

User manual myDatalogGauge LTE-M

Valid from:

- Firmware version: 01v019
- App. version: 03v000
- Server version: 50v007
- Hardware version: 5.0



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Chapter 2 Declaration of conformity

2.1 BLE & LTE-M Gateway ATEX

EU-Konformitätserklärung

EU Declaration of Conformity / Déclaration de conformité UE

Produktbezeichnung: Frei programmierbares (PAWN) Instrument zum Übertragen von
Product: Messdaten mittels Bluetooth Smart (BLE) oder Mobilfunk (LTE-M)
Désignation du produit:

Type : BLE & LTE-M Gateway ATEX **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 16 ATEX 009 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 One or more of the associated listed in the Type Examination Certificate SIQ 16 ATEX 009 X standards have been replaced by new editions.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 16 ATEX 009 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

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

2.2 BLE Gauge

EU-Konformitätserklärung

EU Declaration of Conformity / Déclaration de conformité UE

Produktbezeichnung: BLE Modul zum Erfassen von Füllständen und Übermittlung dieser zu einem BLE Gateway
 Product: BLE Modul zum Erfassen von Füllständen und Übermittlung dieser zu einem BLE Gateway
 Désignation du produit:

Type : BLE Gauge
 Type code:
 Type:

Sensor : 0-1m 9W, 0-3m 9W, 0-10m 9W
 Sensor code: 0-1m 9O, 0-3m 9O, 0-10m 9O
 Capteur:



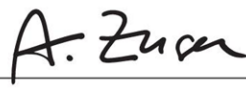
Hersteller: Microtronics Engineering GmbH
 Manufacturer : Hauptstrasse 7
 Fabricant: A-3244 Ruprechtshofen

Das bezeichnete Produkt stimmt mit den folgenden Europäischen Richtlinien überein. Eine oder mehrere der in der zugehörigen Baumusterprüfbescheinigung SIQ 19 ATEX 306 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 19 ATEX 306 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 19 ATEX 306 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 EN62479
		EMC 3.1b	EN301489-1 V1.9.2 EN301489-17 V2.1.1
		Radio spectrum efficiency 3.2	EN300328 V2.1.1
(2014/34/EU)	ATEX Directive		
			EN IEC 60079-0 EN 60079-11
(2015/863/EU)	RoHS Directive		
		Prevention 4.1	EN IEC 63000
Reg. (EG) 1907/2006	REACH Regulation		
Die Produkte enthalten grundsätzlich keine gefährlichen Stoffe nach REACH und entsprechen der Verordnung (EG) Nr. 1907/2006. The products do not contain any hazardous substances according to REACH and comply with Regulation (EC) No 1907/2006. Les produits ne contiennent aucune substance dangereuse selon REACH et sont conformes au Règlement (CE) No 1907/2006.			

Kennzeichnung/ Markings/ Marquage CE 0123 Ex II 2G Ex ib IIB T4 Gb

Ruprechtshofen, den 18.01.2021



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

3.1 BLE & LTE-M Gateway ATEX



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

(2) Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres –
Directive 2014/34/EU

(3) EU-Type Examination Certificate Number:

SIQ 17 ATEX 009 X

Issue: 0



- (4) Product: BLE gateway, types BLE & 3G Gateway ATEX and BLE Gateway ATEX
- (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 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 TEx009.2/17.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0 : 2012 / A11 : 2013 **EN 60079-11 : 2012**
- (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 with 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, 6 September 2017

Igor Likar

Page 1/4

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SIQ Ljubljana, Tržaška cesta 2, SI-1000 Ljubljana, +386 1 4778 221, ex@siq.si



(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number SIQ 17 ATEX 009 X, Issue: 0**

(15) Description of Product

BLE gateway, types BLE & 3G Gateway ATEX and BLE Gateway ATEX, is a communication unit for recording of the measured gas concentration from BLE sensor unit via Bluetooth connection and sending received data to central server via GSM network or to other device via Bluetooth connection. It is designed in type of protection intrinsic safety 'ib'. Power is assured by internal batteries which are not intended to be replaced by user. Enclosure is made from plastic material with plastic protective armor. Unit has an external connector for connection of the antenna. At the bottom of the BLE gateway is a place for installation of the BLE sensor unit, which is attached to the BLE gateway by magnet. BLE sensor unit is not covered by this Certificate.

Type key:

Type:	Description:
BLE & 3G Gateway ATEX	BLE gateway with BLE and GSM 2G/3G module
BLE Gateway ATEX	BLE gateway with BLE module only

Specifications:

Ambient temperature range:	From -20°C to +50°C
Power supply:	Two batteries Tadiran type SL-2880 and hybrid layer capacitor Tadiran type HLC-1530
Material of the enclosure:	Lexan 161R, GTX973, silicone gasket S35WX04 SIL35 SHORE A WHITE and protective armor TC4GPN
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

TEx009.2/17 dated 6 September 2017.

(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.
- Only certified BLE sensor unit shall be used.
- The measuring function for explosion protection is not a subject of this Certificate.

3.1.1 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 17 ATEX 009 X**Issue: 1**

- (4) Product: BLE gateway, types BLE & 3G Gateway ATEX and BLE Gateway ATEX
 (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 TEx412/21.
 (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 with 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 17 ATEX 009 X, Issue: 1**

(15) Description of Product

BLE gateway, types BLE & 3G Gateway ATEX and BLE Gateway ATEX, is a communication unit for recording of the measured gas concentration from BLE sensor unit via Bluetooth connection and sending received data to central server via GSM network or to other device via Bluetooth connection. It is designed in type of protection intrinsic safety 'ib'. Power is assured by internal batteries which are not intended to be replaced by user. Enclosure is made from plastic material with plastic protective armour. Unit has an external connector for connection of the antenna. At the bottom of the BLE gateway is a place for installation of the BLE sensor unit, which is attached to the BLE gateway by magnet. BLE sensor unit is not covered by this Certificate.

Type key:

Type:	Description:
BLE & 3G Gateway ATEX	BLE gateway with BLE and GSM 2G/3G module
BLE Gateway ATEX	BLE gateway with BLE module only

Specifications:

Ambient temperature range:	From -20°C to +50°C
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

TEx412/21 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.
- Only certified BLE sensor unit shall be used.
- The measuring function for explosion protection is not a subject of this Certificate.

(18) Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements has been assured by compliance with the requirements of the standards listed under item (9).

SIQ 17 ATEX 009 X, Issue: 1

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3.1.2 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 17 ATEX 009 X**Issue: 2**

- (4) Product: BLE gateway, types: BLE & 3G Gateway ATEX, BLE Gateway ATEX and BLE & LTE-M Gateway ATEX
 (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 TEx152/23.
 (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 with 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).

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 17 ATEX 009 X, Issue: 2**

(15) Description of Product

BLE gateway, types BLE & 3G Gateway ATEX, BLE Gateway ATEX and BLE & LTE-M Gateway ATEX, is a communication unit for recording of the measured gas concentration from BLE sensor unit via Bluetooth connection and sending received data to central server via GSM/LTE-M network or to other device via Bluetooth connection. It is designed in type of protection intrinsic safety 'ib'. Power is assured by internal batteries which are not intended to be replaced by user. Enclosure is made from plastic material with plastic protective armour. Unit has an external connector for connection of the antenna. At the bottom of the BLE gateway is a place for installation of the BLE sensor unit, which is attached to the BLE gateway by magnet. BLE sensor unit is not covered by this Certificate.

Type key:

Type:	Description:
BLE & 3G Gateway ATEX	BLE gateway with BLE and GSM 2G/3G world module
BLE Gateway ATEX	BLE gateway with BLE module only
BLE & LTE-M Gateway ATEX	BLE gateway with BLE and LTE-M module

Specifications:

Ambient temperature range:	From -20°C to +50°C
Data transmission:	<ul style="list-style-type: none">- 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

TEx152/23 dated 21 July 2023.

(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.
- Only certified BLE sensor unit shall be used.
- The measuring function for explosion protection is not a subject of this Certificate.

3.2 BLE Gauge



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

(2) Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres –
Directive 2014/34/EU

(3) EU-Type Examination Certificate Number:

SIQ 19 ATEX 306 X

Issue: 0



(4) Product: BLE Level meter, type: BLE Gauge

(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 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 TEx306/19.

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

EN IEC 60079-0 : 2018

EN 60079-11 : 2012

(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 with 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 T4 Gb

Certification body

Zoran Svetik

Ljubljana, 21 November 2019

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, Tržaška cesta 2, SI-1000 Ljubljana, +386 1 4778 221, ex@siq.si



(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number SIQ 19 ATEX 306 X, Issue: 0**

(15) Description of Product

BLE Level meter, type: BLE Gauge, includes digital pressure sensor KELLER AG für Druckmesstechnik, type: 26DEi, Ex marking: Ex ia IIC T4...T6 Ga, certificate No.: EPS 14 ATEX 1 661 X, BLE transceiver electronic (I²C interface) for communication between digital pressure sensor and the base unit (BLE Gateway ATEX) via Bluetooth, and metal holder for BLE transceiver electronic and cable.

BLE Level meter, type: BLE Gauge, is designed in type of protection intrinsic safety, level of protection "ib". It has primary cell for voltage supply. Cable of the digital pressure sensor, type: 26DEi, is introduced into enclosure of the BLE transceiver electronic via cable gland and the wires are soldered to PCB. Enclosure of the BLE transceiver electronic is made from plastic material.

Technical data

Ambient temperature range:	From -20°C to +50°C.
Voltage supply:	One primary cell: - SAFT, type LS14250 or - Tadiran, type SL-350.
BLE transceiver electronic (I ² C interface) - output:	U _o = 3.69 V, I _i = 0.171 A, P _i = 0.157 W, C _i = 110 nF, L _i = 0 C _o = 1000 µF / 200 µF / 10 µF L _o = 40 µH / 100 µH / 4000 µH
Data transmission via Bluetooth:	Bluetooth Low Energy: Integrated 2.4 GHz BLE wireless connection.
Type:	BLE Gauge
Sensor identification:	X YZ ... Sensor identification is marked on the cable of the pressure sensor KELLER AG für Druckmesstechnik, type: 26DEi (e.g. 0-1m 9O) X ... measuring range: 0-1m ... with max. 3 m cable (calibrated pressure range 0 – 0.1 bar) 0-3m ... with max. 5 m cable (calibrated pressure range 0 – 0.3 bar) 0-10m ... with max. 12 m cable (calibrated pressure range 0 – 1 bar) Y ... pressure transmitter type: 9 ... Series 9LD Ei Z ... type of medium: W ... water O ... oil

(16) Test Report

TEx306/19 dated 21 November 2019.

(17) Specific Conditions of Use

- Permitted ambient temperature range of use: $-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$.
- The battery (primary cell) must only be replaced by the manufacturer.
- Only primary cells SAFT, type LS14250 or Tadiran, type SL-350 can be used.
- Metal enclosure of the digital pressure sensor KELLER AG für Druckmesstechnik, type: 26DEi, shall be connected to earthing system according to instruction manual.
- Metal holder for BLE transceiver electronic shall be earthed during installation.

(18) Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements has been assured by compliance with the requirements of the standards listed under item (9).

(19) Drawings and Documents

Description	Number	Issue	Date
HW-Description, BLE Gauge, Microtronics Engineering GmbH	/	01v003 Rev0	19. 11. 2019
Calculation BLE_Gauge, Microtronics Engineering GmbH	/	01v001 Doc. Rev.: A	19. 9. 2019
Electrical scheme, BLE_gauge, 9313_01_BLE_gauge_01v001, Microtronics Engineering GmbH	/	01v001	2. 8. 2018
Component list, 9313_01_BLE_gauge_01v001, Microtronics Engineering GmbH	ID: 009313	01v001	26. 4. 2018
Component list sorted, 9313_01_BLE_gauge_01v001, Microtronics Engineering GmbH	ID: 009313	01v001	26. 4. 2018
Technical drawing, PCB, 9313_01_BLE_gauge_01v001, Microtronics Engineering GmbH	/	01v001	26. 4. 2018
PCB manufacturing details, BLE_gauge_01v001, Microtronics Engineering GmbH	/	01v001 Doc. Rev. 1	/
Bildtafel 009321 BLE Gauge, Microtronics Engineering GmbH	009321	01v001	/
BLE-Gehäuse Messdose M16, Microtronics Engineering GmbH	009299	01v000, Rev. 00	8. 1. 2018
BLE-PCM Gehäusedeckel, Microtronics Engineering GmbH	009229	01v002 Rev. 00	23. 11. 2017
Marking label, BLE Gauge, Microtronics Engineering GmbH	/	/	/

SIQ 19 ATEX 306 X, Issue: 0

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Description	Number	Issue	Date
BLE Gauge Halter, Microtronics Engineering GmbH	009359	01v002 Rev. 00	8. 6. 2018
User manual, BLE Gauge, Microtronics Engineering GmbH	300909	03	20. 11. 2019


(20) Consolidated Certificates

None.



Chapter 4 Specifications


4.1 BLE & LTE-M Gateway ATEX

Voltage supply	Battery: 2 x Li-SOCl ₂ cells with a total of 25,74Ah
Enclosure	<p>Material: Noryl GTX 973 / PC (enclosure/cover and activation module)</p> <p>Weight: 730g (incl. activation module)</p> <p>Degree of protection: IP66 / IP68 / IP69 IP68(max. immersion depth 1m for max. 5h)</p> <p>Dimensions (WHD): 106 x 169 x 61mm (with protective armour)</p>
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
Level measurement	<p>2 x BLE Gauge with pressure sensor (connected via Bluetooth Low Energy)</p> <ul style="list-style-type: none"> • Applicable regardless of the selected pressure sensor <ul style="list-style-type: none"> Temperature: -20...+50°C ¹⁾ Resolution: 0,05°C suitable for: Fresh, waste and grey water Measurement method: Piezoresistive pressure sensor • BLE Gauge pressure sensor 0-1m 9W (300872) <ul style="list-style-type: none"> Fill level: 0-1m Resolution: 1mm Cable length: 5m • BLE Gauge pressure sensor 0-3m 9W (300871) <ul style="list-style-type: none"> Fill level: 0-3m Resolution: 1mm Cable length: 5m • BLE Gauge pressure sensor 0-10m 9W (300891) <ul style="list-style-type: none"> Fill level: 0-10m Resolution: 1mm Cable length: 12m

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
Bluetooth	5.0 compatible Low Energy Modul
Data memory	Internal flash memory for up to 36.152 measurement cycles
Data type	Fill level [mm, cm or m]: f32 (32Bit floating point) Temperature [°C]: f32 (32Bit floating point)
Data transmission	Bluetooth Low Energy: Range: 20m (depending on the environmental conditions) Transmission rate: 120 data records/sec. LTE-M/NB-IoT modem (world): M1: LTE B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B28, B66 NB1/NB2: LTE B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66
SIM	Integrated SIM chip
Battery life	Up to 8 years at 10sec. measurement interval and 24h transmission cycle

1) Compensation of the temperature-related influences on the fill level measurement only occurs in the range of 0...50°C .

4.2 BLE Gauge

Voltage supply	Battery: Li-SOCI2 cell with 1,2Ah
Enclosure	Material: POM / Stainless Steel (BLE Gauge / pressure sensor) Weight: approx. 270g (incl. pressure sensor and 5 m cable) Degree of protection: IP67 Dimensions (WHD): 40 x 100mm / 21 x 74mm (BLE Gauge / pressure sensor)
Ex certification	 II 2G Ex ib IIB T4 Gb
Operating temperature	-20...+50°C
Air humidity	15...90%rH non-condensing
Storage and transport temperature	-20...+50°C
Data transmission (to the BLE & LTE-M Gateway ATEX)	Bluetooth Low Energy: Range: 20m (depending on the environmental conditions)
Battery life	up to 8 years (depending on the measurement cycle)

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 myDatanet 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

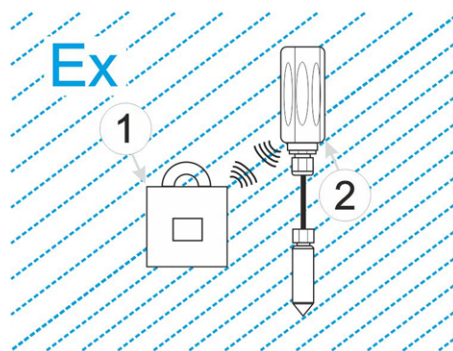
The copying and distribution of this document as well as the utilisation and communication of its contents to others without express authorisation is prohibited. Contraventions are liable to compensation. All rights reserved.

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 myDatalogGauge LTE-M measurement system consists of the and up to 2 BLE Gauge . It is designed for use in areas with a zone 1 explosive atmosphere.



1	2 BLE Gauge
---	-------------

Important note: The Ex approval is only valid if the corresponding marking is provided on the type plate of the and BLE Gauge .

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

5.4.1 BLE & LTE-M Gateway ATEX

The following conditions must be observed:

- Only the manufacturer is permitted to open the housing to carry out maintenance work, which must only be completed outside the Ex area.
- Only the manufacturer's original spare parts must be used.
- The battery must only be replaced with certified identical products.
- 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 impurities.
- The device must be protected from UV radiation.

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

5.4.2 BLE Gauge

The following conditions must be observed:

- Only the manufacturer is permitted to open the housing to carry out maintenance work, which must only be completed outside the Ex area.
- The battery must only be replaced by the manufacturer with certified identical products.
- Only the manufacturer is permitted to replace the pressure sensor.
- Only the manufacturer's original spare parts must be used.
- Possible risk of electrostatic charge - use a damp or electrostatically dissipating cloth to clean the device.
- A mounting distance of min. 50 mm must be maintained on all sides to prevent any impurities.
- Metal enclosure of the digital pressure sensor "KELLER AG for pressure measurement technology, type: 26DEi", shall be connected to earthing system.
- Metal holders for BLE transceivers and cables shall be earthed in the course of installation.
- The device has to be protected from UV radiation.

 **II 2G Ex ib IIB T4 Gb**

5.5 Safety instructions

For the connection, commissioning and operation of the myDatalogGauge 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

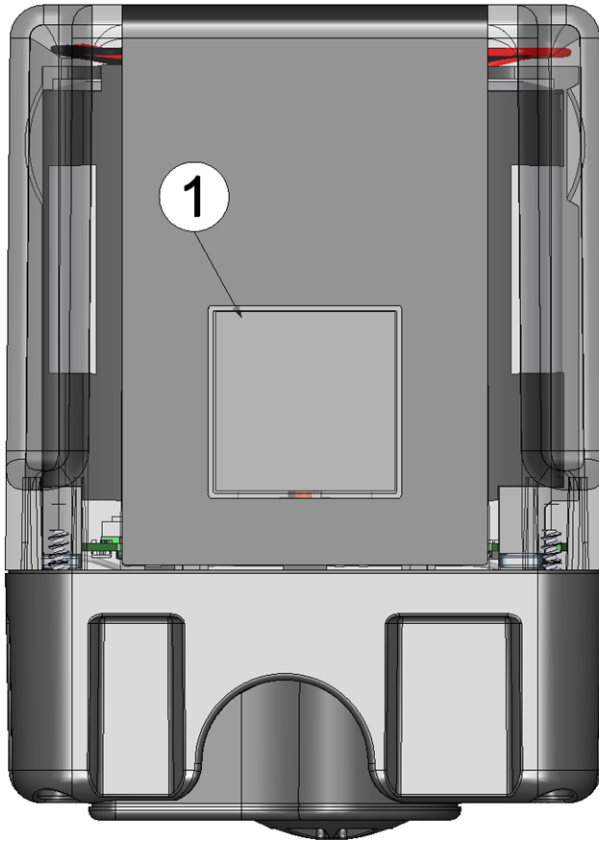
- This device must only be installed by a trained technician who applies the recognised installation practices for a radio frequency transmitter including the correct grounding of external antennas.
- The device must not be operated in hospitals and/or in the vicinity of medical equipment such as heart 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

5.6.1 BLE & LTE-M Gateway ATEX



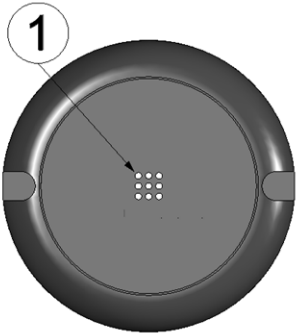
Front of the
(view without protective armour)



Bottom of the
(view without protective armour)

1 Display	3 Activation module (BLE ATM)
2 Antenna connector	

5.6.2 BLE Gauge



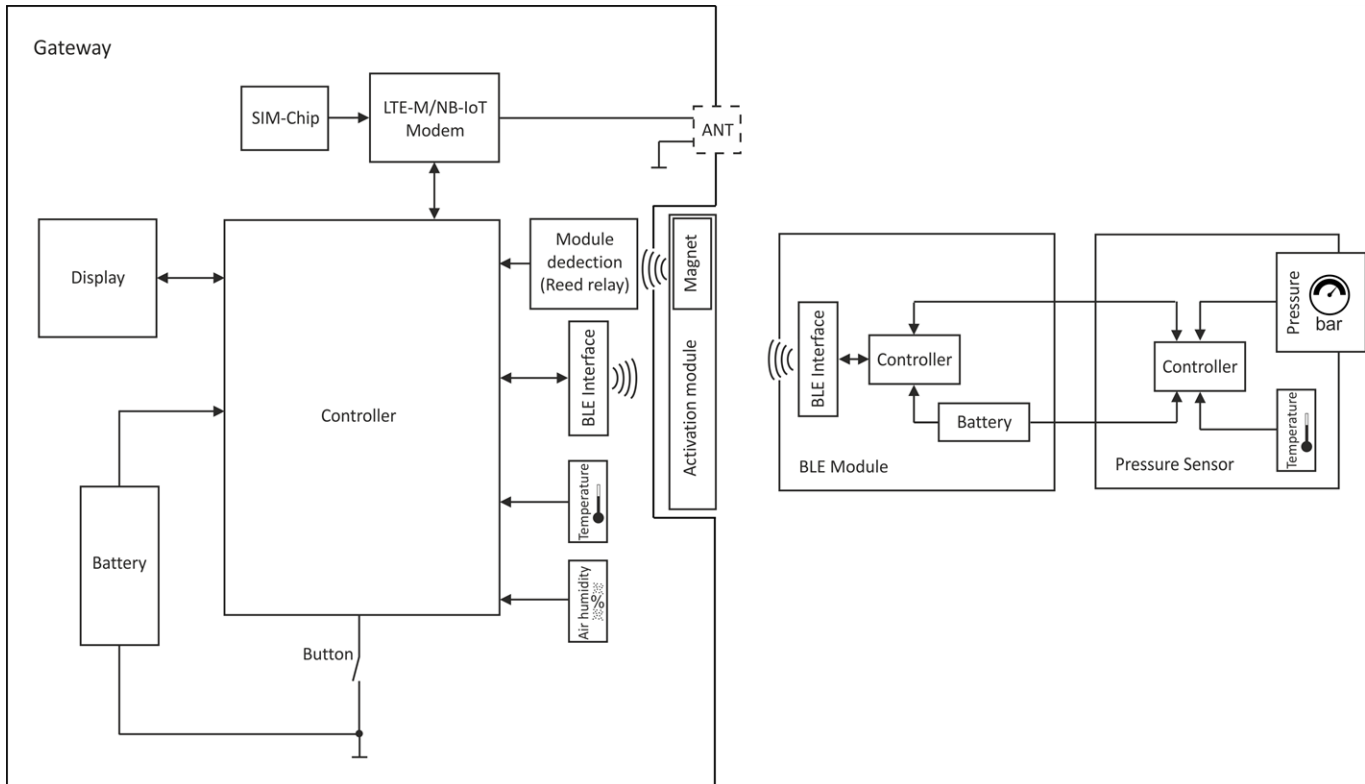
Top of the BLE Gauge



Left side of the BLE Gauge (incl. pressure sensor)

1 Pressure compensation	3 Pressure sensor
2 Medium inlet openings	

5.6.3 Block diagram



Block diagram of the myDataLogGauge LTE-M

5.7 Intended use

The measurement instrument is designed to record fill levels. The device is battery-operated. The measured and recorded data is stored on a non-volatile memory medium. The saved data can either be sent to a central server via the mobile network for further processing or transferred to a PC via a Bluetooth connection (Bluetooth Low Energy). Using the software provided by the manufacturer, the data can then be transferred from the PC to a central server. The device is equipped with an integrated SIM chip for establishing a mobile connection. The maximum permissible limit values (specified in chapter "Specifications" on page 23) 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-operated, stationary system for recording and transferring fill levels. The myDatalogGauge LTE-M consists of the "" data logger and up to 2 BLE Gauge sensor modules with a pressure sensor for the fill level measurement of fresh, waste and grey water. Communication between the BLE Gauge sensor modules and the is realised via a Bluetooth connection (Bluetooth Low Energy). The bridgeable distance can be up to 20m depending on the ambient conditions. The capacity of the battery installed in the sensor module is designed for a max. service life of 8 years. In addition to the fill level (installation height and trimming are taken into consideration), the internal measurement values "PowerOn Flag Sensor" (sensor status), "Battery Sensor", "Temp Sensor" and "Service Sensor" (remaining days until the next battery replacement) are determined for each of the sensor modules (see "Internal channels" on page 90). In addition, the internal measurement values "SOC"(State of Charge), "Battery", "Int. Temp", "rH" (relative air humidity in the enclosure), "GSM" (GSM level), "Service" (remaining days until battery replacement) and "Load" (energy consumption between two recordings) of the are recorded (see "Internal channels" on page 90). The measurement data is recorded at an adjustable interval (see "Basic settings" on page 96) and is temporarily saved in an internal data memory. The recorded data can be read out locally via a Bluetooth connection (Bluetooth Low Energy) or transferred automatically 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 DeviceConfig configuration program (see "DeviceConfig" on page 105) provided by the manufacturer and the USB BLE-Adapter (300685) included in the scope of delivery or a Bluetooth Low Energy compatible smartphone and the "GaugeBuster" smartphone app are required to read out the data via a Bluetooth connection. Both the DeviceConfig configuration program and the "GaugeBuster" smartphone app offer the possibility to forward the measurement data to a central myDatanet server. This server provides

a variety of options for managing and displaying the data. More information is provided in the server manual ("myDatanet Server Manual " 805002). The device is configured via the interface of the relevant myDatanet server. If the fill level falls below or exceeds a defined value, regardless of the transmission cycle that is currently set the trigger function can be used to initiate an immediate transmission, to switch to an "Record interval alternative" or to activate the "Transmission cycle quick" (see "Trigger" on page 89). In addition, limits can be set for all of the measurement values (fill levels and internal measurement values) so that if the measurement value falls below or exceeds these limits, a transmission is initiated immediately in order to report an alarm or warning to the myDatanet server (see "Alarms" on page 88).

The myDatalogGauge LTE-M has a 1,5" OLED display to show the current measurement values (fill level and temperature) and a variety of status information (e.g. remaining days until the next replacement of the batteries of the sensor module). The display is either activated via the solenoid switch or by inserting the activation module. Detailed information on this is provided in chapter "Display" on page 80.

5.9 Device labelling

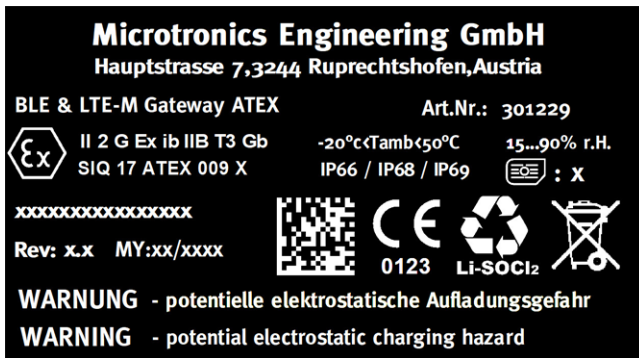
The information in this user manual applies exclusively to the myDatalogGauge LTE-M that is made up of the following components:

- "myDatalogGauge" IoT app
- BLE & LTE-M Gateway ATEX
- Up to 2 x BLE Gauge (300893) with pressure sensor (see "Pressure sensors" on page 157)

Note: Please note that the required pressure sensor with the corresponding measurement range must be specified when ordering the BLE Gauge . The pressure sensor cannot be replaced by the user.

The type plate of the BLE & LTE-M Gateway ATEX is located on the rear side of the device and contains the following information:

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



Type plate



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

The type plates of the BLE Gauge are located on the top and sides of the device and contain the following specifications:

- Type designation
- Serial number
- Hardware revision
- Item number
- Ex protection designation as specified in chapter "Declaration of conformity" on page 9
- Week and year of production
- Environmental conditions during operation
- Protection class
- Name and address of the manufacturer
- Chemical composition of the installed battery
- Logo for the EU WEEE Directive
- CE marking
- Ex parameters as specified in chapter "Ex certification" on page 13



Type plates BLE Gauge

The type plate of the pressure sensor is located on the upper end of the cable and contains the following specifications:

- Item number
- Measurement range (e.g. 0-10 m)
- Type of pressure sensor (e.g. "9" for series PR-26D Ei)
- Permissible media (e.g. "W" for fresh, waste and grey water)



Type plate of the pressure sensor

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

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



WARNING:

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

5.10 Installation of spare and wear parts

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

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

5.11 Storage of the product

To store the myDatalogGauge LTE-M, activate transport mode by removing the Activation module (BLE ATM) from the sensor recess in the device. As part of this process, a connection to the myDatatnet server will first be established so that any data that has not yet been transferred to the server at this point in time is transmitted. The data transmission and measurement are then deactivated. The antenna can be removed as soon as the LTE-M/NB-IoT connection has been terminated - indicated by "Transport mode, no activation module inserted" being shown on the display (see "Display" on page 80). You may need to activate the display again by briefly holding the magnet (approx. 1 sec.) to the reed switch again (see "Reed switch" on page 79). The BLE Gauge sensor modules do not need to be deactivated separately. Store all of the components of the myDatalogGauge LTE-M (and BLE Gauge sensor modules) in their original packaging. Do not remove the protective armour during this process.

The myDatalogGauge LTE-M is placed in a very energy-saving mode by activating transport mode. However, it may still occur that the batteries are fully discharged if the device is stored for very long periods.

However, the configuration and the most recently recorded data are always retained. Transport mode is deactivated again by re-inserting the activation module and the myDatalogGauge LTE-M resumes operation according to the configuration. A connection to the myDataNet server is also established as part of this process, so that any changes to the configuration settings made via the server interface are transmitted to the device. The BLE Gauge sensor modules are always ready for operation and therefore do not need to be activated separately.

5.12 Warranty

The device has been functionally tested before delivery. If it is used as intended (see "Intended use" on page 31) and the operating instructions, the applicable documents (see "Applicable documents" on page 69) and the safety notes and instructions contained therein, are observed, no functional restrictions are to be expected and perfect operation should be possible.

***Note:** Please also note in this regard the next chapter "Disclaimer" on page 35.*

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

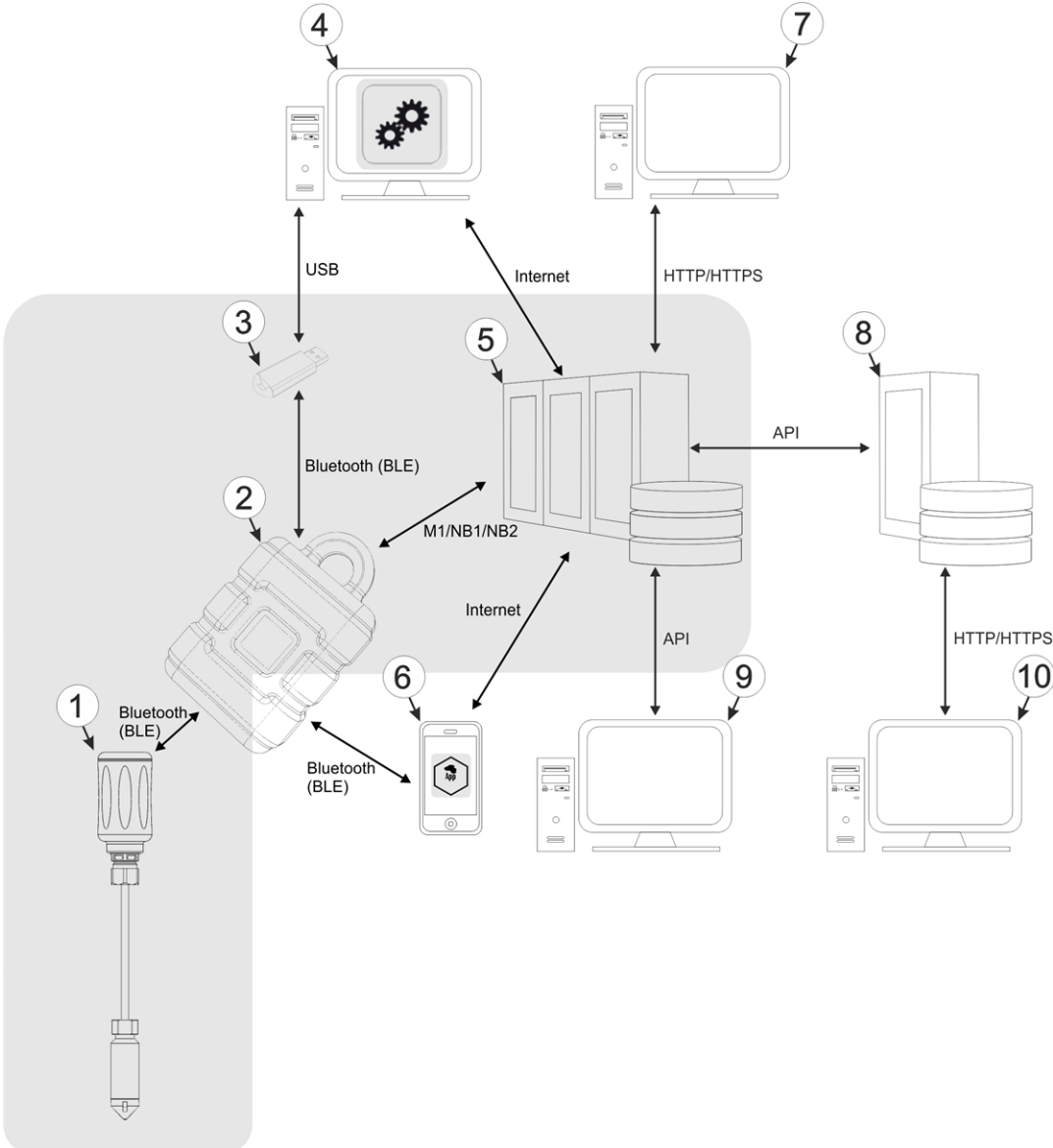
Note: Qualified personnel

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



Functional principle

1	BLE Gauge (incl. pressure sensor)
2	with installed device logic "myDatalogGauge" and integrated managed service SIM chip
3	USB BLE-Adapter (Bluetooth Low Energy to USB converter)
4	PC with the DeviceConfig configuration program installed
5	myDatanet server to which the data is transferred
6	Smartphone with "GaugeBuster" smartphone app installed
7	Client that accesses the interface of the myDatanet server via the web browser

8	Customer-specific server that provides clients with their own interface. The customer-specific server obtains the data via the API interface of the myDatanet server (see "API" on page 139).
9	Client, on which a PC program is running, that obtains its data via the API interface of the myDatanet server (see "API" on page 139)
10	Client that accesses the interface of the customer-specific server via the web browser

As illustrated in the previous figures (see "Functional principle" on page 37), there are 3 options for transferring the data from myDatalogGauge LTE-M to the myDatanet server:

- Directly via LTE-M/NB-IoT mobile connection
- Indirectly, by initially reading the data from the device using the DeviceConfig configuration program via the Bluetooth connection (BLE) and then using the PC's Internet connection to transfer the data to the server
- Indirectly, by reading the data from the device via the "GaugeBuster" smartphone app using the Bluetooth connection (BLE) and using the smartphone's Internet connection to transfer the data to the myDatanet server

Functions and components provided by myDatanet :

- myDatalogGauge LTE-M

It is a system approved for Ex zone 1 used to record fill levels that consists of the "" data logger and up to 2 BLE Gauge (incl. pressure sensor). Communication between the BLE Gauge sensor modules and is realised via a Bluetooth connection (Bluetooth Low Energy).

- BLE Gauge (incl. pressure sensor)

It is a sensor system approved for Ex zone 1 for determining fill levels. The transmission of the measurement command to the BLE Gauge as well as the reading out of the determined measurement values from the BLE Gauge are realised via a Bluetooth connection (Bluetooth Low Energy).

- with installed device logic "myDatalogGauge"

It is a data logger approved for Ex zone 1 that is used in conjunction with up to 2 BLE Gauge sensor modules to record fill levels. The saved data can either be sent to a central server via the mobile network (LTE-M/NB-IoT) for further processing or transferred to a PC via a Bluetooth connection (Bluetooth Low Energy).

- USB BLE-Adapter (included in the scope of delivery of the myDatalogGauge LTE-M)

This hardware module is connected directly to the USB interface of the PC. The required drivers are included in the installation package of the DeviceConfig configuration program. Detailed information on this is provided in chapter "Installing USB BLE-Adapter driver" on page 108.

- configuration program DeviceConfig (optional)

The DeviceConfig configuration program is required to read out the data from the myDatalogGauge LTE-M via the Bluetooth connection (Bluetooth Low Energy). In addition to local processing, the configuration program also provides the option of transferring the data to a central myDatatnet server. An Internet connection is required for this purpose. The DeviceConfig configuration program uses port 51241 to transfer data.

- "GaugeBuster" smartphone app(optional)

When combined with a Bluetooth Low Energy compatible smartphone, the "GaugeBuster" smartphone app provides the option of reading the data from the myDatalogGauge LTE-M via the Bluetooth connection (Bluetooth Low Energy) and transferring it to a central myDatatnet server.

- Managed Service

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

- myDatatnet server

Database for saving the measurement data and configurations. Data is either accessed via the API of the server (see "API" on page 139) or web interface of the server.

Functions and components provided by the customer:

- 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 myDatatnet server via the API interface (see "API" on page 139) by the customer-specific server.

6.1 Determining the fill level

The module chain described in the following is started and executed once every time a recording is to be carried out. The record interval can be selected via the "Record interval" parameter (see "Basic settings" on page 96). The triggers can, however, be used to switch to an alternative record interval that can be selected via the "Record interval alternative" parameter (see "Basic settings" on page 96).

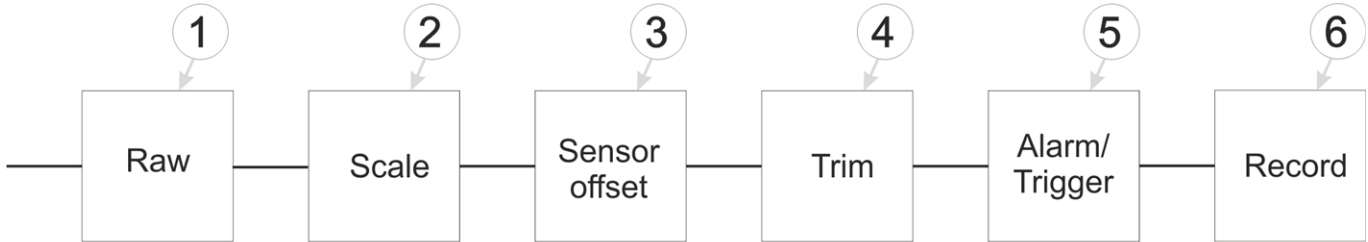


Diagram of how the "Sensor 1" and "Sensor 2" measurement values are generated (see "Measurement channels" on page 87)

1 Generation of the raw value, which is the relative pressure (see "Determining the raw value (relative pressure)" on page 40)	4 Adds the value entered via the "Trimming" configuration parameter to the fill level that is corrected by the "Sensor Offset" (see "Taking the trimming into consideration" on page 41)
2 Conversion of the raw value (relative pressure) to the fill level (see "Calculating the fill level" on page 40)	5 Monitoring of the alarm limits and trigger levels (see "Alarm/trigger module" on page 41)
3 Adds the value entered via the "Sensor Offset" configuration parameter to the fill level (see "Taking the installation height into consideration" on page 40)	6 Recording of the measurement values (see "Record module" on page 41)

6.1.1 Determining the raw value (relative pressure)

The raw value is the relative pressure read directly from the pressure sensor. In the range of 0...50°C, the pressure sensor controller automatically compensates the temperature-related influences.

6.1.2 Calculating the fill level

The raw value (relative pressure) determined in the previous step is converted to a fill level by multiplying it with a factor (e.g. 0.0101974 for fresh, waste and grey water) that is dependent on the density of the medium being measured.

6.1.3 Taking the installation height into consideration

The installation height of the pressure sensor can be taken into consideration in this step. The "Sensor Offset" configuration parameter is added to the fill level determined during the previous step. This means that a negative prefix must be set for the "Sensor Offset" parameter if the pressure sensor is installed in a pump sump and is thus below the zero level, for example.

The following table specifies the relevant parameter for the module:

Configuration section	Parameter	Explanation
Measurement channels -> Basic	Sensor offs.	Specifies the installation height of the sensor (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88)

6.1.4 Taking the trimming into consideration

This step enables you to adjust the zero point without having to change the value for the "Sensor Offset" again. The "Trimming" configuration parameter is added to the fill level from the previous step corrected by the "Sensor Offset". This means that a negative prefix must be set for the "Trimming" parameter (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88) if the fill level should be reduced when adjusting the zero point.

The following table specifies the relevant parameter for the module:

Configuration section	Parameter	Explanation
Measurement channels -> Basic	Trim	Provided to adjust the zero point (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88)

6.1.5 Alarm/trigger module

This module monitors the alarm limits and trigger levels and creates an entry in the alarm list if necessary. An immediate transmission is also triggered in the event of a warning or alarm. For the measurement channels both the alarm and trigger function of the module are available. However, only the alarm function is available for the internal channels.

All of the parameters of the "Alarms" and "Trigger" tabs of the "Measurement channels" configuration section (see "Measurement channels" on page 87) and all of the parameters of the "Alarms" tab of the "Internal channels" configuration section (see "Internal channels" on page 90) are relevant to this module.

6.1.6 Record module

The record module records the measurement values. Depending on the triggers set by the alarm/trigger module, the record interval is modified, the transmission cycle is changed, the transmission is initiated or an immediate recording is triggered, if necessary.

The following table specifies the relevant parameters for the module:

Configuration section	Parameter	Explanation
Measurement channels -> Trigger	RI	Execute recording immediately
	XM	Initiate transmission
	RA	The alternative record interval should be used.
	QX	The alternative transmission cycle should be used.

Configuration section	Parameter	Explanation
Basic settings	Record interval	Time between measurement data recordings
	Alternative record interval	Time between measurement data recordings, if an alternative record interval should be used because of a trigger being initiated

6.2 Functionality of the internal data memory

Structure	Circular buffer
Total size	36.152 measurement cycles
Number of sectors	8
Sector size	4.519 measurement cycles

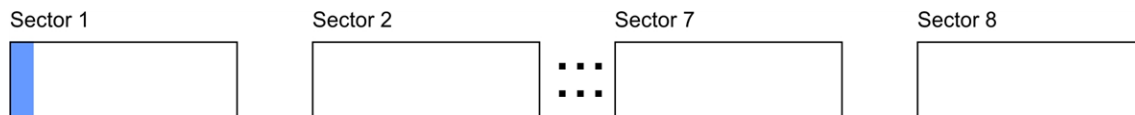
The internal data memory of the myDatalogGauge LTE-M is designed as a circular buffer with 8 sectors. If the maximum number of data records (36.152) is achieved, the sector with the oldest data is deleted fully before new data can be saved in this sector again. This means that the internal data memory at the very least contains the measurement values of the last 31.633 cycles, however at most the measurement values of the last 36.152 cycles.

For this reason, it is recommended to coordinate the transmission cycle and record interval in such a way that a maximum of 31.633 measurement cycles have to be recorded between two transmissions. 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.

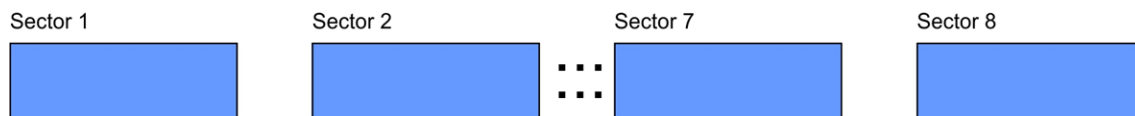
Note:

Additional explanation regarding the functionality of the circular buffer

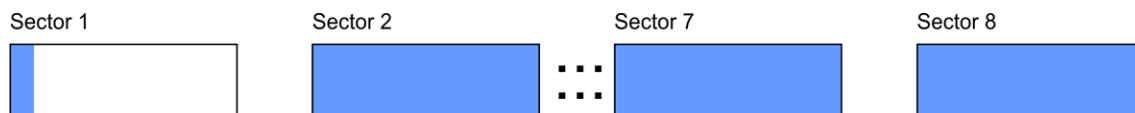
Data memory after the first measurement cycle:



Data memory after 36.152 measurement cycles:



Data memory after 36.152 + 1 measurement cycles:



6.3 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.

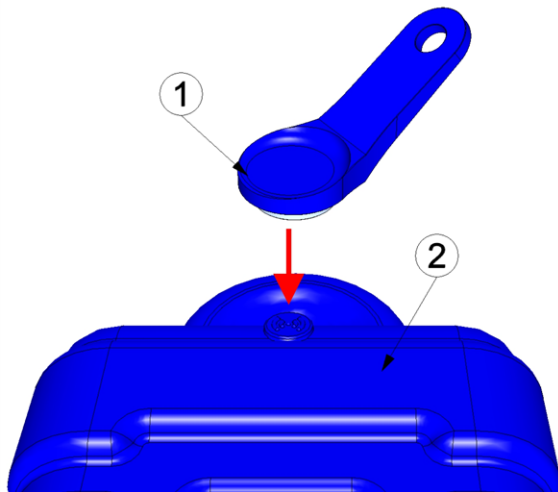
6.4 Setup mode

Setup mode is an operating mode specifically developed for testing the GSM signal quality in the final installation position of the myDatalogGauge 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 61). Setup mode is activated by holding the magnet to the reed switch for at least three seconds. (see "Reed switch" on page 79). A connection to the myDatatnet 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 134). The myDatalogGauge 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 86). Once the time has elapsed, the myDatalogGauge LTE-M establishes another connection with the myDatatnet 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.

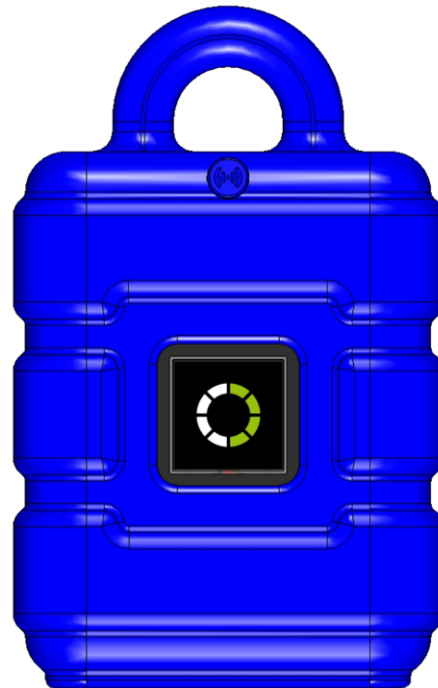
1. Place the device and the antenna in the final installation position (with the shaft lid open).
2. Activate setup mode by pressing the reed switch for at least three seconds. (see "Reed switch" on page 79). The time for which the reed switch was pressed is visualised by a circle on the display in which 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 myDatalogGauge 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 79).

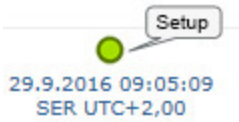


Connection establishment



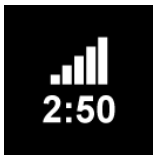
Data synchronisation

- 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.

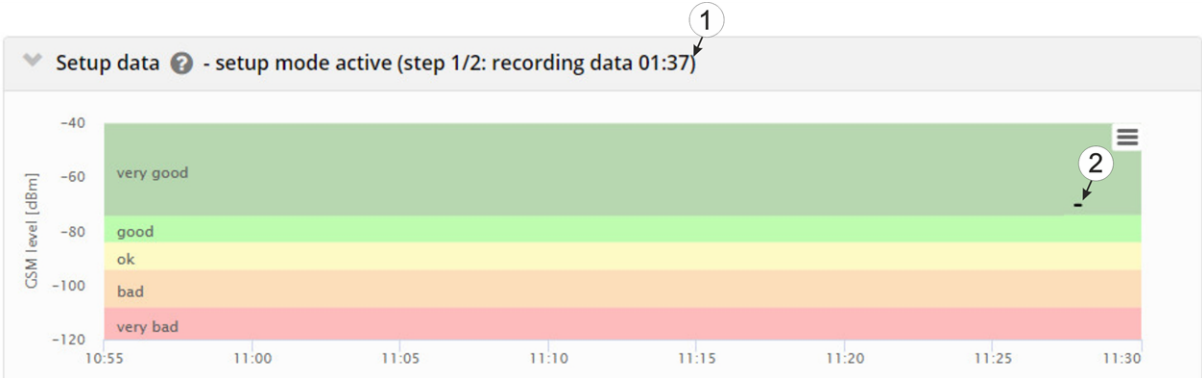


The myDatalogGauge LTE-M terminates the connection to the server again and starts to measure the GSM level for a period of up to 3min. . The speech bubble with the "Setup" inscription continues to be displayed during this process. The remaining time until the second connection to the server completed 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 83).



Current GSM level and remaining duration of the GSM level measurement

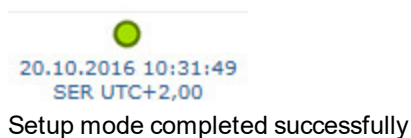


"Setup data" configuration section: Setup mode phase 1 (GSM level measurement)

- | |
|--|
| 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. |

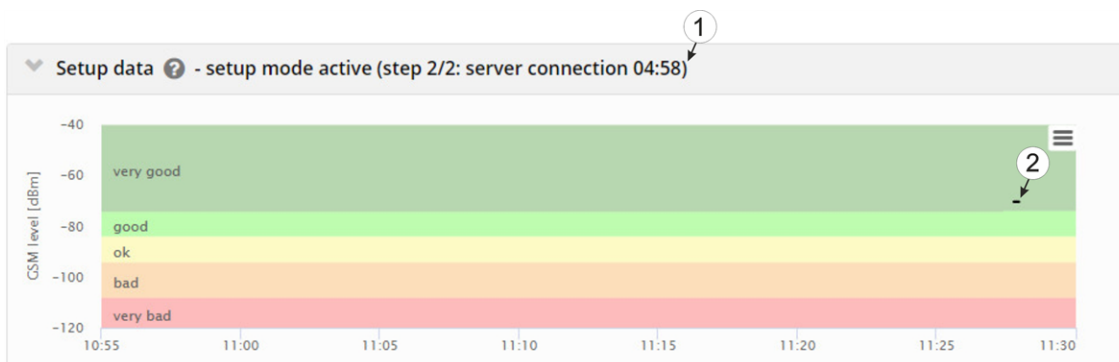
- 4. Close the manhole cover.

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 66) and to start setup mode again.



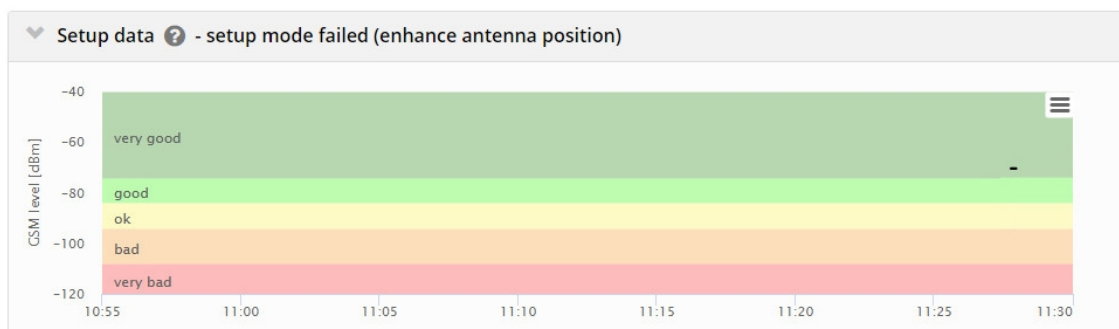
Once the GSM level measurement has been completed, another connection is established to transmit the measurement results to the myDatenet server. The background colour of the speech bubble with the "Setup" inscription changes from white to red and the note "Setup mode failed (enhance antenna position)" 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 66.



"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. |

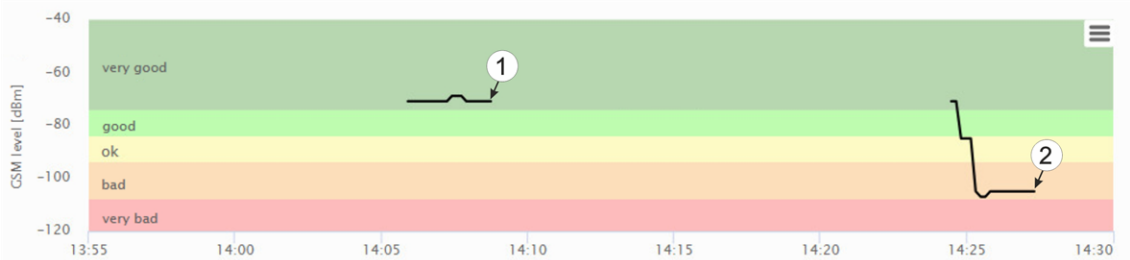


"Setup data" configuration section: Problem detected

6. Open the site settings (see "Site configuration" on page 83) 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 66.



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 79).



Position of antenna is OK.



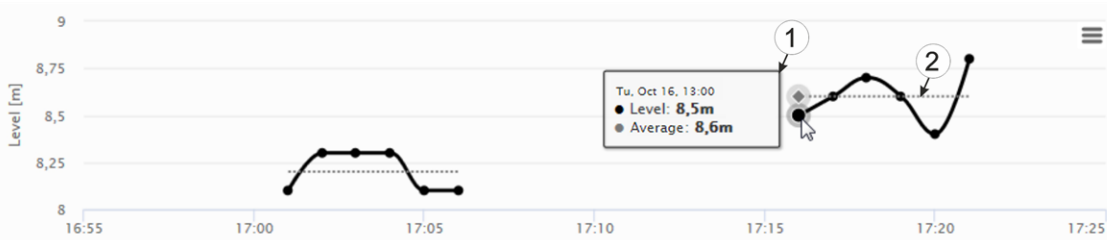
Position of antenna should be improved.



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 87). 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 pressure sensor" on page 88).



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.
---	---

6.5 Automatic selection of the GSM network

The GSM network to which the device should register must be selected, as the myDatalogGauge 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.

6.6 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.

6.7 Determining the position data

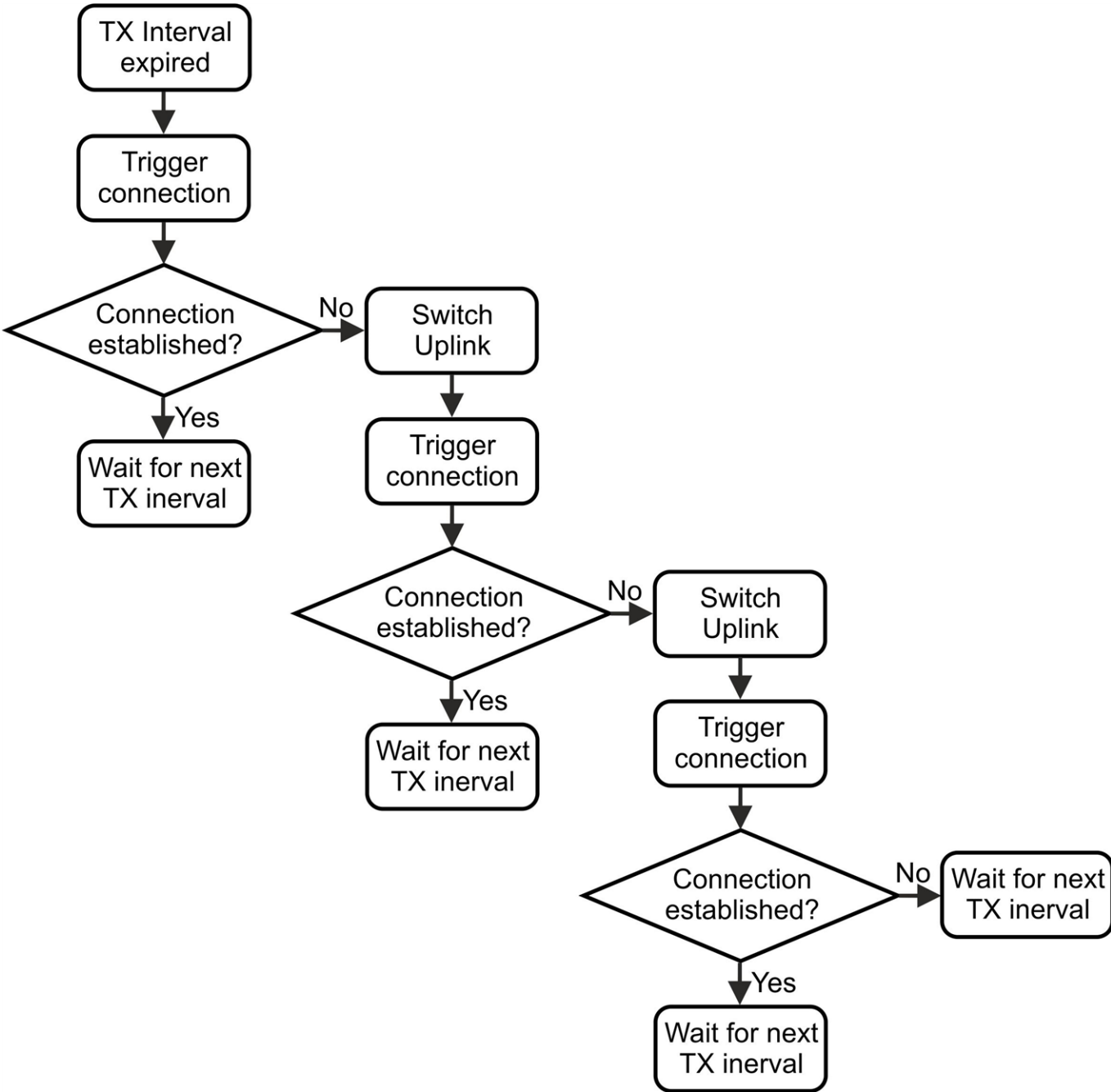
An internal flag is set each time the position cycle expires thus ensuring that the GSM position data will also be determined the next time a connection is established. The position cycle can be selected via the relevant parameter in the "Basic settings" configuration section (see "Basic settings" on page 96). If set to 0, the GSM position data is generated every time a connection is established.

6.8 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 165).

Note: Any claims received thereafter will not be accepted.

7.2 Scope of supply

Note: A BLE Gauge sensor module with pressure sensor (see "Sensor modules" on page 157 and "Pressure sensors" on page 157) which is absolutely necessary for operation, as well as the antenna (see "Antennas" on page 157) are not part of the standard scope of delivery and must be ordered separately.

The standard scope of delivery of the myDatalogGauge LTE-M (301267) includes:

- myDatalogGauge LTE-M with pre-installed device logic "myDatalogGauge"
- BLE Gateway MDN Protection casing (300662)
- MDN Magnet (206.803)
- USB BLE-Adapter (300685)
- Activation module (BLE ATM) (300962)

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

7.3 Storage

The following storage conditions must be adhered to:

myDatalogGauge LTE-M	Storage temperature	-20...+70°C
	Humidity	15...90%rH
BLE Gauge	Storage temperature	-20...+50°C
	Humidity	15...90%rH

Note: The batteries remain in the devices during storage.

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

7.4 Transport

Protect the myDatalogGauge LTE-M against heavy shocks, bumps, impacts or vibrations. The original packaging must always be used for transport.

7.5 Return

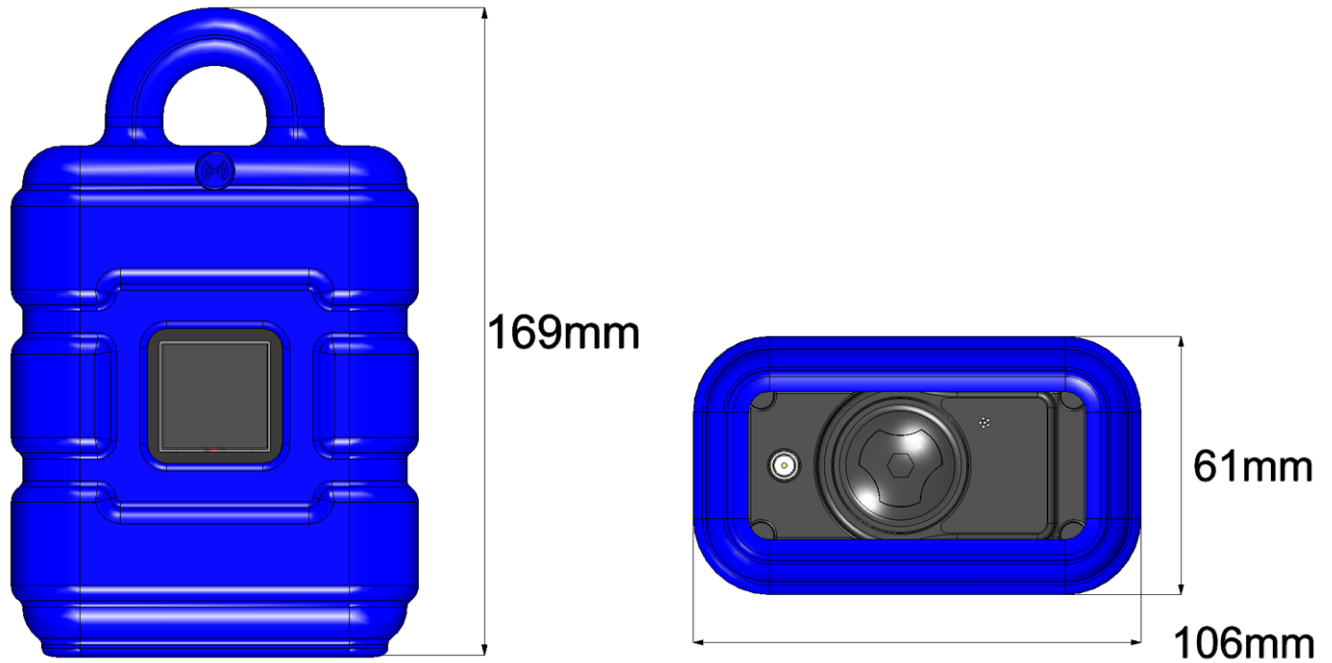
Every return must be accompanied by a fully filled-out return form. This return form is available in the service area of the myDatanet server. An RMA number is mandatory for any returns and can be obtained from the Support & Service Centre (see "Contact information" on page 165). The return shipment of the myDatalogGauge LTE-M must occur in the original packaging and with freight and insurance paid to Microtronics Engineering GmbH (see "Contact information" on page 165). 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

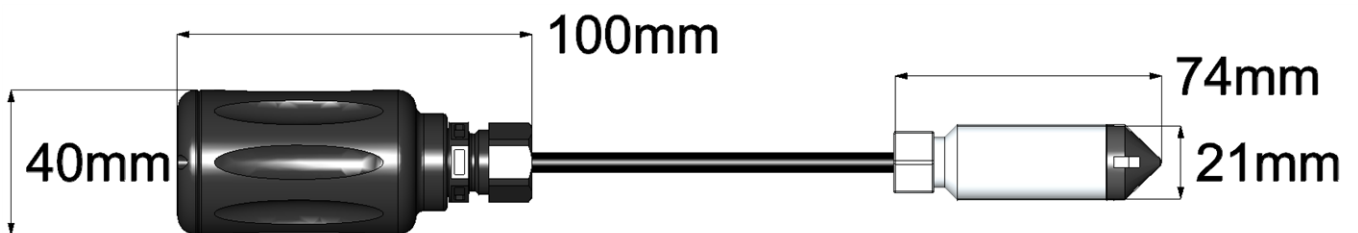
8.1.1 myDatalogGauge LTE-M



Dimensions: Height
(view with protective armour)

Dimensions: Width and depth
(view with protective armour)

8.1.2 BLE Gauge and pressure sensor



Dimensions BLE Gauge and pressure sensor: Length and diameter

8.2 Installing the myDatalogGauge 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 myDatalogGauge 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.*
- *The pressure compensation must be protected against contamination.*
- *When using metallic mounting fixtures, these have to be integrated in the grounding concept in a suitable manner.*

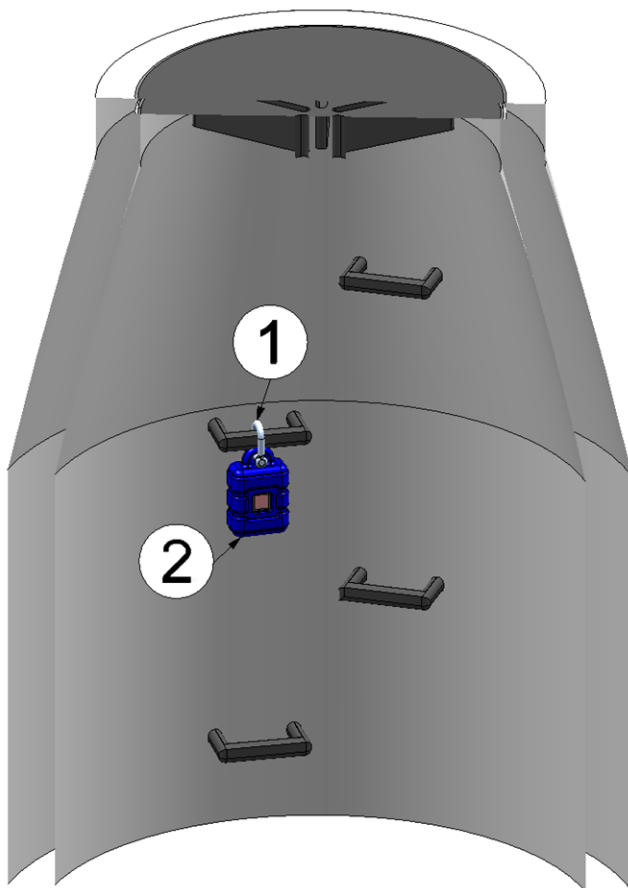
The installation site must be selected according to specific criteria. The following conditions must be avoided in any case:

- 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

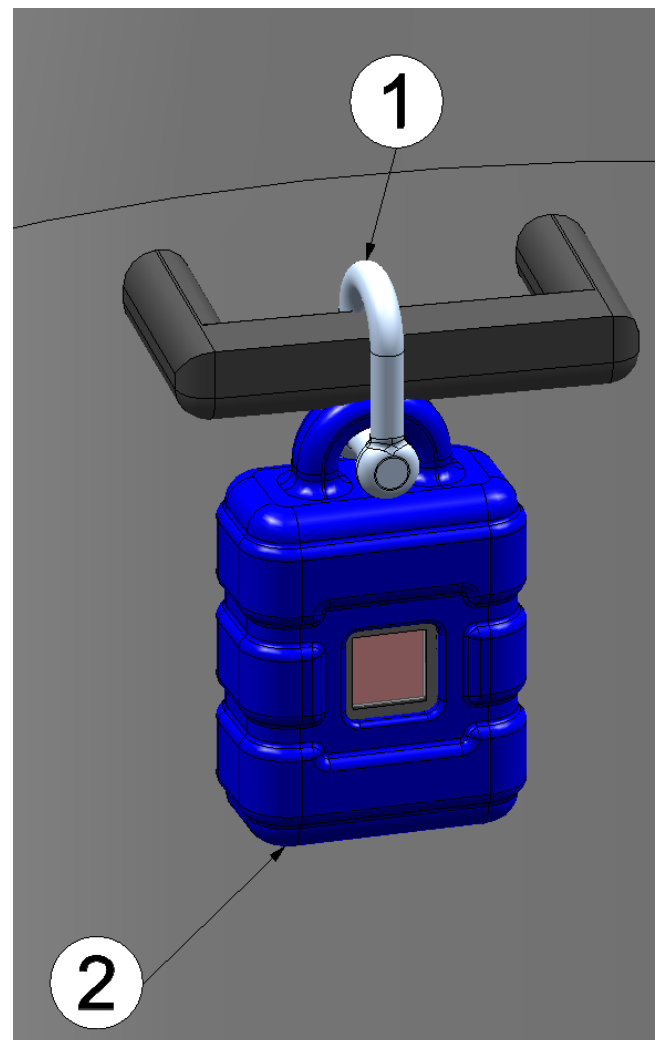
Note: *Leave sufficient space at the lower end to mount the antenna. The space required depends on the antenna used. Generally, a space of approx. 15 cm must be left beneath the device. Further information regarding the installation dimensions can be found in the relevant sub-chapter.*

8.2.1 Suspended installation of the myDatalogGauge LTE-M

The optional "Niro shackle (206.325)" equipment is required for suspended installations.



Suspended installation



Detailed view of a suspended installation

1 Niro shackle (206.325)

2 myDatalogGauge LTE-M

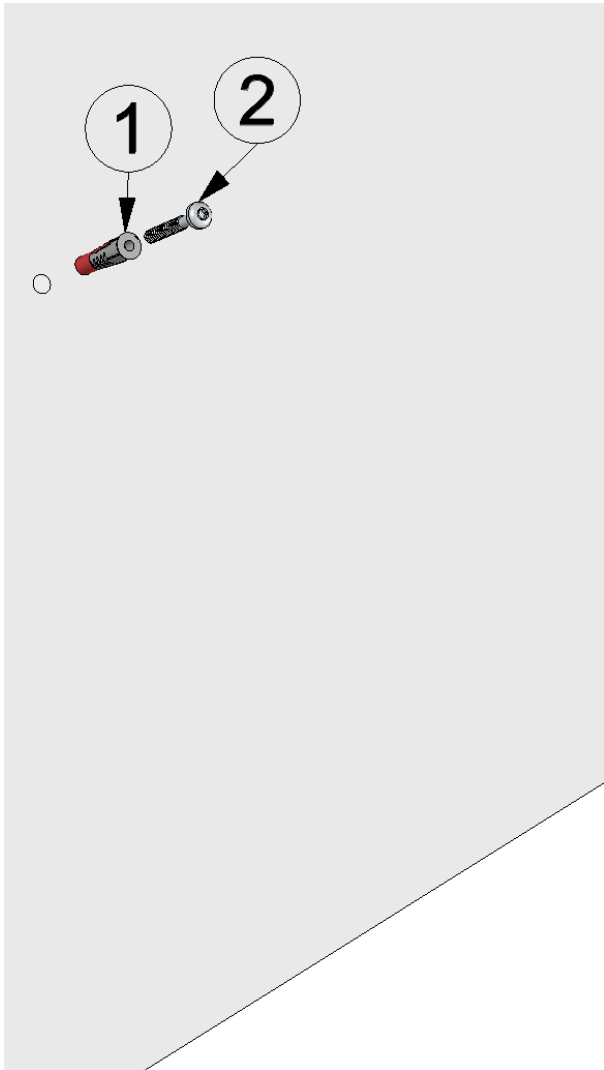
1. Use the Niro shackle (206.325), to attach the myDatalogGauge LTE-M to a rung of the channel ladder or a similar fastening point in accordance with the figure "Detailed view of a suspended installation " on page 55.

8.2.2 Suspended installation of the BLE Gauge

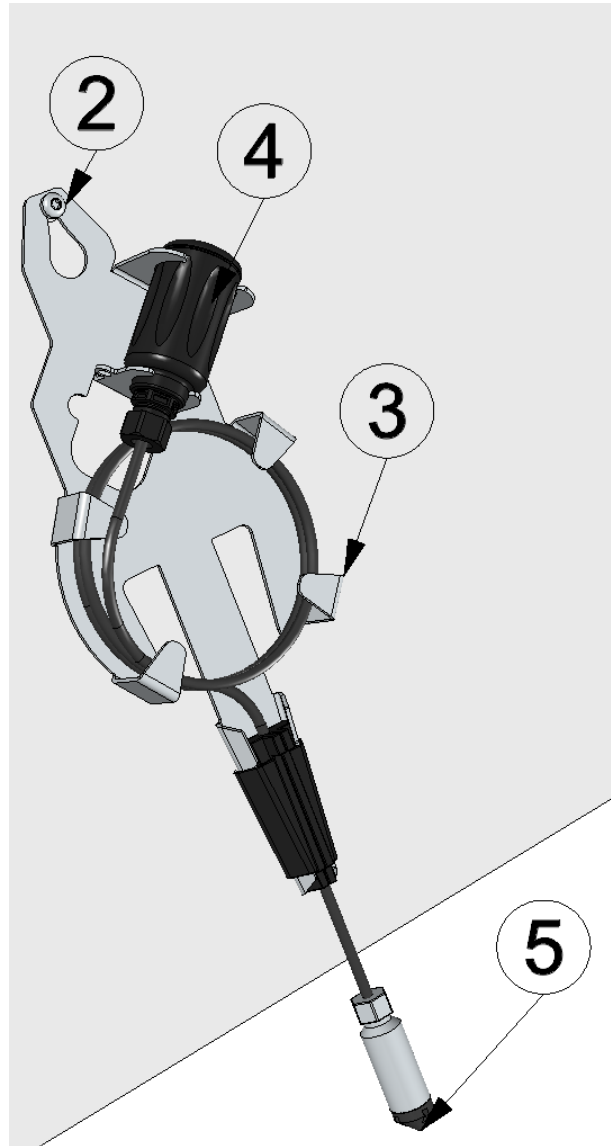
Important note:

- There must not be any kinks in the connection cable for the pressure sensor.
- The bend radius of the connection cable must not fall below the minimum value of 60mm
- Both the BLE Gauge mounting fixture and the metallic housing of the pressure sensor must be included in the earthing concept of the facility by the installation (see "Earthing of the BLE Gauge when installed suspended " on page 60).

The optional "BLE Gauge mounting fixture (300881)" accessories are required for suspended installations.



Suspended installation – step 1



Suspended installation – step 2

1 10x50 wall plug (included in the scope of delivery of 300881)	4 BLE Gauge
2 6.3x60 Torx 30 rounded head screw (included in the scope of delivery of 300881)	5 Pressure sensor
3 BLE Gauge mounting fixture (300881)	

1. Drilling the hole for installation:

If you want to use the rounded head screw included in the accessories set to secure the mounting fixture to the wall, drill one hole with a diameter of 10 mm.

If you want to use your own fastening screw, the diameter of the hole will be based on the screw and wall plug that may be required.

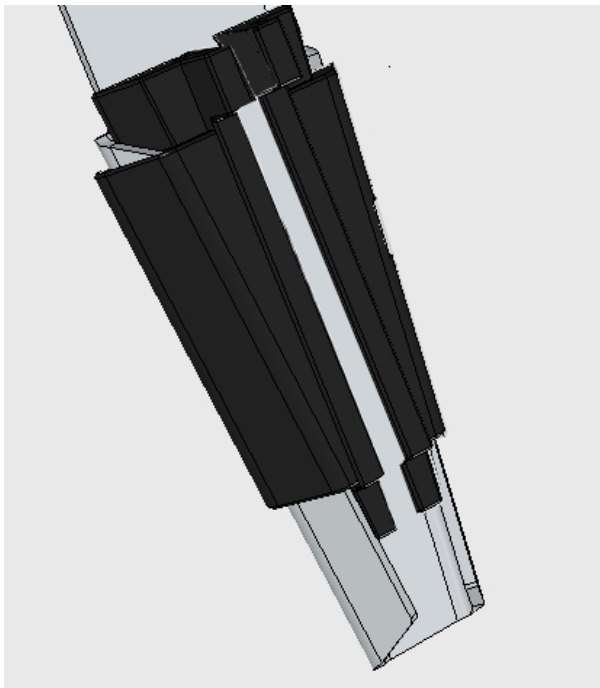
2. Preparing the mounting point on the wall:

If you want to use the rounded head screw, included in the accessories set, first of all insert the wall plug that is also included in the accessories set in to the drill hole before you screw the rounded head screw, on which you want to hang the mounting fixture, in to the wall (see "Suspended installation – step 1" on page 56).

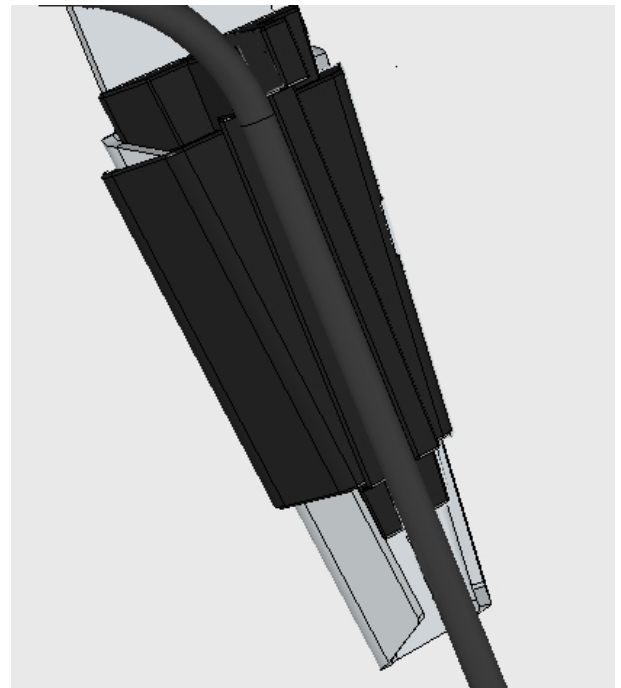
If you are using your own screw, you must also insert the wall plug into the hole before screwing the screw, on which you want to hang the mounting fixture (3), in to the wall (see "Suspended installation – step 1" on page 56).

Once screwed in, the distance between the rear of the screw head and the wall should be at least 4mm so that the mounting fixture can be mounted easily.

3. Push the tension clamp up until the resulting gap is large enough to insert the connection cable of the pressure sensor. Determine the cable length required to position the pressure sensor in the required installation position, insert the connection cable in the tension clamp and secure the cable by pressing the tension clamp down again.



Opening the tension clamp



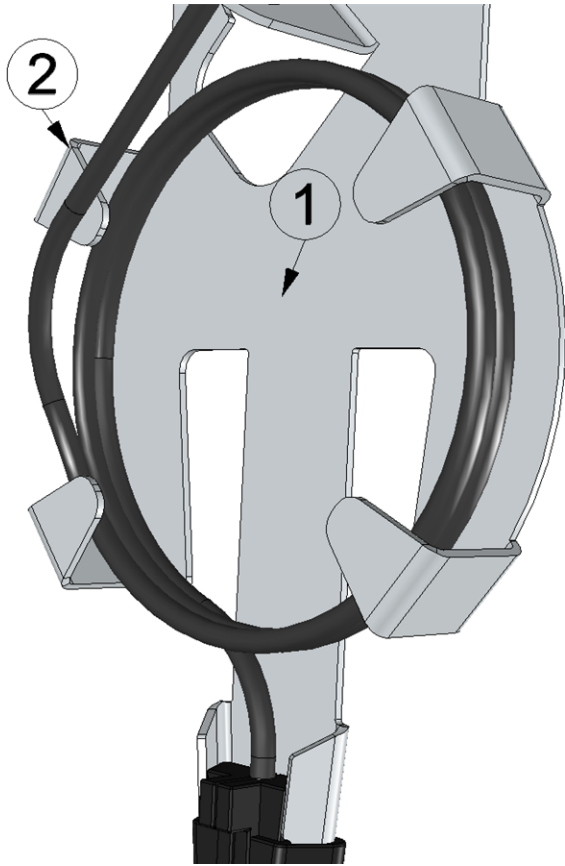
Inserting the cable

1 Tension clamp

2 Connection cable

-
4. If the connection cable is considerably longer than required to position the pressure sensor in the required installation position, you can roll up the excess part of the cable within the cable holder of the mounting fixture. The cable holder can hold up to 3m of cable. Roll up the cable in a clockwise direction. Start in such a way that the cable runs from the tension clamp towards the left upper bracket and the circle then continues towards the right upper bracket.

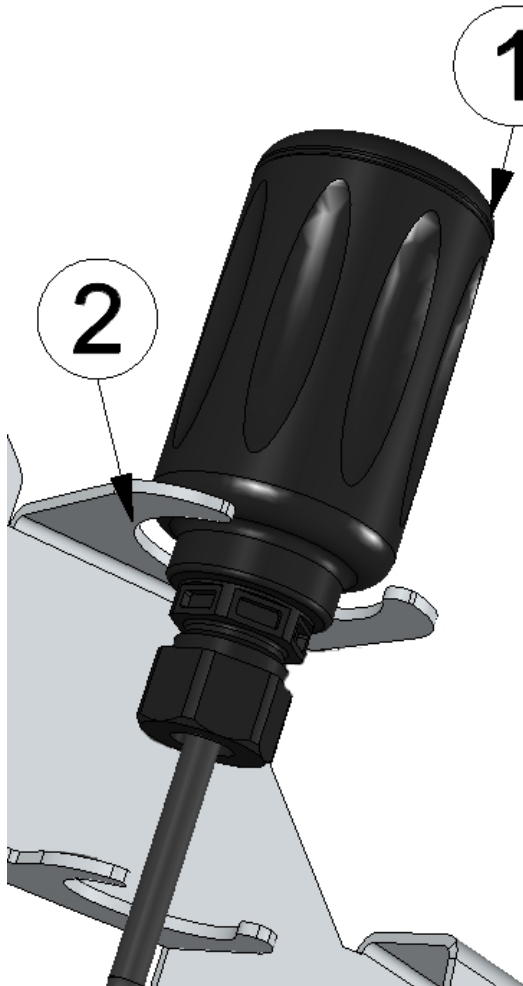
Important note: When rolling up the cable, it must be ensured that the bend radius does not fall below the minimum permissible value of 60mm .



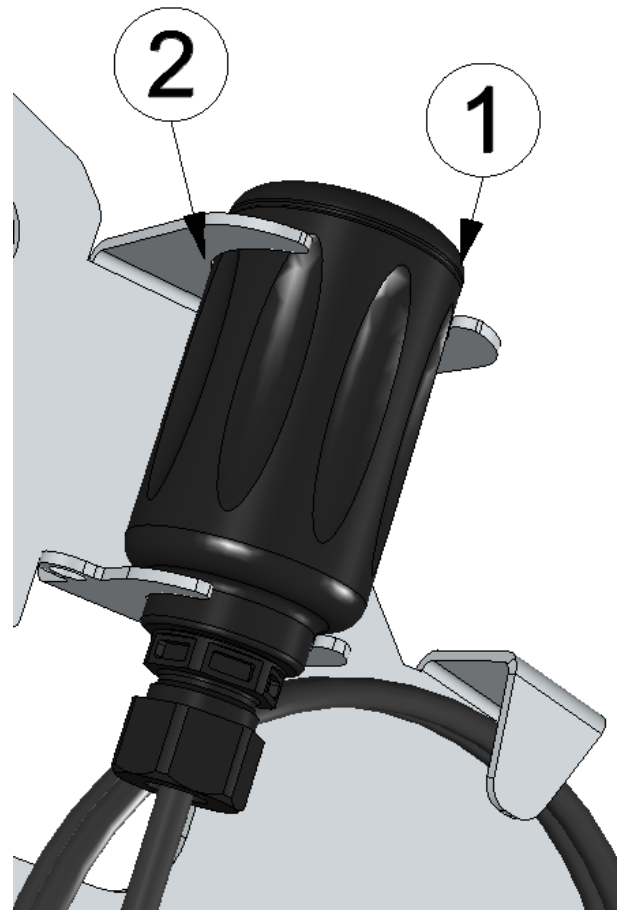
Rolling up the connection cable

1 Cable holder	2 Bracket
----------------	-----------

5. As illustrated in the following figures, guide the BLE Gauge into the relevant bracket of the mounting fixture from above. Always ensure that the minimum permissible bend radius of 60mm is also observed. It may be necessary to remove some of the connection cable from the cable holder again.



Inserting the BLE Gauge



BLE Gauge in final mounting position

1 Bracket for the BLE Gauge	2 BLE Gauge
-----------------------------	-------------

6. Now hang the mounting fixture including the mounted BLE Gauge on the previously prepared screw (see "Suspended installation – step 2" on page 56).

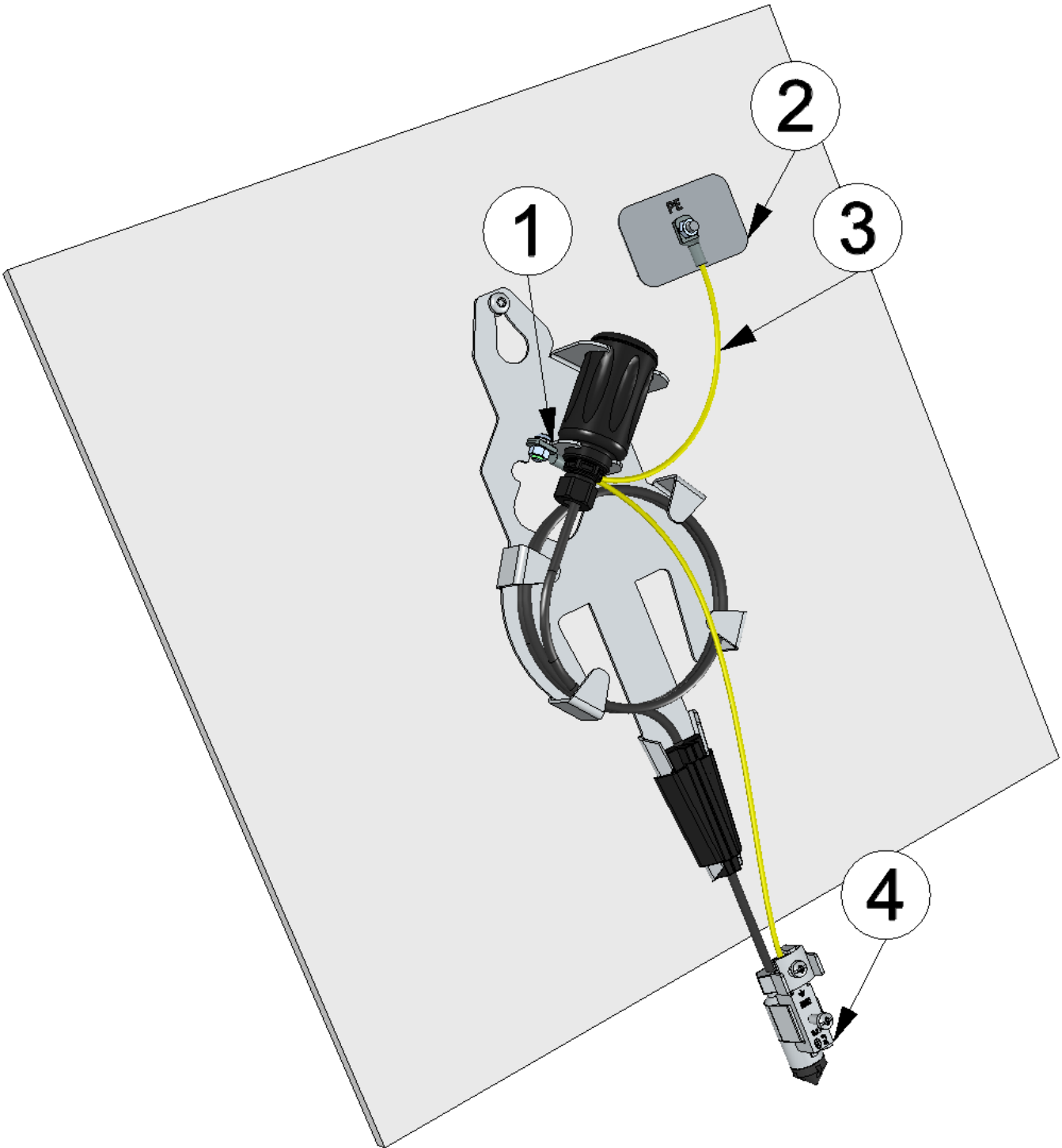
The following step is not mandatory.

7. Tighten the screw on which the mounting fixture is suspended.

8.2.3 Earthing of the BLE Gauge when installed suspended

Important note: The following standards must be observed:

- EN60079-0 (Chapter 15: Connection parts for earthing or equipotential bonding conductors)
- EN60079-11 (Chapter 6.5: Earth conductors, connections and terminals)



Earthing of the BLE Gauge when installed suspended

1 Earthing point of the BLE Gauge mounting fixture	3 Earth cable (minimum requirement: 4mm ²)
2 Earth potential of the facility	4 Earthing pipe clamp

8.2.4 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 87 configuration section).

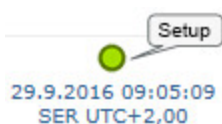
8.2.4.1 Zero point adjustment with the help of setup mode

Note: As the data is only generated every 10sec. during setup mode, this process is only suitable if the fill level is as consistent as possible during the zero point adjustment.

1. Place the pressure sensor and the BLE Gauge in the final installation position (see "Suspended installation of the BLE Gauge" on page 56).
2. Activate the required measurement channel in the "Measurement channels" configuration section by selecting the mode and specifying the serial number of the BLE Gauge (see "Measurement channels" on page 87).

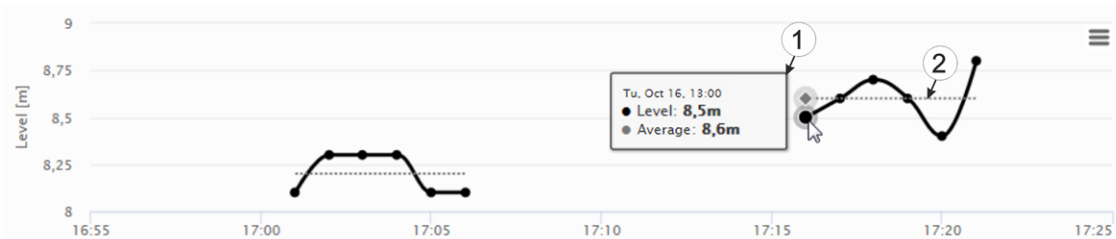
Note: If you have purchased the myDatalogGauge LTE-M as a set (data logger including up to 2 BLE Gauge sensor modules), the serial numbers of the BLE Gauge are already saved in the memory of the data logger. In this case, it suffices to select "Automatic" mode. The saved serial number is displayed in the input field for the serial number, although it cannot be changed.

3. Enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
4. Ensure that the "Trimming" parameter is set to 0 (see "Measurement channels" on page 87).
5. Insert the activation module in the sensor recess of the myDatalogGauge LTE-M (see "Inserting the activation module" on page 65).
6. To establish a connection, activate setup mode (see "Setup mode" on page 43) using the reed switch.
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 83) and click on "Setup data" to display the GSM level and fill level determined during setup mode.

- Analyse the fill level 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 fill level determined by the BLE Gauge sensor module and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 87). As the "Trimming" parameter is added to the measurement value of the BLE Gauge sensor module, a negative prefix must be set for the "Trimming" parameter if the determined fill level value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88).



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>
--	--

- 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 first transmitted to the myDatalogGauge LTE-M and then to the BLE Gauge sensor module.
- Wait until setup mode is terminated and then compare the determined fill level 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 fill level and the reference measurement.

8.2.4.2 Zero point adjustment with the help of the Bluetooth connection (BLE)

Note: As the minimum record interval is 1 min., this process is only suitable if the fill level is as consistent as possible during the zero point adjustment.

- Place the pressure sensor and the BLE Gauge in the final installation position (see "Suspended installation of the BLE Gauge" on page 56).
- Activate the required measurement channel in the "Measurement channels" configuration section by selecting the mode and specifying the serial number of the BLE Gauge (see "Measurement channels" on page 87).

Note: If you have purchased the myDatalogGauge LTE-M as a set (data logger including up to 2 BLE Gauge sensor modules), the serial numbers of the BLE Gauge are already saved in the memory of the data logger. In this case, it suffices to select "Automatic" mode. The saved serial number is displayed in the input field for the serial number, although it cannot be changed.

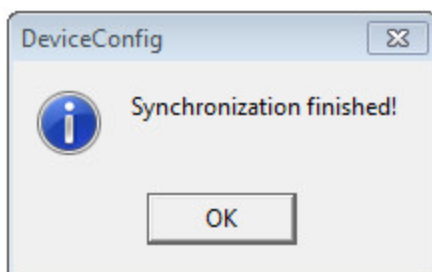
- Enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
- Ensure that the "Trimming" parameter is set to 0 (see "Measurement channels" on page 87).

5. Insert the activation module in the sensor recess of the myDatalogGauge LTE-M (see "Inserting the activation module" on page 65).
6. Use the DeviceConfig configuration program to establish a Bluetooth connection (Bluetooth Low Energy) between the myDatalogGauge LTE-M and your PC (see "Connecting a Device via Bluetooth Low Energy" on page 112).
7. Activate the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatagnet server. To do so, initially select the "Sync with server" checkbox and then click on the button illustrated below. The checkbox and button are both located on the "Sync" tab of the DeviceConfig configuration program (see ""Sync" tab" on page 116).

Note: The "Sync with server" checkbox is only displayed if your PC is already connected to the Internet.



8. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Basic settings" on page 96) and the number of measurement values that you want to take into consideration when calculating the zero point adjustment. If necessary, you can shorten the record interval for this commissioning phase to reduce the waiting time. In this case, use the "Sync" tab of the configuration program DeviceConfig (see ""Sync" tab" on page 116) to transfer the changed record interval from the site to the myDatalogGauge LTE-M .
9. Trigger the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatagnet server to transmit the recorded fill level measurement values to the myDatagnet server.
10. Wait until the DeviceConfig configuration program indicates that the synchronisation process is complete.



Synchronisation completed

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



12. A so-called "report" is used to display the data stored on the myDatagnet server (see "Reports" on page 135). Use the "Download" symbol to download the data of the displayed measurement value graphic as a tsv file and calculate the average value of the fill level measurements (measurement value "Sensor 1" or "Sensor 2"). Detailed instructions on handling the reports is provided in myDatagnet Server Manual (805002).



-
13. If the calculated average value do not match the ones of the reference measurement, the zero point will need to be adjusted. To do so, calculate the difference between the calculated average value and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 87). As the "Trimming" parameter is added to the measurement value of the BLE Gauge sensor module, a negative prefix must be set for the "Trimming" parameter if the determined average value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88).
 14. Trigger the synchronisation between the myDatalogGauge LTE-M , DeviceConfig and myDatanet server again to transmit the changed configuration, i.e. the new "Trimming" value, to the myDatalogGauge LTE-M and subsequently to the BLE Gauge sensor module.
 15. If a zero point adjustment was required, repeat all of the steps from step 8 "Wait until some measurement values have been recorded".
 16. Then compare the calculated average value of the fill level 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 fill level 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.

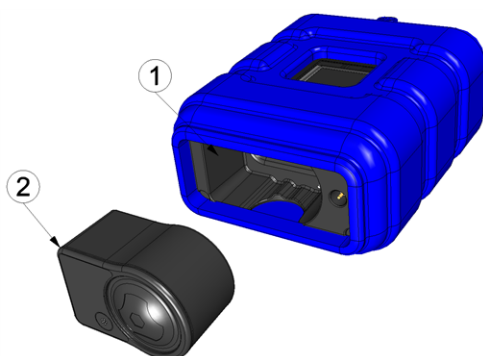
8.3.1 Inserting the activation module

Note: Transport mode is terminated when inserting the activation module, i.e. the measurement/recording and cyclical data transmission are activated. It is therefore recommended that the activation module is only permanently inserted as part of the commissioning process (see "Placing the system into operation" on page 69). However, briefly inserting the activation module in the office, to check the functionality of the myDatalogGauge LTE-M, is still advisable. Storage with the activation module inserted is not recommended due to the significantly increased power consumption when transport mode is deactivated.

The activation module is inserted in the sensor recess of the myDatalogGauge LTE-M, as illustrated in the following figure. It is designed in such a way that it cannot be inserted incorrectly.



How-To-Video: [Inserting the activation module](#)



Inserting the activation module

1 Activation module	2 Sensor recess of the myDatalogGauge LTE-M
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Transport mode is deactivated, the display is activated and the following actions are executed when the activation module is inserted:

Note: To check the current operating state, you may need to activate the display again by holding the magnet (approx. 1 sec.) to the reed switch again (see "Reed switch" on page 79).

1. The BLE connection between the data logger "" and up to 2 BLE Gauge sensor modules is established.



2. A connection to the BLE & 3G Gateway ATEX server is established if the BLE pairing between the BLE Gauge sensor modules and the was successful.



3. The data is synchronised with the myDatenet server.



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 29) of the myDatalogGauge LTE-M .

1. Connect the connection cable of the antenna directly to the antenna connector of the myDatalogGauge LTE-M (see "Overview" on page 29).

The following step is not mandatory.

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

8.3.2.1 Optimum antenna positioning for assembly in a shaft

8.3.2.1.1 Typical influences on the signal quality

Signal losses compared to the reference measurement

Steel cover	up to -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:

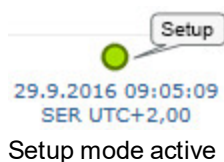
	GSM level	Position
	-67dBm	Reference measurement outside the shaft
	-103 dBm	Measurement at a depth of 1.20 m
	-95dBm	Vertically on the edge of the shaft at a depth of approx. 15 cm
	-83dBm	Centre of the shaft, horizontal on the steel fitting
	-89dBm	Antenna turned by 90°
	-78dBm	Centre of the shaft,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

8.3.2.1.2 Possibilities for improving the signal quality

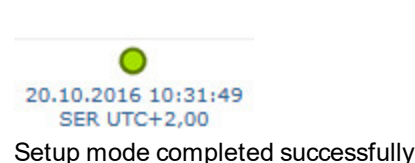
- Drill a duct for the connection cable of the antenna into the concrete ring on the shaft to avoid the steel cover
- Insert the connection cable of the antenna in an existing ventilation or supply pipe
- Use special types of antennas

8.3.2.1.3 Procedure for determining the optimum position of the antenna

1. Install the myDatalogGauge LTE-M as described in chapter "Installing the myDatalogGauge LTE-M " on page 54. During this process, also observe the notes regarding the influences on the signal quality (see "Typical influences on the signal quality" on page 66).
2. Activate setup mode (see "Setup mode" on page 43).
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.



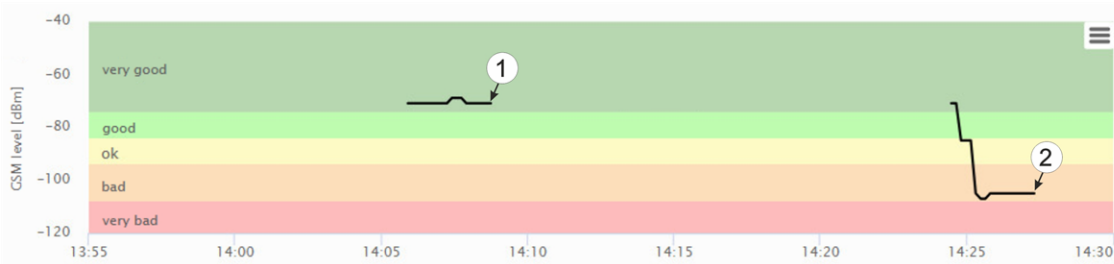
4. Either wait until the speech bubble is hidden again (setup mode completed successfully) or until the background colour of the speech bubble changes from white to red (problem detected). In both cases, this can take up to 8min. .



5. Open the site settings (see "Site configuration" on page 83) and click on "Setup data" to display the GSM level determined during setup mode.

6. 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 66.



Display of the GSM level determined during setup mode

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

8.3.3 Technical details about the Bluetooth Low Energy interface

The connection to a PC or a Bluetooth Low Energy (5.0) compatible Smartphone is established via the Bluetooth Low Energy interface. It is only designated for the communication with the DeviceConfig configuration program or the "GaugeBuster" smartphone app. A detailed description of the DeviceConfig configuration program is provided in chapter "DeviceConfig" on page 105. It can be downloaded free of charge from the following website:

www.microtronics.com/deviceconfig

Chapter 9 Initial Start-Up

9.1 User information

Before you connect the myDatalogGauge 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 myDatalogGauge LTE-M.

Contact Microtronics Engineering GmbH(see "Contact information" on page 165) 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 myDatalogGauge LTE-M and the input screens of the myDatanet server before you begin with the configuration.

9.4 Placing the system into operation

9.4.1 Using the mobile connection and the myDatanet server

Note: *It is recommended that the myDatalogGauge LTE-M is first placed into operation in the office before moving the measurement system to the place of use. During this process, you should set a site for subsequent operation on the myDatanet server (see "Creating the site" on page 135) and determine a site setting (see "Site configuration" on page 83). Take the opportunity to get to know the functions of the device in a stable environment.*

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

1. If necessary, create a customer on the myDatanet server (see "myDatanet Server Manual " 805002).
2. Within the desired customer, create a new site/application based on the IoT application "myDatalogGauge" for operation of the myDatalogGauge LTE-M on the myDatanet server (see "Creating the site" on page 135).
3. Configure the created site/application according to your requirements (see "Site configuration" on page 83).

The following settings should be adjusted:

1. Activate the required measurement channels by selecting the mode and specifying the serial number of the BLE Gauge (see "Measurement channels" on page 87).

Note: *If you have purchased the myDatalogGauge LTE-M as a set (data logger including up to 2 BLE Gauge sensor modules), the serial numbers of the BLE Gauge are already saved in the memory of the data logger. In this case, it suffices to select "Automatic" mode. The saved serial number is displayed in the input field for the serial number, although it cannot be changed.*

2. If already known, enter the intended installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
3. Ensure that the "Trimming" parameter is set to 0 (see "Measurement channels" on page 87).
4. Connect the antenna (see "Connecting the mobile network antenna" on page 66). The antenna is not included in the scope of delivery and must be ordered separately.
5. To establish a connection, activate setup mode (see "Setup mode" on page 43) using the reed switch. During this connection, the configuration of the site is transferred to the myDatalogGauge LTE-M .

Note: *You can also skip this step, as a transmission must also be triggered during installation on site, which transfers the configuration settings to the myDatalogGauge LTE-M at that 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. Place the pressure sensor and the BLE Gauge in the final installation position (see "Suspended installation of the BLE Gauge " on page 56).
8. If you have not already done so in the office, enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
9. Insert the activation module in the sensor recess of the myDatalogGauge LTE-M (see "Inserting the activation module" on page 65). A connection to the myDatanet server is established during this process and the site configuration is transferred to the myDatalogGauge LTE-M .

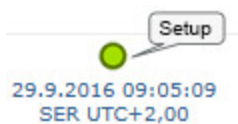
10. If you intend to install the myDatalogGauge LTE-M in a shaft, you must check that the device can also establish a LTE-M/NB-IoT connection in the final installation position when the shaft cover is closed before you leave the worksite. In any case, you should check whether the zero point needs to be adjusted.

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 43).
3. Wait until the symbol for the connection establishment is displayed on the device.

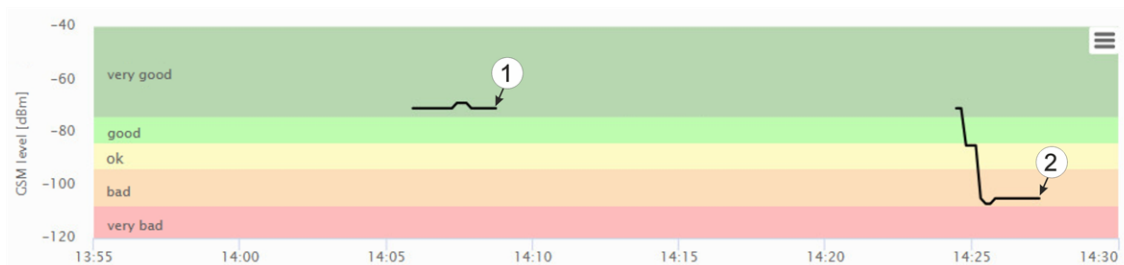


4. Close the shaft lid.
5. Wait for setup mode to be completed. That a device is in setup mode is indicated in the list of sites/applications by a speech bubble with the "Setup" inscription. The speech bubble is hidden again if setup mode was completed successfully. The background colour of the speech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



6. Open the site settings (see "Site configuration" on page 83) and click on "Setup data" to display the GSM level and fill 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. In any case, complete the following step before activating setup mode again, if required.

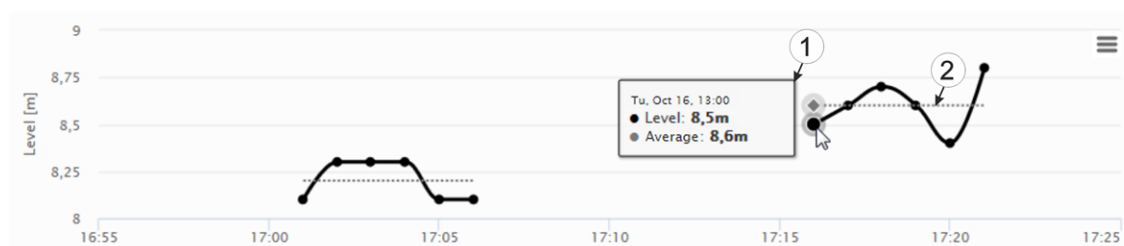
Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 66.



Display of the GSM level determined during setup mode

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

8. Analyse the fill level 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 fill level determined by the BLE Gauge sensor module and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 87). As the "Trimming" parameter is added to the measurement value of the BLE Gauge sensor module, a negative prefix must be set for the "Trimming" parameter if the determined fill level value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88).



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.
---	---

9. 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 first transmitted to the myDatalogGauge LTE-M and then to the BLE Gauge sensor module.
10. Wait until setup mode is terminated and then compare the determined fill level 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 fill level and the reference measurement.

9.4.2 Using the Bluetooth connection (BLE) and the myDatanet server

You will need the DeviceConfig configuration program (minimum version 4.21.4) to commission the myDatalogGauge LTE-M . It can be downloaded free of charge from the following website:

www.microtronics.com/deviceconfig

Detailed instructions on using the DeviceConfig configuration program are provided in the chapter "DeviceConfig " on page 105.

Note: It is recommended that the myDatalogGauge LTE-M is first placed into operation in the office before moving the measurement system to the place of use. During this process, you should set a site for subsequent operation on the myDatanet server (see "Creating the site" on page 135) and determine a site setting (see "Site configuration" on page 83). Take the opportunity to get to know the functions of the device in a stable environment.

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

1. If necessary, create a customer on the myDatanet server (see "myDatanet Server Manual " 805002).
2. Within the desired customer, create a new site/application based on the IoT application "myDatalogGauge" for operation of the myDatalogGauge LTE-M on the myDatanet server (see "Creating the site" on page 135).
3. Configure the created site/application according to your requirements (see "Site configuration" on page 83).

The following settings should be adjusted:

1. Activate the required measurement channels by selecting the mode and specifying the serial number of the BLE Gauge (see "Measurement channels" on page 87).

Note: If you have purchased the myDatalogGauge LTE-M as a set (data logger including up to 2 BLE Gauge sensor modules), the serial numbers of the BLE Gauge are already saved in the memory of the data logger. In this case, it suffices to select "Automatic" mode. The saved serial number is displayed in the input field for the serial number, although it cannot be changed.

2. If already known, enter the intended installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
3. Ensure that the "Trimming" parameter is set to 0 (see "Measurement channels" on page 87).
4. Use the DeviceConfig configuration program to establish a Bluetooth connection (Bluetooth Low Energy) between the myDatalogGauge LTE-M and your PC (see "Connecting a Device via Bluetooth Low Energy" on page 112).
5. Activate the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatanet server. To do so, initially select the "Sync with server" checkbox and then click on the button illustrated below. The checkbox and button are both located on the "Sync" tab of the DeviceConfig configuration program (see ""Sync" tab" on page 116).

Note: The "Sync with server" checkbox is only displayed if your PC is already connected to the Internet.



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

6. Place the pressure sensor and the BLE Gauge in the final installation position (see "Suspended installation of the BLE Gauge " on page 56).
7. If you have not already done so in the office, enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
8. Insert the activation module in the sensor recess of the myDatalogGauge LTE-M (see "Inserting the activation module" on page 65).
9. Use the DeviceConfig configuration program to establish a Bluetooth connection (Bluetooth Low Energy) between the myDatalogGauge LTE-M and your PC (see "Connecting a Device via Bluetooth Low Energy" on page 112).

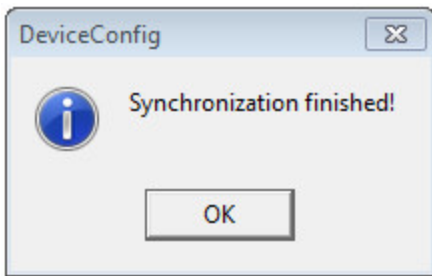
-
10. Activate the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatanet server to transmit the changed installation height to the myDatalogGauge LTE-M . To do so, initially select the "Sync with server" checkbox and then click on the button to trigger the synchronisation. The checkbox and button are both located on the "Sync" tab of the DeviceConfig configuration program (see ""Sync" tab" on page 116).

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

11. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Basic settings" on page 96) and the number of measurement values that you want to take into consideration when calculating the zero point adjustment. If necessary, you can shorten the record interval for this commissioning phase to reduce the waiting time. In this case, use the "Sync" tab of the configuration program DeviceConfig (see ""Sync" tab" on page 116) to transfer the changed record interval from the site to the myDatalogGauge LTE-M .

Note: *As the minimum record interval is 1 min., this process is only suitable if the fill level is as consistent as possible during the zero point adjustment.*

12. Trigger the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatanet server to transmit the recorded fill level measurement values to the myDatanet server.
13. Wait until the DeviceConfig configuration program indicates that the synchronisation process is complete.



Synchronisation completed

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



15. A so-called "report" is used to display the data stored on the myDatanet server (see "Reports" on page 135). Use the "Download" symbol to download the data of the displayed measurement value graphic as a tsv file and calculate the average value of the fill level measurements (measurement value "Sensor 1" or "Sensor 2"). Detailed instructions on handling the reports is provided in myDatanet Server Manual (805002).



16. If the calculated average value do not match the ones of the reference measurement, the zero point will need to be adjusted. To do so, calculate the difference between the calculated average value and the reference measurement and enter the difference in the input field for the "Trimming" parameter (see "Measurement channels" on page 87). As the "Trimming" parameter is added to the measurement value of the BLE Gauge sensor module, a negative prefix must be set for the "Trimming" parameter if the determined average value is greater than the reference measurement (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88).

17. Trigger the synchronisation between the myDatalogGauge LTE-M , DeviceConfig and myDatanet server again to transmit the changed configuration, i.e. the new "Trimming" value, to the myDatalogGauge LTE-M and subsequently to the BLE Gauge sensor module.
18. If a zero point adjustment is required, repeat all of the steps from step 9 "Wait until some measurement values have been recorded".
19. Then compare the calculated average value of the fill level 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 fill level and the reference measurement.*

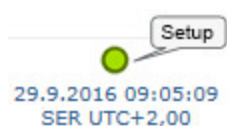
9.5 Testing communication with the device

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

1. Within the desired customer, create a new site/application based on the IoT application "myDatalogGauge" for operation of the myDatalogGauge LTE-M on the myDatanet server (see "Creating the site" on page 135).
2. Configure the created site/application according to your requirements (see "Site configuration" on page 83).

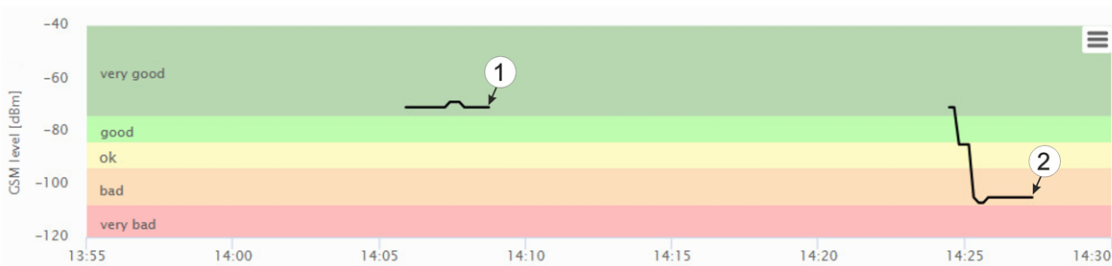
The following settings should be carried out if you also want to test the communication with the BLE Gauge sensor module at the same time:

1. Activate the required measurement channels by selecting the mode and specifying the serial number of the BLE Gauge (see "Measurement channels" on page 87).
2. Check or enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
3. Check or enter the value for the zero point adjustment in the input field for the "Trimming" parameter (see "Measurement channels" on page 87).
3. Connect the antenna (see "Connecting the mobile network antenna" on page 66). The antenna is not included in the scope of delivery and must be ordered separately.
4. Insert the activation module in the sensor recess of the myDatalogGauge LTE-M (see "Inserting the activation module" on page 65).
5. To establish a connection, activate setup mode (see "Setup mode" on page 43) using the reed switch.
6. 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.



7. 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. .
8. Open the site settings (see "Site configuration" on page 83) and click on "Setup data" to display the GSM level and fill level determined during setup mode.
9. 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.

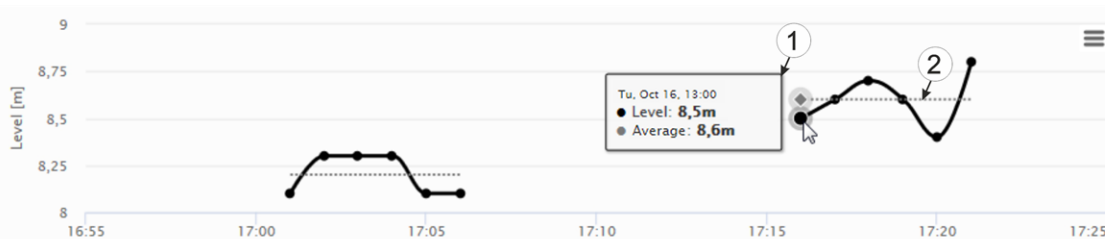
Note: Information on improving the reception quality is provided in chapter "Optimum antenna positioning for assembly in a shaft" on page 66.



Display of the GSM level determined during setup mode

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

10. Check whether the values for the fill level 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 61).



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. |
|---|---|

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



13. Check whether all of the data up to the point of the synchronisation is present and plausible (especially the "Sensor 1" and/or "Sensor 2" measurement values).

9.5.2 Testing communication between the myDatalogGauge LTE-M and the myDatanet server (Bluetooth connection)

1. Within the desired customer, create a new site/application based on the IoT application "myDatalogGauge" for operation of the myDatalogGauge LTE-M on the myDatanet server (see "Creating the site" on page 135).
2. Configure the created site/application according to your requirements (see "Site configuration" on page 83).

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

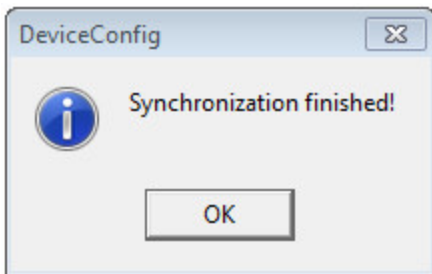
1. Activate the required measurement channels by selecting the mode and specifying the serial number of the BLE Gauge (see "Measurement channels" on page 87).
 2. Check or enter the installation height of the pressure sensor in the input field for the "Sensor Offset" parameter (see "Measurement channels" on page 87).
 3. Check or enter the value for the zero point adjustment in the input field for the "Trimming" parameter (see "Measurement channels" on page 87)
3. Insert the activation module in the sensor recess of the myDatalogGauge LTE-M (see "Inserting the activation module" on page 65).
 4. Use the DeviceConfig configuration program to establish a Bluetooth connection (Bluetooth Low Energy) between the myDatalogGauge LTE-M and your PC (see "Connecting a Device via Bluetooth Low Energy" on page 112).
 5. Activate the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatanet server. To do so, initially select the "Sync with server" checkbox and then click on the button illustrated below. The checkbox and button are both located on the "Sync" tab of the DeviceConfig configuration program (see ""Sync" tab" on page 116).

Note: The "Sync with server" checkbox is only displayed if your PC is already connected to the Internet.



6. Wait until some measurement values have been recorded. The waiting time depends on the configured record interval (see "Basic settings" on page 96).
7. Trigger the synchronisation between myDatalogGauge LTE-M , DeviceConfig and the myDatanet server to transmit the recorded fill level measurement values to the myDatanet server.

-
- Wait until the DeviceConfig configuration program indicates that the synchronisation process is complete.



Synchronisation completed

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



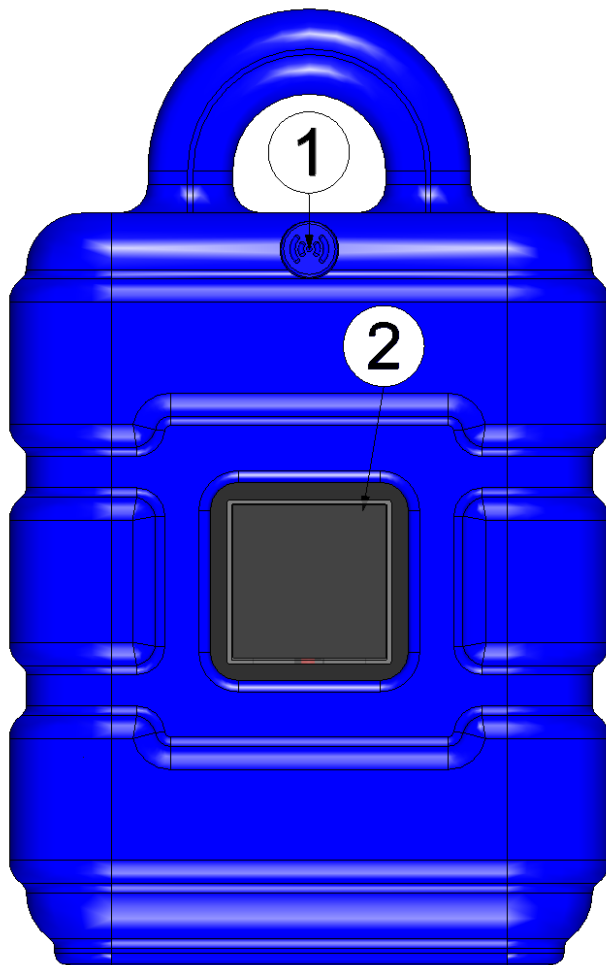
- Check whether all of the data up to the point of the synchronisation is present and plausible (especially the "Sensor 1" and/or "Sensor 2" measurement values). Complete a zero point adjustment, if the measurement values of the BLE Gauge sensor module do not meet the expectations (see "Zero point adjustment" on page 61).

Chapter 10 User interfaces

The configuration of the myDatalogGauge LTE-M is carried out via the web interface on the myDatatnet server (see "User interface on the myDatatnet server" on page 83), which your responsible sales partner will provide to you.

10.1 User interface on the myDatalogGauge 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 myDatalogGauge 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 80)
Press and hold for three seconds	Setup mode is activated	---

The display of the myDatalogGauge 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 43).



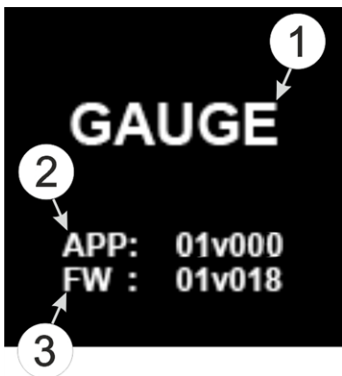
Visualisation of the time for which the reed switch was pressed

10.1.1.2 Display

Important note:

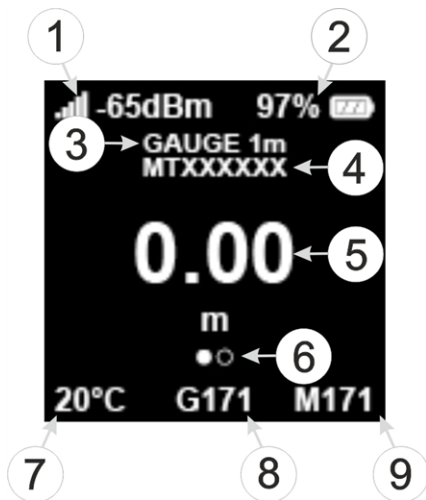
- Do not touch the display with a sharp object, such as the tip of a pen.
- Do not stand or place any objects on the display as this could scratch it.

The display of the myDatalogGauge LTE-M is only designed to show the current measurement values (fill level and temperature) and various status information. The device cannot be operated via the display. The display is activated by briefly holding the magnet (approx. 1 sec.) to the reed switch (see "Reed switch" on page 79) or by inserting the activation module (see "Inserting the activation module" on page 65). 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

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



Status indication during normal operation

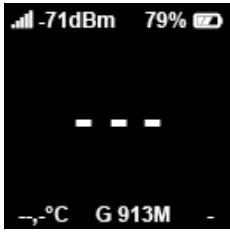





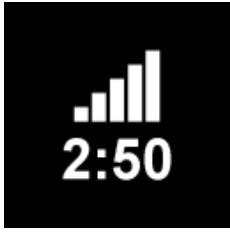

1 GSM level during last connection	6 Each point/circle represents a coupled BLE module. The point represents the BLE module for which the value is currently shown on the display.
2 Current state of charge in % (SOC)	7 Temperature of the BLE module for which the fill level is currently shown in the centre of the display
3 Type designation of the BLE module	8 Remaining days until the batteries for the device need to be replaced
4 Serial number of the BLE module	9 Remaining days until the battery of the BLE module currently shown on the display needs to be replaced.
5 Fill level (incl. unit)	

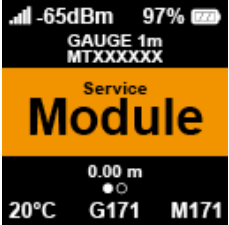


Note: Additional explanation on the display of the current state of charge

- 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.

The status indication during normal operation shows the current fill level in the centre of the display. If several BLE Gauge sensor modules are connected to the myDatalogGauge LTE-M , the fill levels of the individual BLE Gauge sensor modules are displayed alternately. Based on the currently displayed value, the type designation and serial number for the relevant module are shown in the upper section of the display. The temperature and remaining days until the battery of the BLE Gauge sensor module needs replacing, that are shown in the bottom area of the display, also always refer to the module for which the fill level is currently being displayed. Each point/circle underneath the displayed fill level represents a coupled BLE Gauge sensor module. The point represents the BLE Gauge sensor module for which the value is currently shown on the display. The points/circles are not displayed if only one BLE Gauge sensor module is coupled with the myDatalogGauge LTE-M .

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, no activation module inserted
	Reed switch activated
	Establishing the BLE connection between BLE Gauge and myDatalogGauge LTE-M
	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 setup mode (i.e. the determined values of the GSM level) that is displayed for a period of 5min.

Display	Explanation
	Battery for the BLE Gauge needs to be replaced
	<p>Error</p> <ul style="list-style-type: none"> • E02 ... last connection failed • E03 ... last measurement failed <ul style="list-style-type: none"> • BLE-Pairing of BLE Gauge sensor module and myDatalogGauge LTE-M faulty • Sensor module battery is depleted (check "PowerOn Flag") • 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) • E31 ... Signal line between BLE Gauge and the pressure sensor interrupted
	The batteries of the myDatalogGauge LTE-M need to be replaced

10.2 User interface on the myDatatnet 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 myDatatnet 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 "myDatatnet Server Manual " 805002).

10.2.1.1 Specific input screen for configuring the site

10.2.1.1.1 Site

The screenshot shows a configuration form for a site. The fields and their values are:

- Customer:** Customer (Callout 1)
- Name:** Site 1 (Callout 3)
- Device S/N:** 04AF840256xxxxxx (Callout 4)
- Application:** myDatalogGauge (Callout 5)
- Application Version:** 1 (Callout 6)
- Sensor 1:** Gauge 10m (MTxxxxxx, Trim.: -0,01m, Offs.: 0,08m) (Callout 10)
- Sensor 2:** Gauge 10m (MTxxxxxx, Trim.: 0,12m, Offs.: 0,34m) (Callout 11)
- Tags:** Released (Callout 9)

Additional information on the right side of the form:

- Next Service:** 05.11.2023 - still 816 days (Callout 7)
- Next Calibration (Sensor 1):** 05.10.2024 - still 1151 days
- Next Calibration (Sensor 2):** 21.07.2025 - still 1440 days (Callout 13)

Callout 14 points to a plus sign icon, and callout 12 points to a minus sign icon.

"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 data logger ()are likely to need replacing and remaining days until this date
8	Measurement channel active Type designation of the BLE module currently assigned to the measurement channel and used for measurement value acquisition
	Measurement channel inactive The string "----" is displayed instead of the type designation.
	Error The string "Error" is displayed instead of the type designation.
9	Serial number of the BLE module currently assigned to the measurement channel and used for measurement value acquisition
10	Value for the zero point adjustment currently saved in the BLE Gauge (i.e. the "Trimming")
11	Installation height currently saved in the BLE Gauge (i.e. the "Sensor Offset")

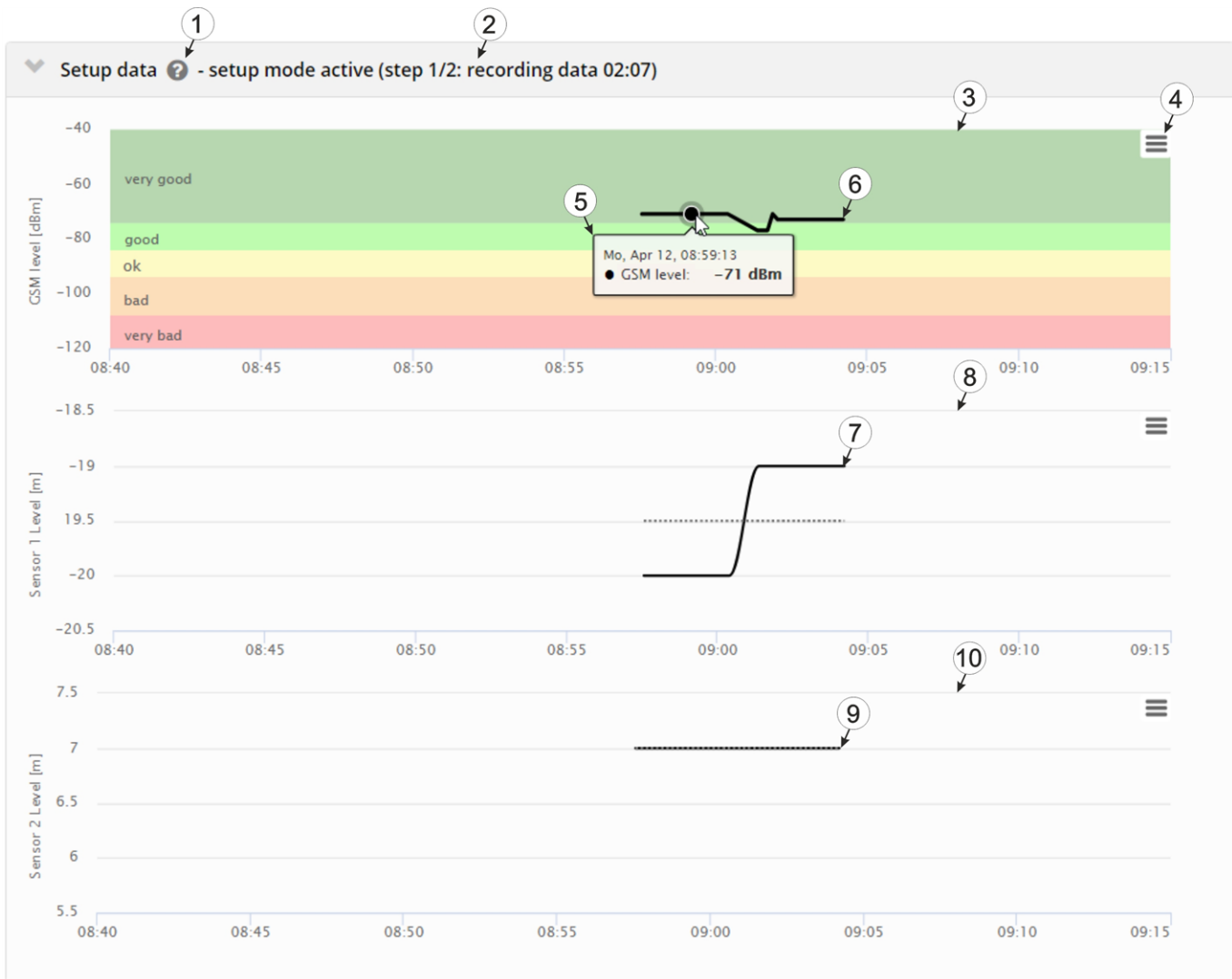
- 12** Indicates that the values for the trimming and sensor offset entered via the "Measurement channels" configuration section (see "Measurement channels" on page 87) have not yet been stored in the BLE Gauge . The symbol is hidden as soon as the values read-back from the BLE Gauge match the values in the "Measurement channels" configuration section. An additional connection establishment may be required for this.
- 13** Date when the battery of the BLE Gauge assigned to the measurement channel is likely to need replacing and remaining days until this date
- 14** List of tags that are already assigned to the site. This assignment can be cancelled by clicking on the cross next to the title of the tag. The input screen for assigning tags can be opened by clicking on the plus symbol.

"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.

Note: During normal operation, information on the BLE Gauge that are assigned to the two measurement channels is displayed instead of the operation mode.

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 fill level of the BLE Gauge assigned to measurement channel 1 measured in the course of a single setup mode
8	Visualisation of the fill level measured in the last 35 minutes (measurement channel 1)
9	Visualisation of the fill level of the BLE Gauge assigned to measurement channel 2 measured in the course of a single setup mode
10	Visualisation of the fill level measured in the last 35 minutes (measurement channel 2)

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

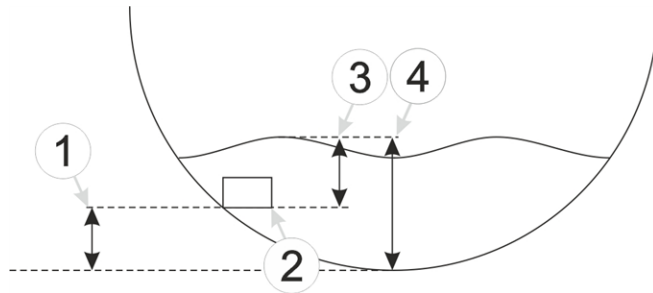
"Measurement channels" configuration section, "Basis" tab

1	Freely selectable channel designation for the fill level that is recorded by means of the BLE Gauge assigned to the measurement channel						
2	Selection of the mode used to assign the BLE Gauge to the corresponding measurement channel						
	<table border="1"> <tr> <td>automatic</td> <td>The BLE Gauge , whose serial number has already been stored in the myDatalogGauge LTE-M during production, should be used to acquire the measurement values.</td> </tr> <tr> <td>manual</td> <td>The BLE Gauge , that should be used to acquire the measurement values, is assigned manually by entering the serial number of the BLE Gauge in the "S/N" field.</td> </tr> <tr> <td>Off</td> <td>Measurement channel deactivated</td> </tr> </table>	automatic	The BLE Gauge , whose serial number has already been stored in the myDatalogGauge LTE-M during production, should be used to acquire the measurement values.	manual	The BLE Gauge , that should be used to acquire the measurement values, is assigned manually by entering the serial number of the BLE Gauge in the "S/N" field.	Off	Measurement channel deactivated
automatic	The BLE Gauge , whose serial number has already been stored in the myDatalogGauge LTE-M during production, should be used to acquire the measurement values.						
manual	The BLE Gauge , that should be used to acquire the measurement values, is assigned manually by entering the serial number of the BLE Gauge in the "S/N" field.						
Off	Measurement channel deactivated						
3	Serial number of the BLE Gauge used to acquire the measurement values. Read Only if "automatic" mode has been selected for the assignment of the BLE Gauge to the measurement channel.						
4	Provided to adjust the zero point (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88)						
5	Specifies the installation height of the sensor (see "Additional explanation on the zero point adjustment and installation height of the pressure sensor" on page 88)						
6	Selection of the length unit (mm, cm or m) used by all of the server display elements						
7	Number of decimal places that are used by all of the server display elements						
8	Buttons to switch between the individual tabs of the configuration section						

Note:

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

Assumption: Pressure sensor 0-1 m



Installation situation of the pressure sensor

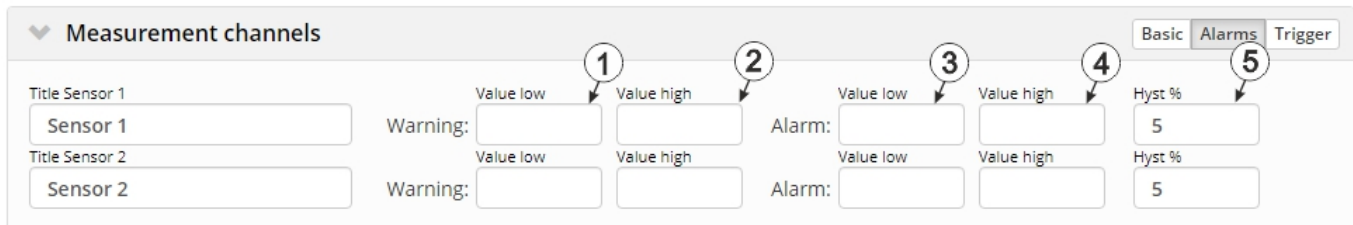
1 Installation height: 15 cm	3 Output value of the pressure sensor: 6 cm
2 Pressure sensor	4 Measured fill level: 20 cm

Required configuration

Parameter	Value
Trimming	-0.01
Sensor offset	0.15
Unit	m

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

10.2.1.1.4.2 Alarms



"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)

10.2.1.1.4.3 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

The screenshot shows the 'Internal channels' configuration section in the 'Basis' tab. The interface is divided into two tabs: 'Basic' and 'Alarms'. The 'Basic' tab is active. Below the tabs, there is a list of channels. Each channel has a title input field and a unit dropdown menu. The channels listed are:

Title	Unit
SOC	%
Battery	V
Int. temp	°C
rH	%

Callouts in the image: 1 points to the 'SOC' title input field, 2 points to the '%' unit dropdown, and 3 points to the 'Basic' tab button.

"Internal channels" configuration section, "Basis" tab

1 Freely selectable channel designation for:

SOC	State of charge of the internal battery of the myDatalogGauge LTE-M
Battery	Internal battery voltage of the myDatalogGauge LTE-M
Int. temp	Internal device temperature of the myDatalogGauge LTE-M
rH	Air humidity in the housing of the myDatalogGauge LTE-M
GSM	GSM level
Service	Remaining days until the batteries of the myDatalogGauge LTE-M need to be replaced
Load	Energy consumption between two recordings
PowerOn Flag Sensor x	
Battery Sensor x	Sensor status
Temp Sensor x	Internal battery voltage of the BLE Gauge
Service Sensor x	Temperature of the pressure sensor of the BLE Gauge
	Remaining days until the batteries of the BLE Gauge need to be replaced

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 Basic Alarms

Title	Value low	Value high	Value low	Value high	Hyst %
SOC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5
Battery	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5
Int. temp	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5
rH	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5
GSM	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5
Service	<input type="text"/>		<input type="text"/>		
Load	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5
PowerOn Flag Sensor 1					
Battery Sensor 1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	5

Annotations: 1 (Warning Value low), 2 (Warning Value high), 3 (Alarm Value low), 4 (Alarm Value high), 5 (Hyst %), 6 (Alarm checkbox).

"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) |
| 6 | An "alarm" is triggered when the battery of the BLE Gauge is depleted. |

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.

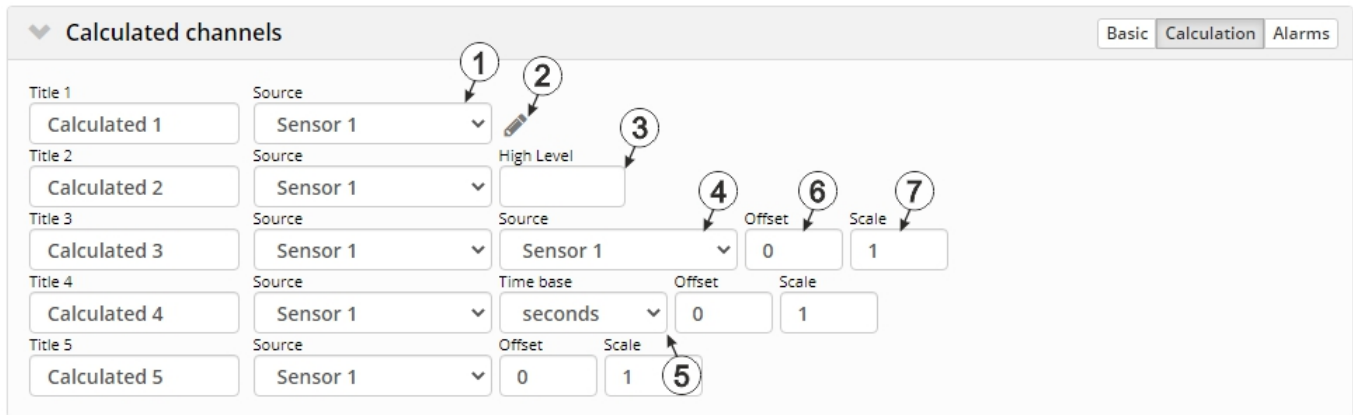
10.2.1.1.7.1 Basis

"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 101).
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

Transmission cycle: 1 → 24:00 hh:mm

Transmission cycle quick: 2 → 08:00 hh:mm

Record interval: 3 → 5 min

Record interval alternative: 4 → 1 min

Time zone: 5 → standard (server: UTC +1:00 (Paris, Frankfurt, Zurich, Vienna)) ▼

Daylight saving time: 6 → standard (server: EU) ▼

Position cycle: 7 → 24:00 hh:mm

Default report: 8 → off ▼

Report template: 9 → (not assigned) ▼

"Basic settings" configuration section

1 Time between transmissions	
2 Time between the transmissions, if a alternative transmission cycle should be used because of a trigger being initiated	
3 Time between measurement data recordings	
4 Time between measurement data recordings, if an alternative record interval should be used because of a trigger being initiated	
5 Regional settings (not relevant for raw measurement data as this is stored in UTC)	
6 Configuration for automatic time adjustment	
Standard	The configuration for the time adjustment is adopted by the global server setting (siehe "myDatenet Server Manual " 805002).
Off	Automatic time adjustment deactivated
USA	Predefined setting for the American area
EU	Predefined setting for the European area
7 Position update interval (00:00 positioning is completed with every connection)	
8 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.

<p>9 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.</p>	
(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

List of tags that are already assigned to the site. This assignment can be cancelled by clicking on the cross next to the title of the tag. 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 101).</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 myDatanet 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 myDatanet server (for creating an FTP export profile, see "myDatanet 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 myDatalogGauge LTE-M	

10.2.2.3 GPRS

SIM tariff

Selected SIM tariff

Chapter 11 DeviceConfig

11.1 General

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

www.microtronics.com/deviceconfig

The tool is used for configuration, maintenance, fault analysis and synchronisation purposes. It is compatible with all myDatanet devices equipped with a USB interface, wireless M-bus interface or Bluetooth Low Energy.

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

The DeviceConfig enables you to complete the following tasks:

- Synchronisation of measurement data and configuration between device and server (specifically for devices without GSM/GPRS modem)
- Basic configuration of the device (e.g. measurement and transmission cycle)
- Read out and analysis of the device log
- Calibration, trimming and zero point adjustment (special knowledge and password required)
- Update the firmware

11.2 Prerequisites

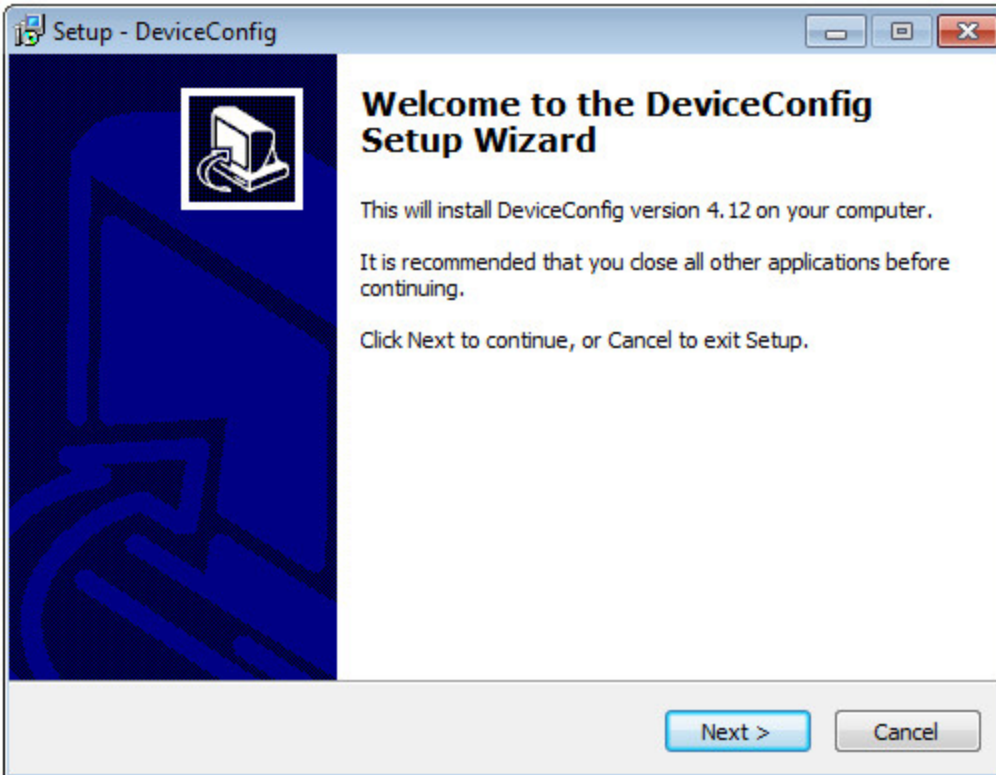
Interfaces	1 x USB
Operating system	Win XP Windows Vista Windows 7 Windows 8 Windows 10
Internet connection	Recommended
Required disk space	approx. 50 MB

11.3 Installation

The following chapter describes the installation process in Windows 7.

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

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



DeviceConfig setup wizard

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



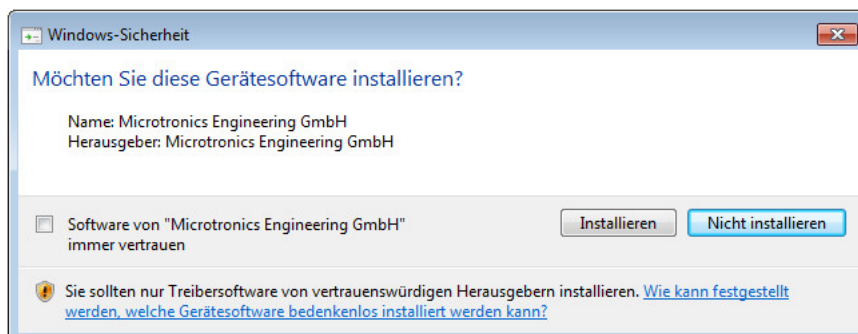
Installation of the USB drivers for the devices



Installation of the drivers for the USB BLE-Adapter

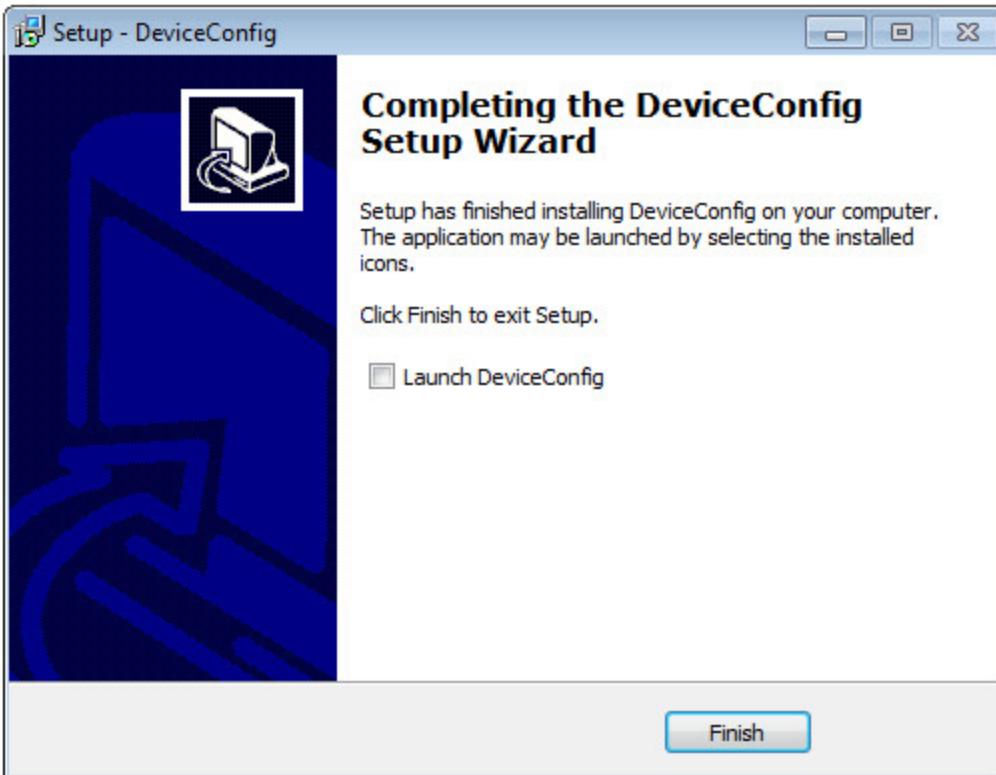


Installation of the USB drivers for the devices on a M1 basis



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

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



Complete the setup

11.3.1 Installing USB BLE-Adapter driver

Note: Information on the USB BLE-Adapter (300685) is provided in chapter "USB BLE-Adapter" on page 112.

The following chapter describes the installation process in Windows 7.

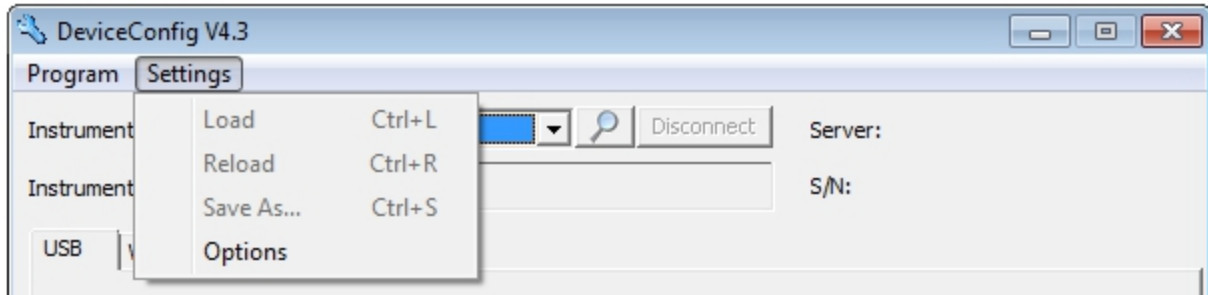
1. Complete all of the steps described in chapter "Installation" on page 106.
2. Close the DeviceConfig configuration program, if, when completing the installation, you selected the option for the program to be started following completion of the installation process.
3. Connect the USB BLE-Adapter (300685) to a free USB port on your PC. From Windows Vista onwards, the driver will be installed automatically. Instructions on installing the driver on older versions of Windows are included in the user manual for the DeviceConfig ("myDatanetDeviceConfig Manual" 805004).

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

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

11.4 Menu of the DeviceConfig

11.4.1 Settings

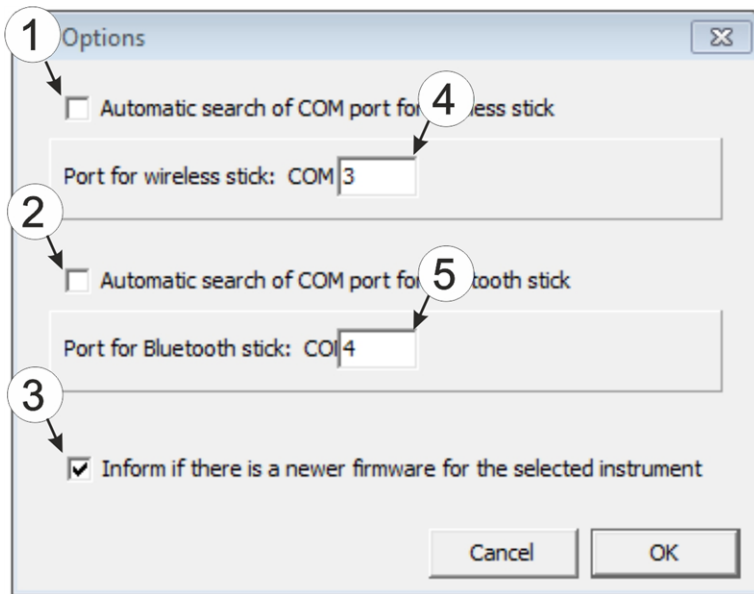


"Settings" menu item

11.4.1.1 Options

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

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

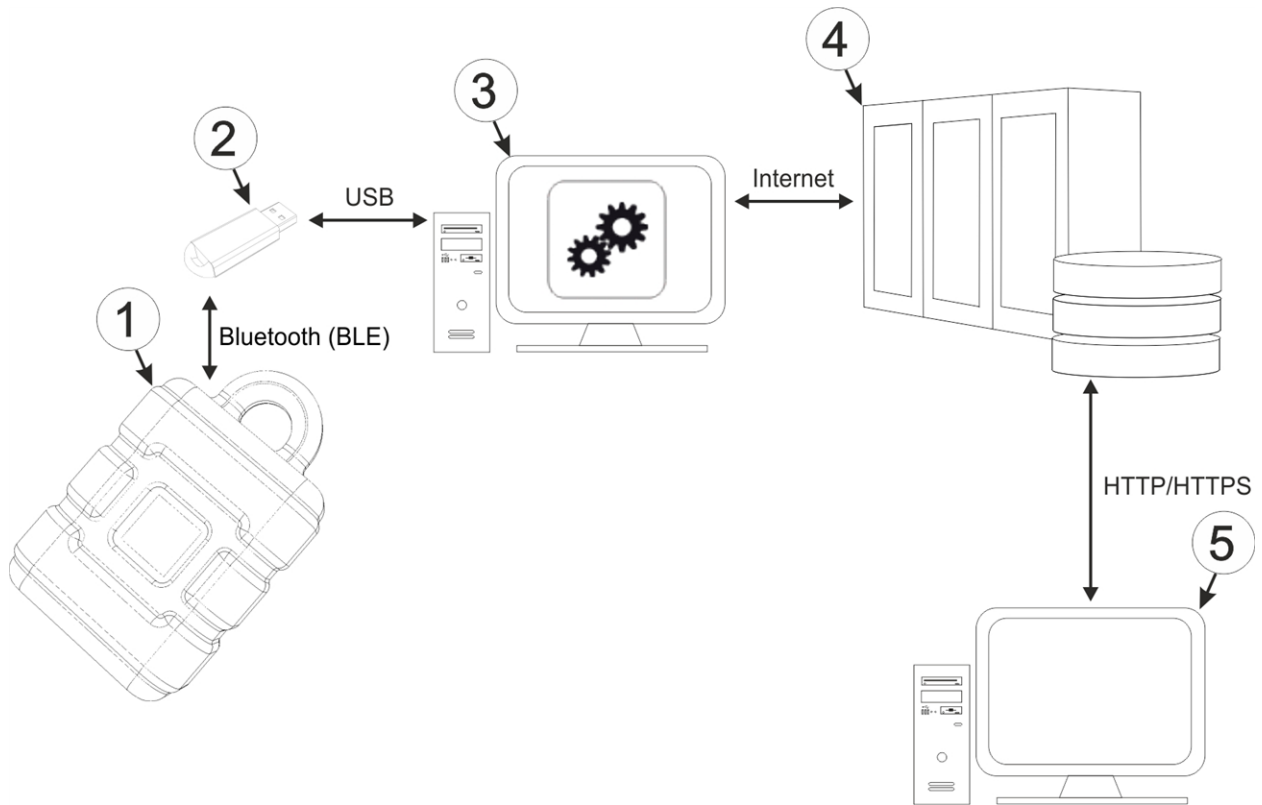


"Settings -> Options" menu item

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

11.5 Functional principle (communication with a myDatalogGauge LTE-M)

The following description specifically refers to the use of the configuration program DeviceConfig in conjunction with the myDatalogGauge LTE-M .



Functional principle

1 myDatalogGauge LTE-M	4 myDatanet server
2 USB BLE-Adapter	5 Client that accesses the interface of the myDatanet server via the web browser
3 PC with the DeviceConfig configuration program installed	

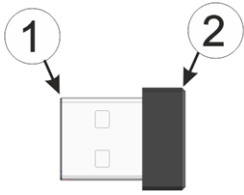
The DeviceConfig configuration program communicates wirelessly (Bluetooth Low Energy) with the myDatalogGauge LTE-M using the USB BLE-Adapter (300685). The functions provided with the DeviceConfig configuration program include:

- Read out and analysis of the device log (see ""Log" tab" on page 114)
- Update the firmware(see ""Firmware" tab" on page 116)
- Synchronisation of measurement data and configuration between device and server (see ""Sync" tab" on page 116)

As soon as the data has been transferred to the myDatanet server, it is available via all of the server's interfaces (e.g. HTTP/HTTPS, as illustrated in the functional principle above) in the same way as the data from all of the other myDatanet devices.

11.5.1 USB BLE-Adapter

The USB BLE-Adapter (300685) is not included in the scope of delivery of the myDatalogGauge LTE-M . It is required because standard PCs and laptops often do not have a Bluetooth Low Energy interface that is necessary for communication with the myDatalogGauge LTE-M .



USB BLE-Adapter

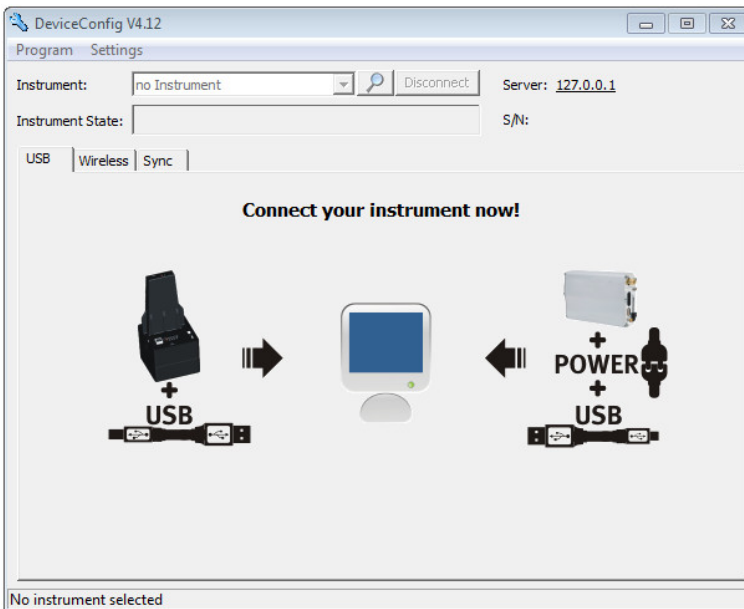
1 USB connector (type A)	2 Antenna
--------------------------	-----------

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

11.5.2 Connecting a Device via Bluetooth Low Energy

The USB BLE-Adapter (300685) is required to establish a connection to a device with a Bluetooth Low Energy interface. First of all complete the steps described in chapter "Installing USB BLE-Adapter driver" on page 108 to install the drivers required to operate the USB BLE-Adapter .

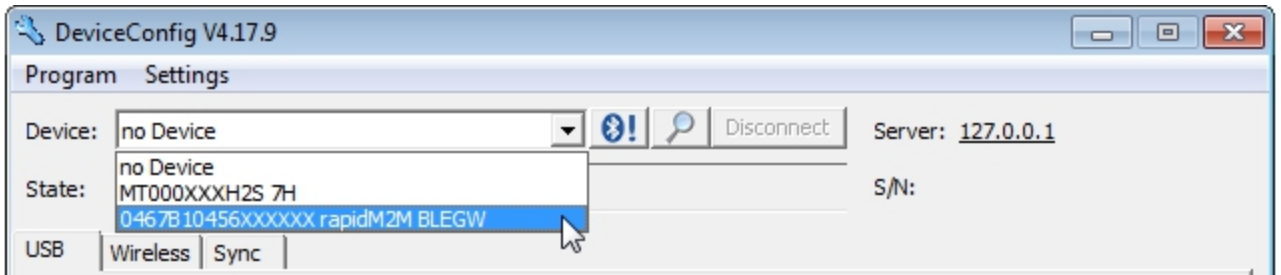
1. Connect the USB radio transmitter (206.657) to the USB interface of your PC.
2. Start the DeviceConfig configuration program.



DeviceConfig

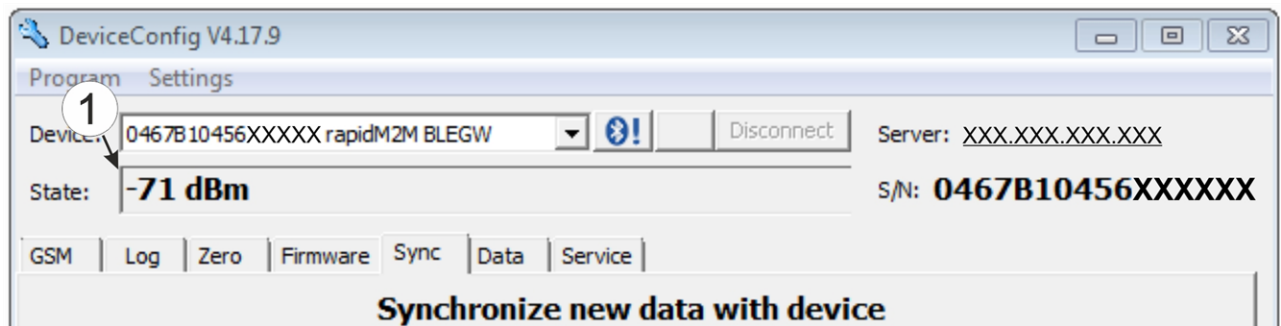
3. Select your device based on the serial number from the list of devices found.

Important note: Please note that, depending on the environmental conditions, the range of the radio transmitter of the myDatalogGauge LTE-M is max. 20m .



List of devices found

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



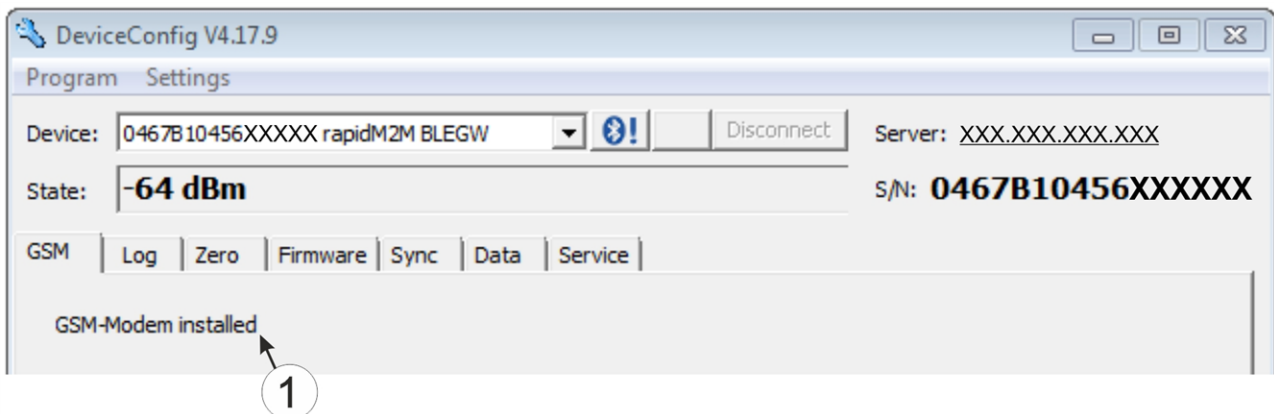
"Sync" tab when actively connected to the myDatalogGauge LTE-M

1	Wireless signal level [dBm]
---	-----------------------------

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

11.5.3 "GSM" tab

This tab can be used to check whether the device has a mobile network modem installed.

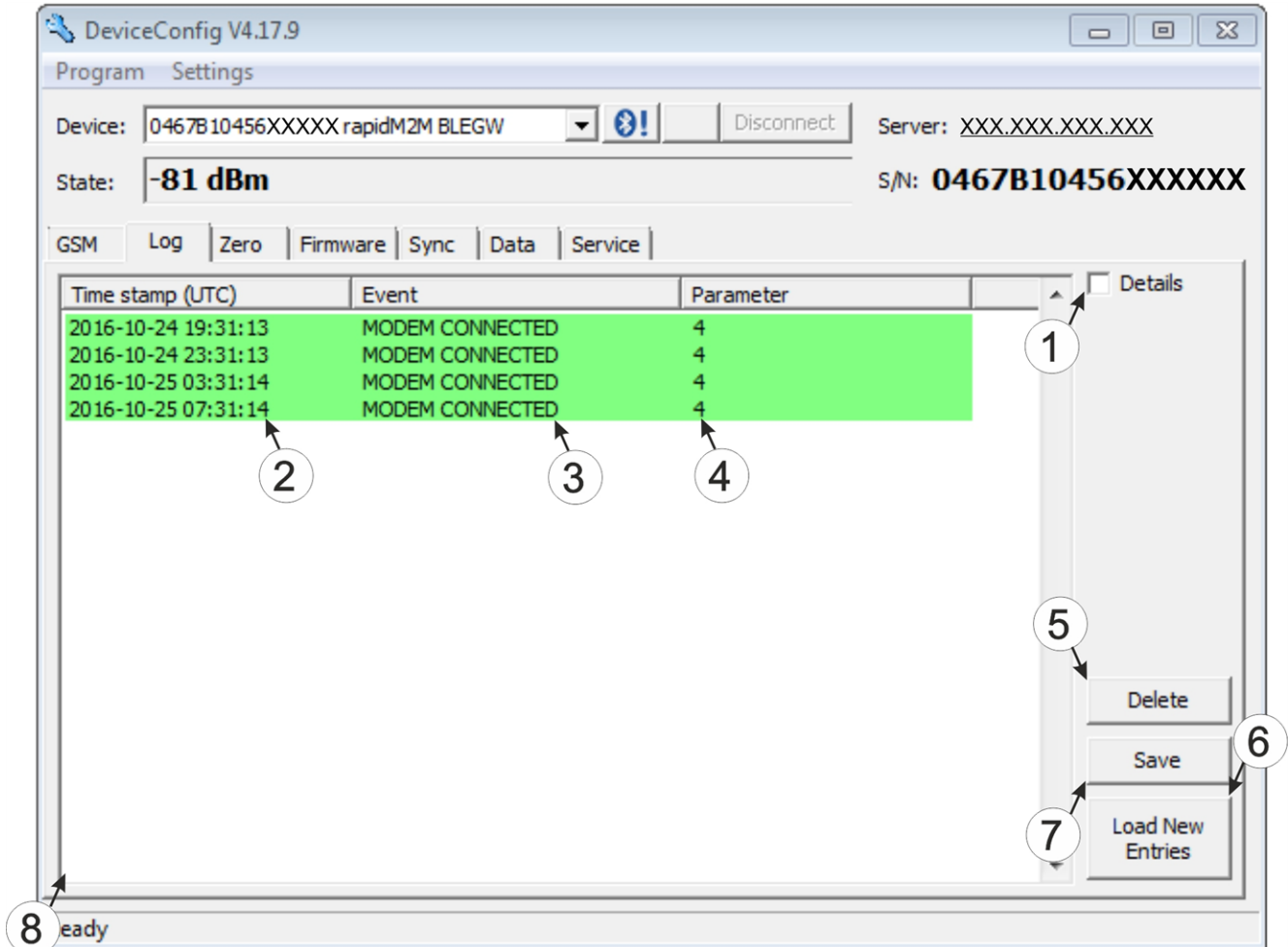


"GSM" tab

1	Indicates whether a mobile network modem is installed
---	---

11.5.4 "Log" tab

This tab is designed to manage log entries. It enables the entries to be loaded from the myDatalogGauge LTE-M , to be saved as a *.tsv file and entries to be deleted from the memory of the myDatalogGauge LTE-M .

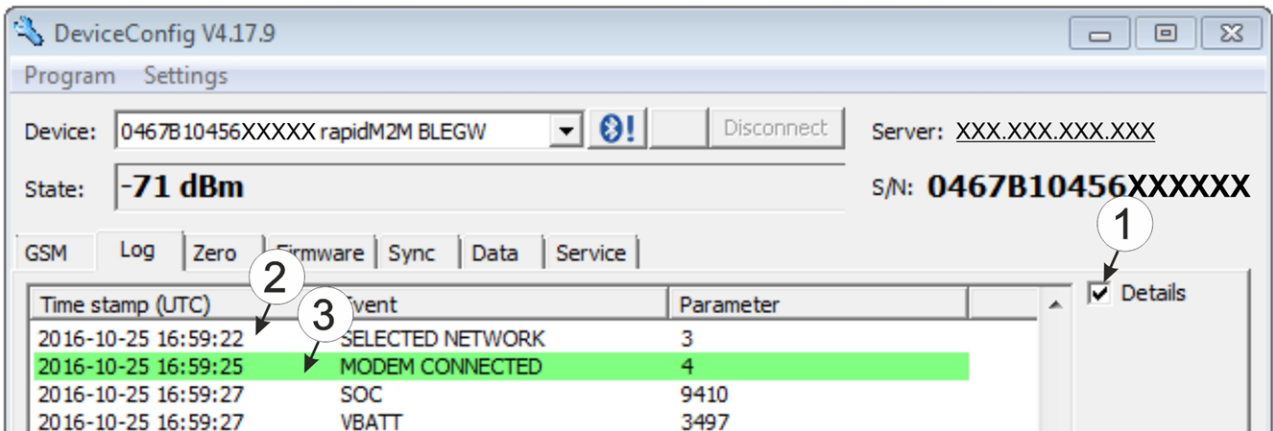


"Log" tab

1 Activates the detailed display of the log entries	5 Deletes the log entries from the memory of the device
2 Time stamp of the log entry	6 Loads the log entries from the device
3 Log entry	7 Saves the loaded log entries as a tsv file
4 Parameter of the log entry	8 Window to display the loaded log entries

The coloured highlighting indicates how crucial the log entry is. The white, informative log entries are only displayed when the detailed display of the log entries is activated (see ""Log" tab with detailed view activated" on page 115).

Colour	Evaluation
White	Information regarding the current operating state
Green	
Light blue	
Blue	
Purple	
Grey	
Yellow	Uncritical error
Red	Critical error



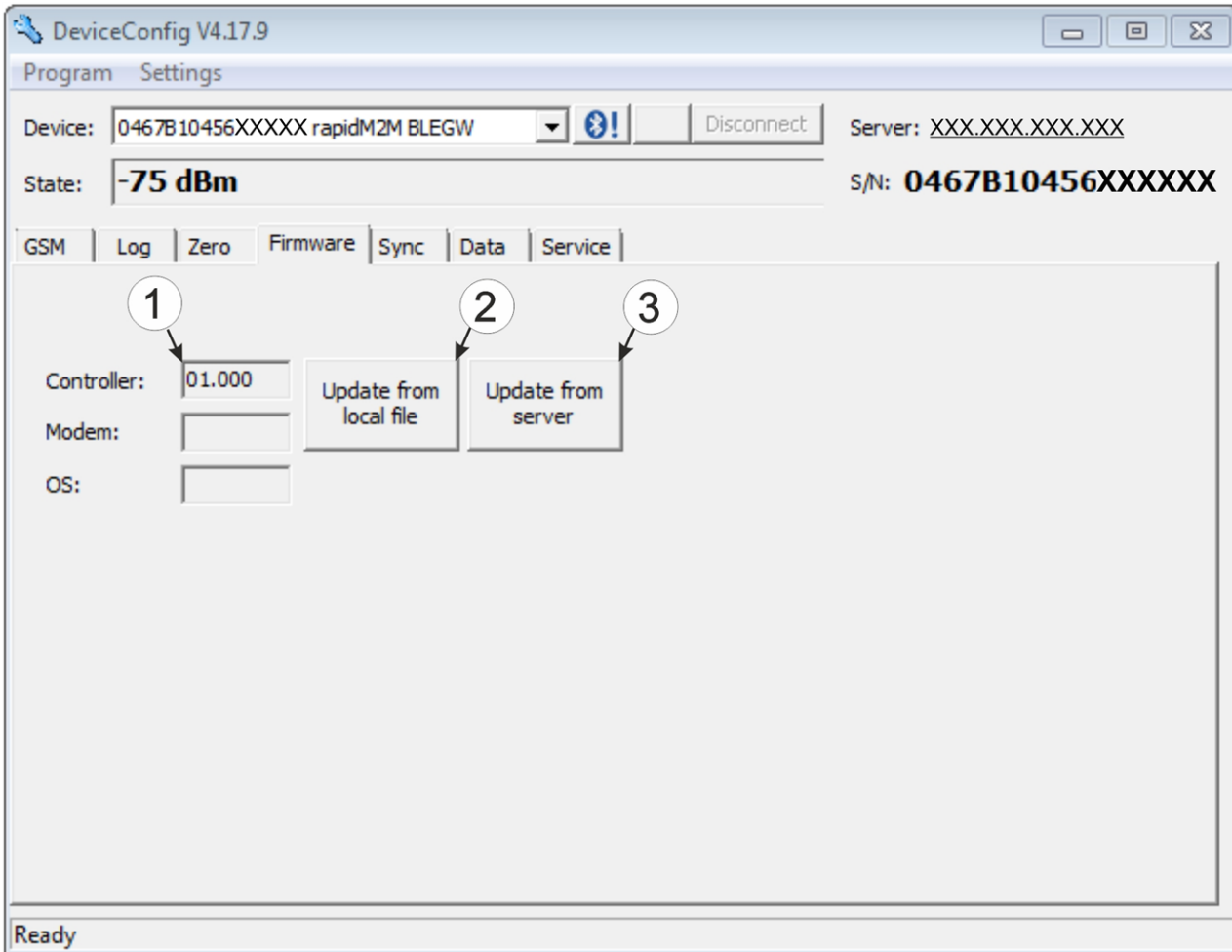
"Log" tab with detailed view activated

1 Activates the detailed display of the log entries	3 Log entry that is always displayed
2 Informative log entry that is only visible if the detailed display is activated	

11.5.5 "Firmware" tab

This tab enables firmware to be installed directly via the USB interface or the Bluetooth Low Energy interface. There are two available ways to update the firmware:

- Using a previously downloaded firmware package
- By directly loading from the myDatatnet server



"Firmware" tab

1 Currently installed software version	3 The firmware is loaded directly from the server and installed on the device.
2 Button to install a previously downloaded firmware package	

11.5.6 "Sync" tab

This area is designed to synchronise measurement data and configurations between myDatalogGauge LTE-M , DeviceConfig and myDatatnet server. The "Sync" tab is also available if there is no connection (USB, wireless M-bus or Bluetooth) to a device.

Detailed instructions on completing the synchronisation is provided in chapter "Synchronisation with the myDatatnet server" on page 119.

11.5.6.1 Existing connection to the myDatalogGauge LTE-M

If there is an existing connection to the myDatalogGauge LTE-M, there is an option to only synchronise the measurement data and configurations with the DeviceConfig configuration program for local processing or to transfer them to the myDatatnet server. In the event that your PC is not connected to the Internet when reading out the data, you can initially synchronise the measurement data and configurations of the myDatalogGauge LTE-M with the DeviceConfig configuration program. As soon as your PC establishes a connection to the Internet, for example when you return to the office, you can then complete the synchronisations between the DeviceConfig and myDatatnet server (see "No connection to a device" on page 118).



"Sync" tab when connected to the myDatalogGauge LTE-M

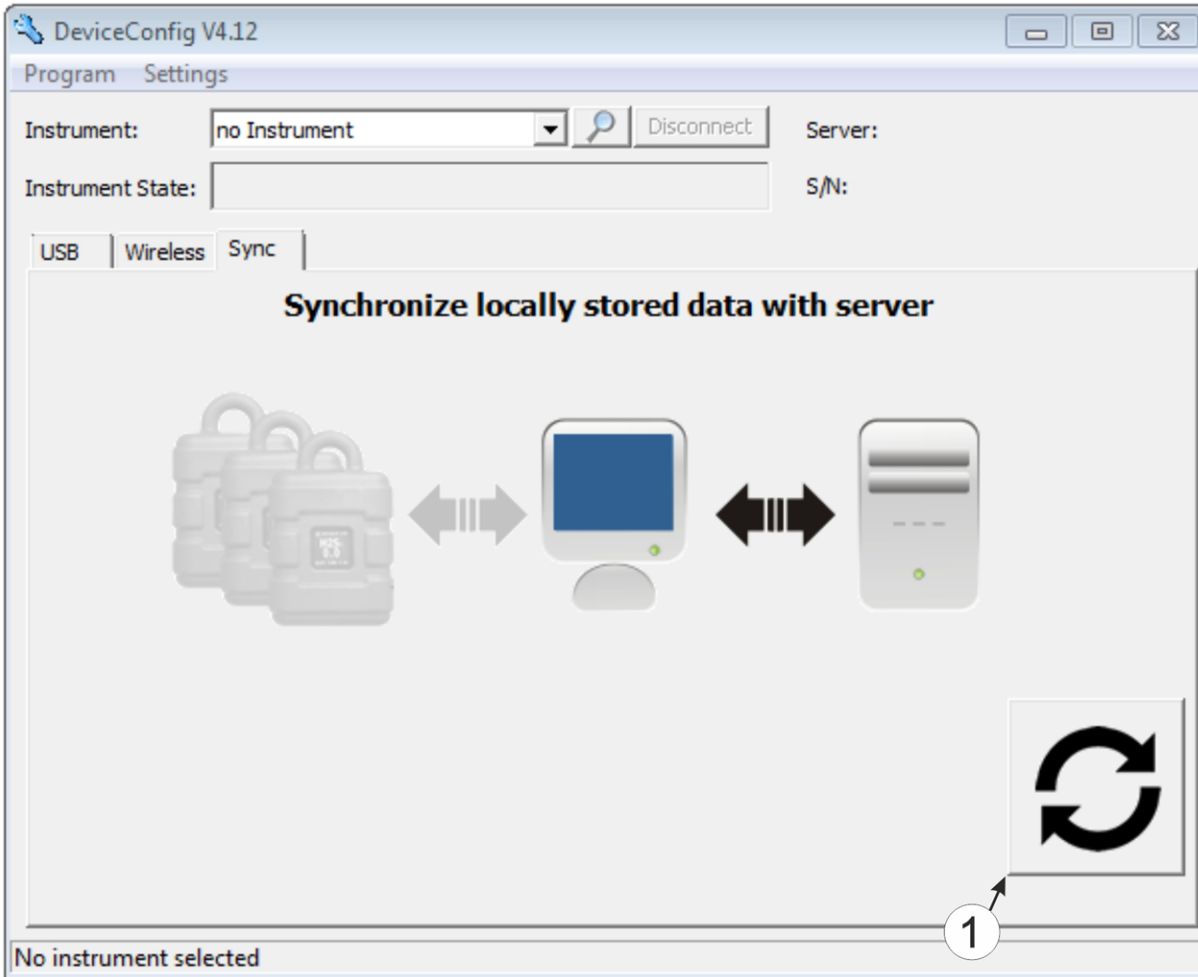
- 1 Checkbox to determine whether the measurement data and configurations should also be synchronised with the server when clicking on the Sync button.

Note: This checkbox is only displayed if your PC is already connected to the Internet.

- 2 Button to trigger synchronisation

11.5.6.2 No connection to a device

This option can be used to complete the synchronisation retrospectively, if no connection to the Internet was possible while reading out the measurement data and configurations from the myDatalogGauge LTE-M .



"Sync" tab without connection to a device

- 1 Button to trigger synchronisation During this process, the measurement data and configurations for all of the devices that the DeviceConfig configuration program has saved locally are synchronised with the myDatanet server.

11.5.7 Recommended procedure

11.5.7.1 Synchronisation with the myDatanet server

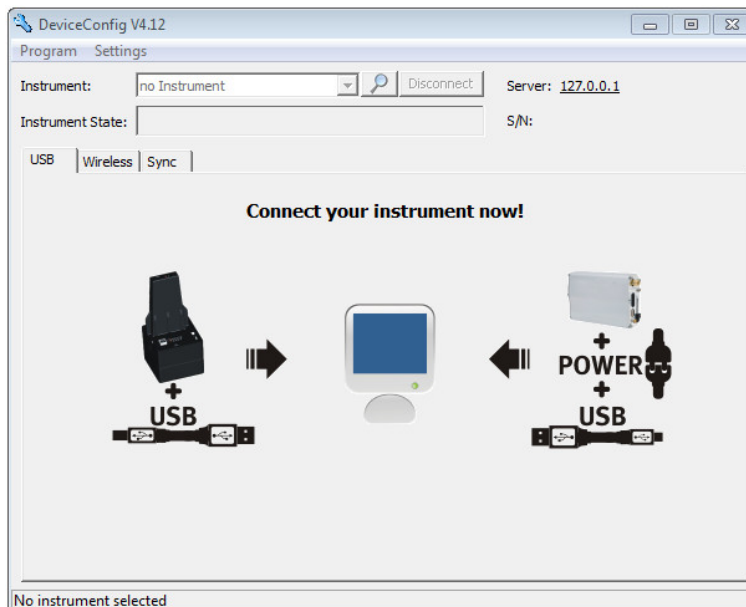
To ensure a more comprehensive management and display of the data, the DeviceConfig configuration program also provides the option of forwarding the measurement data and configurations to a central myDatanet server. The next two chapters describe the possible scenarios when reading out the data from the myDatalogGauge LTE-M .

More information on the functions of the server is provided in the server manual ("myDatanet Server Manual " 805002).

11.5.7.1.1 Internet connection available when reading out the data

The following process describes how you can not only synchronise the data with the DeviceConfig configuration program but also with the myDatanet server. A site must already be assigned to the myDatalogGauge LTE-M on the myDatanet server for this purpose. Detailed instructions are provided in chapter "Creating the site" on page 135. Another prerequisite for this is that your PC is connected to the Internet while reading out the data from the myDatalogGauge LTE-M . If this is not possible, follow the procedure described in chapter "No Internet connection when reading out the data" on page 123.

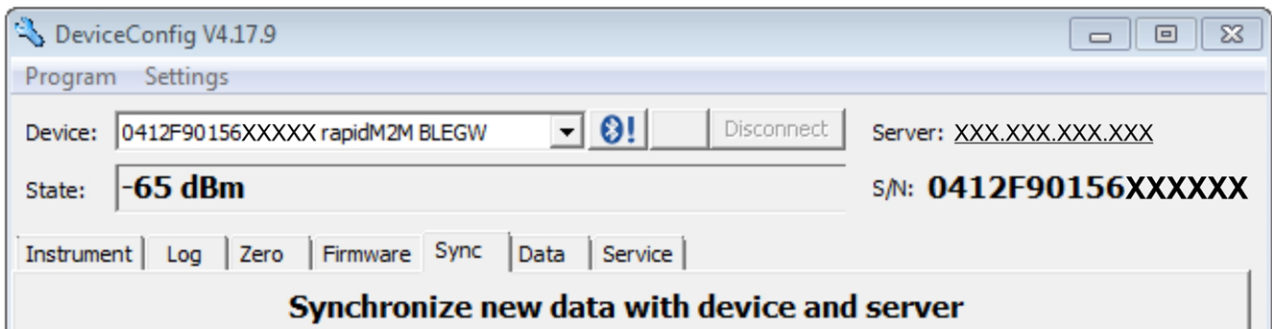
1. Connect the USB BLE-Adapter (300685) to the USB interface of your PC.
2. Start the DeviceConfig configuration program.



DeviceConfig

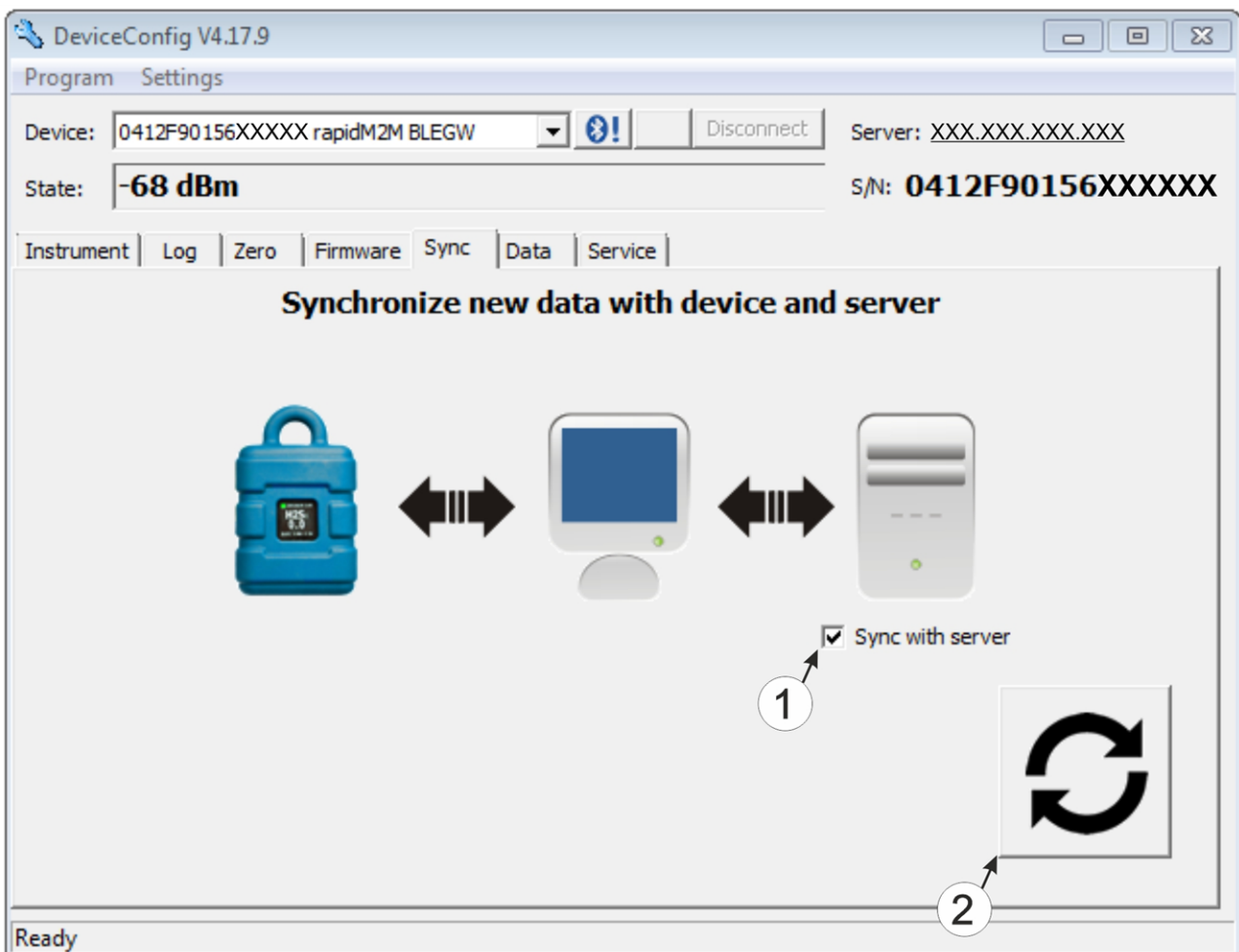
3. Connect the myDatalogGauge LTE-M to the PC using the USB BLE-Adapter (300685) supplied (see "Connecting a Device via Bluetooth Low Energy" on page 112).

- Additional tabs are displayed if the connection was established successfully. Now select the "Sync" tab.



myDatalogGauge LTE-M specific tab

- Place a tick in the "Sync with server" checkbox. This checkbox is only visible if your PC is currently connected to the Internet.



"Sync" tab when connected to the myDatalogGauge LTE-M

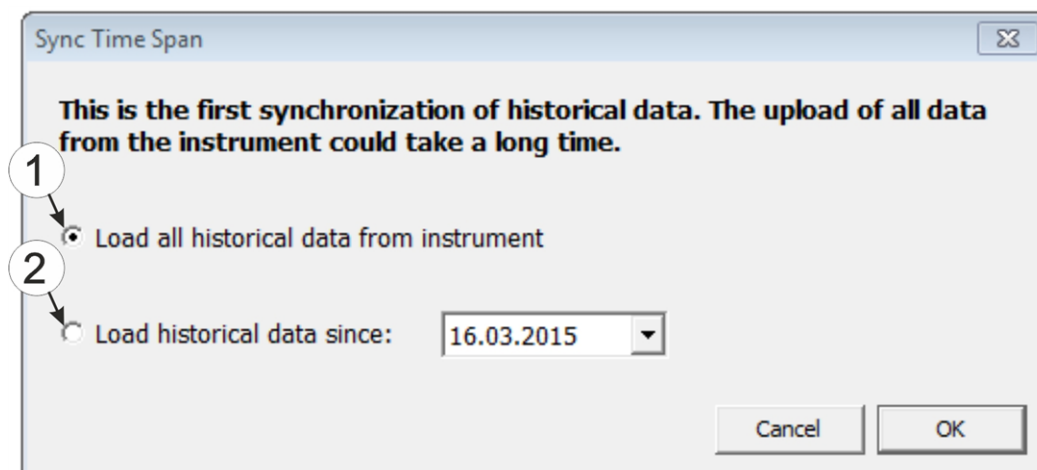
- Checkbox to determine whether the measurement data and configurations should also be synchronised with the server when clicking on the Sync button.

Note: This checkbox is only displayed if your PC is already connected to the Internet.

- Button to trigger synchronisation

-
6. Click on the button to trigger the synchronisation (see ""Sync" tab when connected to the myDatalogGauge LTE-M " on page 120).

When you read out the data for the first time from a myDatalogGauge LTE-M , you can choose whether all of the saved data or only the data from a certain date onwards are read out from the myDatalogGauge LTE-M . During the following synchronisation processes, the DeviceConfig configuration program always reads out the data from the last synchronised measurement data record onwards.



Selecting the time period for which the data should be read out (only during first synchronisation)

1 Read out all of the saved data

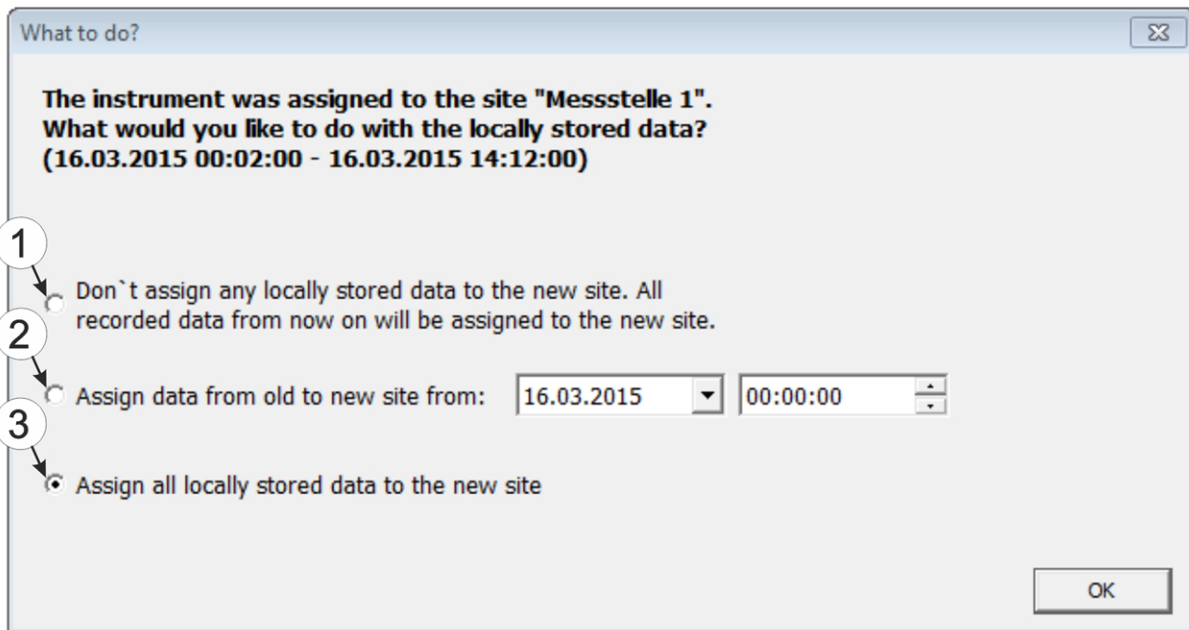
Note: Reading out all of the saved data can take several hours depending on the number of saved measurement data records.

2 Only read out the data from the selected date onwards. The data is always read out from 00:00 am of the selected day.

Important note: Following completion of the synchronisation it is no longer possible to read out data before the selected date.

If the DeviceConfig configuration program determines that the myDatalogGauge LTE-M has been assigned to a new or different site on the myDatatnet server, you can decide what you would like to do with the data that is already saved locally. The following screenshot provides an overview of the available options that can be selected.

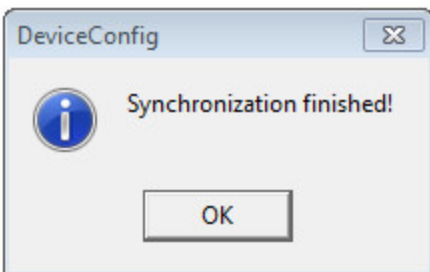
Important note: If a site already contains data, then only the measurement data that is newer than the current measurement data record for the site is synchronised.



Selecting how to proceed with the locally saved data (only if the device has been assigned a new or different site)

- | |
|---|
| <p>1</p> <p>The locally saved data is not assigned to the new site. Only the measurement data that is read out from the current point in time is assigned to the new site.</p> <p>After clicking on "OK", the option to select from which time period onwards the data should be read out opens. The measurement data is read out from the myDatalogGauge LTE-M in accordance with the selection and assigned to the new site.</p> |
| <p>2</p> <p>The locally saved data is assigned to the new site from the selected point in time onwards.</p> |
| <p>3</p> <p>All locally saved data is assigned to the new site.</p> |

7. Wait until the DeviceConfig configuration program indicates that the synchronisation process is complete.



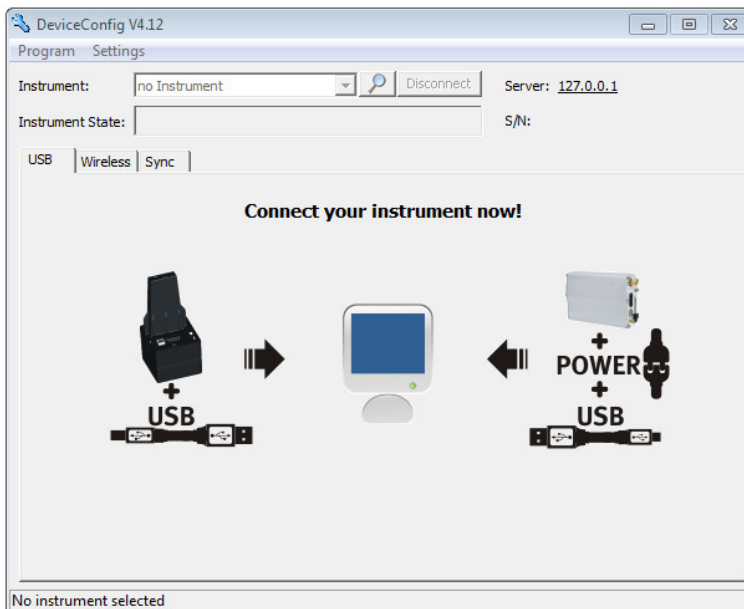
Synchronisation completed

11.5.7.1.2 No Internet connection when reading out the data

Important note: The method described in the following requires that the myDatalogGauge LTE-M myDatanet has already been assigned a site on the myDatanet server. Detailed instructions are provided in chapter "Creating the site" on page 135. Additionally, a synchronisation must already have been completed during which the DeviceConfig configuration program simultaneously established a connection to the myDatalogGauge LTE-M and the myDatanet server (see "Internet connection available when reading out the data" on page 119).

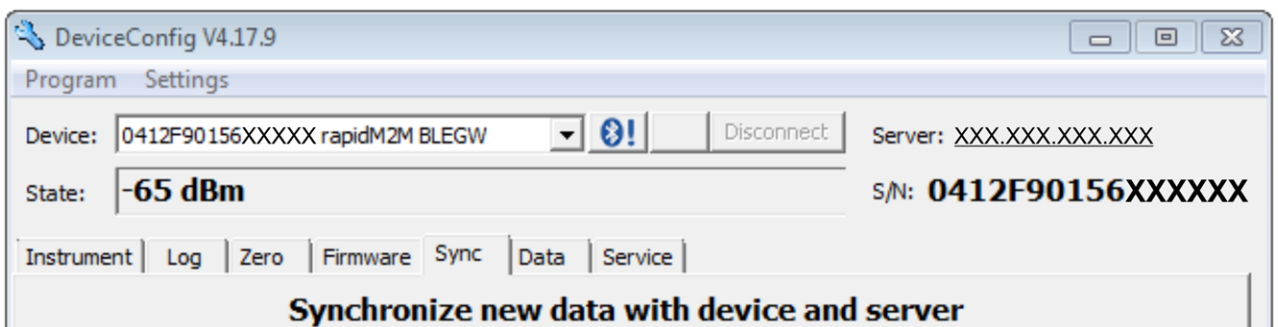
This procedure is recommended, if an Internet connection cannot be established on the site while reading out the data from the myDatalogGauge LTE-M. During this procedure, the data on the site is initially only synchronised with the DeviceConfig configuration program. The data is then transferred to the myDatanet server at a later date when your PC has re-established a connection to the Internet.

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



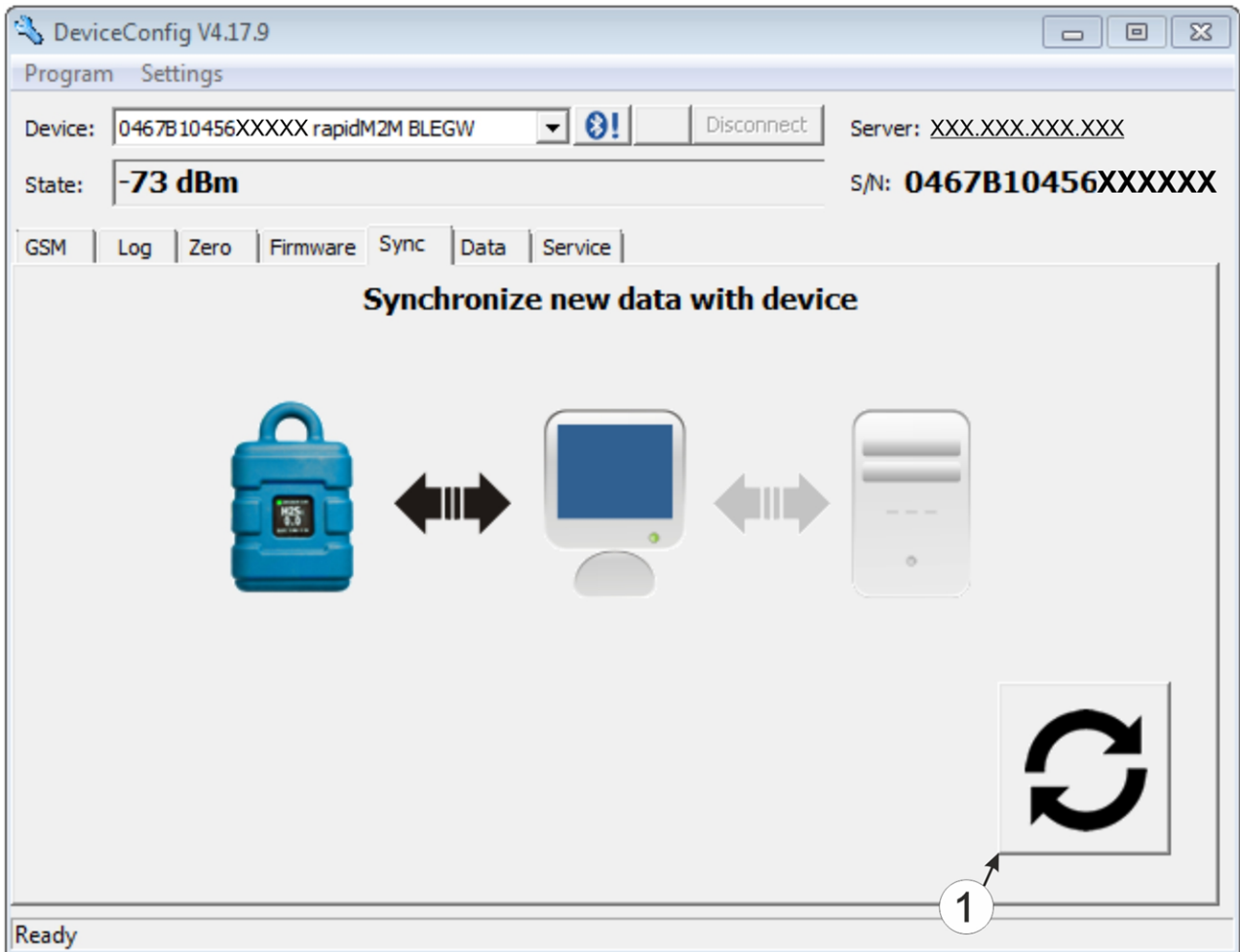
DeviceConfig

3. Connect the myDatalogGauge LTE-M to the PC using the USB BLE-Adapter (300685) supplied (see "Connecting a Device via Bluetooth Low Energy" on page 112).
4. Additional tabs are displayed if the connection was established successfully. Now select the "Sync" tab.



myDatalogGauge LTE-M specific tab

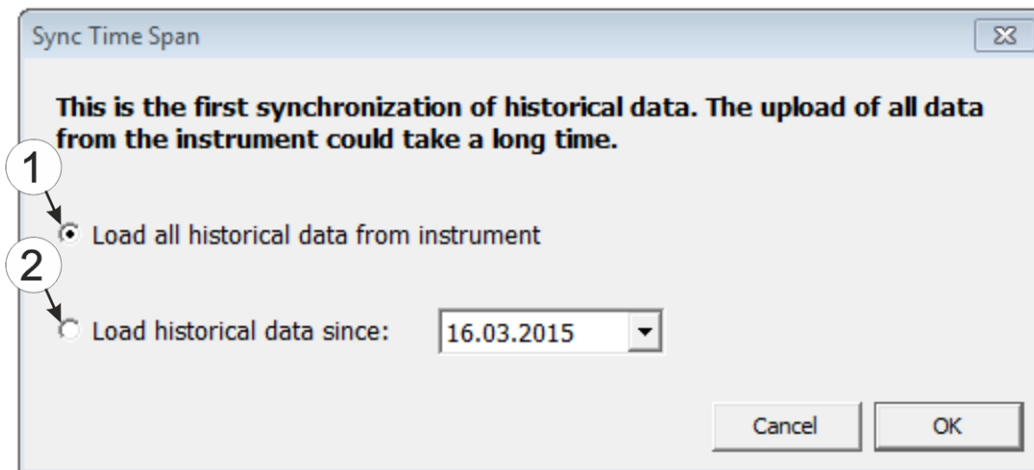
5. Click on the button to trigger synchronisation.



"Sync" tab when connected to the myDatalogGauge LTE-M although there is no connection to the myDatatnet server

1 Button to trigger synchronisation

When you read out the data for the first time from a myDatalogGauge LTE-M , you can choose whether all of the saved data or only the data up to a certain date are read out from the myDatalogGauge LTE-M . During the following synchronisation processes, the DeviceConfig configuration program always reads out the data from the last synchronised measurement data record.



Selecting the time period for which the data should be read out (only during first synchronisation)

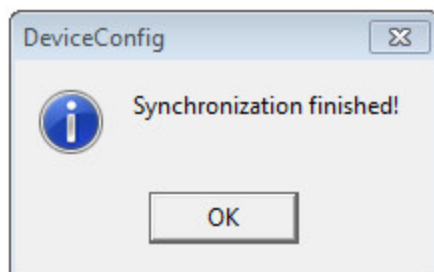
1 Read out all of the saved data

Note: Reading out all of the saved data can take several hours depending on the number of saved measurement data records.

2 Only read out the data from the selected date onwards. The data is always read out from 00:00 am of the selected day.

Important note: Following completion of the synchronisation it is no longer possible to read out data before the selected date.

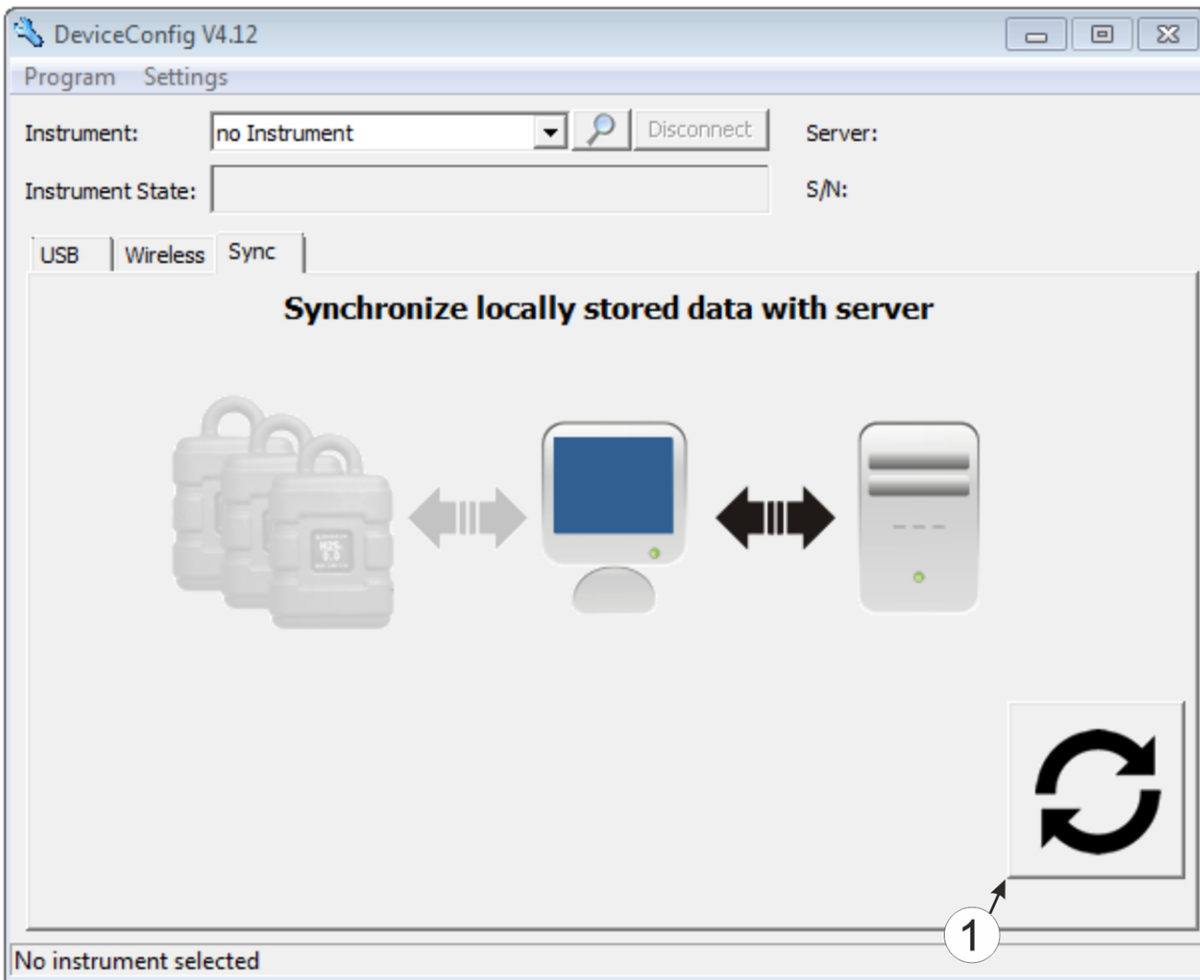
6. Wait until the DeviceConfig configuration program indicates that the synchronisation process is complete.



Synchronisation completed

7. Close the DeviceConfig configuration program.
8. Re-open the DeviceConfig configuration program as soon as your PC is connected to the Internet.

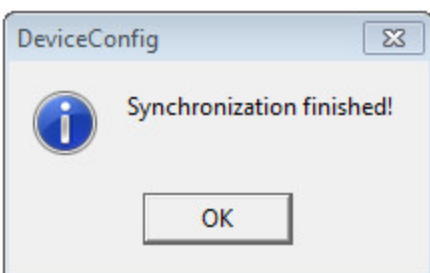
9. Select the "Sync" tab and click on the button to trigger synchronisation.



"Sync" tab without connection to a device

1 Button to trigger synchronisation During this process, the measurement data and configurations of all of the devices that the DeviceConfig configuration program has saved locally are synchronised with the myDatenet server.

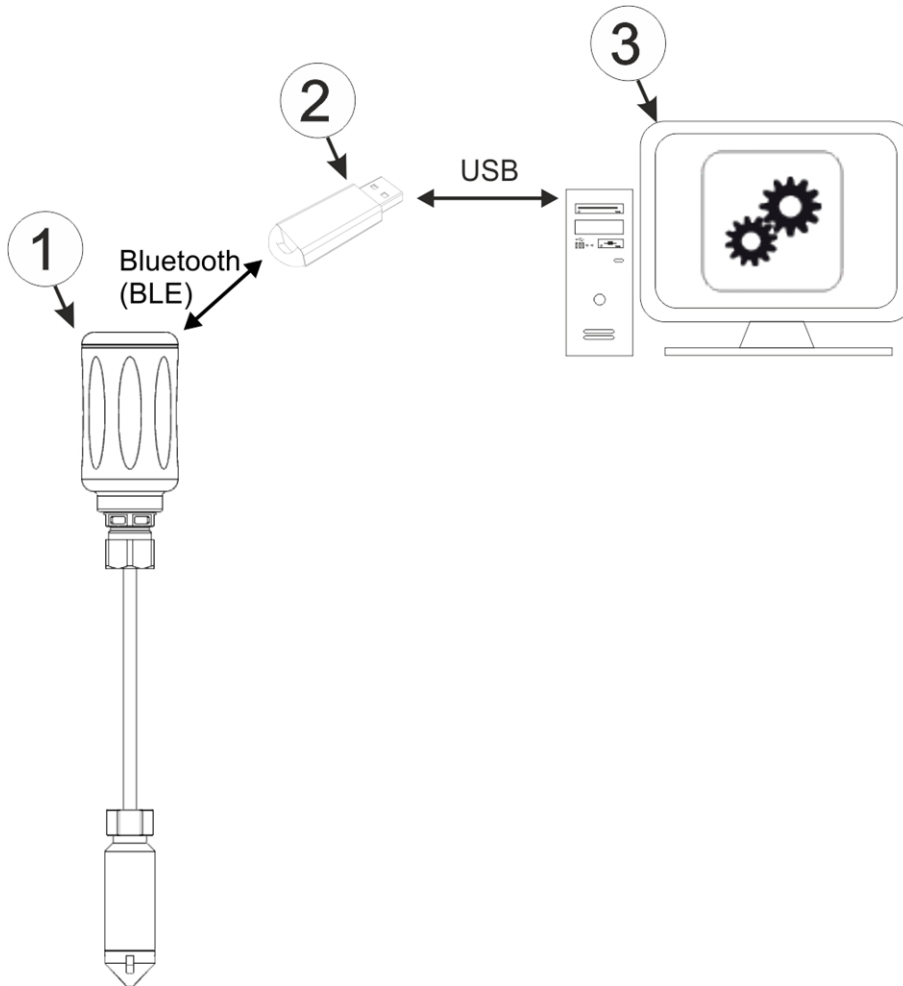
10. Wait until the DeviceConfig configuration program indicates that the synchronisation process is complete.



Synchronisation completed

11.6 Functional principle (communication with a BLE Gauge sensor module)

The following description particularly relates to the use of the DeviceConfig configuration program in conjunction with a BLE Gauge sensor module.



Functional principle

1 BLE Gauge sensor module	3 PC with the DeviceConfig configuration program installed
2 USB BLE-Adapter	

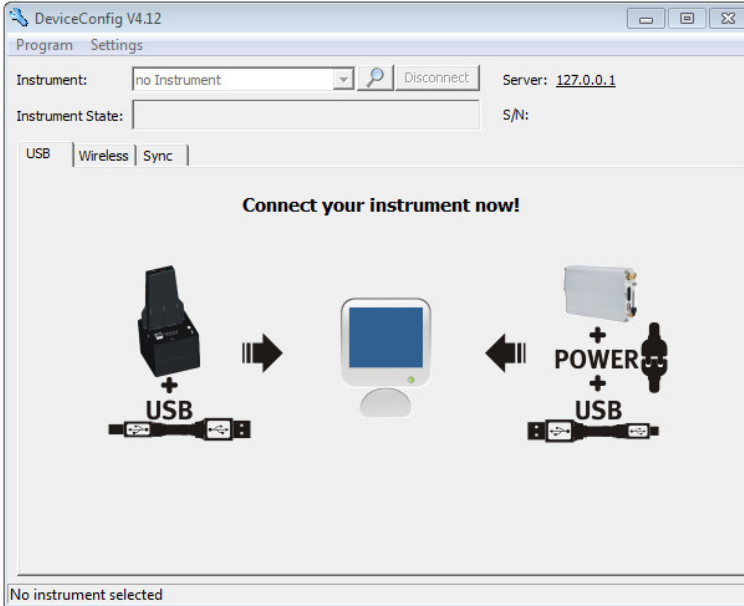
The DeviceConfig configuration program communicates wirelessly (Bluetooth Low Energy) with the BLE Gauge sensor module using the USB BLE-Adapter (300685). The functions provided with the DeviceConfig configuration program include:

- Update the firmware(see ""Firmware" tab" on page 130)

11.6.1 Establishing a connection to a sensor module with Bluetooth Low Energy interface

The USB BLE-Adapter (300685) is required to establish a connection to a sensor module with a Bluetooth Low Energy interface. First of all complete the steps described in chapter "Installing USB BLE-Adapter driver" on page 108 to install the drivers required to operate the USB BLE-Adapter .

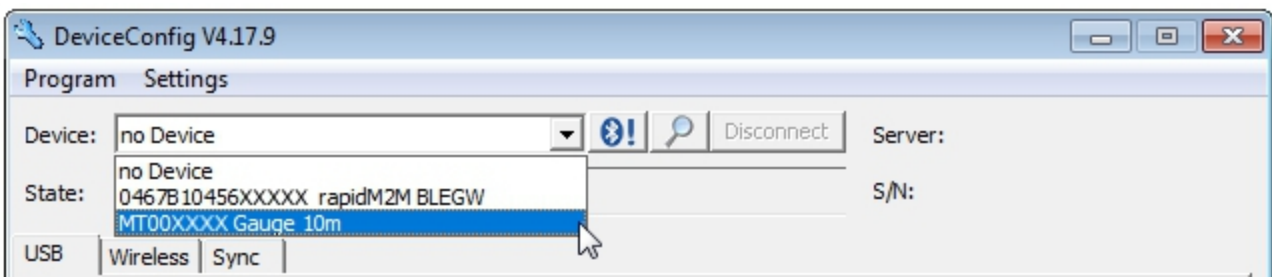
1. Connect the USB BLE-Adapter (300685) to the USB interface of your PC.
2. Start the DeviceConfig configuration program.



DeviceConfig

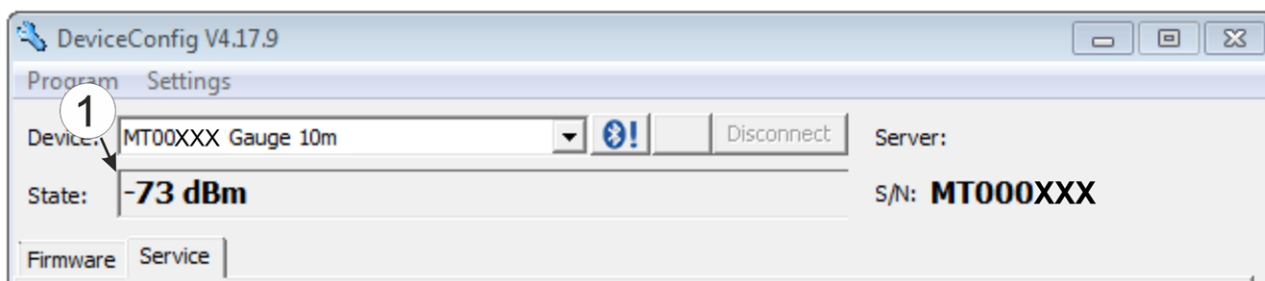
3. Select your sensor module based on the serial number from the list of devices found.

Important note: Sensor modules that are successfully coupled with a myDatalogGauge LTE-M are not displayed by the DeviceConfig .



List of devices found

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



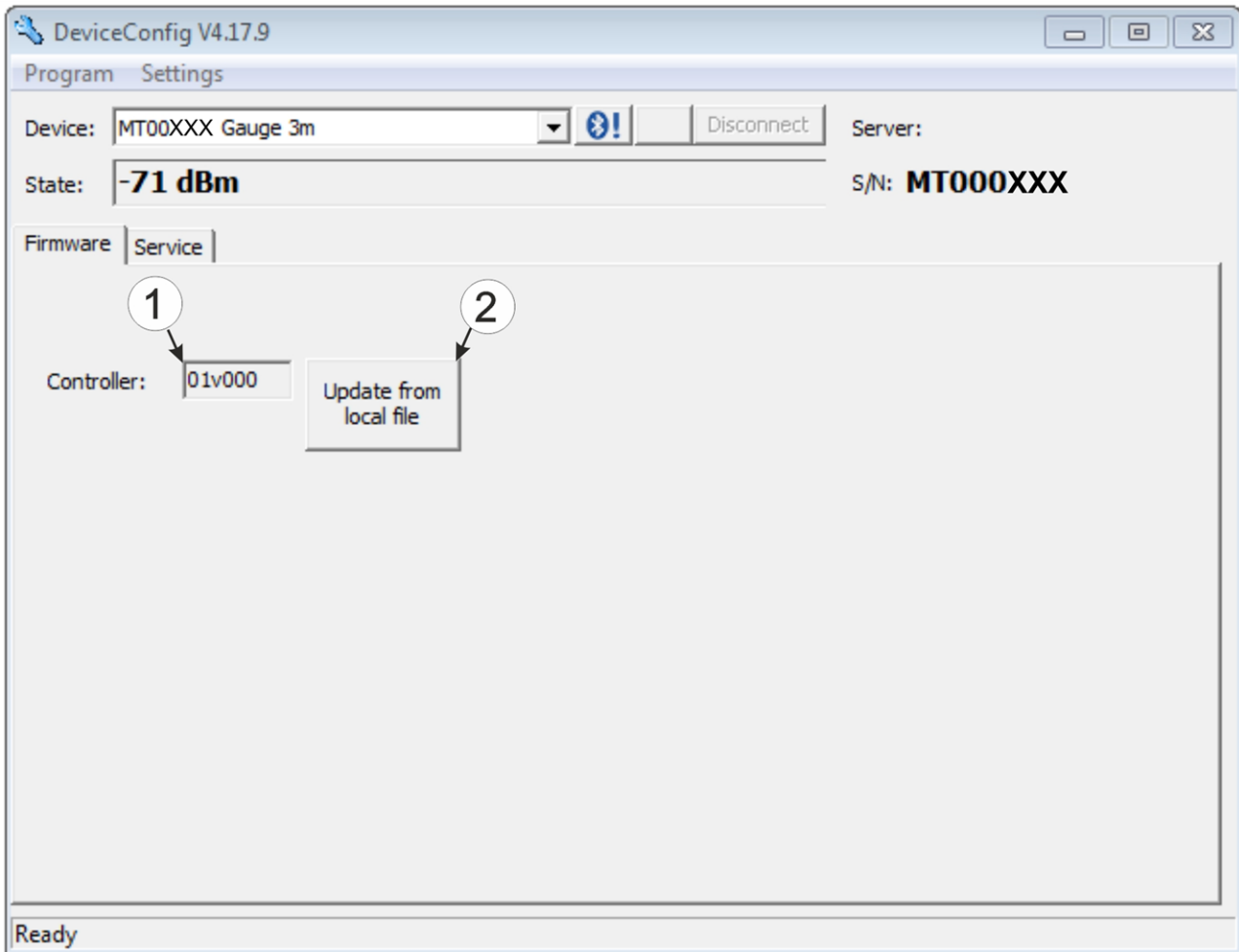
"Instrument" tab when actively connected to the sensor module

1	Radio signal strength [dBm]	
---	-----------------------------	--

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

11.6.2 "Firmware" tab

This tab enables firmware to be installed directly via the Bluetooth Low Energy interface.



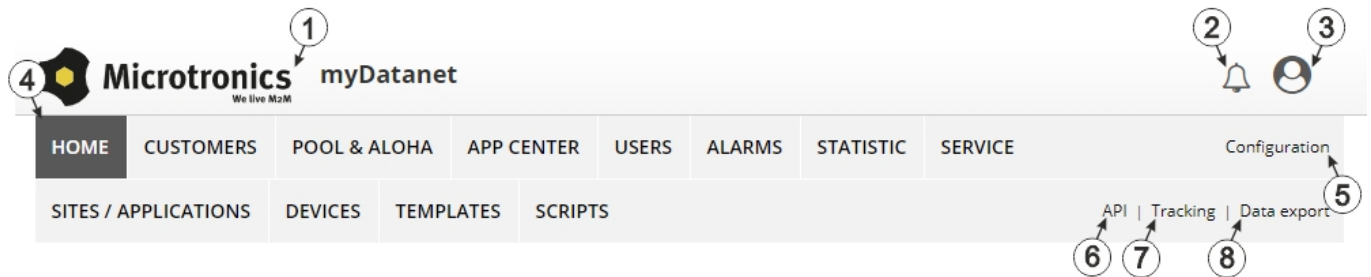
"Firmware" tab

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

Chapter 12 myDatanel server

Note: All of the screenshots show version 50v007 of the myDatanel server using the standard colour scheme. Newer versions may include minor changes to the appearance of the server.

12.1 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.

12.1.1 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.).

12.2 "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**

2015 Training **8**

Pages: **1** (Total 1)

4 **5** !! Training **6** Comment **7**

1234 City Street 1 **9**

10 **11**

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 134 or "Reports" on page 135).</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 135)</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>

12.3 "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	Details	Status	Actions
Site 1	4-Channel Data Logger: 047394065Dxxxxxx (9.9.2020 - 1.9.2022)	●	1.9.2022 09:45:48 SER UTC+02:00 01:49
Site 2	4-Channel Data Logger: 048A880857xxxxxx (9.9.2020 - 1.9.2022)	●	1.9.2022 09:42:01 SER UTC+02:00 01:45

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 135)
3	List of sites/applications (see "Site" on page 97)
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 135)
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.

12.3.1 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).

12.3.2 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).

12.4 Recommended procedure

12.4.1 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).

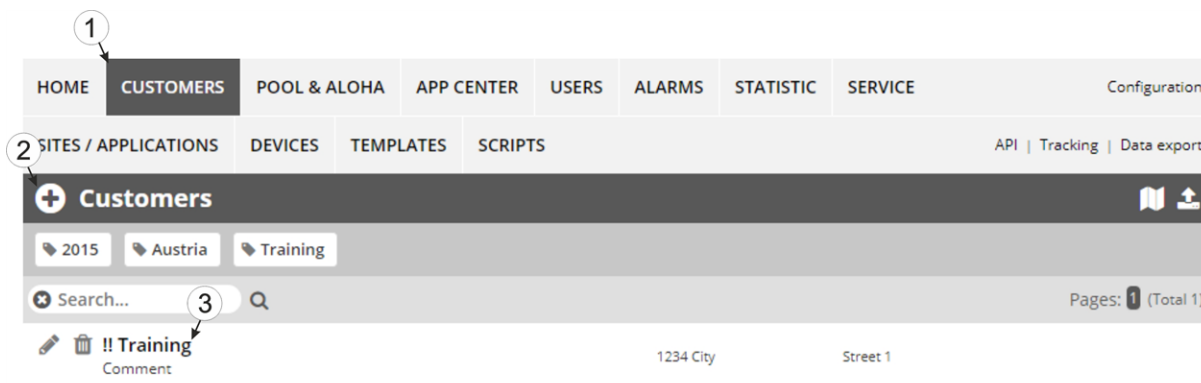
1. Log in via the web interface on the myDatanet server. You will receive the web address from your responsible sales partner.



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.

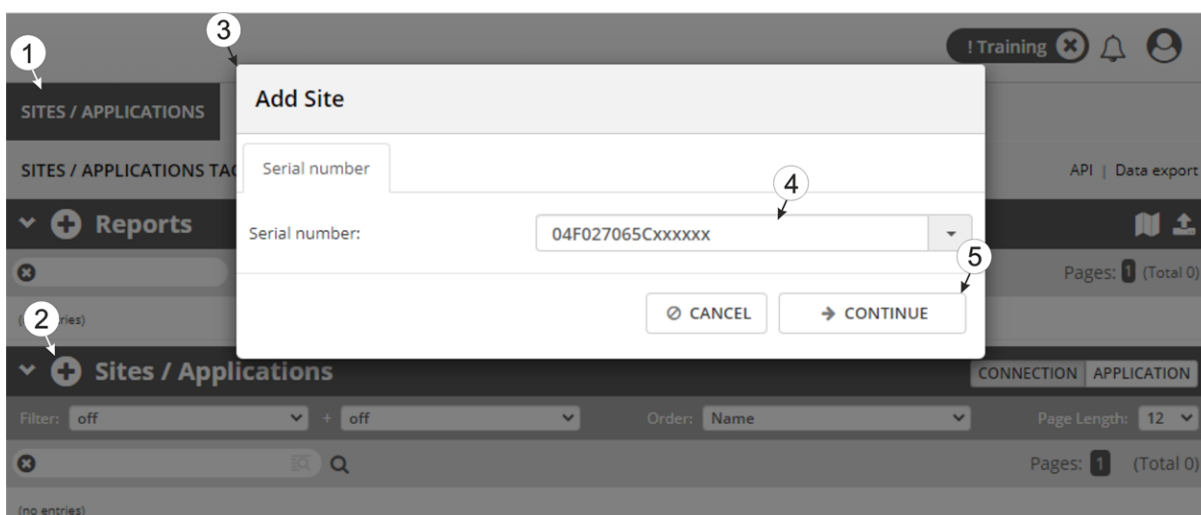


Selecting the customer

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.

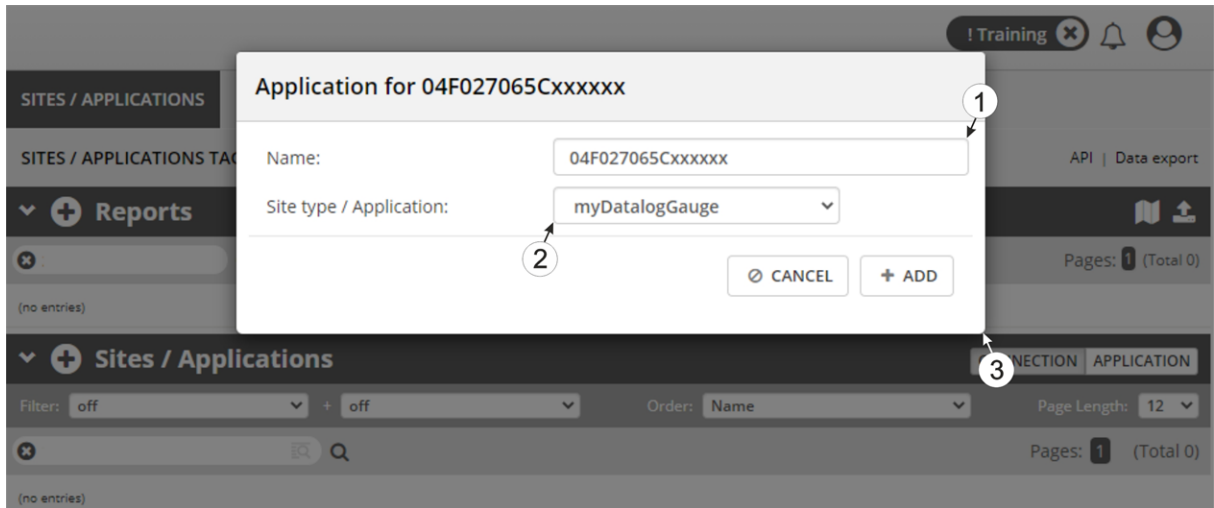
Note: The serial number is on the type plate of the device (see "Device labelling" on page 32)



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 13 API

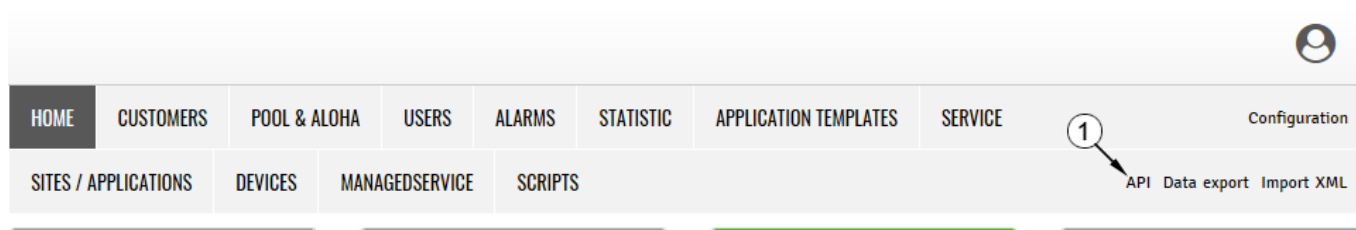
Important note: The relevant licences are required on the myDatanet server to use the API (Application Programming Interface). For future information contact your responsible sales partner.

13.1 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.

13.2 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

13.2.1 Overview

rapidM2M Playground

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

Chapter 14 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.

14.1 General maintenance

14.1.1 myDatalogGauge LTE-M

- Check myDatalogGauge LTE-M regularly for mechanical damage.
- Clean the myDatalogGauge LTE-M with a soft, moist cloth. Use a mild cleaning agent, if necessary.

Important note: Due to the electrostatic effects, the protective armour must not be rubbed with cloths in the Ex zone.

14.1.2 BLE Gauge and pressure sensor

- Check the BLE Gauge sensor module (incl. the pressure sensor) regularly for mechanical damage.
- Check all cables for mechanical damage at regular intervals.
- Clean the BLE Gauge sensor module (incl. the pressure sensor) with a soft, moist cloth. Use a mild cleaning agent, if necessary.

Important note: Due to the electrostatic effects, the BLE Gauge sensor module (incl. the pressure sensor) must not be rubbed with cloths in the Ex zone.

14.2 Maintenance of the myDatalogGauge LTE-M

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

The myDatalogGauge LTE-M itself does not require any cyclic maintenance work other than the actions listed in chapter "General maintenance" on page 141 and replacement of the batteries after max. 8 years. In the event of unfavourable environmental conditions (e.g. low temperatures), it may occur that the battery capacity is depleted before this period of time has elapsed. The remaining days until the next time the batteries need to be replaced are shown on the display of the myDatalogGauge LTE-M (see "Display" on page 80). The batteries must only be replaced by the manufacturer (see "Contact information" on page 165) or a certified service partner. The device must be returned in its original packaging for this purpose.

14.3 Maintenance of the BLE Gauge sensor module

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

The capacity of the installed battery is designed for a max. service life of 8 years (depending on the measurement cycle). In the event of unfavourable environmental conditions (e.g. low temperatures), it may occur that the battery capacity is depleted before this period of time has elapsed. To replace the battery, the BLE Gauge must be sent back to the manufacturer in the original packaging (see "Return" on page 52). The

remaining number of days until the battery of the BLE Gauge must be replaced is shown on the display of the myDatalogGauge LTE-M (see "Display" on page 80).

Chapter 15 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.



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 16 Troubleshooting and repair

16.1 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 (between myDatalogGauge LTE-M and PC)	<ul style="list-style-type: none"> • Reduce the distance between the myDatalogGauge LTE-M and USB BLE-Adapter , and try to avoid obstacles such as walls and similar. • Check the value displayed by the DeviceConfig for the wireless signal level [dBm]. To ensure a stable connection, this value should be higher than -90dBm , for example -85dBm (see "Connecting a Device via Bluetooth Low Energy" on page 112). • The capacity of the battery pack is virtually depleted.
Communication problems (between myDatalogGauge LTE-M and myDatenet server)	<ul style="list-style-type: none"> • Evaluate the error code shown on the display (see "Display" on page 80). • Load the device log from the myDatalogGauge LTE-M or the myDatenet server and use DeviceConfig for the report (see "Evaluating the device log" on page 156). • 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 80). • Load the device log from the myDatalogGauge LTE-M or the myDatenet server and use DeviceConfig for the report (see "Evaluating the device log" on page 156). • 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 measurement data and configurations have not been synchronised between the DeviceConfig configuration program and the myDatenet server. • The connection was aborted during the transmission, which is indicated by a time-out entry in the connection list (see "myDatenet Server Manual " 805002). Solution: Activate setup mode or wait for the next cyclical transmission. • The assignment of the device and site is not correct (see "Site" on page 97 or "Creating the site" on page 135).
Communication problems (between myDatalogGauge LTE-M and BLE Gauge)	<ul style="list-style-type: none"> • Reduce the distance between the myDatalogGauge LTE-M and BLE Gauge , and try to avoid obstacles such as walls and similar. • The capacity of the battery of the BLE Gauge is virtually depleted. Check on the display the number of remaining days until the next time the battery needs to be replaced (see "Display" on page 80). • Check that the correct serial number was specified when linking the BLE Gauge with the myDatalogGauge LTE-M (see "Measurement channels" on page 87). • When using "Automatic" mode, compare the displayed serial number and that on the type plate (see "Measurement channels" on page 87).

Problem	Cause/solution
Fill level is not plausible.	<ul style="list-style-type: none"> • Check whether there are any kinks in the cable between the BLE Gauge and the pressure sensor or whether the bend radius has fallen below the minimum permissible value of 60mm . • Check the pressure compensation membrane of the BLE Gauge for any impurities (see "Overview" on page 29). • Check whether the inlet openings of the pressure sensor are blocked (see "Overview" on page 29).
Alarm state of a measurement value was not detected.	<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 "myDatanet Server Manual " 805002). Solution: Activate setup mode or wait for the next cyclical transmission.
Alarm message was not sent although the alarm was signalled.	<ul style="list-style-type: none"> • Check the settings of the alarm schedule (see "myDatanet Server Manual " 805002). • Check the address data of the alarm schedule (see "myDatanet Server Manual " 805002).

16.2 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 165).
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 165).
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 165).
1192	FUTURE TIMESTAMP	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 165).
1200	MODEM ERROR			Modem error (see "Modem error" on page 152)
1201	MODEM NOT FOUND	---		Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 165).
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 165).
1281	ZLIB STREAMPROCESS ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 165).
1282	ZLIB STREAMFINISH ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 165).
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>
2000 - 2199	MODULE ERR	##	---	Module-specific critical error (see "Module-specific critical errors" on page 154)
2200 - 2399	MODULE WARNING	##	---	Module-specific uncritical error (see "Module-specific uncritical error" on page 154)
2400 - 2599	MODULE INFO	##	---	Module-specific information about the current operating state (see "Module-specific information regarding the current operating state" on page 155)
2600 - 2799	MODULE DEBUG	##	---	Reserved for extensions
3000 - 3099	SCRIPT ERROR	##	--	Internal system error Contact the manufacturer if the device log contains this error with the same parameter code several times (see "Contact information" on page 165).

16.2.1 Modem error

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
GPRS error				
1200	BEARER GPRS FAILED	-988	---	GPRS setup error <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	---	A network could not be found on the GSM900/1800 or on the GSM850/1900 band. <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

16.2.2 Module-specific critical errors

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2003	Sensor measurement failed	1	---	No communication with the BLE Gauge , that is assigned to measurement channel 1, is possible.
		2	---	No communication with the BLE Gauge , that is assigned to measurement channel 2, is possible.
2031	Sensor measurement failed: broken cable	1	---	The signal line between the pressure sensor and BLE Gauge (assigned to measurement channel 1) is interrupted.
		2	---	The signal line between the pressure sensor and BLE Gauge (assigned to measurement channel 2) is interrupted.
2090	Overflow recording list	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 165).

16.2.3 Module-specific uncritical error

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2200	Service interval gateway	0	---	The batteries of the myDatalogGauge LTE-M need to be replaced
2201	Service interval sensor	1	---	Battery of the BLE Gauge , that is assigned to measurement channel 1, needs to be replaced
		2	---	Battery of the BLE Gauge , that is assigned to measurement channel 2, needs to be replaced
2210	Reset BLE chip	0	---	Reset of the BLE chip after 3 unsuccessful scan attempts
		1	---	Reset of the BLE chip after a communication timeout during an existing connection
2220	Config value invalid	1	---	The transmission cycle is less than 10 min.
		2	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 165).
		3	---	The record interval is less than 30 sec.

16.2.4 Module-specific information regarding the current operating state

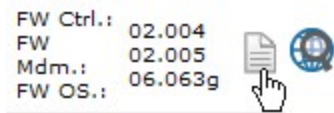
Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2400	Activation module has been removed	0	---	The activation modules has been removed from the sensor recess of the myDatalogGauge LTE-M .
	Activation module has been inserted	1	---	The activation module has been inserted in the sensor recess of the myDatalogGauge LTE-M .
2401	Serial number of first sensor module	##	---	Serial number of the BLE Gauge that is assigned to measurement channel 1 This entry is always duplicated in the device log. In the first entry, the parameter specifies the higher 16Bit of the serial number and the second entry specifies the lower 16Bit of the serial number.
2402	Serial number of second sensor module	##	---	Serial number of the BLE Gauge that is assigned to measurement channel 1 This entry is always duplicated in the device log. In the first entry, the parameter specifies the higher 16Bit of the serial number and the second entry specifies the lower 16Bit of the serial number.
2410	Solenoid switch was released again after being pressed	0	---	Solenoid switch was released again after being pressed.
	Solenoid switch pressed	1	---	Solenoid switch pressed
2420	Scan for BLE devices started	0	---	Scan for BLE devices has been started
2421	Number of scanned BLE devices	##	---	BLE devices were found. The parameter specifies the number of BLE devices found.
2422	Sensor not connected, start search	1	---	Search for the BLE Gauge assigned to measurement channel 1, was started again as the cyclic check determined that the connection to the BLE Gauge is no longer available.
		2	---	Search for the BLE Gauge assigned to measurement channel 2, was started again as the cyclic check determined that the connection to the BLE Gauge is no longer available.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2430	Measurement OK	1	---	Indicates that the BLE Gauge assigned to measurement channel 1, provided a valid measurement value again after at least one measurement failed.
		2	---	Indicates that the BLE Gauge assigned to measurement channel 2, provided a valid measurement value again after at least one measurement failed.

16.3 Evaluating the device log

16.3.1 Evaluating the device log on the myDatanet server

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



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

16.3.2 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 myDatalogGauge 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 17 Spare parts and accessories

17.1 Assembly sets

Description	Quantity	Order number
Niro shackle	1	206.325
BLE Gauge mounting fixture	1	300881

17.2 Antennas

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

17.3 Sensor modules

Description	Quantity	Order number
BLE Gauge	1	300893

17.4 Pressure sensors

Note: The required pressure sensor with the relevant measurement range must be specified when ordering the BLE Gauge . The pressure sensor cannot be replaced by the user.

Description	Measurement range	Quantity	Order number
BLE Gauge pressure sensor 0-3m 9W	0-3m	1	300871
BLE Gauge pressure sensor 0-1m 9W	0-1m	1	300872
BLE Gauge pressure sensor 0-10m 9W	0-10m	1	300891

17.5 Other accessories

Description	Quantity	Order number
MDN Magnet	1	206.803
USB extension cable USB-A/USB-A 1,8m	1	206.664
DeviceConfig	1	300264
BLE Gateway MDN Protection casing	1	300662
USB BLE-Adapter	1	300685
Activation module (BLE ATM)	1	300962

Chapter 18 Document history

Rev.	Date	Changes
01	16.04.2021	First version
02 (1/2)	30.08.2022 (1/2)	<p>Hardware version 3.0</p> <p><i>The electronic system has been modified to meet the requirements for the certification in accordance with ATEX Zone 1.</i></p> <p><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></p> <p><i>The Bluetooth module has been replaced with a new module that support the "Bluetooth 5.0 Low Energy" standard.</i></p> <p><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 "BLE & LTE-M Gateway ATEX " on page 13 <i>1st amendment to the EC-type examination certificate added</i></p> <p>Chapter "Specifications" on page 23 <i>Information on the Bluetooth Low Energy module 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> <i>Specification of the battery life time changed from 5 to 8 years.</i></p> <p>Chapter "General product information" on page 31 <i>Name of the smartphone app added</i></p> <p>Chapter "Device labelling" on page 32 <i>Type plate updated</i></p> <p>Chapter "Functional principle" on page 37 <i>Name of the smartphone app added</i></p> <p>Chapter "Technical details about the Bluetooth Low Energy interface" on page 68 <i>The Bluetooth module has been replaced with a new module that support the "Bluetooth 5.0 Low Energy" standard.</i> <i>Name of the smartphone app added</i></p> <p>Chapter "Display" on page 80 <i>Explanation of the display of the current charge state added</i></p> <p>Chapter "Site" on page 84 <i>Explanation of the field "Applikation" added, which indicates the IoT application currently installed on the site.</i></p> <p>Chapter "FTP export settings" on page 102 <i>Chapter added</i></p> <p>Chapter "Measurement instrument" on page 103 <i>Explanation of the "Modem version" and "OS version" fields that are no longer used removed</i></p>

Rev.	Date	Changes
02 (2/2)	30.08.2022 (2/2)	<p>Chapter "rapidM2M Playground " on page 139 Screenshot and description of the rapidM2M Playground updated (Button "System Console" has been removed, button for the global settings has been added)</p> <p>Chapter "Log entries and error codes" on page 147 Explanation of the error codes "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" and "SHT2X RH RAW" added</p> <p>Chapter "Glossary" on page 163 Explanation of the terms "Hardware ID string", "Product revision" und "rapidM2M timestamp" added</p>
03 (1/2)	22.08.2023 (2/2)	<p>Hardware version 5.0 The 2G/3G modem (SARA-U201 ATEX) has been replaced by a LTE-M/NB-IoT modem (nRF9160). The circuit to switch on/off the modem has been adapted to the new LTE-M/NB-IoT modem (nRF9160). Adaptation of the internal power supply to the new LTE-M/NB-IoT modem (nRF9160).</p> <p>Chapter "Declaration of conformity" on page 9 Declaration of conformity of the BLE & LTE-M Gateway ATEX added</p> <p>Chapter "BLE & LTE-M Gateway ATEX " on page 13 2nd amendment to the EC-type examination certificate added</p> <p>Chapter "Specifications" on page 23 Specification of the weight corrected from 657g to 730g Specification of the supported frequency bands adapted to the LTE-M/NB-IoT modem (nRF9160) used from hardware version 5.0.</p> <p>Chapter "Ex protection" on page 25 Note removed indicating that only antennas tested and approved by the manufacturer may be used. Note regarding the cleaning adapted. It is permissible to clean the device using a damp or electrostatically dissipative cloth. Note added indicating that the device has to be protected from UV radiation.</p> <p>Chapter "Block diagram" on page 30 The 2G/3G modem (SARA-U201 ATEX) has been replaced by a LTE-M/NB-IoT modem (nRF9160).</p> <p>Chapter "Device labelling" on page 32 Type plate adapted to hardware version 5.0</p> <p>Chapter "Functional principle" on page 37 Specification of the used mobile radio standard corrected from 2G/3G to M1/NB1/NB2</p> <p>Chapter "Setup mode" on page 43 Link and QR code referring to the How-To-Video "Activating the setup mode" added.</p>

Rev.	Date	Changes
03 (2/2)	22.08.2023 (2/2)	<p>Chapter "Automatic switching between the mobile radio technologies "LTE-M" and "NB-IoT"" on page 48 <i>Chapter added</i></p> <p>Chapter "Inserting the activation module" on page 65 <i>Link and QR code referring to the How-To-Video "Inserting the activation module" added.</i></p> <p>Chapter "Installing the myDatalogGauge LTE-M " on page 54 <i>Note added indicating that metallic mounting fixtures must be grounded.</i></p> <p>Chapter "Typical influences on the signal quality" on page 66 <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 and the myDatatnet server" on page 69 <i>Link and QR code referring to the How-To-Video "Activating the setup mode" added.</i></p> <p>Chapter ""Sites / Applications" area at customer level" on page 134 <i>Screenshots of the user interface of the myDatatnet server adapted to version 50v007</i></p> <p>Chapter "Log entries and error codes" on page 147 <i>Explanation of the error codes "MODEM NOT FOUND" and "ACCU 0 E2PROM ERROR" added.</i></p>

Chapter 19 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 myDatanet servers. When installing and updating IoT apps the myDatanet server access the app models provided in the rapidM2M Store . The developer of the respective app model defines which myDatanet servers are allowed to access an app model via the rapidM2M Studio .

rapidM2M timestamp

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

Chapter 20 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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