the site (freely selectable)	3 "Add" button
2 Drop-down list of available applications, templates and site types	

Chapter 12 API

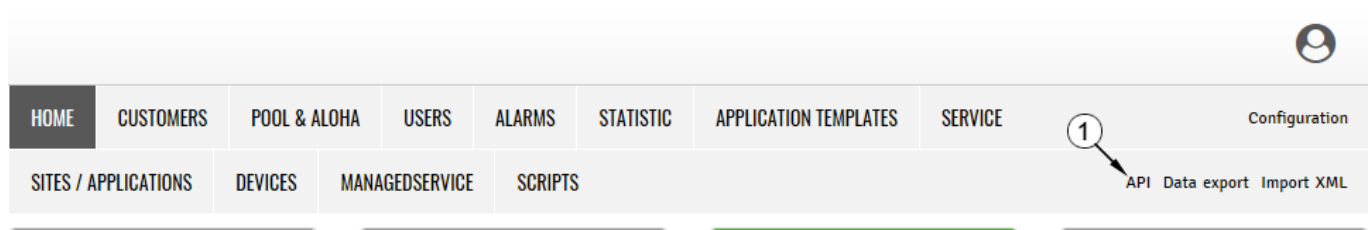
Important note: The relevant licences are required on the myDatanet server to use the API (Application Programming Interface). For future information contact your responsible sales partner.

12.1 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.

12.2 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

12.2.1 Overview

The screenshot shows the Microtroni rapidM2M Playground interface. It features a top navigation bar with the Microtroni logo, 'rapidM2M Playground', and 'API Quick guide' links. A left sidebar lists various application features. The main area displays an HTTP client interface with a 'GET /1/customers/\$CID' command. The response code is '200' and the response body is a JSON object. A 'Response Body' window is open, showing the JSON data and its documentation. A bottom status bar shows the last executed command 'GET /1/customers/\$CID'.

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 13 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.

13.1 General maintenance

- Regularly check the myDatalogEx LTE-M 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 myDatalogEx LTE-M with a soft, moist cloth. Use a mild cleaning agent, if necessary.

Important note: Due to the electrostatic effects, the myDatalogEx LTE-M must not be rubbed with cloths in the Ex zone.

Chapter 14 Removal/disposal

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.

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 15 Troubleshooting and repair

15.1 General problems

Problem	Cause/solution
Device does not respond (nothing appears on the display).	<ul style="list-style-type: none"> • Battery pack is completely discharged
Communication problems	<ul style="list-style-type: none"> • Evaluate the error code shown on the display (see "Display" on page 62). • Load the device log from the myDatalogEx LTE-M or the myDatatnet server and use DeviceConfig for the report (see "Evaluating the device log" on page 107). • The capacity of the battery pack is virtually depleted.
Setup mode cannot be activated	<ul style="list-style-type: none"> • Evaluate the error code shown on the display (see "Display" on page 62). • Load the device log from the myDatalogEx LTE-M or the myDatatnet server and use DeviceConfig for the report (see "Evaluating the device log" on page 107). • The capacity of the battery pack is virtually depleted.
Not all or no data is available on the server.	<ul style="list-style-type: none"> • The connection was aborted during the transmission, which is indicated by a time-out entry in the connection list (see "myDatatnet 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 "Creating the site" on page 91).
The data at the universal input is not plausible.	<ul style="list-style-type: none"> • Check the cable connections (see "Connecting the sensor" on page 46). • Check whether the universal input configuration matches the sensor output signal.
Alarm state of a measurement value was not identified	<ul style="list-style-type: none"> • Increase the record interval (attention: This will increase the required data volume).
Alarm state was not transferred although the data is present	<ul style="list-style-type: none"> • Check the alarm settings of the measurement channel • The connection was aborted during the transmission, which is indicated by a time-out entry in the connection list (see "myDatatnet Server Manual " 805002). Solution: Activate setup mode or wait for the next cyclical transmission.
Alarm message was not sent although the alarm was signalled	<ul style="list-style-type: none"> • Check the settings of the alarm schedule (see "myDatatnet Server Manual " 805002). • Check the address data of the alarm schedule (see "myDatatnet Server Manual " 805002).

15.2 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 119).
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 119).
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.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
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.
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 119).
1192	FUTURE TIMESTAMP	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 119).
1200	MODEM ERROR			Modem error (see "Modem error" on page 106)
1201	MODEM NOT FOUND	---		Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 119).
1202	MODEM CMME ERROR	##	---	The GPRS modem indicates a +CME error. The parameter specifies the type of error.
1203	SELECTED NETWORK	##	---	A new GSM network was selected. The parameter specifies the MCC (Mobile Country Code) and the MNC (Mobile Network Code) of the selected GSM 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

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
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.
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
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 119).
1281	ZLIB STREAMPROCESS ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 119).
1282	ZLIB STREAMFINISH ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 119).
1317	BLE CONNECTED	---	---	Bluetooth connection to a PC established
1318	BLE DISCONNECTED	---	---	Bluetooth connection was terminated

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
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 occurred when reading the air humidity value from the internal temperature and air humidity sensor.
		2	SHT2X TEMP ERROR	A communication error occurred when reading the temperature value from the internal temperature and air humidity sensor.
		3	SHT2X RH+TEMP ERROR	A communication error occurred 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
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).

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
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	---	<ul style="list-style-type: none"> • 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. <p>The battery is probably defective and should be checked by the manufacturer.</p>
3000 - 3099	SCRIPT ERROR	##	--	<p>Internal system error</p> <p>Contact the manufacturer if the device log contains this error with the same parameter code several times (see "Contact information" on page 119).</p>

15.2.1 Modem error

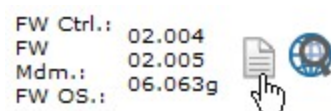
Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
GPRS error				
1200	BEARER GPRS FAILED	-988	---	<p>GPRS setup error</p> <ul style="list-style-type: none"> • Try to improve the position of the antenna. • Check whether the device is in the coverage area (www.microtronics.com/footprint).
1200	BAND SEL FAILED	-969	---	<p>A network could not be found on the GSM900/1800 or on the GSM850/1900 band.</p> <ul style="list-style-type: none"> • Try to improve the position of the antenna. • Check whether the device is in the coverage area (www.microtronics.com/footprint).

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. Internal SIM chip: see www.microtronics.com/footprint
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
	MODEM POSITION UPDATE ERROR	-943	---	Timeout during determination of the GSM position data

15.3 Evaluating the device log

15.3.1 Evaluating the device log on the myDatenet server

The last 300 log entries on the myDatenet 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.

15.3.2 Evaluating the device log using DeviceConfig

The DeviceConfig program can be used to read all of the stored log entries, including those that have not yet been transferred to the myDatanet server, directly from the myDatalogEx LTE-M via the Bluetooth interface.

A more detailed description about the evaluation of the device log using DeviceConfig is included in the user manual for the DeviceConfig ("myDatanetDeviceConfig Manual " 805004).

Chapter 16 Spare parts and accessories

16.1 Assembly sets

Description	Quantity	Order number
Niro shackle	1	206.325
Anchor clamp 5,5 - 10,5mm	1	301017

16.2 Antennas

Description	Quantity	Order number
Flat antenna Disc Multi Band FME-F 2m	1	300629
Multi band antenna with bracket	1	300787

16.3 Cable

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

16.4 Other accessories

Description	Quantity	Order number
MDN Magnet	1	206.803
DeviceConfig	1	300264
BLE Gateway MDN Protection casing	1	300662

Chapter 17 Document history

Rev.	Date	Changes
01	28.01.2020	First version
02	12.02.2020	<p>Chapter "Specifications" on page 17 <i>Specified weight changed from 690 g to 730 g</i> <i>Specified Ex certification corrected from "II 3G Ex ic IIB T4 Gc" to "II 3G Ex ic IIB T3 Gc"</i> <i>Number of measurement cycles that can be stored in the internal flash added</i></p> <p>Chapter "Functionality of the internal data memory" on page 30 <i>Number of measurement cycles that can be stored in the internal flash added</i></p>
03	12.08.2020	<p>Hardware version 1.1 <i>The electronic system has been modified to meet the requirements for the certification in accordance with ATEX Zone 1.</i></p> <p>Chapter "Warranty" on page 26 <i>Chapter added</i></p> <p>Chapter "Disclaimer" on page 27 <i>Chapter added</i></p> <p>Chapter "Personnel requirements" on page 28 <i>Chapter added</i></p> <p>Chapter "Applicable documents " on page 55 <i>Chapter added</i></p> <p>Chapter "Removal/disposal" on page 99 <i>Notes regarding recycling and environmentally friendly disposal of waste electrical and electronic equipment added.</i></p>
04	24.09.2020	<p>Chapter "General product information" on page 25 <i>Classification of "portable" changed to "battery-operated, stationary"</i></p> <p>Chapter "Scope of supply" on page 39 <i>Protective cap added to the scope of delivery</i></p> <p>Chapter "Connecting the sensor" on page 46 <i>Note added that the sensor connection must be covered with a protective cap if no sensor is connected.</i></p>
05	22.10.2020	<p>Hardware version 2.0 <i>This hardware version is approved for ATEX zone 1.</i></p> <p>Chapter "Using the mobile connection (LTE-M/NB-IoT) and the myDatanet server" on page 55 <i>Explanation adapted to version 49v011 of the myDatanet server</i></p> <p>Chapter "Testing communication between the myDatalogEx LTE-M and the myDatanet server (mobile connection)" on page 58 <i>Explanation adapted to version 49v011 of the myDatanet server</i></p> <p>Chapter "myDatanet server" on page 87 <i>Screenshots and explanations of the user interface of the myDatanet server adapted to version 49v011</i></p>

Rev.	Date	Changes
06 (1/2)	22.10.202 (1/2)	<p>Hardware version 3.0 <i>The electronic system has been modified to meet the requirements for the certification in accordance with ATEX Zone 1.</i> <i>The 2G/3G modem (SARA-U270 ATEX), that only supports the frequency bands used in Europe, has been replaced with a 2G/3G modem (SARA-U201 ATEX) that can be used globally.</i> <i>The Bluetooth module has been replaced with a new module that support the "Bluetooth 5.0 Low Energy" standard.</i> <i>The size of the installed flash memory has been increased to 64 MBit. This is designed to improve the internal firmware update routines.</i></p> <p>Chapter "Declaration of conformity" on page 9 <i>Declaration of Conformity updated</i></p> <p>Chapter "Ex certification" on page 11 <i>1. Amendment to the EC-type examination certificate added</i></p> <p>Chapter "Specifications" on page 17 <i>The protection class is now specified based on the state of the connections (open/connected).</i> <i>Information on the permissible immersion depth and immersion duration for IP68 added</i> <i>Specification of the supported frequency bands suitable for the 2G/3G modem (SARA-U201 ATEX) used from hardware version 3.0 or higher.</i></p> <p>Chapter "Setup mode" on page 31 <i>Note added, indicating that once setup mode is terminated, the result is displayed on the device.</i> <i>Explanation extended to include description of the zero point adjustment.</i></p> <p>Chapter "Zero point adjustment" on page 44 <i>Chapter added</i></p> <p>Chapter "Reed switch" on page 61 <i>Explanation amended to indicate that if the reed switch is pressed briefly information on the installed software is initially displayed and that the current operating state is only displayed afterwards.</i></p> <p>Chapter "Display" on page 62 <i>Explanation of the display of the information regarding the installed software added</i> <i>Explanation of the display of the current charge state added</i> <i>Explanation of error code E02 (last connection failed) added</i></p> <p>Chapter "Using the mobile connection (LTE-M/NB-IoT) and the myDatanet server" on page 55 <i>Explanation extended to include description of the zero point adjustment.</i></p> <p>Chapter "Testing communication between the myDatalogEx LTE-M and the myDatanet server (mobile connection)" on page 58 <i>Explanation extended to include description of the zero point adjustment.</i></p> <p>Chapter "Specific input screen for configuring the site" on page 65 <i>Chapter added</i></p> <p>Chapter "Setup data" on page 67 <i>Explanation of the visualisation of the data determined during setup mode extended to include the measurement values for sensor 1.</i></p>

Rev.	Date	Changes
06 (2/2)	22.10.202 (2/2)	<p>Chapter "Default input screen for configuring the site" on page 79 <i>Chapter added</i></p> <p>Chapter "rapidM2M Playground " on page 95 <i>Screenshot and description of the rapidM2M playground updated ("System Console" button removed, button for the global settings added)</i></p> <p>Chapter "Glossary" on page 117 <i>Explanation of the terms "App Centre", "App Model", "Device Logic", "Hardware ID String", "IoT App", "Product revision", "rapidM2M Store" and "rapidM2M Timestamp" added</i></p>
07 (1/2)	27.06.2023 (1/2)	<p>Hardware version 5.0 <i>The 2G/3G modem (SARA-U201 ATEX) has been replaced with a LTE-M/NB-IoT modem (nRF9160). The switch to activate/deactivate the modem has been adapted to the new LTE-M/NB-IoT modem (nRF9160). The internal power supply has been adjusted to the new LTE-M/NB-IoT modem (nRF9160). The internal current limitation has been modified to meet the requirements for a possible certification for ATEX zone 1.</i></p> <p>Chapter "Declaration of conformity" on page 9 <i>Declaration of conformity adjusted to the LTE-M/NB-IoT modem (nRF9160) used from hardware version 5.0.</i></p> <p>Chapter "Ex certification" on page 11 <i>2nd Amendment to the EU Type Examination Certificates added</i></p> <p>Chapter "Specifications" on page 17 <i>Specification of the supported frequency bands suitable for the LTE-M/NB-IoT modem (nRF9160) used from hardware version 5.0 has been adapted Maximum device operation span adjusted from 1 to 11 years.</i></p> <p>Chapter "Block diagram" on page 24 <i>The 2G/3G modem (SARA-U201 ATEX) has been replaced with a LTE-M/NB-IoT modem (nRF9160).</i></p> <p>Chapter "Device labelling" on page 25 <i>Type plate adjusted to hardware version 5.0</i></p> <p>Chapter "Functional principle" on page 29 <i>Specification of the used mobile radio standards corrected from 2G/3G to M1/NB1/NB2</i></p> <p>Chapter "Setup mode" on page 31 <i>Link and QR code referring to the How-To-Video "Activating the setup mode" added.</i></p> <p>Chapter "Determining the GSM/UMTS/LTE signal strength" on page 36 <i>Chapter added</i></p> <p>Chapter "Determining the position data" on page 36 <i>Chapter added</i></p> <p>Chapter "Automatic switching between the mobile radio technologies "LTE-M" and "NB-IoT"" on page 36 <i>Chapter added</i></p>

Rev.	Date	Changes
07 (2/2)	27.06.2023 (2/2)	<p>Chapter "Zero point adjustment with the help of setup mode" on page 44 <i>Explanation extended to include that, when connecting for the first time during setup mode, the configuration of the site is transferred to the device. Link and QR code referring to the How-To-Video "Inserting the sensor module" added.</i></p> <p>Chapter "Connection examples" on page 48 <i>Use of the Connection cable 7-pins for sensors 2,8m (206.602) included in the description.</i></p> <p>Chapter "Typical influences on the signal quality" on page 50 <i>Unit for the specification of the signal loss with regard to the reference measurement corrected from "dBm" auf "dB".</i></p> <p>Chapter "Using the mobile connection (LTE-M/NB-IoT) and the myDatanet server" on page 55 <i>Explanation extended to include that, when connecting for the first time during setup mode, the configuration of the site is transferred to the device. Link and QR code referring to the How-To-Video "Inserting the sensor module" added.</i></p> <p>Chapter "Testing communication between the myDatalogEx LTE-M and the myDatanet server (mobile connection)" on page 58 <i>Explanation extended to include that, when connecting for the first time during setup mode, the configuration of the site is transferred to the device. Link and QR code referring to the How-To-Video "Inserting the sensor module" added.</i></p> <p>Chapter "Display" on page 62 <i>Explanation of the display of the setup mode result added</i></p> <p>Chapter "Measurement instrument" on page 85 <i>Explanation of the "Modem Version" and "OS Version" fields, that are no longer used, removed.</i></p> <p>Chapter ""Customer" area" on page 88 <i>Screenshots of the user interface of the myDatanet servers adapted to version 50v007</i></p> <p>Chapter ""Sites / Applications" area at customer level" on page 90 <i>Screenshots of the user interface of the myDatanet servers adapted to version 50v007</i></p> <p>Chapter "General maintenance" on page 97 <i>Note added indicating that connectors also should be checked regularly for tightness and corrosion.</i></p> <p>Chapter "Log entries and error codes" on page 102 <i>Explanation of the error codes "MODEM NOT FOUND", "GSM NETWORK REGISTRATION", "GPRS NETWORK REGISTRATION", "LTE NETWORK REGISTRATION", "SHT2X SENSOR OK", "SHT2X RH ERROR", "SHT2X TEMP ERROR", "SHT2X RH+TEMP ERROR", "SHT2X PLAUSIBILITY ERROR", "SHT2X COM ERR", "SHT2X COM ERR1", "SHT2X COM ERR2", "SHT2X TEMP RAW", "SHT2X RH RAW" and "ACCU 0 E2PROM ERROR" added</i></p>

Rev.	Date	Changes
08	28.07.2023	<p>Chapter "Specifications" on page 17 <i>Protection class adjusted from "IP67 / IP68" to "IP66 / IP68 / IP69"</i> <i>Dependency of protection class on connector status (open/plugged) removed</i> <i>Specification of the load adjusted from 4Ω to 2Ω</i></p> <p>Chapter "Block diagram" on page 24 <i>Corrected an error in the designation of the sensor connector. V_{Sensor} is at pin "C".</i></p> <p>Chapter "Storage of the product" on page 26 <i>Explanation extended to account for the fact that the sensor connector has to be covered with the protective cap when storing the device.</i></p> <p>Chapter "Storage" on page 39 <i>Note added indicating that the sensor connector has to be covered with a protective cap when storing the device.</i></p> <p>Chapter "Installing the myDatalogEx LTE-M " on page 42 <i>Note added indicating that metallic mounting fixtures have to be grounded.</i></p> <p>Chapter "Technical details about universal input" on page 51 <i>Resistor in the schematic diagram of the universal input adjusted from 4Ω to 2Ω.</i></p> <p>Chapter "0/4...20mA mode" on page 52 <i>Specification of the load adjusted from 4Ω to 2Ω.</i></p> <p>Chapter "Technical details regarding the sensor supply" on page 52 <i>Added explanation of the relationship between warmup time and record interval in case the warm up time > record interval.</i></p> <p>Chapter "Measurement channels" on page 68 <i>Explanation extended to account for the fact that the warmup time may be entered in 0,1sec.</i></p>

Chapter 18 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.

Footprint

The manufacturer's devices are equipped with subscriber identity modules (SIM) ex-works for the purpose of mobile data transmission. The footprint describes those countries and regions where a mobile connection is available (see www.microtronics.com/footprint).

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 myDatatnet servers. When installing and updating IoT apps the myDatatnet server access the app models provided in the rapidM2M Store . The developer of the respective app model defines which myDatatnet 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 19 Contact information

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Certified by TÜV AUSTRIA: EN ISO 9001:2015, EN ISO 14001:2015, ISO/IEC 27001:2013, EN ISO 50001:2011 for myDatenet | TÜV SÜD: ATEX Directive 2014/34/EU

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