User manual myDataconC3 MBM

installed on myDatalogC3xx

Valid from:

- **Firmware version: 02v009 (C32x) / 01v024 (C33x)**
- **App. version: 12v000**
- **Server version: 54v00x**
- **Hardware version: 1.2 (C32x M1/NB1 EU, C33x 2G/3G/4G World) / 1.7 (C32x 2G/4G World)**



301574 | Rev.03

Microtronics

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Chapter 2 Declarations of conformity

2.1 myDatalogC32x M1/NB1 EU

EU-Konformitätserklärung
EU Declaration of Conformity / Déclaration de conformité UE

Produktbezeichnung: Product: Désignation du produit:	Stationäres, kompaktes, frei programmierbares Gerät zur Erfassung, Verarbeitung und Übertragung von Signalen und Geräteinformationen
Type - Gültig ab: Type code - Valid from: Type - Valide à partir de:	**myDatalogC32x M1/NB1 EU - Rev. 1.2**

Microtronics

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

Das bezeichnete Produkt stimmt mit den folgenden Europäischen Richtlinien überein.
The designated product is in conformity with the following european directives.
Le produit décrit est conforme aux directives européennes suivantes.

		Europäische Norm	
(2014/30/EU)	**EMC Directive**		
		EN61000-4-3 (testlevel 3) EN55032 (class A) EN61326-1	
(2014/35/EU)	**LVD Directive**		
		EN61010-1	
(2014/53/EU)	**RED Directive**		
	Safety & Health 3.1a	EN62368-1 EN62368-1+A11:2017 EN62311	
	EMC 3.1b	EN301489-1 V2.2.3 EN301489-19 V2.2.1 EN301489-52 V1.1.0	
	Radio spectrum efficiency 3.2	EN301908-1 V15.2.1 EN301908-13 V13.2.1 EN303413 V1.2.1	
	Cybersecurity 3.3	EN18031-1	
(2015/863/EU)	**RoHS Directive**		
	Prevention 4.1	EN IEC 63000	

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Martin Mayer, General Managing Director
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Ruprechtshofen, den 15.07.2025
Ort und Datum der Ausstellung
Place and date of issue
Lieu et date d'établissement

2.2 myDatalogC32x 2G/4G World

EU-Konformitätserklärung

EU Declaration of Conformity / Déclaration de conformité UE

Produktbezeichnung:
Product:
Désignation du produit:

Stationäres, kompaktes, frei programmierbares Gerät zur Erfassung, Verarbeitung und Übertragung von Signalen und Geräteinformationen

Type - Gültig ab:
Type code - Valid from:
Type - Valide à partir de:

myDatalogC32x 2G/4G World- Rev. 1.7

Microtronics

Hersteller:
Manufacturer:
Fabricant:

Microtronics Engineering GmbH
Hauptstrasse 7
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Das bezeichnete Produkt stimmt mit den folgenden Europäischen Richtlinien überein.
The designated product is in conformity with the following european directives.
Le produit décrit est conforme aux directives européennes suivantes.

		Europäische Norm	
(2014/30/EU)	**EMC Directive**		
		EN61000-4-3 (testlevel 3) EN55032 (class A) EN61326-1	
(2014/35/EU)	**LVD Directive**		
		EN61010-1	
(2014/53/EU)	**RED Directive**		
	Safety & Health 3.1a	ENIEC62311 ENIEC62368-1+A11:2020 EN50665	
	EMC 3.1b	EN301489-1 V2.2.3 EN301489-52 V1.2.1	
	Radio spectrum efficiency 3.2	EN301511 V12.5.1 EN301908-1 V15.2.1 EN301908-13 V13.2.1	
	Cybersecurity 3.3	EN18031-1	
(2015/863/EU)	**RoHS Directive**		
	Prevention 4.1	EN IEC 63000	

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

2.3 myDatalogC33x WIFI/2G/3G/4G World

EU-Konformitätserklärung

EU Declaration of Conformity / Déclaration de conformité UE

Produktbezeichnung:
Product:
Désignation du produit:

Stationäres, kompaktes, frei programmierbares Gerät zur Erfassung, Verarbeitung und Übertragung von Signalen und Geräteinformationen

Type :
Type code:
Type:

myDatalogC3xx 2G/3G/4G World

Gültig ab:
Valid from:
Valide à partir de:

Rev. 1.2

Microtronics

Hersteller:
Manufacturer :
Fabricant:

Microtronics Engineering GmbH
Hauptstrasse 7
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Das bezeichnete Produkt stimmt mit den folgenden Europäischen Richtlinien überein.
The designated product is in conformity with the following european directives.
Le produit décrit est conforme aux directives européennes suivantes.

		Europäische Norm	
(2014/30/EU)	**EMC Directive**		
		EN61000-4-3 (testlevel 3) EN55032 (class A) EN61326-1	
(2014/35/EU)	**LVD Directive**		
		EN61010-1	
(2014/53/EU)	**RED Directive**		
	Safety & Health 3.1a	EN62368-1 EN62368-1+A11:2017 EN62311 EN62479	
	EMC 3.1b	EN301489-1 V2.2.3 EN301489-52 V1.1.0	
	Radio spectrum efficiency 3.2	EN301511 V12.5.1 EN301908-1 V13.1.1 EN301908-2 V13.1.1 EN301908-13 V13.1.1 EN300328 V2.1.1	
(2015/863/EU)	**RoHS Directive**		
	Prevention 4.1	EN IEC 63000	

Ruprechtshofen, den 22.09.2023

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

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Chapter 3 Specifications

Voltage supply	9...32 VDC (+/-10 %) Additional information is provided in "Technical details about the energy supply" on page 56.
Power consumption	typ. 5 W (without sensors) max. 9 W (without sensors)
Integrated rechargeable buffer battery	Rechagreable Li-Po battery with 500 mAh for sending a notification in the event of a power failure. Additional information is provided in "Technical details about the integrated rechargeable buffer battery" on page 54.
Housing	Material: Lexan/Noryl Weight: 190 g Degree of protection: IP20 / IP40 (connection area/operating area) Dimensions (WHD): 70 x 92 x 63 mm (without antenna)
Operating temperature	-20...+60 °C
Air humidity	15...90 % RH non-condensing
Storage temperature	-40...+85 °C
Charging temperature (rechargeable buffer battery)	0 ...+45 °C
Display	RGB-LED to indicate the operating state and error codes
Operation	Button to trigger • a new connection establishment if the online connection has been aborted, • a complete device synchronisation with established online connection or • a connection establishment in interval mode. In all cases, the server assignments are also checked.
System time	Hardware real-time clock with its own buffer battery (service life >10 years) and automatic time synchronisation with the server. Additional information is provided in "Technical details about the system time" on page 56.
Antenna connector	1 x SMA-F for mobile network

Universal inputs	3 x analogue or digital Modes: • 0/0...20 mA: Resolution 6,36 µA, max. 23,96 mA, load 96 Ω • 0...2 V: Resolution 610 µV, max. 2,5 V, load 10k086 • 0...10 V: Resolution 7,97 mV , max. 32 V, load 4k7 • Digital: low <0,99 V, high >2,31 V, max. 32 V, load 4k7 • Day counter: pulse length min. 1 ms, max. 32 V, load 4k7 • Interval counter: pulse length min. 1 ms, max. 32 V, load 4k7 Additional information is provided in "Technical details about the universal inputs" on page 51.
Modbus RTU (Client, formerly master)	Number of modbus channels that can be processed: • Inputs: 20 • Outputs:12 1 x RS485 (2-wire) • Baud rate: 2400-115200 • Stop bits: 1, 2 • Parity: N, E, O • Data bits: 7, 8 • Terminal resistance: off, 120 Ω • Pull up on RS485 B: off, 390 Ω • Pull down on RS485 A: off, 390 Ω Additional information is provided in "Technical details about the RS485 interface" on page 52.
Outputs	2 x relay: • U_{max}: 32 V • I_{max}: 2 A Additional information is provided in "Technical details about the outputs" on page 53.
USB interface	1 x mini-B USB 2.0 slave for the connection to a PC. The DeviceConfig configuration program must be installed on the PC to enable communication with the myDataconC3 MBM . Additional information is provided in "Technical details about the USB interface" on page 53.
Data memory	Internal flash memory for up to 18.832 measuring cycles Additional information is provided in "Functionality of the internal data memory" on page 38.
Data type	f32 (32Bit floating point)

Data transmission	M1/NB1 EU (myDatalogC32x M1/NB1 EU): • LTE B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B28, B66 (M1) • LTE B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66 (NB1/NB2) 2G/4G World (myDatalogC32x 2G/4G World): • 2G GPRS 900MHz / 1800MHz • 2G GPRS 850MHz / 1900MHz • LTE FDD B1, B2, B3, B4, B5, B7, B8, B12, B13, B17, B18, B19, B20, B25, B26, B28, B66 • LTE TDD B34, B38, B39, B40, B41 2G/3G/4G World and LAN (myDatalogC33x WIFI/2G/3G/4G World): • 2G GPRS 900MHz / 1800MHz • 2G GPRS 850MHz / 1900MHz • UMTS B1, B2, B5, B8 • LTE FDD B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B26, B28 • LTE TDD B38, B39, B40, B41 • LAN (10/100 Ethernet)
SIM	The myDataconC3 MBM is equipped with an integrated SIM chip.

Chapter 4 General specifications

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

> ***Note:*** *The specifications in this manual are valid as of the versions listed on the front page. Revised versions of this manual are available via the manufacturer's website (see "Contact information" on page 169).*

4.1 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.

4.2 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.

4.3 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.

4.4 Safety instructions

For the connection, commissioning and operation of the myDataconC3 MBM , 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 product is not approved for use outdoors as it is not protected from penetrating moisture and only provides minimal protection against the ingression of dust.*

4.4.1 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.*

4.4.2 General safety instructions



WARNING:
Hazardous electric voltage can cause electric shock or burns. Always switch off all of the used power supplies for the device before installing it, completing any maintenance work or resolving any faults.



WARNING:
Ensure that the device is fully deactivated and cannot activate automatically when sending/returning it as air freight. Information on this is provided in chapter "Storage of the product" on page 25. If you have any unanswered questions, contact the manufacturer (see "Contact information" on page 169).



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



WARNING:
Never use this device in potentially explosive atmospheres and in the vicinity of highly combustible areas (fuel stations, storage areas for combustible material, chemical plants and detonation sites) or in the vicinity of flammable gases, vapours or dust.

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

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



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

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

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

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

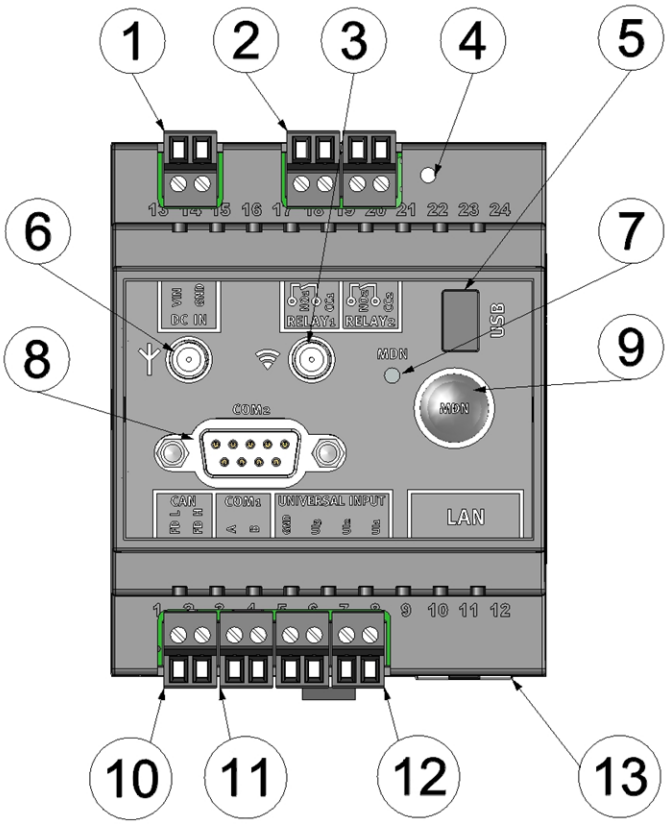
4.4.3.1 Safety and precautionary measures for devices with mobile network modem

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

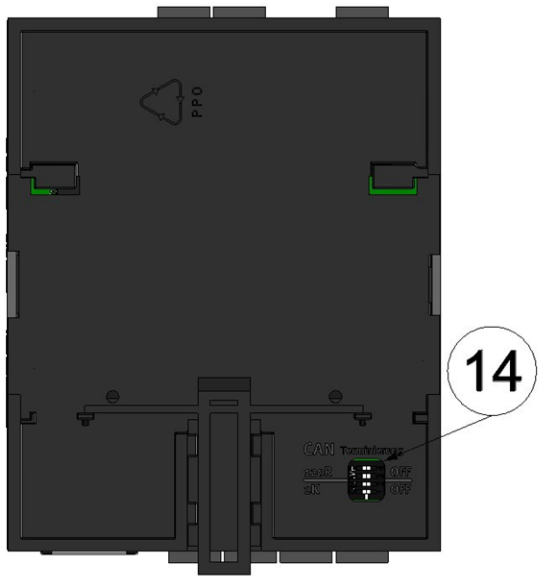
4.4.3.2 Safety measures for installing the antenna

- 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 be extended outside protected buildings and must be protected against lightning strikes.
- The voltage supply must be switched off before replacing the antenna.

4.5 Overview



Front of the myDatalogC3xx

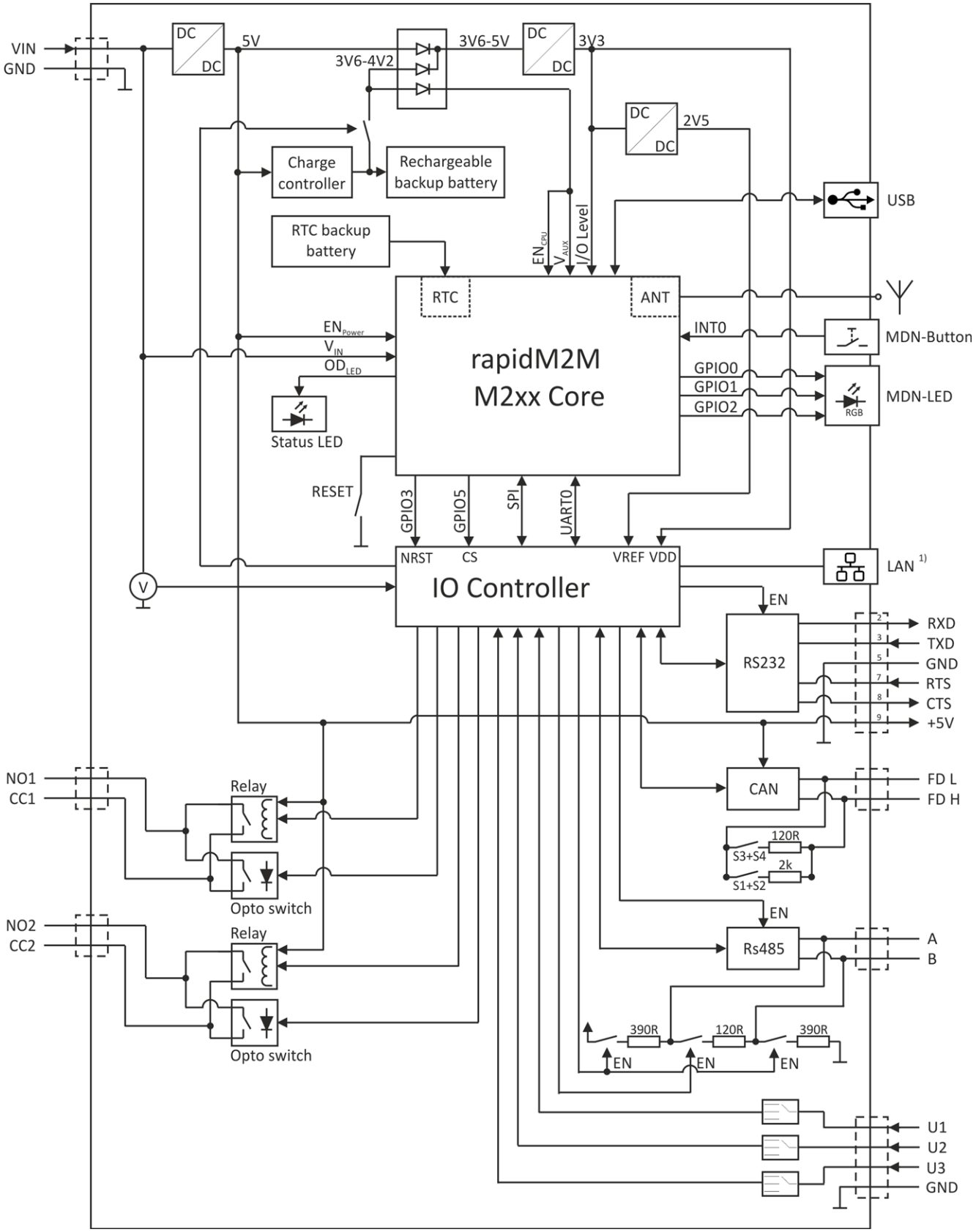


Rear of the myDatalogC3xx

1	Supply (V IN, GND)	**8**	Reserved for extension
2	Relay 1-2	**9**	Button to trigger another connection establishment or a complete device synchronisation
3	Reserved for extensions	**10**	Reserved for extension
4	Reset button	**11**	Com1 (RS485)
5	Mini-B USB (only for debugging and device logic update)	**12**	Universal input 1-3 (incl. GND)
6	Connector for the mobile network antenna	**13**	LAN interface [1)]
7	Status LED	**14**	Reserved for extension

[1)] can only be used with variant myDatalogC33x WIFI/2G/3G/4G World

4.6 Block diagram



Block diagram of the myDatalogC3xx

1) can only be used with variant myDatalogC33x WIFI/2G/3G/4G World

4.7 Limitations of use

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

> ***Note:*** *Any use of the device that is not specified in chapters "Intended use" on page 22, "Type of use" on page 22 and "Field of application" on page 22 is not permitted. This also applies if the device is used in a way that is not explicitly excluded as unauthorised in the chapter "Unauthorised use" on page 23. The manufacturer is not liable for any damage or consequential damage resulting from unauthorised use. The risk is borne solely by the operator.*

4.7.1 Intended use

The stationary, compact measurement system is designed for determining, processing and transferring data read out of sensors, machines or control units via the modbus interface, and to write back information into these sensors, machines or control units. In addition, analogue and digital signals can be determined, processed and transferred. The device requires a continuous power supply. The measured and recorded data is stored on a non-volatile memory medium. This stored data is sent via the mobile network to a central server for further processing. The measurement system is equipped with an integrated SIM chip for establishing a mobile connection. The device is designed solely for operation within the limits specified in chapter "Specifications" on page 13.

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

4.7.2 Type of use

Installation, commissioning and maintenance may only be completed by qualified personnel (see "Personnel requirements" on page 27). The device is only approved for use in areas without an explosive atmosphere.

4.7.3 Field of application

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

4.7.4 Unauthorised use

Note: *The following describes the types of use of the device that are not permitted. This is not a complete list, but rather a list of reasonably foreseeable misuse. Only the use specified in chapters "Intended use" on page 22, "Type of use" on page 22 and "Field of application" on page 22 is permitted. The manufacturer is not liable for any damage or consequential damage resulting from unauthorised use. The risk is borne solely by the operator.*

- The device must not be exposed to direct sunlight or direct weather influences (rain, snow, etc.).
- The device must not be used outdoors without a suitable enclosure.
- The device must not be mounted hanging from the connection cable.
- The device must not be operated without an antenna.
- When using antennas with a connection cable, neither the device nor the antenna may be suspended from the antenna cable.
- Stranded wires must not be connected to the connection terminals of the device without crimped wire end sleeves.
- Only a single cable may be inserted into a connection terminal. However, two stranded cables may be combined using a twin wire end sleeve and connected together to the connection terminal.
- No traction may be exerted on the connection cables.
- The relays of the device must not be connected to 230 V. The relay contacts are not designed for such voltage.

4.8 General product information

The system is a compact, stationary measurement system designed for determining, processing and transferring analogue and digital signals as well as data read out of sensors, machines and control units via the modbus interface. For control and regulating tasks, the measurement system is not only equipped with 2 relays for the direct control of an actuator, but it also allows for the option to transmit data to sensors, machines or control units via the modbus interface. The measurement system consists of a data logger (see "Suitable data loggers" on page 159) with installed IoT application "myDataconC3 MBM". To simplify matters, the measurement system will be referred to as "myDataconC3 MBM " hereinafter. The myDataconC3 MBM requires a constant energy supply. However, the data logger has an integrated rechargeable buffer battery which allows sending a notification in the event of a voltage supply failure (see "Technical details about the integrated rechargeable buffer battery" on page 54).

The following interfaces are available for determinig measurement data:

- 3 universal inputs that can be operated in various analogue and digital modes
- A RS485 interface configured as modbus client (formerly master) in operating mode "RTU"

The RS485 interface is used for communication with the modbus servers (formerly slaves), i.e. with sensors, machines or control units. To record the data read out of the sensors, machines or control units using modbus, 20 measurement channels are available. Data or commands can also be sent back to the sensors, machines or control units via modbus. To do so, 12 output channels are available, of which the setpoints can be configured via the input mask or API of the myDatanet server.

In addition, 2 relays are available to output control commands. The setpoints for the relays can be determined wirelessly from a central point. The measurement data of all inputs are recorded in an adjustable interval (see "Basic settings" on page 99) and together with the states of all outputs they are temporarily stored in an internal data memory. Since the default connection type for the myDataconC3 MBM is "online" mode, the determined data is transferred immediately to the myDatanet server. If the alternative connection type "interval" is used, the recorded data is transmitted to the myDatanet server in a freely selectable interval. In both cases, this connection is also used to transfer the configuration to the measurement system. For this

purpose the device is equipped with an integrated SIM chip. To manage and display the transferred data, the central myDatanet server offers various possibilities. Further information is provided in the user manual of the server ("myDatanet Server Manual " 805002). The measurement system is also configured via the interface of the relevant myDatanet server.

4.9 Device labelling

The specifications in this user manual apply exclusively to the measurement system "myDataconC3 MBM ", which is composed of the following components:

- IoT application "myDataconC3 MBM"
- Data logger "myDatalogC3xx"

The type plate of the myDatalogC3xx is located on the right side of the device and contains the following specifications:

- Type designation
- Serial number
- MAC address of the LAN interface [1)]
- MAC address of the WiFi interface [1)]
- Item number
- Voltage supply specifications
- Week and year of production
- Country list profile of the SIM chip
- Environmental conditions during operation
- Degree of protection
- Hardware revision
- Name and address of the manufacturer
- Logo for the EU WEEE Directive
- CE marking

[1)] Only if a myDatalogC33x WIFI/2G/3G/4G World is used as data logger.

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.



Type plate myDatalogC3xx

Note: *This symbol indicates the country list profile of the SIM chip installed in the device.*

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

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

4.10 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.

4.11 Storage of the product

To safeguard the myDataconC3 MBM , ensure that all relevant data was transferred to the myDatanet server. If necessary, initiate a transmission directly on the device via the button (see "Button" on page 62) and then check again that all of the relevant data has been transferred. This particularly applies to the "Interval" connection type. With the "Online" connection type, the determined measurement data is immediately transferred to the myDatanet server. The data on the server should always be up-to-date and the device can be switched off at any time. It is however still possible that, dispite the mechanisms for detecting interruptions of the online connection and establishing a new connection implemented in the device, the myDataconC3 MBM is temporarily not connected to the myDatanet server. This state is indicated via the status LED which is not constantly green (see "Status LED" on page 63). In this case, initiate a transmission directly on the device using the button (see "Button" on page 62) and then check again to see whether all of the relevant data has now been transferred. Then disconnect the myDataconC3 MBM from the supply voltage. If possible, switch off the supply voltage before disconnecting the cables from the VIN and GND terminals (see "Connection of the sensors, actuators and the supply" on page 46). The colour of the status LED will then change from green to magenta (online mode active) or from "off" to magenta (interval mode active) to indicate that the supply has switched to the internal rechargeable buffer battery. As soon as the myDataconC3 MBM has been logged out correctly from the mobile network, the status LED switches off and the remaining cabling as well as the antenna can be removed. The duration of the timespan until the status LED switches off depends on the determined "Alarm/Shutdown delay" in the confguration section "basic settings" (see "Basic settings" on page 99) and on whether an alarm notification should be sent. Store all components of the myDataconC3 MBM in the original packaging.

The configuration and most recently determined data are retained. The system time also continues to run thanks to the hardware real-time clock equipped with its own buffer battery. This means that a valid time basis is available immediately following recommissioning (see "Technical details about the system time" on page 56).

4.12 Warranty

The device has been functionally tested before delivery. If it is used as intended (see "Intended use" on page 22) and the operating instructions, the applicable documents (see "Applicable documents " on page 57) 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 26.*
>
> ***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.*

4.13 Disclaimer

The manufacturer assumes no liability

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

4.14 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.

4.15 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

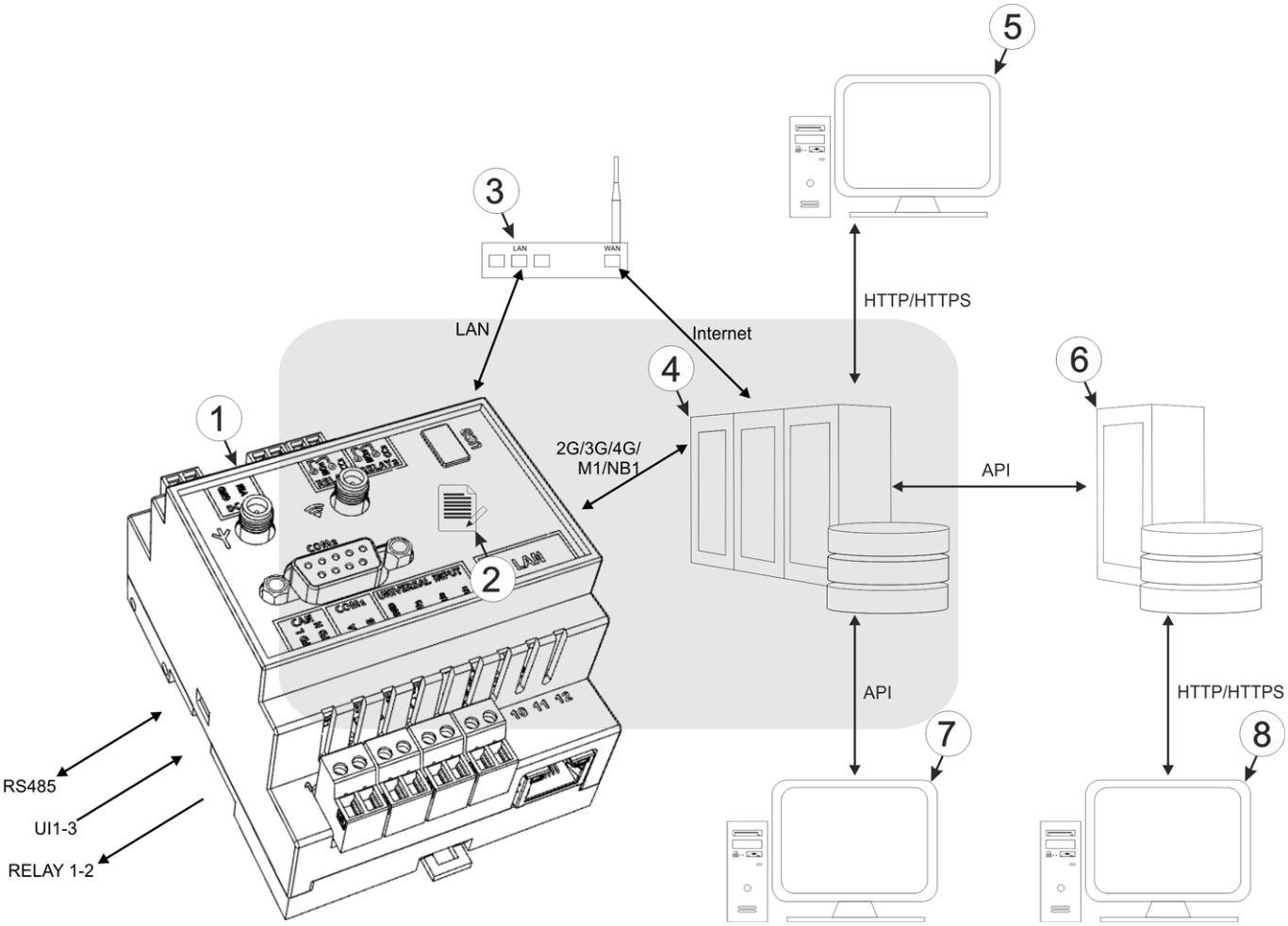
Note: Qualified personnel

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 5 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	myDatalogC3xx with integrated Managed Service SIM chip (including data transmission)
2	IoT application "myDataconC3 MBM"
3	Router to connect the myDatalogC3xx to the Internet via the LAN interface.
4	myDatanet server to which the data is transferred
5	Client that accesses the interface of the myDatanet server via the web browser
6	Customer-specific server that provides clients with their own interface. The customer-specific server obtains the data via the API interface of the myDatanet server (see "API" on page 137).
7	Client on which a PC program is running that obtains its data via the API interface of the myDatanet server (see "API" on page 137)
8	Client that accesses the interface of the customer-specific server via the web browser

Functions and components provided by myDatanet :

- myDatalogC3xx with installed IoT application "myDataconC3 MBM"

  Stationary data logger with integrated memory and standardised industrial interfaces (UI1-3, RS485, relay 1-2) to connect sensors, machines, control units and actuators to the myDatanet server (2G/3G/4G/M1/NB1)

- Managed Service

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

- myDatanet server

  Database for saving the measurement data and configurations. Data is either accessed via the API (see "API" on page 137) or the web interface of the server.

Functions and components provided by the customer

- Sensors, machines, control units and actuators

  Sensors, machines, control units and actuators that include interfaces that are compatible with the specifications listed in chapter "Specifications" (see "Specifications" on page 13)

- Router to connect the myDatalogC3xxto the Internet (optional)

  This means that in addition to the mobile network connection, a LAN connection is available as a second communication channel for connecting to the myDatanet server. The LAN connection can then be used as a preferred communication channel as well as a secondary communication channel.

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

  It can be used to create an individual web interface for the clients. Using this method, the data is read out of the myDatanet server via the API interface (see "API" on page 137) by the customer-specific server.

5.1 Internal processing of the measurement values

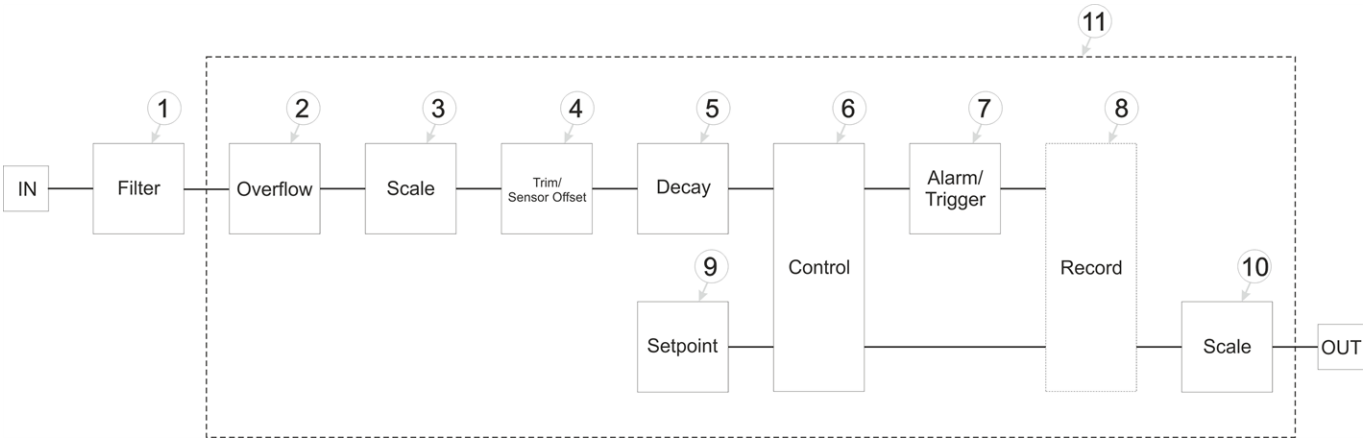


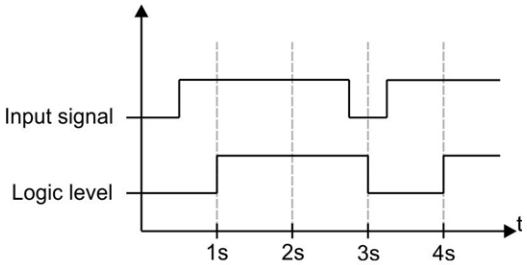
Diagram of the internal processing of the measurement values

1 Filter to compensate for brief signal fluctuations (see "Filter module" on page 32). The filter module is operated permanently.	**7** Monitoring of the alarm limits and trigger levels (see "Alarm/trigger module" on page 35)
2 Monitoring of the measurement range limits (see "Overflow module" on page 33)	**8** As the record interval and measurement cycle can be selected individually, the measurement values and setpoints are not recorded at the time of every measurement (see "Record module" on page 36).
3 Rescaling from the raw value to the measurement value (see "Scale module (inputs)" on page 33)	**9** Specification of the setpoints for the outputs (see "Setpoint module" on page 37)
4 Adds the values entered via the "Trim" and "Sensor offs." configuration parameters to the measurement value (see "Trim/sensor offset module" on page 34).	**10** Rescaling from the setpoint to the physical size for the output (see "Scale module (outputs)" on page 37)
5 Decay module to summarise several measurement values (see "Decay module" on page 34)	**11** This module chain is started at the time of every measurement and is completed once. For universal inputs that are operated in Digital mode, this module chain (with exception of the control module) is also executed at second intervals to be able to react to level changes as quickly as possible.
6 Determination of the setpoints, (see "Control module" on page 35)	

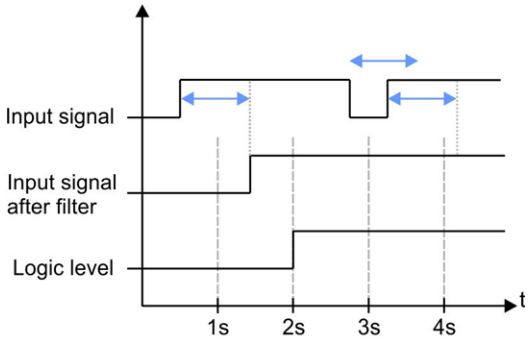
Note: *Additional explanation on universal inputs that are operated in Digital mode.*

Measurement channels -> Basis		*Mode*	*Digital*
Measurement channels ->Config.	⟷	*Filter time*	*800 ms*

Input signal	*Input signal at the universal input*
Input signal after filter	*Input signal taking the "filter time" into consideration*
Logic level	*The input signal at the universal input is analysed once per second.*



Filter module to compensate for brief signal fluctuations disabled ("filter time" = 0)



Filter module to compensate for brief signal fluctuations active ("filter time" not equal to 0)

Explanation: *To react to a level change at the universal inputs as quickly as possible, the module chain detailed in "Internal processing of the measurement values" on page 31 (with exception of the control module) for the relevant universal input is operated once per second in Digital operating mode. This ensures that alarms and triggers are detected asynchronously to the measurement cycle. The signal must be present for at least 1 second to definitely detect a pulse safely. Additionally, any brief faults can be eliminated with the help of the "filter time".*

5.1.1 Filter module

The filter module is designed to compensate for brief fluctuations to the input signal. This module is only available for the 3 universal inputs.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels -> Configuration	Digital	Filter time	Time in [ms] during which the signal must remain constant to initiate a level change. Used to suppress brief faults (debouncing).
	Cnt.Day		
	Cnt.Intrvl.		
	4-20 mA	Filter time	Time in [ms] during which the analogue signal is averaged for signal smoothing. Used to suppress signal noise (also see "Output channels " on page 78).
	0-20 mA		
	0-2 V		
	0-10 V		

5.1.2 Overflow module

This module monitors the measurement range limits of the raw value. If a universal input was, for example, switched to "4-20 mA" mode, a raw value of 2 mA will violate the measurement range. The overflow module is only available for the 3 universal inputs in "4-20 mA", "0-20 mA", "0-2 V" and "0-10 V" channel modes as well as for the modbus measurement channels when scale is active.

The following table specifies the relevant parameters for the module:

Configuration section	Mode/Interface	Parameter	Explanation
Measurement channels -> Configuration	Digital	---	---
	Cnt.Day		
	Cnt.Intrvl.		
	4-20 mA	Overflow	Procedure in the event of measurement range violations
	0-20 mA		
	0-2 V		
	0-10 V		
Modbus measurement channels -> Scale	RS485	Overflow	Procedure in the event of measurement range violations

5.1.3 Scale module (inputs)

This module rescales the raw value (e.g. mA) to the required measurement value (e.g. mm). The scale module is only available for the 3 universal inputs as well as the modbus measurement channels.

The following table specifies the relevant parameters for the module:

Configuration section	Mode/Interface	Parameter	Explanation
Measurement channels -> Basic	Digital	Invert	Inverts the input signal
	Cnt.Day	Impulse	Counted measurand of a pulse in the measurement unit
	Cnt.Intrvl.		
	4-20 mA 0-20 mA 0-2 V 0-10 V	0 %	Start of the measurement range in the measurement unit
		100 %	End of the measurement range in the measurement unit
Modbus measurement channels -> Scale	RS485	0 % Modbus	Start of the measurement range in the unit of the modbus server (i.e. raw value to be read from the modbus server)
		100 % Modbus	End of the measurement range in the unit of the modbus server (i.e. raw value to be read from the modbus server)
		0 %	Start of the measurement range in the measurement unit
		100 %	End of the measurement range in the measurement unit

5.1.4 Trim/sensor offset module

The installation height of the sensor can be taken into consideration with the help of this module. It also enables the zero point to be adjusted without having to change the value for the installation height again. The trim/sensor offset module is only available for the universal inputs in the analogue modes ("0...20mA", "4...20mA", "0-2V", "0-10V"). The "Trimming" parameter value and the "Sensor offset" parameter value are added to the output value of the scale module (see "Scale module (inputs)" on page 33). This means that a negative prefix must be set for the "Trimming" parameter (see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 70) if the scaled measurement value should be reduced during the zero point adjustment.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels -> Basic	Digital	---	---
	Cnt.Day		
	Cnt.Intrvl.		
	0-20 mA 4-20 mA 0-2 V 0-10 V	Trimming	is used to adjust the zero point
		Sensor offset	indicates the mounting height of the sensor

5.1.5 Decay module

The decay module is designed to summarise several measurement values. The average value over a required time frame or the minimum value within a required time frame can be determined, for example. The decay module is only available for the 3 universal inputs, with the exception of "Cnt.Day" channel mode.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels -> Configuration	Digital	Decay	Temporal function in the measurement cycle
		Quantity	Number of measurement values taken into consideration during the decay (max. 64). In theses modes, a measurement value is created upon expiry of the measurement cycle and when the input signal level is changed. The changes to the inputs are monitored at one second intervals.
	Cnt.Day	---	---
	Cnt.Intervl. 0-2 0mA 4-20 mA 0-2 V 0-10 V	Decay	Temporal function in the measurement cycle
		Quantity	Number of measurement values taken into consideration during the decay (max. 64).

5.1.6 Control module

The control module determines the setpoints for the outputs.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Output channels	Off	---	---
	Digital	---	---
Measurement channels -> >Trigger	Digital Cnt.Day Cnt.Intrvl. 4-20 mA 0-20 mA 0-2 V 0-10 V	D1	If this checkbox has been selected, the setpoint on the output channel "RELAY1" of the data logger is controlled using trigger. In doing so, the setpoint entered via the interface is ignored.
		D2	If this checkbox has been selected, the setpoint on the output channel "RELAY2" of the data logger is controlled using the trigger. In doing so, the setpoint entered via the interface is ignored.
Internal channels -> Trigger	---	D1	If this checkbox has been selected, the setpoint on the output channel "RELAY1" of the data logger is controlled using trigger. In doing so, the setpoint entered via the interface is ignored.
		D2	If this checkbox has been selected, the setpoint on the output channel "RELAY2" of the data logger is controlled using the trigger. In doing so, the setpoint entered via the interface is ignored.

5.1.7 Alarm/trigger module

This module monitors the alarm limits and trigger levels and creates an entry in the alarm list if necessary. The alarm/trigger module is available for inputs (universal inputs, modbus measurement channels and internal channels).

All of the parameters of the "Alarms" and "Trigger" tabs of the "Measurement channels" (see "Measurement channels " on page 67), "modbus measurement channels" (see "Modbus measurement channels" on page 82) and "Internal channels" (see "Internal channels " on page 91) configuration sections are relevant to this module.

5.1.8 Record module

The record module records the measurement values. As the record interval and measurement cycle can be selected individually, a record is not saved at the time of every measurement. ADepending on the triggers set by the alarm/trigger module, the record interval is modified, the transmission cycle is changed, the transmission is initiated or a new measurement is triggered, if necessary.

The following tables specify the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels ->Trigger	Digital Cnt.Day Cnt.Intrvl. 0-20 mA 4-20 mA 0-2 V 0-10 V	RI	Execute recording immediately
		XM	Initiate transmission
		ON	Activate online mode
		RA	The alternative record interval should be used.
		QX	The alternative transmission cycle should be used.
Modbus measurement channels -> Trigger	---	RI	Execute recording immediately
		XM	Initiate transmission
		ON	Activate online mode
		RA	The alternative record interval should be used.
		QX	The alternative transmission cycle should be used.
Internal channels -> Trigger	---	RI	Execute recording immediately
		XM	Initiate transmission
		ON	Activate online mode
		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

5.1.9 Setpoint module

This module uses the setpoints for the output channels and the modbus output channels entered via the configuration interface of the myDatanet servers.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Output channels	off	---	--
	digital	Setpoint	Setpoint (on/off) that should be issued
Modbus output channels -> Basic	---	Setpoint	Output value in the measurement unit

5.1.10 Scale module (outputs)

For the output channels, this module rescales the setpoint (e.g. "on") into the desired signal level on the output (e.g. "low"). Hence, it enables inverting the setpoint.

For the modbus output channels, this module rescales the setpoint (e.g. mm) into the desired raw value to be written to the register.

The following table specifies the relevant parameters for the module:

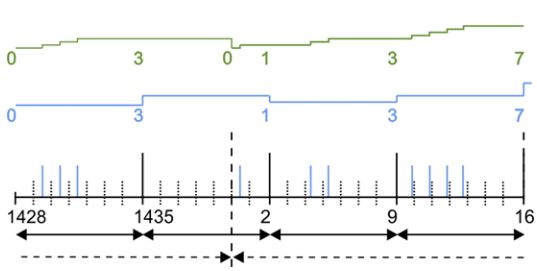
Configuration section	Mode	Parameter	Explanation
Output channels	off	---	---
	digital	Invert	Inverts the level issued on the device
Modbus output channels -> Basic	Scale "off"	---	---
	Scale "on"	0 % Modbus	Start of the output range in the unit of the modbus server (i.e. the raw value to be written in the modbus server)
		100 % Modbus	End of the output range in the unit of the modbus server (i.e. the raw value to be written in the modbus server)
		0 %	Start of the output range in the measurement unit
		100 %	End of the output range in the measurement unit

5.2 Day change

If an input is operated in Cnt.Day mode, all of the pulses up to the day changing time at midnight based on the time zone selected using the "Time zone" parameter are added up. This parameter is located in the "Basic settings" configuration section (see "Basic settings" on page 99). The current counter reading is calculated at the time of every measurement. The counter reading is recorded in the record interval that generates a rising gradient in the measurement value graphics on the myDatanet server. The highest value of the day equates to the value that was determined during the last record before the day change. At the time of the day change, the temporary memory, in which the counter reading is added up, is set to the difference between the current and last recorded value. This means that if pulses have been detected since the last record before the day change, the measurement value graphic for the new day does not start with 0 but with the calculated counter reading that is dependent on the number of detected pulses. The measurement value graphic for the new day does not start with 0 even if pulses are detected between the day change and first record. The counter reading calculated during the measurement cycle (green line in the following figures) is also required if an unscheduled record should be completed following initiation of a trigger (e.g. by a digital input).

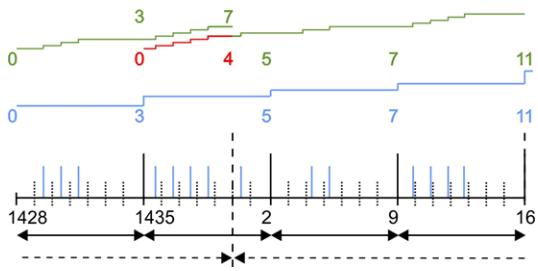
Note: *Additional explanation on the day change*

	◄- - - - - - - - ►	*Day changing time (cannot be changed)*	*Midnight*	*Number of pulses between last record and day change*	*Red line*
"Basic settings" configuration section	◄ · · · · · · · · · ►	*Measurement cycle*	*1 min.*	*Calculated counter reading*	*Green line*
	◄——►	*Record interval*	*7 min.*	*Recorded counter reading*	*Blue line*



No new pulses between last record and day change

The counter (green line) is set to 0 when the day changes. A single pulse is detected before the first record. The measurement value graphic (blue line) therefore starts with 1.



New pulses between last record and day change

The counter is set to 4 at the time of the day change so that the pulses detected since the last record are taken into consideration in the first record of the day. Another pulse was also detected before the first record. The measurement value graphic therefore starts with 5.

5.3 Functionality of the internal data memory

Structure	Circular buffer
Total size	18.832 measurement cycles
Number of sectors	8
Sector size	2354 measurement cycles

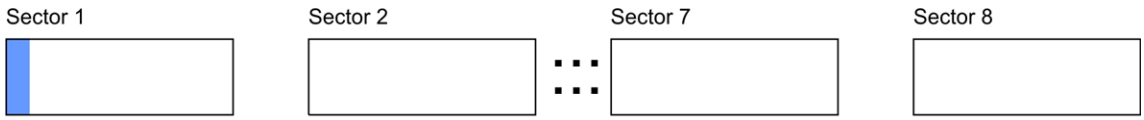
The internal data memory of the myDataconC3 MBM is designed as a circular buffer with 8 sectors. If the maximum number of data records (18.832) is achieved, the sector with the oldest data is deleted fully before new data can be saved in this sector again. This means that the internal data memory at the very least contains the measurement values of the last 16.478 cycles, however at most the measurement values of the last 18.832 cycles.

For this reason, it is recommended to coordinate the transmission cycle and record interval in such a way that a maximum of 16.478 measurement cycles have to be recorded between two transmissions. Note, that if the measurement cycle is shorter than the record interval, the record interval still has to be used for the calculation. In this case, the reason for this is that although the measurement is completed in the measurement cycle, the determined data is saved in the data memory in the record interval. If it can be expected that individual transmissions fail due to poor network coverage or an alternative record interval is activated via the trigger, this must also be taken into consideration when calculating the measurement cycles that are to be saved.

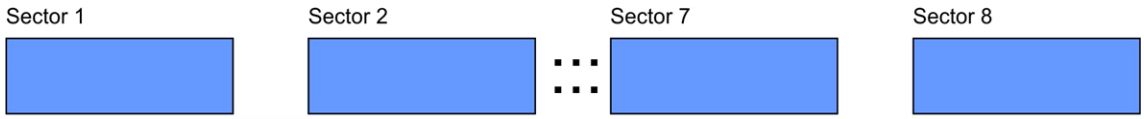
Note:

Additional explanation regarding the functionality of the circular buffer

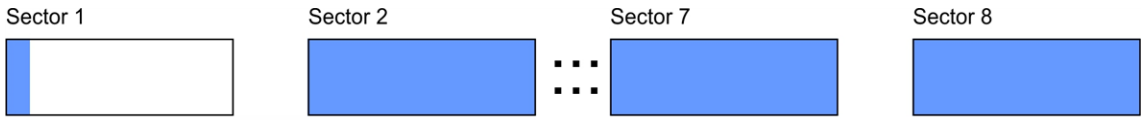
Data memory after the first measurement cycle:



Data memory after 18.832 measurement cycles:



Data memory after 18.832 +1 measurement cycles:



5.4 Procedure in case of connection aborts

5.4.1 Connection abort in "online" mode

An immediate connection attempt is made if the connection is lost in "online" mode. it is not possible to establish a connection, a standard retry sequence with 2 further attempts after a 2 min. delay follows.

If the connection could still not be established, 10 connection attempts are made, each followed by the standard retry sequence with 2 further attempts after a 2 min. delay. After a 60min. delay, the sequence of 10 connection attempts is repeated until the connection has been established.

5.4.2 Connection abort in "interval" mode

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

5.5 Automatic selection of the mobile network

The moible network to which the device should register must be selected, as the myDataconC3 MBM is equipped with a SIM chip that provides a mobile connection via a variety of international service providers. This is completed automatically by the device.

5.6 Determining the strength of the mobile network signal

The internal update rate of the strength of the mobile network signal is dependent on the type of connection that can be selected via the relevant parameter in the "Basic settings" configuration section (see "Basic settings" on page 99):

- Interval: Updated during connection establishment
- Online: Updated every 5 seconds

Note that the value of the mobile network signal strength is only read by the system during the measurement cycle and is added to the measurement data.

5.7 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 99). If set to 0, the GSM position data is generated every time a connection is established.

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

Note: *The process described below is only used for variant myDatalogC32x M1/NB1 EU .*

The myDataconC3 MBM is equipped with a modem supporting the mobile network technologies "LTE-M" and "NB-IoT". The modem automatically selects the most suitable mobile network technology for the respective situation.

Chapter 6 Storage, delivery and transport

6.1 Inspection of incoming deliveries

Check the shipment immediately upon receipt to ensure it is complete and intact. Immediately report any discovered transport damages to the delivering carrier. Also notify Microtronics Engineering GmbHin writing about this without delay. Report any incompleteness of the delivery to the responsible representative or directly to the company headquarters of the manufacturer within two weeks (see "Contact information" on page 169).

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

6.2 Scope of delivery

Note: *All specifications in this user manual apply to the "myDataconC3 MBM " measurement system. The components the measurement system is composed of must be ordered individually. A special set with corresponding order number is not available..*

The "myDataconC3 MBM " measurement system is composed of the following components:

- **Antenna:** see "Antennas" on page 159
- **Data logger:** myDatalogC3xx (see "Suitable data loggers" on page 159)
- **IoT application:** myDataconC3 MBM (301516)

Please check further accessories depending on the order against the delivery slip.

6.3 Storage

The following storage conditions must be observed:

myDataconC3 MBM	Storage temperature	-40...+85 °C
	Humidity	15...90 % RH

Store the measurement technology so that it is protected against corrosive and organic solvent vapours, radioactive emissions and strong electromagnetic radiation.

6.4 Transport

Protect the myDataconC3 MBM against heavy shocks, bumps, impacts or vibrations. The original packaging must always be used for transport.

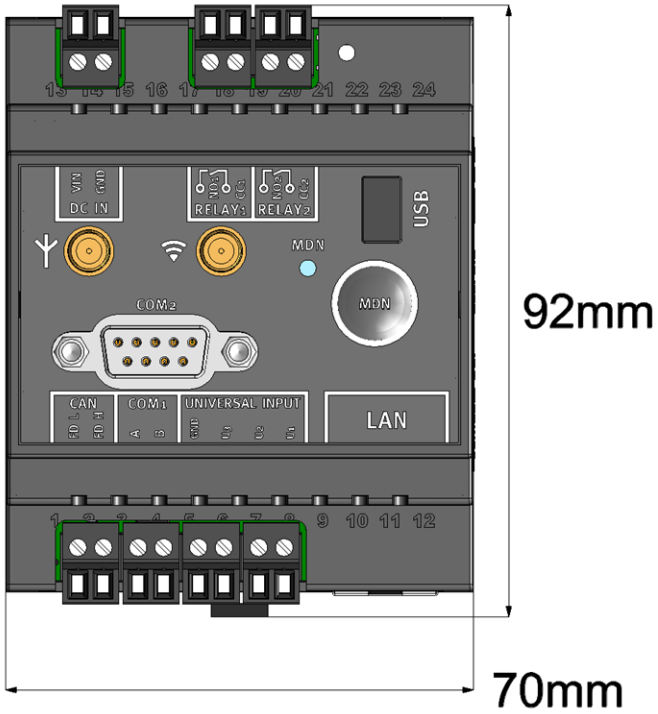
6.5 Return

Every return must be accompanied by a fully field-out return form. This return form is available in the service area of the myDatanet server. An RMA number is mandatory for any returns and can be obtained from the Support & Service Centre (see "Contact information" on page 169). The return shipment of the myDataconC3 MBM must occur in the original packaging and with freight and insurance paid to Microtronics Engineering GmbH (see "Contact information" on page 169). Insufficiently cleared return shipments will otherwise not be accepted!

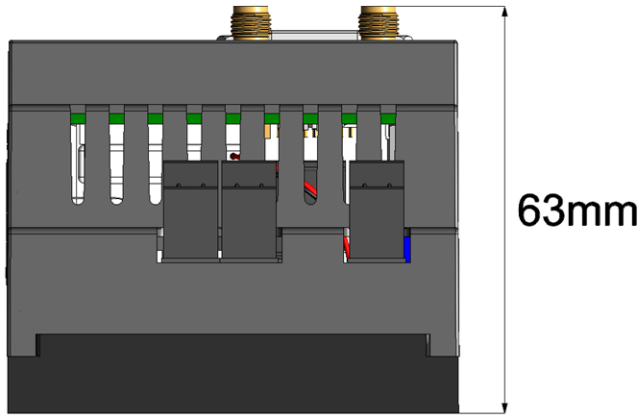
Chapter 7 Installation

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.*

7.1 Dimensions



Dimensions: Width and height



Dimensions: Depth

7.2 Installing the myDataconC3 MBM

Important note:

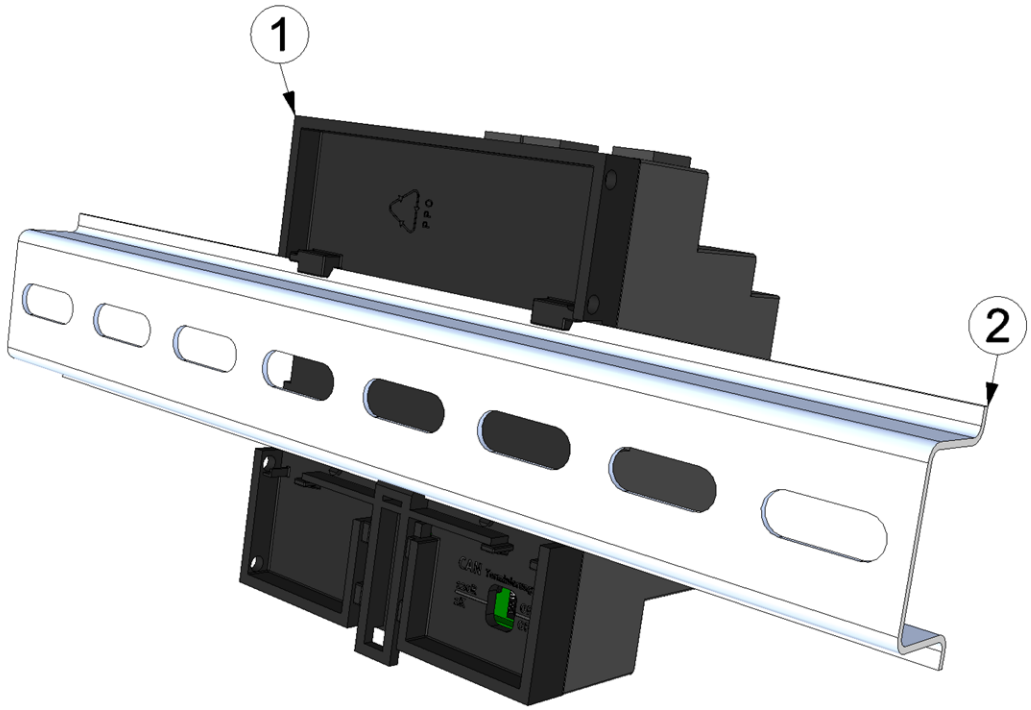
- *Ensure installation is completed correctly.*
- *Comply with existing legal and/or operational directives.*
- *Improper handling can cause injuries and/or damage to the devices.*
- *The myDataconC3 MBM is not approved for use in sewers.*
- *The myDataconC3 MBM is not suitable for outdoor use.*

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

- Direct sunlight
- Direct weather exposure (rain, snow, etc.)
- Objects that radiate intense heat (maximum ambient temperature: -20...+60 °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: *Approx. 2-5 cm of space must be left above and below the device for the cable connections. The antenna connections are located at the front of the device. The space required depends on the antennas used. Further information regarding the installation dimensions can be found in the relevant sub-chapter.*

7.2.1 Top-hat rail assembly



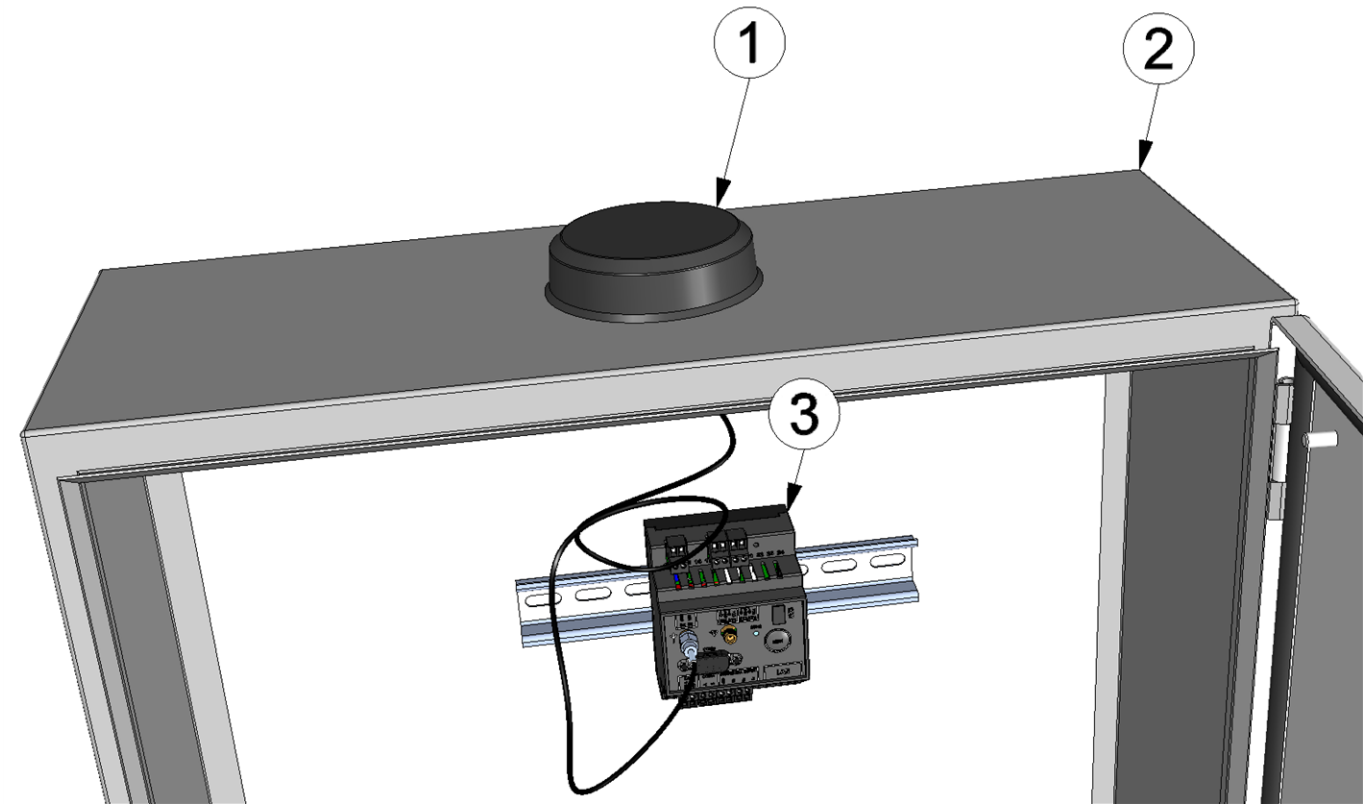
Top-hat rail assembly

1 myDataconC3 MBM	**2** Top-hat rail

1. Place the myDataconC3 MBM on to the top edge of the top-hat rail. Turn slightly around the horizontal axis so that the myDataconC3 MBM clicks into the top-hat rail (see Figure "Top-hat rail assembly" on page 44).

7.2.2 Assembly in a control cabinet

Antennas mounted directly on the myDataconC3 MBM are not suitable for assembly within a control cabinet as the mobile network signal is shielded by the metal of the cabinet. In this case, the manufacturer recommends using the Flat antenna Disc Multi Band SMA-M 1,5m (301362) that are available as accessories.



Control cabinet with mounted Flat antenna Disc Multi Band SMA-M 1,5m (301362)

1 Flat antenna Disc Multi Band SMA-M 1,5m (301362)	**3** myDataconC3 MBM
2 Control cabinet	

7.3 Safety instructions for cabling

Important note: *To avoid any damage, always switch off the voltage supply to the device when performing electrical connections.*

When connections are made to the myDataconC3 MBM , the following warnings and information must be observed, in addition to the warnings and information found in the individual chapters on the installation. Further safety information is included in "Safety instructions" on page 17.

7.3.1 Information on preventing electrostatic discharges (ESD)

Important note: *Maintenance procedures that do not require the device to be connected to the power supply should only be performed once the device has been disconnected from the mains power supply to minimise hazards and ESD risks.*

The sensitive electronic components inside the device can be damaged by static electricity, which can impair the device performance or even cause the device to fail. The manufacturer recommends the following steps to prevent any damage to the device caused by electrostatic discharges:

- Discharge any static electricity present on your body before handling the electronic components of the device (such as circuit boards and components attached thereto). To do this, you can touch a grounded metallic surface such as the housing frame of a device or a metal pipe.
- Avoid any unnecessary movements to prevent the build-up of static charges.
- Use antistatic containers or packaging to transport components that are sensitive to static.
- Wear an antistatic wristband that is grounded via a cable to discharge your body and keep it free of static electricity.
- Only touch components that are sensitive to electric charges in an antistatic working area. If possible, use antistatic mats and work pads.

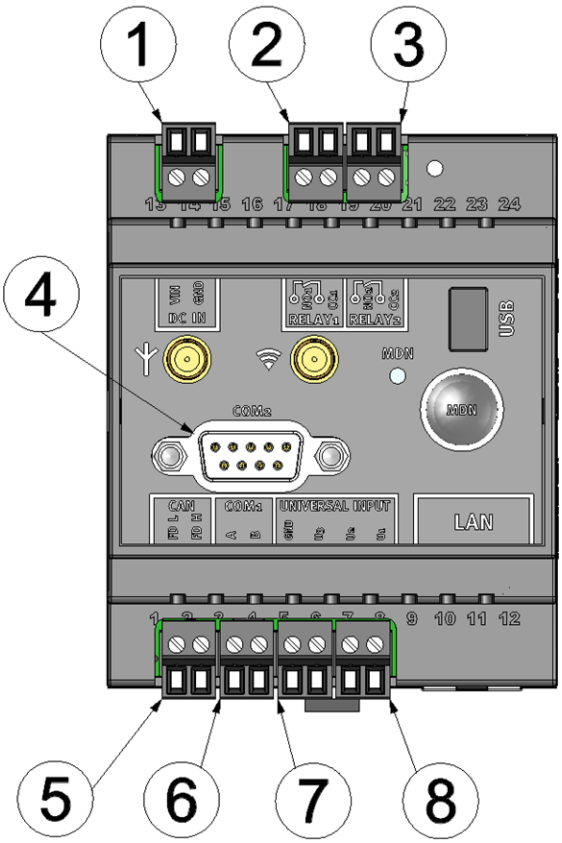
7.4 Electrical installation

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

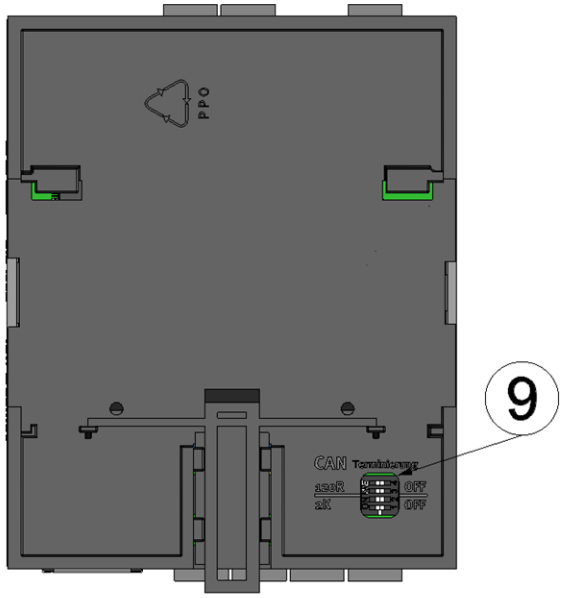
7.4.1 Connection of the sensors, actuators and the supply

Important note:

- *All wiring work must be performed in the de-energised state.*
- *Ensure installation is completed correctly.*
- *Comply with existing legal and/or operational directives.*
- *Improper handling can cause injuries and/or damage to the instruments.*
- *Run all data and power cables so that they do not pose a trip hazard and ensure that cables do not have any sharp bends!*
- *The length of data and current cables must not exceed 30m !*



Connection of the sensors, actuators and the supply (front)



Connection of the sensors, actuators and the supply (rear)

1 Supply (V IN, GND)	**6** Com1 (RS485)
2 Relay 1	**7** Ground and universal input 1
3 Relay 2	**8** Universal input 2-3
4 Reserved for extension	**9** Reserved for extension
5 Reserved for extension	

DC IN

VIN	Supply voltage: 9...32 VDC (+/-10 %), max. 9 W
GND	Ground

RELAY1

NO1	Operating contact of relay 1 (Normally Open)
CC1	Root of relay 1

RELAY2

NO2	Operating contact of relay 2 (Normally Open)
CC2	Root of relay 2

COM1

A	RS485 A
B	RS485 B

UNIVERSAL INPUT

GND	Ground
UI3	Universal input 3
UI2	Universal input 2
UI1	Universal input 1

The following table contains the conditions to be observed when connecting cables to the terminals of the myDataconC3 MBM zu beachte:

Nominal cross-section	1,5 mm²
Cross-section for solid wire	0,14...1,5 mm²
Cross-section for stranded wire	0,14...1,5 mm²
Length to be stripped	9 mm
Torque	0,22...0,25 Nm

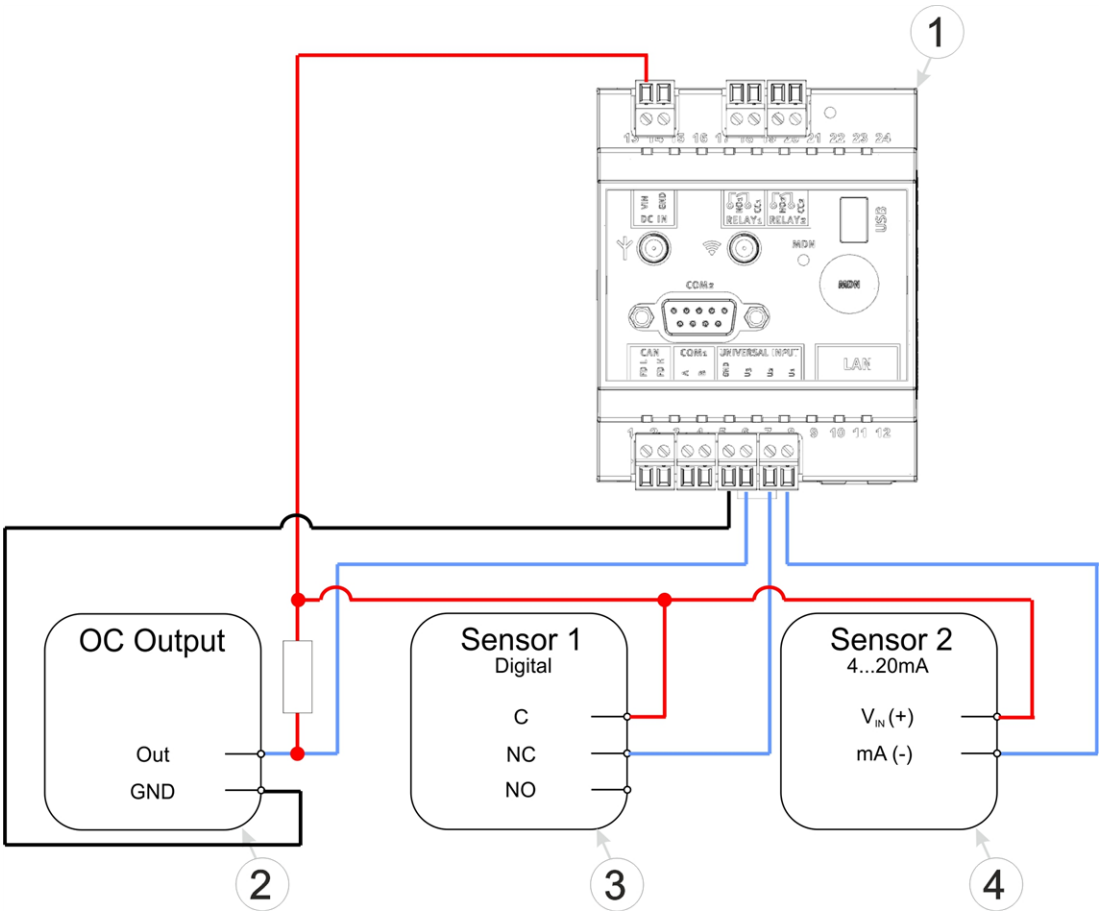
1. Connect your sensors and actuators to the inputs, the RS485 interface and outputs. Ensure that no current is present! The cable for the supply of the myDataconC3 MBM should be connected to the supply terminal with no current present.
2. Connect the antenna (see "Connection of the mobile network antenna" on page 50).
3. Switch on the 9...32 VDC supply voltage of the myDataconC3 MBM .

The following step is not mandatory.

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

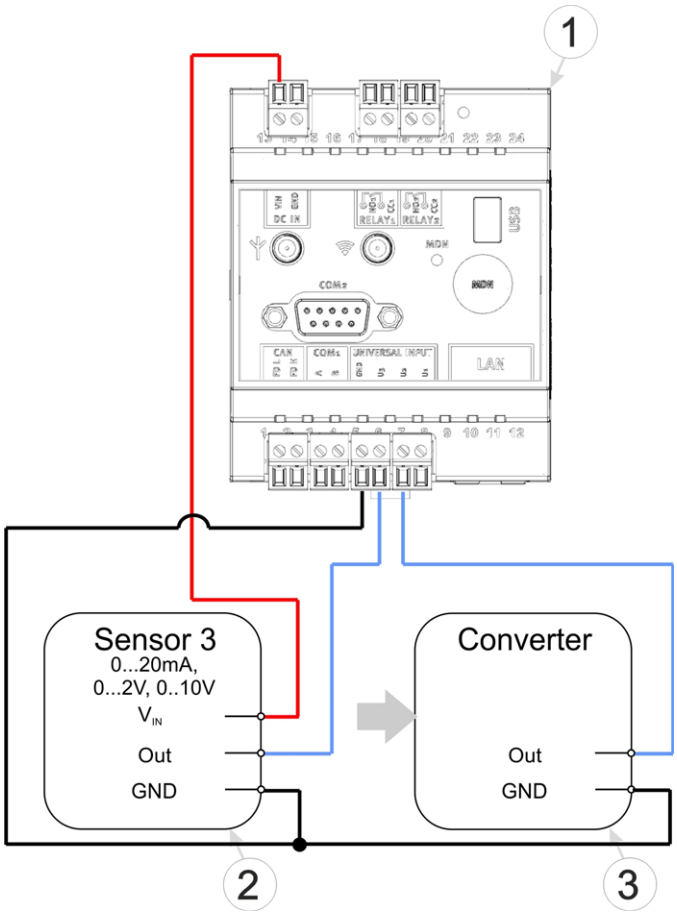
7.4.1.1 Connection examples

Note: *Since the universal inputs of the device are not galvanically isolated, it is not possible to add the myDataconC3 MBM to an existing 4-20 mA current loop (e.g. between sensor and SPS). Use a suitable isolation transformer in this case.*



Connection examples (OC output, digital, 4…20 mA)

1	myDataconC3 MBM	**4**	Isolated relay contact
2	Sensor with open collector output	**4**	2-wire mA sensor



Connection examples (0…20 mA, 0…2 V, 0…10 V, converter)

1 myDataconC3 MBM	**3** Signal converter, isolating transducer
2 3-wire mA sensor or 3-wire U-sensor	

7.4.2 Connection of the mobile network antenna

Important note:

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

The standard antenna is directly attached to the antenna connector (see "Overview" on page 20) of the myDataconC3 MBM . In the event of a low radio signal strength, you can use the Dome antenna multi band SMA-M 3m (301212) or Flat antenna Disc Multi Band 2xSMA-M 2m (301090).

If the distance between the antenna position and the myDataconC3 MBM is too great, you can use a 2.5 m Extension cable for antenna SMA-M/SMA-F 2,5m (206.807).

1. Ensure that the myDataconC3 MBM is de-energised.
2. If you need an antenna extension, connect this to the antenna first.

3. Connect the antenna extension or antenna directly to the antenna connector of the myDataconC3 MBM (see "Overview" on page 20).

   Important note: *Do not apply too much force when tightening the antenna. Do not use any tools to tighten the antenna or antenna extension; only tighten it manually.*

4. Switch the voltage supply of the myDataconC3 MBM back on.

The following step is not mandatory.

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

7.4.3 Technical details about the universal inputs

Note: *The universal inputs are not galvanically isolated.*

7.4.3.1 0/4...20 mA mode

Note: *Above 23,96 mA, the relevant input becomes highly resistive (safety shutdown to prevent damage to the universal input).*

Resolution	6,36 µA
I_{max}	23,96 mA
Load	96 Ω

7.4.3.2 0...2 V mode

Resolution	610 µV
U_{max}	2,5 V
Load	10k086

7.4.3.3 0...10 V mode

Resolution	7,97 mV
U_{max}	32 V
Load	4k7

7.4.3.4 Standard digital modes (Digital, day counter, interval counter)

General	U_{max}	32 V
	Low	<0,99 V
	High	>2,31 V
	Load	4k7
Day and interval counter	Minimum pulse length	1 ms

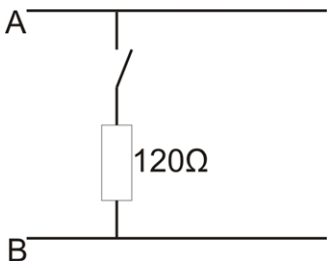
7.4.4 Technical details about the RS485 interface

Note: *The RS485 interface corresponds to standard EIA-485.*

The RS485 interface of the myDataconC3 MBM includes an input common mode range that covers the full area specified for RS485 (-7 V...+12 V). Higher voltages damage the interface. Differential signals of more than +/-200 mV within the specified input common mode range are detected correctly. In send mode, the output signal is in the range of 1,5...3,3 V .

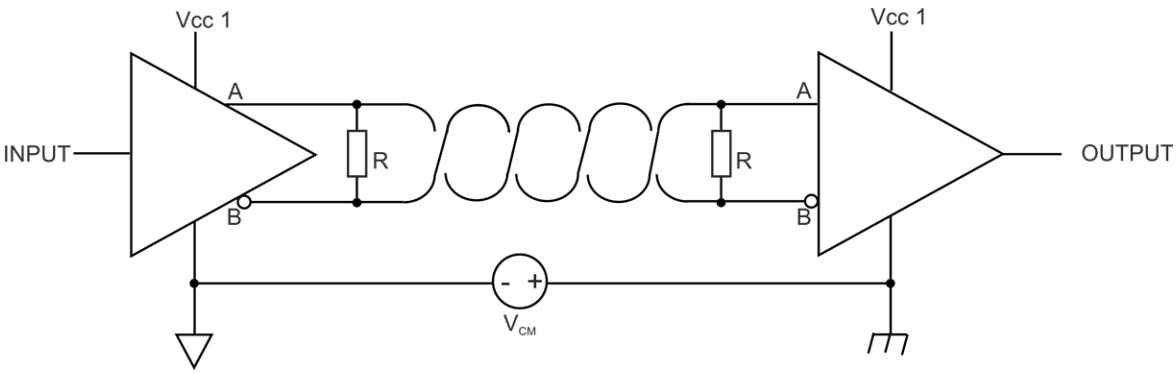
Baud rate	2400-115200
Stop bits	1, 2
Parity	N, E, O
Data bits	7, 8
Load resistance	Off 120 Ω
Terminal resistance	Off 390 Ω

Via the checkbox "termination" located in the input mask for configuring the modbus interface (see "Modbus interface" on page 80), the 120 Ω terminal resistance between RS485 A and B can be activated. In the same input mask, the checkbox "bias" can be found, which is used to activate the 390 Ω clamp resistances (Pull up to RS485 A and Pull down to RS485 B).



Schematic diagram of the switchable load resistances

Note: *Additional explanation regarding the connection of two RS485 bus participants*



Schematic diagram: Connection of two RS485 bus participants

A problem occurs if there is no connection between the GND potentials of the sender and recipient. A common mode voltage (V_{CM}) occurs in this case. The GND potential difference must not exceed max. +/- 7 V . Higher voltages will damage the interface. Temporary overvoltages (ESD, EFT and surge) are, however, absorbed by protective circuits.

Note: The common mode input voltage range of -7 V...+12 V specified for the RS485 is determined from the max. permissible GND potential difference (+/- 7 V) and the max. permissible output voltage range of 0...5 V for RS485.

7.4.5 Technical details about the USB interface

The connection to a PC is established via the USB slave interface. It is only designated for the communication with the DeviceConfig configuration program. A detailed description of the DeviceConfig configuration program is provided in chapter "DeviceConfig " on page 115. The DeviceConfig configuration program can be downloaded free of charge from the following website:

www.microtronics.com/deviceconfig

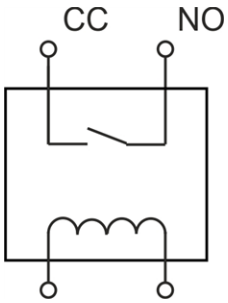
Important note: *If the antenna of the device is earthed or connected to the ground potential of another object (e.g. installation on a control cabinet), remove the antennas before you connect the device with the USB interface of a PC. Otherwise, this can cause a potential displacement between the ground of the antenna and the ground of the PC, which could damage the USB interface of the device.*

7.4.6 Technical details about the outputs

7.4.6.1 Relay (NO, CC)

Important note: *The user must ensure that the current on the relay does not exceed 2 A .*

In idle state, the make contact of the relay is open (normally open).



Equivalent circuit diagram for the relay

Proof voltage (CC, NO)	32 V AC
galv. separation	1,5 kV AC
U_{max}	32 V AC and DC
I	max. 2 A
P_{max}	64 VA , 60 W

7.4.7 Technical details about the integrated rechargeable buffer battery

The integrated rechargeable buffer battery enables sending a notification in case of a power failure. However, in order for an alarm to be generated, it has to be activated in the configuration section "basic settings" (see "Basic settings" on page 99) of the "Alarm" parameter.

As soon as the supply voltage falls below 8,65 V , the failure report is triggered - provided there is no delay for triggering the failure report set via the "Alarm/shutdown delay" parameter in the configuration section "basic settings" (see "Basic settings" on page 99), or triggering the failure report has not been deactivated via the "Alarm" parameter. In any case, falling below the threshold and switching the power supply to the rechargeable buffer battery and is noted in the device log via te log entry "MODULE INFO (402), 5" and the coulour of the status LED switches to magenta. If a delay has been configured, the myDataconC3 MBM works as per ususal until the end of the delay, apart from the modules that fail when supplied via the rechargeable buffer battery. If the supply voltage increases again above 8,65 V during the delay, the supply is switched from the rechargeable buffer battery back to the supply voltage. This is entered in the device log via the log entry "MODULE INFO (402), 1" and the coulour of the status LED swiches back to green. If the supply voltage is below 8,65 V after the delay has expired, the failure report is triggered - provided the failure report has been activated via the "Alarms" parameter.

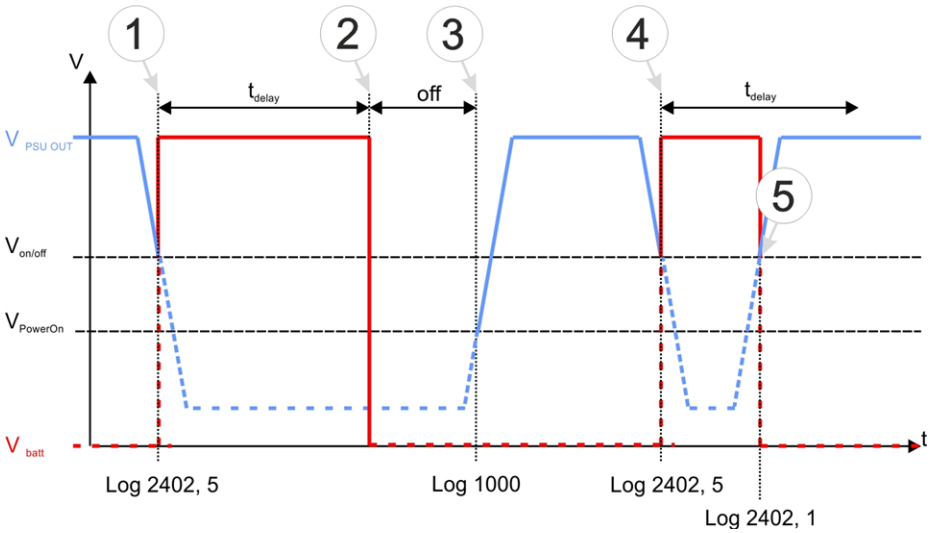
As soon as the myDataconC3 MBM is exclsively supplied by the rechargeable buffer battery, the following assembly groups fail:

- Control of the relays on data logger (i.e. the make contacts switch to idle state "NO")

While the device remains connected to the server to send the failure report, the status LED is switched on in colour magenta. After that, the rechargeable buffer battery is deactivated and the status LED goes out. All operations are terminated and the device is completely deactivated. Only when the supply increases above 7,06 V again, the myDataconC3 MBM resumes normal operation.

A hardware-regulated controller ensures that the rechargeable buffer battery is only charged when the ambient temperature is in the permitted range (0 ...+45 °C) .

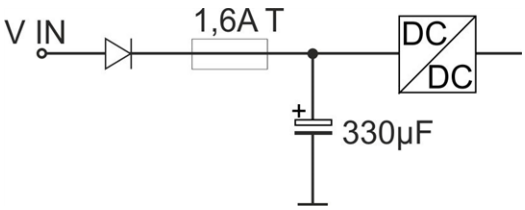
V IN	Supply voltage: 9...32 VDC (+/-10 %)
$V_{on/off}$	Threshold for switching between normal operation and the rechargeable buffer battery supply: 8,65 V
$V_{PowerOn}$	Threshold for reactivating the device after it was switched off completely:7,06 V
t_{delay}	Delay for sending a failure report. It is configured via the "Alarm/shutdown delay" parameter which is in the configuration section "basic settings" (see "Basic settings" on page 99).
Backup	Voltage of the rechargeable buffer battery



Supply of he myDataconC3 MBM

1	• The power supply is switched to the rechargeable buffer battery. • The log entry "MODULE INFO (402), 5" is created. • The device continues to operate normally (except for the components that fail when supplied by the rechargeable buffer battery).
2	• The delay for sending the failure report has expired. • The failure report is sent (provided this function has been activated via the "Alarms" parameter). After that, the rechargeable buffer battery is deactivated. Then the myDataconC3 MBM is switched off.
3	• The supply voltage exceeds the threshold for reactivating the device. • The log entry "POWER ON" is created. • The myDataconC3 MBM resumes normal operation again.
4	• The power supply is switched to the rechargeable buffer battery. • The log entry "MODULE INFO (402), 5" is created. • The device continues to operate normally (except for the components that fail when supplied by the rechargeable buffer battery).
5	• The supply voltage exceeds the threshold for switching to normal operation again. • The delay for sending a failure report has not yet expired. • The log entry "MODULE INFO (402), 1" is created. • NO failure report is set off.

7.4.8 Technical details about the energy supply



Schematic diagram of the energy supply

V IN	9...32 VDC (+/-10 %)
Power consumption [1)] (without sensors)	typ. 5 W max. 9 W
Input capacity	330 µF
Fuse	1,6 A T
Reverse voltage protection	Yes

[1)] applies to ongoing operation. A current peak is caused by the input capacity at the time of activation.

The myDataconC3 MBM is equipped with a relatively large input capacity (330 µF) to ensure reliable switchover to the integrated rechargeable buffer battery in the event of a supply voltage failure. When selecting the power supply please ensure that it is able to supply the required initial current. A selection of compatible power supply units is included in the chapter "Power supply" on page 159. The supply voltage input is also equipped with a diode to protect against polarity reversal and a 1,6 A T fuse.

7.4.9 Technical details about the system time

The myDataconC3 MBM is equipped with a hardware real-time clock that has its own buffer battery with an expected service life of >10 years. The system time continues to run even if the device is removed from the supply voltage. This means that following recommissioning, valid time stamps for the measurement and log data can be generated immediately. Additionally, the system time is synchronised with the server each time a connection to the myDatanet server is established.

Chapter 8 Initial Start-Up

8.1 User information

Before you connect the myDataconC3 MBM 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 myDataconC3 MBM

Contact Microtronics Engineering GmbH(see "Contact information" on page 169) if anything is unclear or if you encounter difficulties with regard to installation, connection or configuration.

8.2 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.

8.3 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 myDataconC3 MBM and the input screens of the myDatanet server before you begin with the configuration.

8.4 Commissioning the system

Note: *It is recommended that the myDataconC3 MBM is first placed into operation in the office before mounting the device permanently at the place of use. During this process, you should create a site for the later operation on the myDatanet server (see "Creating the site" on page 133) and determine a site configuration (see "Site configuration" on page 67). Take the opportunity to get to know the functions of the device in a stable environment. You can also use suitable test signals to simulate the sensors to establish the optimum configuration of the myDataconC3 MBM prior to its actual first use. This reduces the amount of time required for on-site installation to a minimum.*

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

1. If necessary, create a customer on the myDatanet server (see "myDatanet Server Manual " 805002).
2. Within the selected customer, create a site/application based on the "myDataconC3 MBM" application for operation on the myDatanet server (see "Creating the site" on page 133).
3. Configure the created site/application according to your requirements (see "Site configuration" on page 67).
4. Connect the antenna (see "Connection of the mobile network antenna" on page 50).
5. Trigger a connection establishment so that the configuration of the site/application is transferred to the myDataconC3 MBM . You can achieve this by establishing the power supply (see "Connecting the sensors, actuators and power supply" on page 46). If a device logic has already been loaded into the device, execute the operations provided in the device logic to trigger the establishment of a connection. You can achieve this by establishing the power supply (see "Connection of the sensors, actuators and the supply" on page 46). The status LED should then start flickering (see "Status LED" on page 63) to signalise the connection establishment.

   Note: *You can also skip this step, as a connection must be established during the installation on site, which transfers the configuration settings to the myDataconC3 MBM at the same time.*

6. Then disconnect the cables of the supply voltage from the device preferably in a de-energised state. The colour of the status LED will then change from green to magenta in order to signalise that the supply has been switched to the internal rechargeable buffer battery. After that, wait until the device has shut down in a controlled manner. You can see it has when the status LED is switched off. Ensure that the myDataconC3 MBM is completely deactivated. Should the status LED remain switched on for a longer time, you can press the reset butten (see "Operating elements" on page 61) to switch it off.
7. Remove the antenna again.

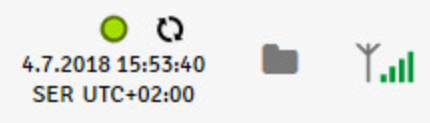
The following tasks are to be completed directly at the deployment site of the device:

8. Then complete all steps described in chapter "Connection of the sensors, actuators and the supply" on page 46.
9. Check whether the connection to the myDatanet server has worked correctly (see "Testing communication with the device" on page 58).

8.5 Testing communication with the device

1. Create a new site/application based on the "myDataconC3 MBM" application for operation on the myDatanet server (see "Creating the site" on page 133).
2. Configure the created site/application according to your requirements (see "Site configuration" on page 67).
3. Connect the antenna (see "Connection of the mobile network antenna" on page 50).
4. You can achieve this by establishing the power supply (see "Connection of the sensors, actuators and the supply" on page 46). The status LED should then start flickering (see "Status LED" on page 63) to signalise the connection establishment.

5. Wait until it is indicated in the list of measurement instruments that the device is connected to the server (rotating arrows).



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

6. Complete all of the steps detailed in the chapter"Connection of the sensors, actuators and the supply" on page 46. This includes connecting the sensors.

   Important note: *All wiring work must be performed in the de-energised state!*

7. Click on the "Direct report" symbol in the list of sites / applications to display the data stored on the myDatanet server.



8. Wait until several measurement values have been recorded.

   The default connection type for myDataconC3 MBM is "online" mode. In this operating mode, the determined measurement data is immediately transmitted to the myDatanet server. I.e. the data displayed on the myDatanet server is updated in record interval (see "Basic settings" on page 99).

   If the connection type "interval" is used, the transmission of the measurement data has to be triggered manually. Use the button (see "Button" on page 62) for this purpose. Only the data up to the moment of triggering the transmission is transferred. If you require additional measurement data, you have to trigger the transmission again using the button.

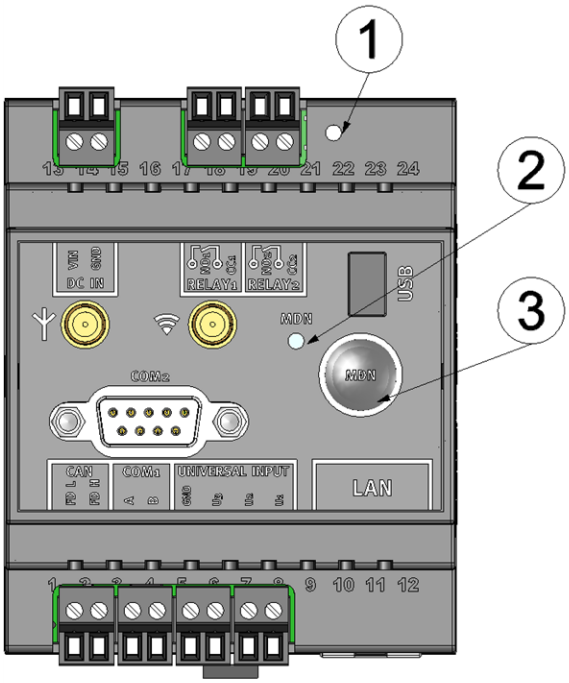
9. Check whether the data available is up to date and plausible (especially the measurement value "voltage" and "GSM").

Chapter 9 User interfaces

The configuration of the myDataconC3 MBM is carried out via the web interface on the myDatanet server (see "User interface on the myDatanet server" on page 64), which your responsible sales partner will provide to you.

9.1 User interface on the myDataconC3 MBM

9.1.1 Operating elements



Operating elements

1 Reset button	**3** Button to trigger another connection establishment or a complete device synchronisation
2 Status LED	

9.1.1.1 Button

The button can be used to trigger either a new connection establishment or a complete device synchronisation.

User action	Device reaction	Operation after releasing the button
press and hold for 3 sec.	Status LED switches to blue.	"online" mode: • establishing connection again if the online connection was aborted or • complete device synchronisation at established online connection "interval"mode: • establishing connection In all cases, the server assignment is checked again.

9.1.1.2 Status LED

The status LED is used both to display the error/status codes and to indicate the current operating state. The error/status codes are issued every 3 seconds unless there is an active mobile network connection.

Error/status codes

Blinking code	Colour	Description	Solution/Cause
1x	green	Last connection OK	---
2x	red	Last transmission faulty	• Try again later
7x	red	Network block/no matching provider	• Improve position of the antenna • Check whether the device is within the coverage of one of the service providers supported by the integrated SIM chip • Unlock network (see "myDatanetDeviceConfig Manual " 805004)
8x	red	No mobile network	• Try again later • Improve position of the antenna
10x	red	No mobile network connection	Improve position of the antenna
11x	red	no myDatanet server available	• Check whether port 51241 is unlocked on the myDatanet server • Try again later
12x	red	Faulty SIM chip	Contact support

Operating states

Status LED	Colour	Description
flickering	green	Establishing connection
on	green	Mobile network connection established
off	---	Normal measuring operation according to configuration until the next transmission
blinking	green	Last connection OK
blinking	red	Error detected during last connection establishment
on	blue	Button has been pressed for more than 3 sec.
on	magenta	The myDataconC3 MBM is supplied by the rechargeable buffer battery.

9.2 User interface on the myDatanet server

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

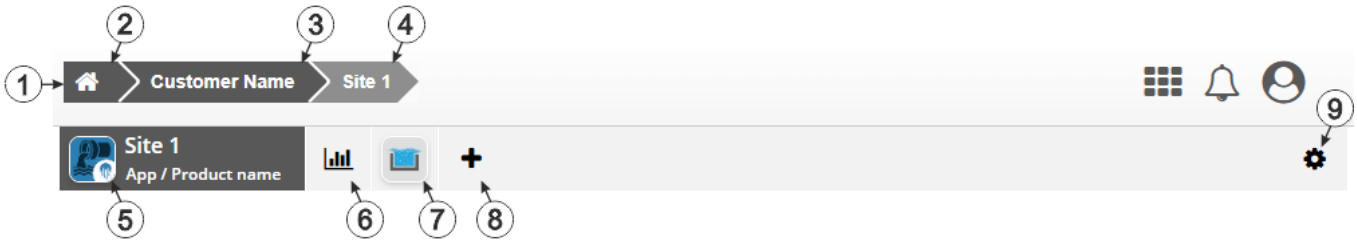
Configuration of the myDataconC3 MBM is done via the web interface on the myDatanet server. It is essentially divided into configuration of the site and configuration of the device. The corresponding input screens are opened via the list of sites / applications in the "Sites / Applications" area (see ""Sites / Applications" area at customer level" on page 132). The title bar displayed at the top of the input screen is always the same, regardless of whether

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



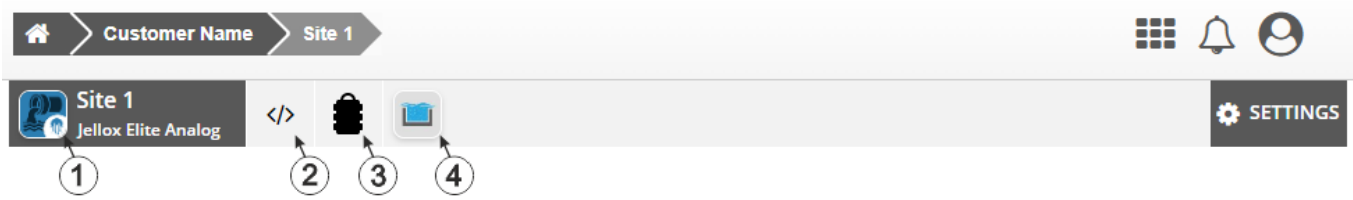
How-To-Video: How to use the new title bar

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



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

1	Breadcrumb navigation; shows the path via which the current input screen was called up.
2	Closes the current input screen and returns to the main level (This segment is only available if you are authorised to manage multiple customers.) Depending how the customer displayed after the house symbol was reached, one of the following areas of the main level is opened: • Customers • Sites / Applications • Devices
3	Displays the name of the customer that is currently open. By clicking on the segment, the currently open input screen is closed and you return to the overview of the customers. Depending on the input screen that has been opened, one of the following areas of the customers level will then be displayed: • Sites / Applications • Devices
4	Depending on the input screen that is currently open, one of the following elements may be displayed: • Name of the site • Name of the report • Serial number of the device
5	Opens the specific input screen for configuring the site (see "Specific input screen for configuring the site" on page 67)
6	Opens the report template for displaying the measurement data
7	Opens the specific input screen for configuring an add-on that has been added to the site Multiple add-ons can be added to a site. A dedicated button is added to the title bar for each add-on.
8	Opens the wizard for adding new add-ons to the site that is currently open
9	Cogwheel symbol for selecting whether the buttons to open the application specific input screens or the buttons to open the generic input screens are displayed in the title bar.

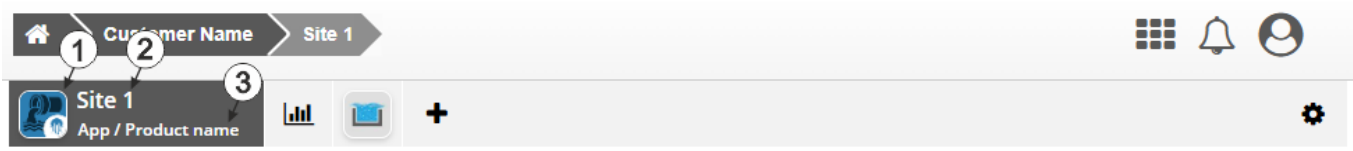


Title bar displaying the buttons to open the generic input screens

1	Opens the default input screen for configuring the site (see "Default input screen for configuring the site" on page 103)
2	Opens the default input screen for configuring the site in development mode (see "Default input screen for configuring the site in development mode" on page 112)
3	Opens the input screen for configuring the device connected to the site (see "Device configuration" on page 113)
4	Opens the default input screen for configuring the add-on

Buttons of the title bar in more detail

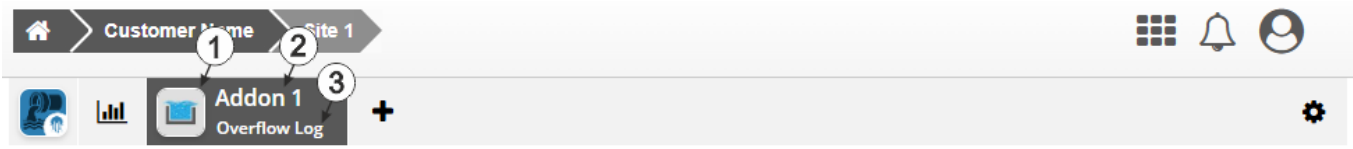
When clicking on the icon, the relevant button is expanded and shows additional information next to the Icon. The following screen shot shows the expanded button for opening the application specific input screen for configuring the site. The expanded button for opening the default input screen for configuring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



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

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

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



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

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

9.2.1 Site configuration

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

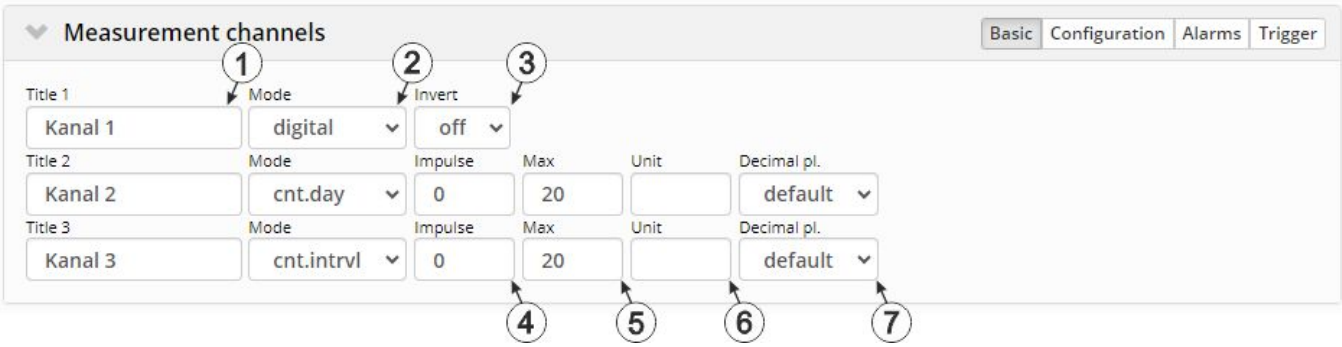
9.2.1.1 Specific input screen for configuring the site

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

9.2.1.1.1 Measurement channels

Configuration section to configure the settings for the 3 universal inputs. The basic settings are configured in the "Basic" tab. The advanced configuration of the measurement channel is done via the "configuration" tab, whereas the available caonfiguration parameters depend on the "mode" selected in the "Basic" tab. The "Alarms" tab is used to set alarm thresholds and the "trigger" tab to determine the trigger thresholds as well as the actions to be performed in case the trigger conditions are met.

9.2.1.1.1.1 Basic



"Measurement channels" configuration section, "Basic" tab (digital mode & counter modes)

1	Freely selectable channel title for the universal inputs	
2	Basic settings for the measurement channel	
	off	Measurement channel deactivated
	xxx	Analogue- and digital modes

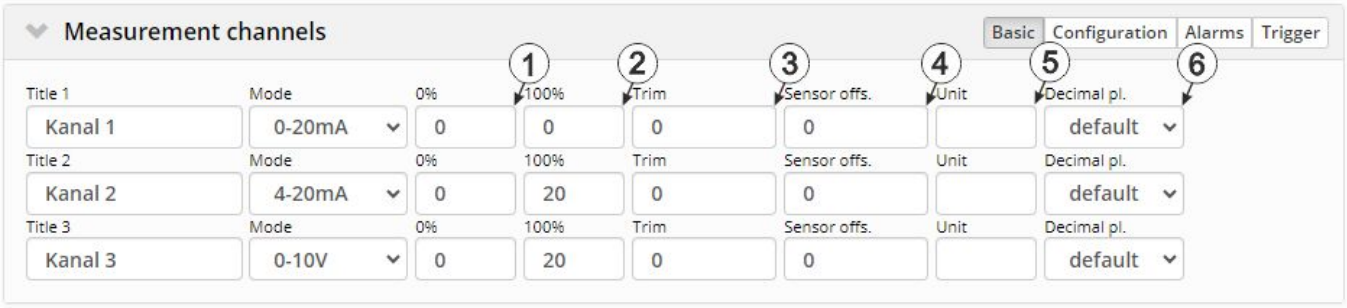
Mode "digital"

3	Inverts the input signal

Modes "Cnt.Day [1)]" and "Cnt.Intrvl."

4	Counter value of a pulse in the "Imp. unit"
5	Defines the upper scale end of the pointer instruments in reports
6	String that is used as a measurement unit by all of the server display elements [0-16 8 characters]
7	Number of decimal places that are used by all of the server display elements

1) The daycounter is reset to the time zone selected via the "time zone" parameter in the "basic settings" configuration section (see "Basic settings" on page 99) at 00:00 hours.



"Measurement channels" configuration section, "Basic" tab (analogue modes)

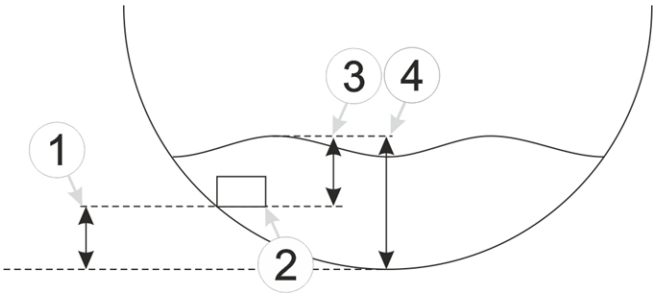
Modes "0-20 mA", "4-20 mA", "0-2 V" and "0-10 V"

1	Start of the measurement range in the measurement unit
2	End of the measurement range in the measurement unit
3	is used to adjust the zero point(see "Additional explanation on the zero point adjustment and installation height of the sensor" on page 70)
4	indicates the mounting height of the sensor
5	String that is used as a measurement unit by all of the server display elements [0-16 8 characters]
6	Number of decimal places that are used by all of the server display elements

Note:

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

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



Installation situation of the pressure sensor

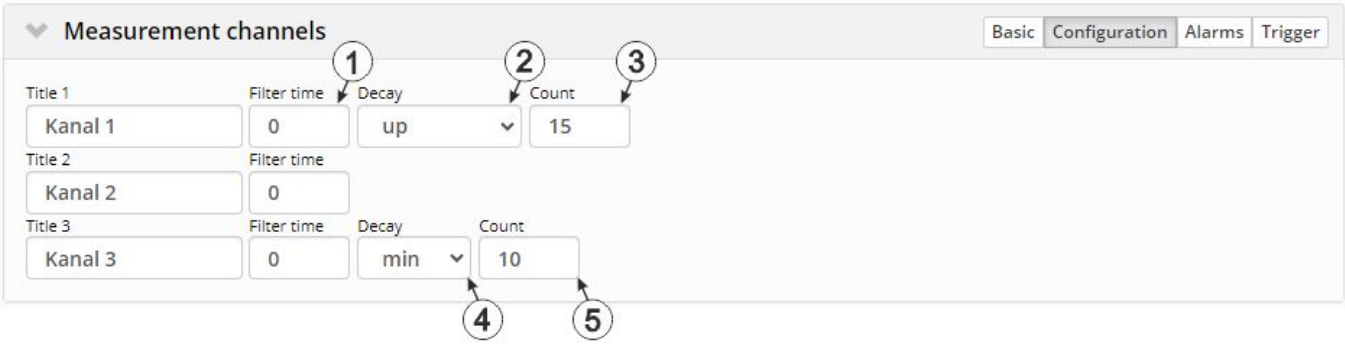
1 *Installation height: 15 cm*	**3** *Output value of the sensor: 6 cm*
2 *Pressure sensor*	**4** *Measured fill level: 20 cm*

Required configuration

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

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

9.2.1.1.1.2 Configuration



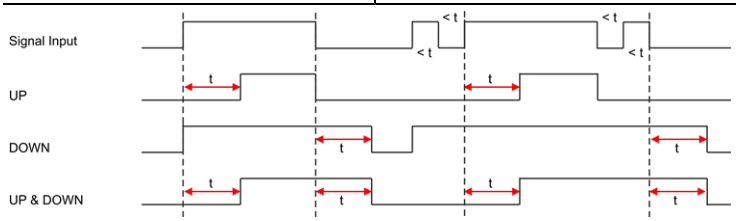
"Measurment channels" configuration section, "Configuration" tab (digital mode & counter modes)

Mode "digital"

1 Time in [ms] during which the signal must remain constant to initiate a level change. Used to suppress brief faults (debouncing).

2 Temporal function in the measurement cycle

off	Decay deactivated
up	At least x consecutive measurement values must be "High" for "High" to be recorded.
down	At least x consecutive measurement values must be "Low" for "Low" to be recorded.
up&down	At least x consecutive measurement values must be "High" for "High" to be recorded. At least x consecutive measurement values must be "Low" for "Low" to be recorded.



3 Number of measurement values taken into consideration during the decay (max. 64). In theses modes, a measurement value is created upon expiry of the measurement cycle and when the input signal level is changed. The changes to the inputs are monitored at one second intervals.

Mode "Cnt.Day"

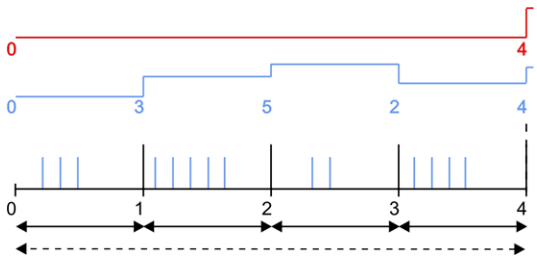
1 Time in [ms] during which the signal must remain constant to initiate a level change. Used to suppress brief faults (debouncing).

Mode "Cnt.Intrvl."

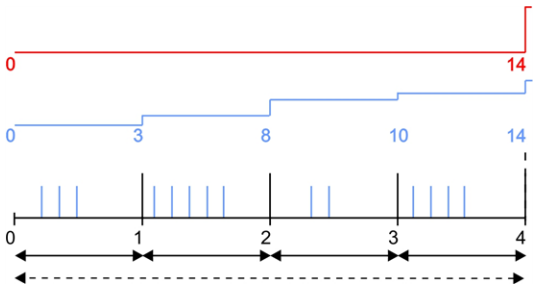
1	Time in [ms] during which the signal must remain constant to initiate a level change. Used to suppress brief faults (debouncing).	
4	Temporal function in the measurement cycle	
	aus	Decay deactivated
	min	The minimum of the last x measurement values is recorded.
	max	The maximum of the last x measurement values is recorded.
	avg	The arithmetic mean of the last x measurement values is recorded.
	med	The median of the last x measurement values is recorded.
	rms	The root mean square of the last x measurement values is recorded.
	sum	The pulses are added up and are not reset every time a measurement value is generated but only after the measurement value has been recorded. This mode is thus recommended if the record interval is longer than the measurement cycle.
5	Number of measurement values taken into consideration during the decay (max. 64). This configuration parameter is not available if "sum" mode was selected for the decay.	

Note: *Additional explanation regarding the difference between "Cnt.Day" and "Cnt.Intrvl."*

Basic setting	◄- - - - - -►	*Record interval*	*4 min.*	*Recorded value*	*red line*
	◄——►	*Measurement cycle*	*1 min.*	*Measurement value*	*blue line*



"Cnt.Intrvl." mode: The pulses are added up and reset every time a measurement value is generated.



"Cnt.Day" mode: All of the pulses up to the reset time are added up.

Note on "Cnt.Intrvl." mode: *If the record interval is longer than the measurement cycle, by default only the number of pulses registered the last time the measurement value was generated is recorded. If all pulses within a record interval should be collected and recorded, "sum" mode must be selected for the decay.*

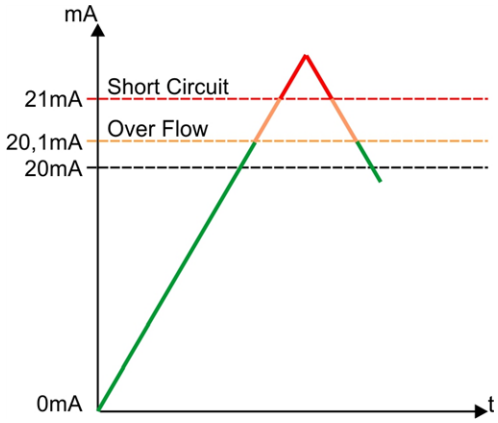


"Measurement channels" configuration section, "Configuration" tab (analogue modes)

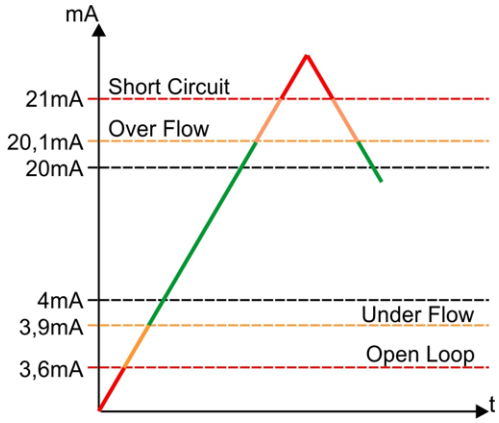
Modes "0-20 mA", "4-20 mA", "0-2 V" and "0-10 V"

1	Time in [ms] during which the analogue signal is averaged for signal smoothing. Used to suppress signal noise (also see "Output channels " on page 78).	
2	Temporal function in the measurement cycle	
	off	Decay deactivated
	min	The minimum of the last x measurement values is recorded.
	max	The maximum of the last x measurement values is recorded.
	avg	The arithmetic mean of the last x measurement values is recorded.
	med	The median of the last x measurement values is recorded.
	rms	The root mean square of the last x measurement values is recorded.
3	Number of measurement values taken into consideration during the decay (max. 64).	
4	Procedure in the event of measurement range violations	
	Ignore	The measurement value is calculated beyond the range limits.
	Silent cutoff	The measurement value is truncated at the range limits.
	NAMUR borders	Mode "0-20 mA": • The error value "OF" (overflow) is issued if the measurement value is between 20.1 mA and 21 mA. • If the measurement value is above 21 mA, the error value "SC" (short circuit) is issued. Mode "4-20 mA": • The error value "OL" (open loop) is issued, if the measurement value is below 3.6 mA. • The error value "UF" (underflow) is issued, if the measurement value is between 3.6 mA and 3.9 mA. • The error value "OF" (overflow) is issued if the measurement value is between 20.1 mA and 21 mA. • If the measurement value is above 21 mA, the error value "SC" (short circuit) is issued. Mode "0-2 V": • The error value "OF" (overflow) is issued, if the measurement value is above 2.01 V. Mode "0-10 V": • The error value "OF" (overflow) is issued, if the measurement value is above 10.05 V.

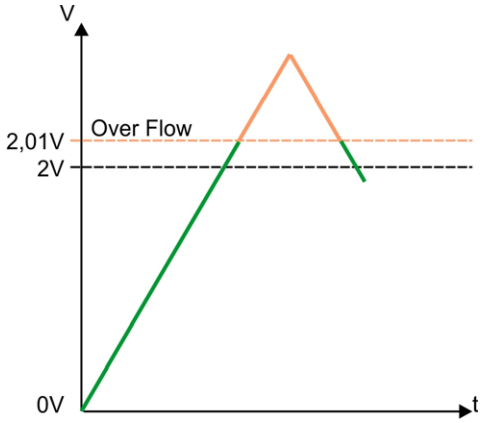
Note: *Additional explanation regarding the "NAMUR borders" overflow mode*



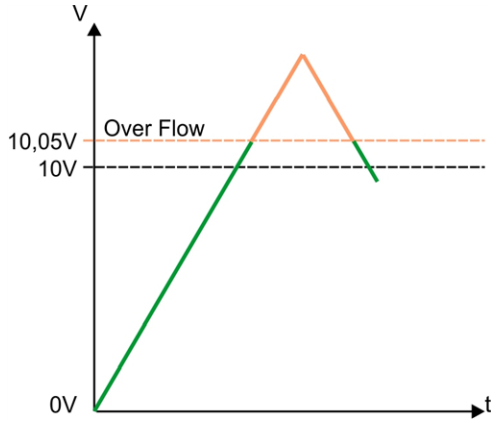
Mode "0-20 mA"



Mode "4-20 mA"



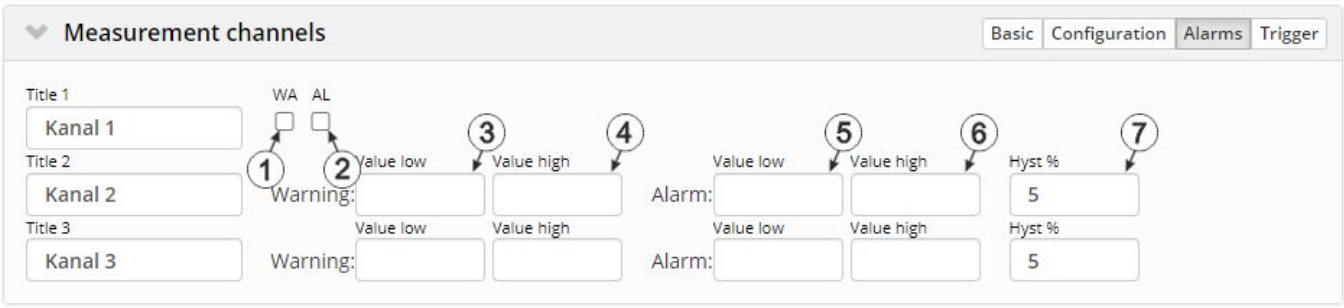
Mode "0-2 V"



Mode "0-10 V"

9.2.1.1.1.3 Alarms

> ***Note:*** *In the event of a warning or an alarm, an entry is always created in the alarm list and an immediate transmission is initiated. If the warning or the alarm is cancelled again, an immediate transmission follows.*



"Measurement channels" configuration section, "Alarms" tab

Mode "digital"

1	A "high" at the universal input triggers a "warning".
2	A "high" at the universal input triggers an "alarm".

All other modes

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

9.2.1.1.1.4 Trigger

If an universal input is operated in digital mode, there are two different types of triggers:

- Event trigger (RI, XM)

  In contrast to the level triggers, the relevant operation (e.g. record immediately) is only executed once when the trigger event occurs. With the help of the "Edge" configuration parameter, it is specified whether the rising, falling or both edges initiate the trigger event.

- Level trigger (ON, RA, D1, D2, QX)

  A "high" at the universal input initiates the trigger. A "low" at the universal input resets the trigger. The relevant operation (e.g. use alternative record interval) is executed as long as the trigger is active. The option selected via the "Edge" configuration parameter is not relevant to the level trigger. If it is necessary for the trigger to be initiated by a "low" at the universal input and for it to be reset by a "high", the input signal must then be inverted using the "Invert" configuration parameter located in the "Basis" tab.

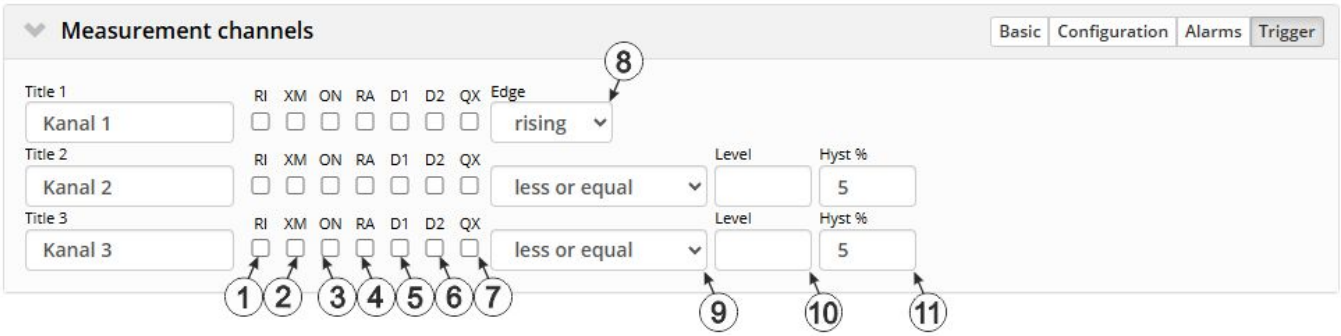
These two types of triggers are also differentiated in other universal input modes:

- Event trigger (RI, XM)

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

- Level trigger (ON, RA, D1, D2, QX)

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



"Measurement channels" configuration section, "Trigger" tab

	Event trigger:
1	Execute recording immediately
2	Initiate transmission
	Level trigger:
3	Activate online mode
4	The alternative record interval should be used.
5	If this checkbox has been selected, the setpoint on the output channel "RELAY1" of the data logger is controlled using trigger. In doing so, the setpoint entered via the interface is ignored. The normal state of the output channel is "off (low)" and switches to "on (high)" if trigger is active. However, if "Invert" is active for the output channel, the behaviour described above is reversed. See "Example explaining how to determine the switching state at the output via trigger" on page 79.
6	If this checkbox has been selected, the setpoint on the output channel "RELAY2" of the data logger is controlled using the trigger. In doing so, the setpoint entered via the interface is ignored. The normal state of the output channel is "off (low)" and switches to "on (high)" if trigger is active. However, if "Invert" is active, the behaviour described above is reversed.
7	The alternative transmission cycle should be used.

Mode "digital"

8	Event trigger: Selection of the edge at which the trigger should be initiated Level trigger: not relevant	
	rising	The rising edge initiates the trigger.
	falling	The falling edge initiates the trigger.
	both	Both edges initiate the trigger.

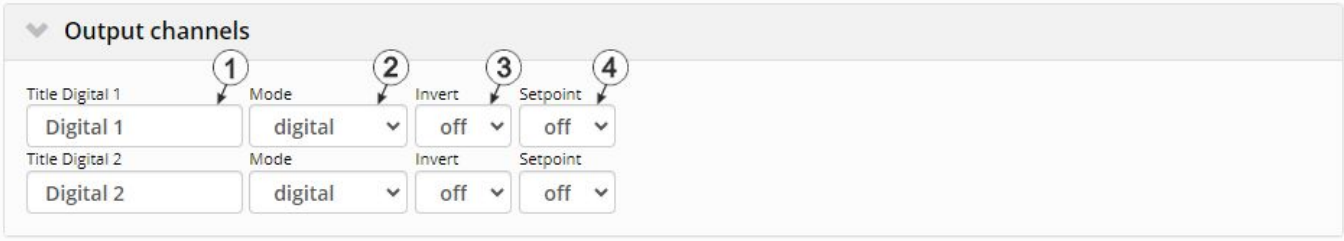
All other modes

9	Selection if the corresponding action is to be performed upon exceeding or falling below the value entered in the "level" field	
	Greater or equal	Event trigger: The trigger is initiated if the measurement value meets or exceeds this value. Level trigger: The trigger is active as long as the measurement value is higher than the level or equal to the level.
	Less or equal	Event trigger: The trigger is initiated if the measurement value drops to or falls below this value. Level trigger: The trigger is active as long as the measurement value is lower than the level or equal to the level.
10	Levels for initiating the trigger. The hysteresis is used to determine the level to reset the trigger.	
11	Hysteresis for revoking the trigger (e.g. hyst=5 %, level = greater or equal, trigger at 100 -> all-clear at 95)	

Note: *If one of the "D1" or "D2" checkboxes has been selected on several measurement channels (this also applies to internal measurement channels), the switching state on the corresponding output channel is changed as soon as the trigger is active on one of the measurement channels, i.e. it is an "or" conjunction.*

9.2.1.1.2 Output channels

Configuration section to configure the settings for the 2 relays.



Configuration section "Output channels"

1	freely selectable designation for the output channels	
2	Basic setting for the output channel	
	off	Output channel deactivated
	digital	Digital output

Mode "digital"

3	Inverts the level issued on the device
4	Setpoint (on/off) that should be issued ***Note:*** *If one of the check boxes "D1" or "D2" is selected in the "Trigger" tab of the configuration section "Measurement channels" or "Internal channels", the "setpoint" entered is ignored for the corresponding output channel.*

Note:

Additional explanation on "Digital" mode

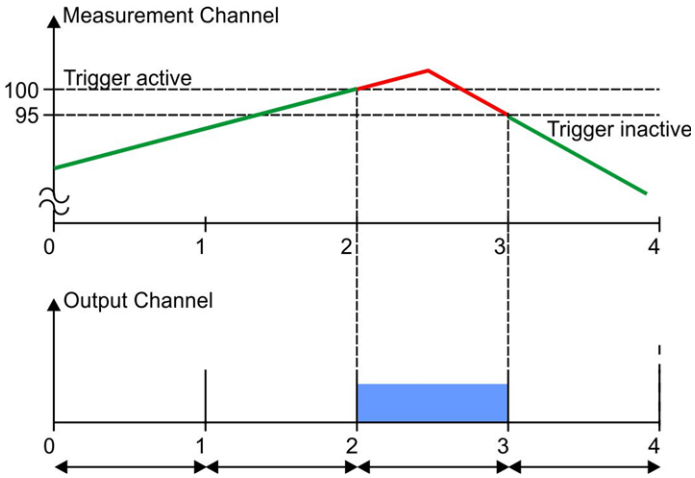
Invert	***Setpoint***		***Output on the device***
Off	*Off*	=	*Off (low)*
Off	*On*	=	*On (high)*
On	*Off*	=	*On (high)*
On	*On*	=	*Off (low)*

Note:

Example explaining how to determine the switching state at the output via trigger

Basic settings	⟷	*Measurement cycle*	*1 min.*
Measurement channels -> Trigger		*D1*	*Selected*
		Threshold	*Greater or equal 100*
		Hyst %	*5*
Output channels		*Mode*	*digital*
		Invert	*off*
		Setpoint	*on*

Trigger not active		*green line*	
Trigger active		*red line*	
Output on the device		*Switching state*	



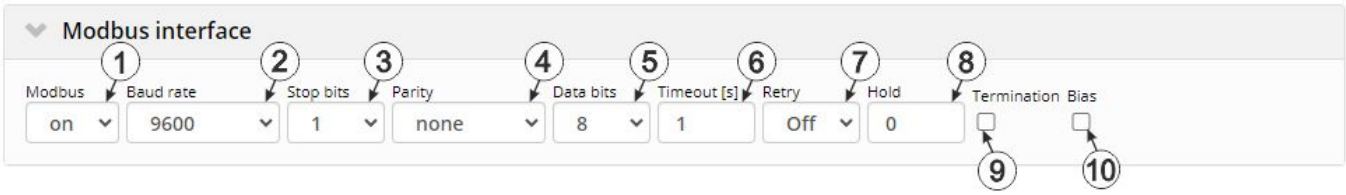
Initial situation: *One of the measurement channels is to be used to determine the switching state at the ouput channel depending on the measurement value using the triggers. If one of the checkboxes "D1" (output channel "RELAY1") or "D2" (output channel "RELAY2") in the "Trigger" tab of the "Measurement channels" configuration section (see "Measurement channels " on page 67) is selected for one of the measurement channels, the output channel is set to "off (Low)" at the time of the next measurement as long as the trigger for this measurement channel is not active.*

Explanation: *The output on the device is set to "off (Low)" up to the time of 2, as the measurement value on the measurement channel is below the trigger level. The trigger is active from the time of 2 which sets the output to "on (High)". At the time of 3, the output is ultimately set to "off (Low)" again as the measurement value falls below the "Level - hyst" value (100-5=95).*

Ergänzung: *If one of the two checkboxes ("D1" or "D2") has been selected, the "setpoint" entered for the relevant output channel via the interface is ignored. The parameter "invert" is however taken into account. If "invert" is active for the output channel, the switching states at the output are exactly the opposite of the example described above (i.e. with trigger active, the output channel is set to "on (High)").*

9.2.1.1.3 Modbus interface

Configuration section to select and configure the interface to be used for the modbus communication.



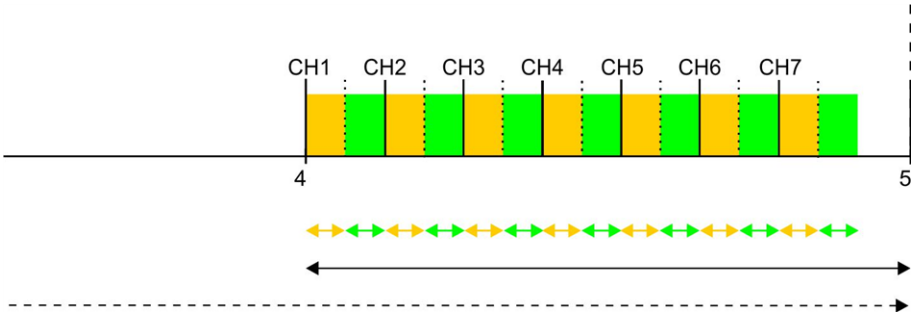
"Modbus interface" configuration section

1	Selection of the interface to be used for the modbus communication	
	off	Interface deactivated
	on	The RS485 interface should be used.
2	Selection of the required baud rate	
3	Selection of the required stop bits	
4	Selection of the required parity	
5	Number of data bits to be used	
6	Time during which the modbus server must react to the command from the device	
7	Selection if the commands should be repeated when a communication error occurs	
	Off	A communication error is highlighted immediately.
	1-3	When a communication error occurs, the relevant command is repeated x times. The error is only highlighted when the selected number of attempts has failed.
8	Number of measurement cycles for which the measurement value is held until the error value is issued	
9	Activates the 120 Ω terminal resistance or RS485 A and B	
10	Activates the 390 Ω clamp resistances (pull up to RS485 A and pull down to RS485 B)	

Important note:

Example to explain the correlation between "Timeout", "Retry" and "Measurement interval"

Basic setting		*Record interval*	*5 min.*
		Measurement cycle	*1 min.*
Modbus interface	*1st attempt*	*Timeout*	*4 sec.*
	Retry		
		Retry	*1*



Explanation: *In this example 7 channels are activated, the modbus server however does not respond. At the time of measurement, there is an attempt to read the data for the modbus measurement channel 1. Since "Retry" is activated, there is another attempt to read the data for modbus measurement channel 1 after the "Timeout" has expired. After the "Timeout" has expired for the second time, the error code "OL" (Open Loop) is set for modbus measurement channel 1 and the first attempt to read the data for the modbus measurement channel 2 is started.*

The number of activated channels (modbus measurement channels + modbus output channels), the "Timeout", the number of "Retry"s and the measurement cycle must hence be chosen as follows:

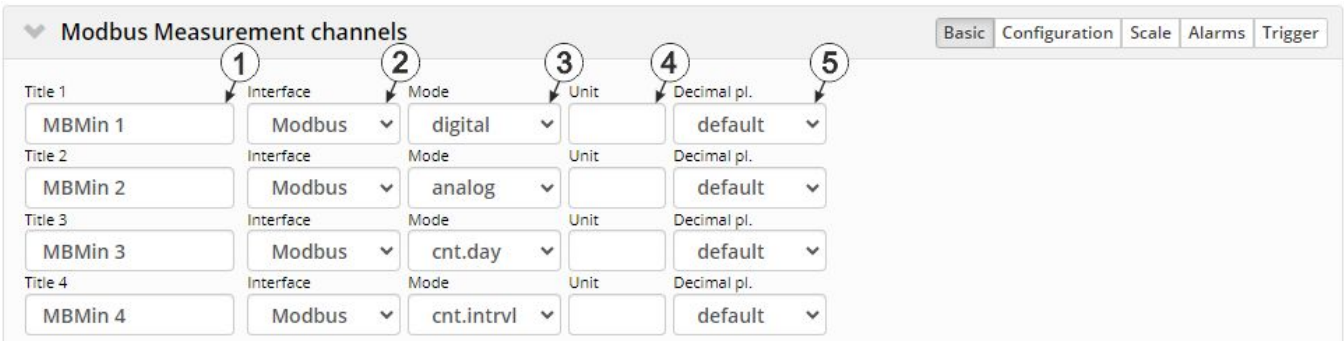
Retry not active: "Timeout" * no. of active channels < "Measurement cycle"

Retry active: "Timeout" * (1+ no. of retrys) * no. of active channels < "Measurement cycle"

9.2.1.1.4 Modbus measurement channels

Configuration section to configure the settings for the 20 modbus measurement channels. The basic settings are configured in the "Basic" tab. The "Configuration" tab is used to determine from which modbus registers the data is received and how the data stored in the modbus registers is to be interpreted. The "Scale" tab allows for the read out raw data to be resecaled into the desired unit. The "Alarms" tab is used to set the alarm thresholds and the "Trigger" tab to determine the trigger thresholds as well as the actions to be performed in case the trigger conditions are met.

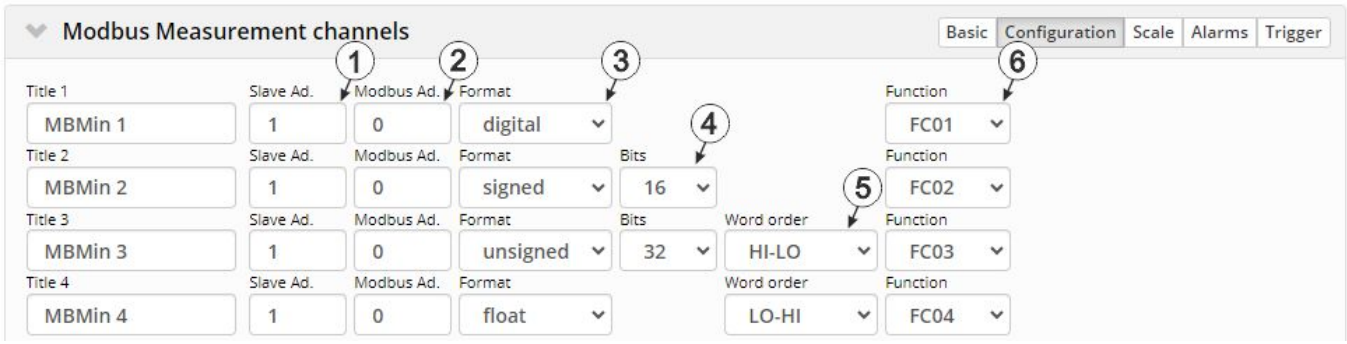
9.2.1.1.4.1 Basic



"Modbus measurement channels" configuration section, "Basic" tab

1	freely selectable channel designation for the modbus measurement channels	
2	Basic settings for the modbus measurement channel	
	off	Measurement channel deactivated
	Modbus	The data for the measurement channel are determined usint the RS485 interface selected in the configuration section "Modbus interface". The interface is always configured as modbus client (formerly master) in "RTU" operating mode.
3	defines how the modbus measurement channel is to be handled by the report elements of the server	
	digital	Digital measurement value. I.e. the system considers each measurement value independently from the measured values before or after.
	analogue	Analogue measurement value. I.e. the system considers each measurement value independently from the measured values before or after.
	Cnt.Day	Day counter. This means that the system anticipates that the measurement value of the channel will continuously increase and is reset once per day.
	Cnt.Intervl	Interval counter. This means that the system assumes that the counter reading is reset each time a measurement is recorded.
4	String that is used as a measurement unit by all of the server display elements [0-16 8 characters]	
5	Number of decimal places that are used by all of the server display elements	

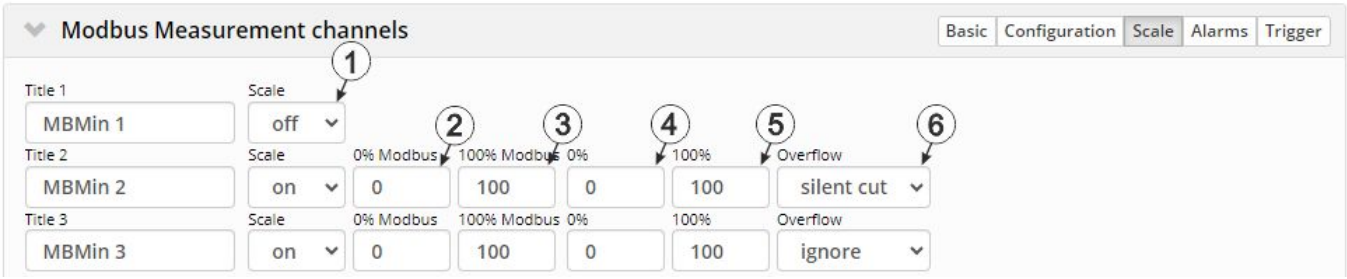
9.2.1.1.4.2 Configuration



"Modbus measurement channels" configuration section, "Configuration" tab

1	Address of the modbus server	
2	Address of the register that should be read	
3	Format in which the data to be read is stored in the register	
	Digital	A digital value should be read.
	Signed	A signed integer value should be read.
	Unsigned	The integer value to be read is not signed.
	Float	A 32-bit float should be read.
4	Selection of the word length (i.e. number of bits the integer value consists of) Only available if "Signed" or "Unsigned" has been selected for the format (i.e. an integer value should be read from the register)	
	16	16-bit integer
	32	32-bit integer. Two registers must be read from the modbus server for this purpose.
5	Selection of the word order, if the selection of format and word length requires that 2 registers are read from the modbus server (i.e. "Float", "Signed" with a word length of 32 bit or "Unsigned" with a word length of 32 bit has been selected)	
	HI-LO	HI word on the lower register address and the LO word on the higher register address
	LO-HI	LO word on the lower register address and the HI word on the higher register address
6	Function code to be used for accessing the register	
	FC01	Read Coils
	FC02	Read Discrete Inputs
	FC03	Read Holding Registers
	FC04	Read Input Registers

9.2.1.1.4.3 Scale



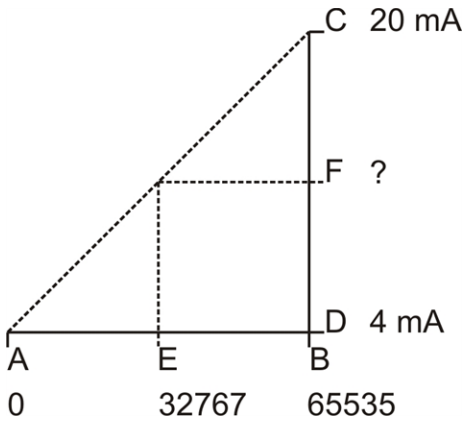
"Modbus measurement channels" configuration section, "Scale" tab

1	Selection if the raw data read from the register is to be rescaled before further processing.	
	off	The data is processed unchanged..
	on	Scale active (i.e. the data is rescaled into the desired unit before further processing)
2	Start of the measurement range in the unit of the modbus server (i.e. raw value to be read from the modbus server)	
3	End of the measurement range in the unit of the modbus server (i.e. raw value to be read from the modbus server)	
4	Start of the measurement range in the measurement unit	
5	Start of the measurement range in the measurement unit	
6	Procedure in the event of measurement range violations	
	Ignore	The measurement value is calculated beyond the range limits.
	Silent cutoff	The measurement value is truncated at the range limits.

Note: *Calculation of the measurement values when scale is active:*

0 %	*4 mA*	*D*
100 %	*20 mA*	*C*
0 % Modbus	*0*	*A*
100 % Modbus	*65535*	*B*

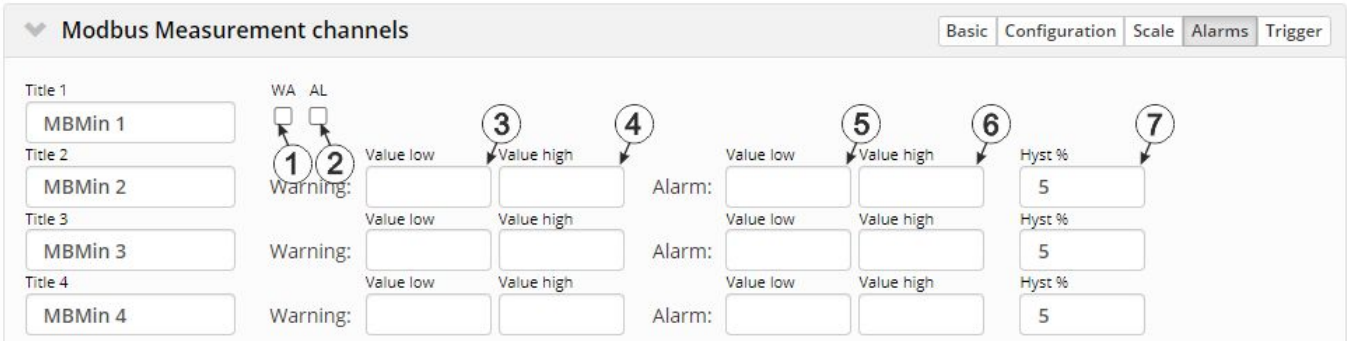
Measurement value in the unit of the modbus server	*32767*	*E*
Scaled measurement value	*11,9998 mA*	*F*



F = ((C - D)/(B - A)) * (E - A) + D
F = ((20 mA - 4 mA) /(65535 - 0)) * (32767 - 0) + 4 mA
=11,9998 mA

9.2.1.1.4.4 Alarms

> ***Note:*** *In the event of a warning or an alarm, an entry is always created in the alarm list and an immediate transmission is initiated. If the warning or the alarm is cancelled again, an immediate transmission follows.*



"Modbus measuement channels" configuration section, "Alarms" tab

Which of the configuration parameters are available for the respective modbus measurement channel depends on the format selected via the "Configuration" tab in which the data to be read is saved in the register.

Format "Digital"

1	A "high" at the universal input triggers a "warning".
2	A "high" at the universal input triggers an "alarm".

All other formats

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

9.2.1.1.4.5 Trigger

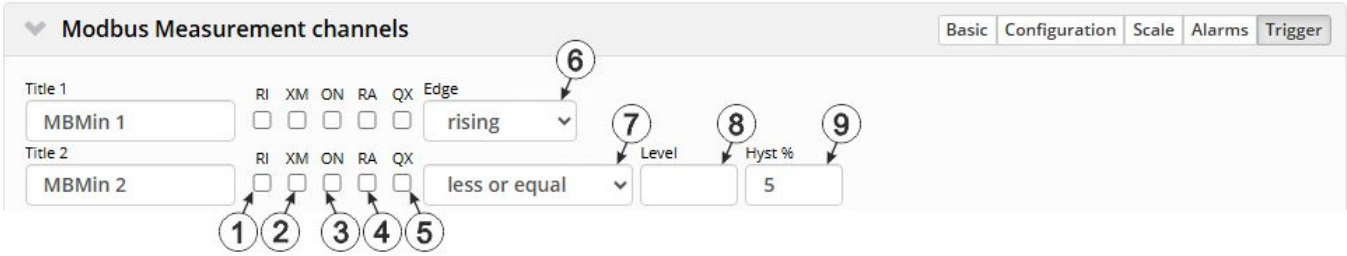
There are two different types of triggers:

- Event trigger (RI, XM)

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

- Level trigger (ON, RA, QX)

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



"Modbus measurement channels" configuration section, "Trigger" tab

	Event trigger:
1	Execute recording immediately
2	Initiate transmission
	Level trigger:
3	Activate online mode
4	The alternative record interval should be used.
5	The alternative transmission cycle should be used.

Which of the configuration parameters are available for the respective modbus measurement channel depends on the format selected via the "Configuration" tab in which the data to be read is saved in the register.

Format "Digital"

6	Event trigger: Selection of the edge at which the trigger should be initiated Level trigger: not relevant. The trigger is active as long as the measurement value is "High".	
	rising	The rising edge initiates the trigger.
	falling	The falling edge initiates the trigger.
	both	Both edges initiate the trigger.

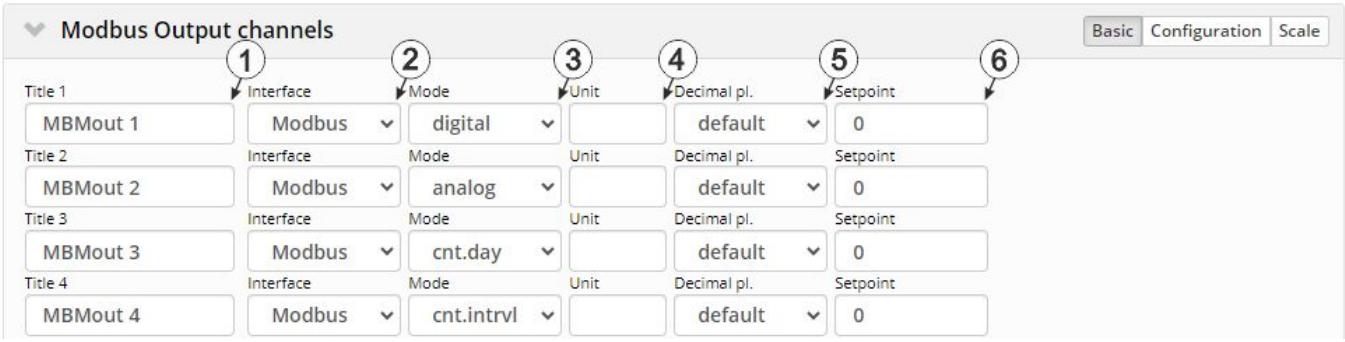
All other formats

7	Selection if the corresponding action is to be performed upon exceeding or falling below the value entered in the "level" field	
	greater or equal	Event trigger: The trigger is initiated if the measurement value meets or exceeds this value. Level trigger: The trigger is active as long as the measurement value is higher than the level or equal to the level.
	less or equal	Event trigger: The trigger is initiated if the measurement value drops to or falls below this value. Levelt rigger: The trigger is active as long as the measurement value is lower than the level or equal to the level.
8	Levels for initiating the trigger. The hysteresis is used to determine the level to reset the trigger.	
9	Hysteresis for revoking the trigger (e.g. hyst=5 %, level = greater or equal, trigger at 100 -> all-clear at 95)	

9.2.1.1.5 Modbus output channels

Configuration section to configure the settings for the 12 modbus output channels. The basic settings are configured in the "Basic" tab. The "Configuration" tab is used to determine in which modbus register the setpoints should be written and in which format the setpoints should be filed in the corresponding registers. Via the "Scale" tab, the setpoints available in a specific unit can be rescaled to the desired raw value to be written into the register.

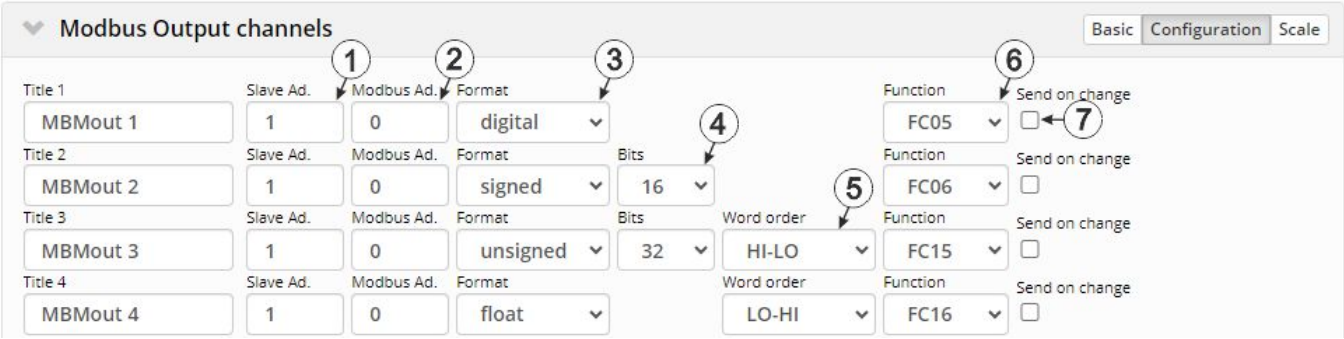
9.2.1.1.5.1 Basic



"Modbus output channels" Configuration section, "Basic" tab

1	freely selectable designation for the modbus output channels	
2	Basic setting for the modbus output channel	
	off	Output channel deactivated
	Modbus	The setpoint is transmitted to the modbus server via the RS485 interface selected in the "Modbus interface" configuration section. The interface is always configured as modbus client (formerly master) in "RTU" operating mode.
3	defines how the modbus output channel is to be handled by the report elements of the server	
	digital	Digital measurement value. I.e. the system considers each measurement value independently from the measured values before or after.
	analogue	Analogue measurement value. I.e. the system considers each measurement value independently from the measured values before or after.
	Cnt.Day	Day counter. This means that the system anticipates that the measurement value of the channel will continuously increase and is reset once per day.
	Cnt.Intervl	Interval counter. This means that the system assumes that the counter reading is reset each time a measurement is recorded.
4	String that is used as a measurement unit by all of the server display elements [0-16 8 characters]	
5	Number of decimal places that are used by all of the server display elements	
6	Output value in the measurement unit	

9.2.1.1.5.2 Configuration



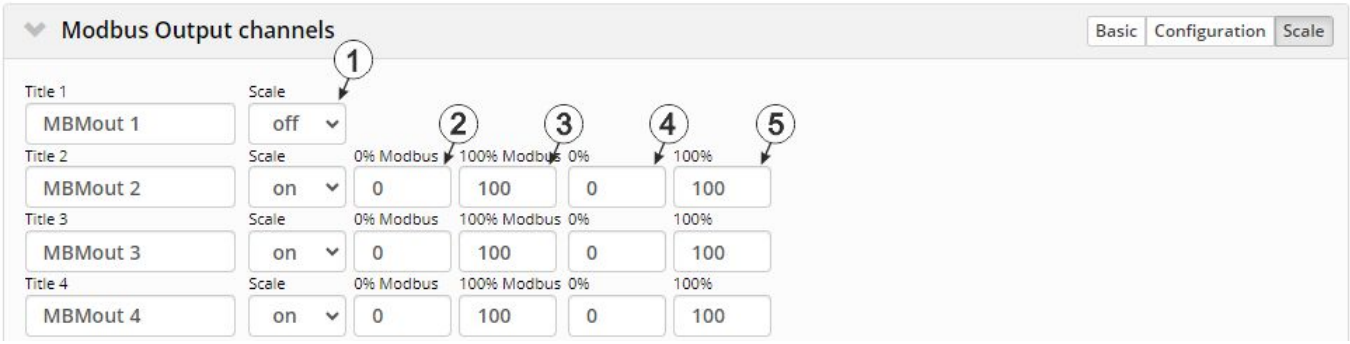
"Modbus output channels" configuration section, "Configuration" tab

1	Address of the modbus server	
2	Address of the register that should be written to	
3	Format in which the setpoint is to be written to the register	
	digital	A digital value must be written.
	signed	A signed integer value should to be written.
	unsigned	The integer value to be written is not signed.
	float	A 32-bit float should to be written.
4	Selection of the word length (i.e. number of bits the integer value consists of) Only available if "signed" or "unsigned" has been selected for the format	
	16	16-bit integer
	32	32-bit integer. Two registers must be written in the modbus server for this purpose.
5	Selection of the word order, if the selection of format and word length requires that 2 registers are written to the modbus server (i.e. "Float", "Signed" with a word length of 32 bit or "Unsigned" with a word length of 32 bit has been selected)	
	HI-LO	HI word on the lower register address and the LO word on the higher register address
	LO-HI	LO word on the lower register address and the HI word on the higher register address
6	Function code to be used for accessing the register	
	FC5	Write Single Coils
	FC6	Write Single Register
	FC15	Write Multiple Coils
	FC16	Write Multiple Registers
7	Selected: In the event of a change, the setpoint is only transmitted to the modbus server once after the current measurement value has expired.[1)] Not selected: The setpoint is transmitted to the modbus server cyclically in the measurement interval. [2)]	

[1)] Recommended if the modbus server saves the received data in a non-volatile memory each time. It prevents the int. flash of the modbus server from reaching the max. number of write cycles prematurely due to frequent writing of the same data.

[2)] Recommended if the modbus server uses the continuous data transmission to recognise if the connection to the modbus client is still active.

9.2.1.1.5.3 Scale



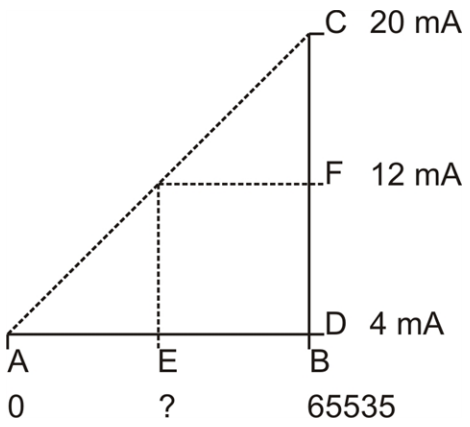
"Modbus output channels" configuration section, "Scale" tab

1	Selection if the setpoint is to be rescaled before writing it to the register.	
	off	The setpoint is written to the register as is.
	on	Scale active (i.e. the setpoint is rescaled into the desired raw value before writing it to the register)
2	Start of the output range in the unit of the modbus server (i.e. the raw value to be written in the modbus server)	
3	End of the output range in the unit of the modbus server (i.e. the raw value to be written in the modbus server)	
4	Start of the output range in the measurement unit	
5	End of the output range in the measurement unit	

Note: *Calcualtion of the output value is scale is active:*

0 %	*4 mA*	*D*
100 %	*20 mA*	*C*
0 % Modbus	*0*	*A*
100 % Modbus	*65535*	*B*

Basic > setpoint	*12 mA*	*F*
Scaled output value	*32767*	*E*



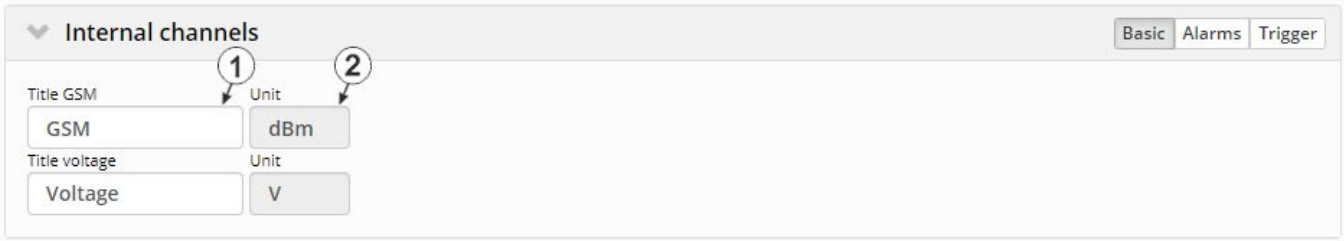
E = ((B - A)/(C - D)) * (F - D) + A

F = ((65535 - 0) /(20 mA - 4 mA)) * (12 mA - 4 mA) + 0 =32767

9.2.1.1.6 Internal channels

Configuration section to configure the settings for the internal channels (e.g. mobile network field strength). The designation of the individual channels can be determined via the "Basic" tab. The "Alarms" tab is used to enter the alarm thresholds and the via the "Trigger" tab the trigger thresholds and the actions to be performed if the trigger conditions are met are determined.

9.2.1.1.6.1 Basic



"Internal channels" configuration section, "Basic" tab

1	freely selectable channel designation for: GSM — the mobile network signal strength voltage — the supply voltage (VIN)
2	String that is used as measurement unit from all display elements of the server

9.2.1.1.6.2 Alarms

> ***Note:*** *In the event of a warning or an alarm, an entry is always created in the alarm list and an immediate transmission is initiated. If the warning or the alarm is cancelled again, an immediate transmission follows.*



"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)

9.2.1.1.6.3 Trigger

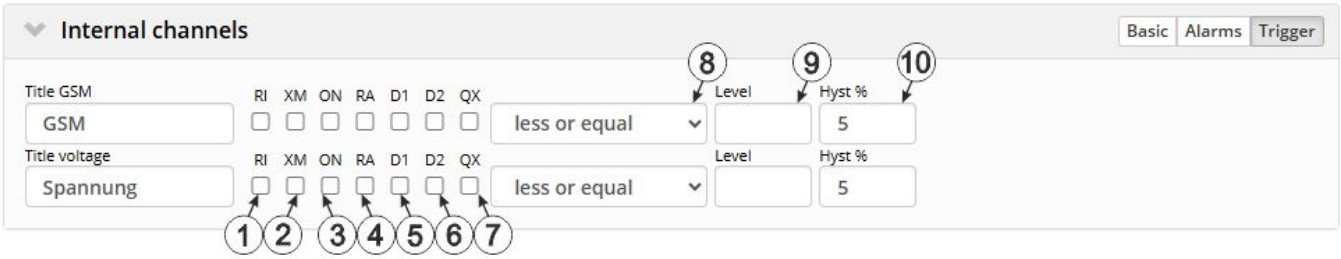
The following two type of triggers are differentiated:

- Event trigger (RI, XM)

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

- Level trigger (ON, RA, D1, D2, QX)

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



"Internal channels" configuration section, "Trigger" tab

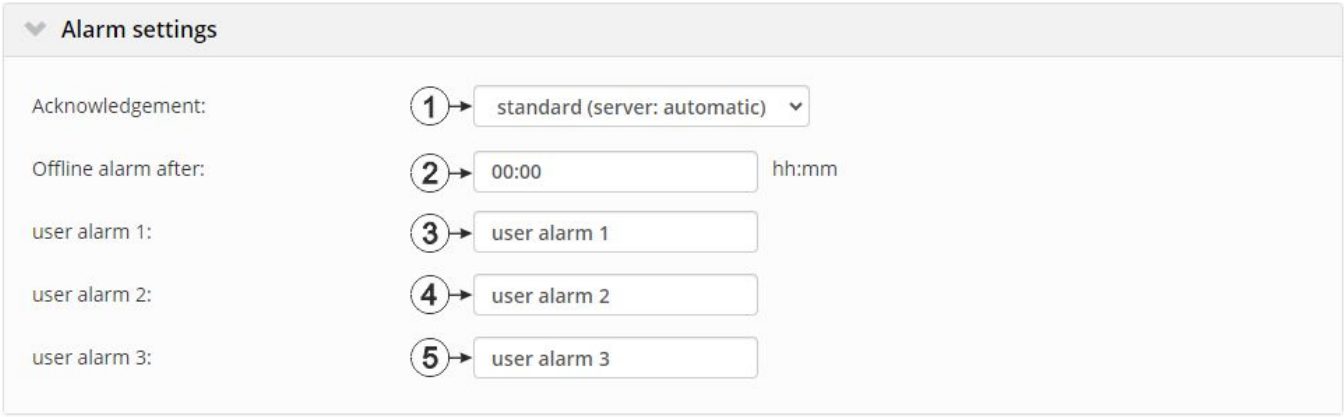
	Event trigger:	
1	Execute recording immediately	
2	Initiate transmission	
	Level trigger:	
3	Activate online mode	
4	The alternative record interval should be used.	
5	If this checkbox has been selected, the setpoint on the output channel "RELAY1" of the data logger is controlled using trigger. In doing so, the setpoint entered via the interface is ignored. The normal state of the output channel is "off (low)" and switches to "on (high)" if trigger is active. However, if "Invert" is active for the output channel, the behaviour described above is reversed. See "Example explaining how to determine the switching state at the output via trigger" on page 79.	
6	If this checkbox has been selected, the setpoint on the output channel "RELAY2" of the data logger is controlled using the trigger. In doing so, the setpoint entered via the interface is ignored. The normal state of the output channel is "off (low)" and switches to "on (high)" if trigger is active. However, if "Invert" is active, the behaviour described above is reversed.	
7	The alternative transmission cycle should be used.	
8	Selection if the corresponding action is to be performed upon exceeding or falling below the value entered in the "level" field	
	greater or equal	Event trigger: The trigger is initiated if the measurement value meets or exceeds this value. Level trigger: The trigger is active as long as the measurement value is higher than the level or equal to the level.
	less or equal	Event trigger: The trigger is initiated if the measurement value drops to or falls below this value. Level trigger: The trigger is active as long as the measurement value is lower than the level or equal to the level.

9	Levels for initiating the trigger. The hysteresis is used to determine the level to reset the trigger.
10	Hysteresis for revoking the trigger (e.g. hyst=5 %, level = greater or equal, trigger at 100 -> all-clear at 95)

Note: *If one of the "D1" or "D2" checkboxes has been selected on several measurement channels (this also applies to internal measurement channels), the switching state on the corresponding output channel is changed as soon as the trigger is active on one of the measurement channels, i.e. it is an "or" conjunction.*

9.2.1.1.7 Alarm settings

Configuration section to determine how to aknowledge alarms and after how much time an "Offline alarm" should be triggered if the device does not report to the server for a longer period of time.



"Alarm settings" configuration section

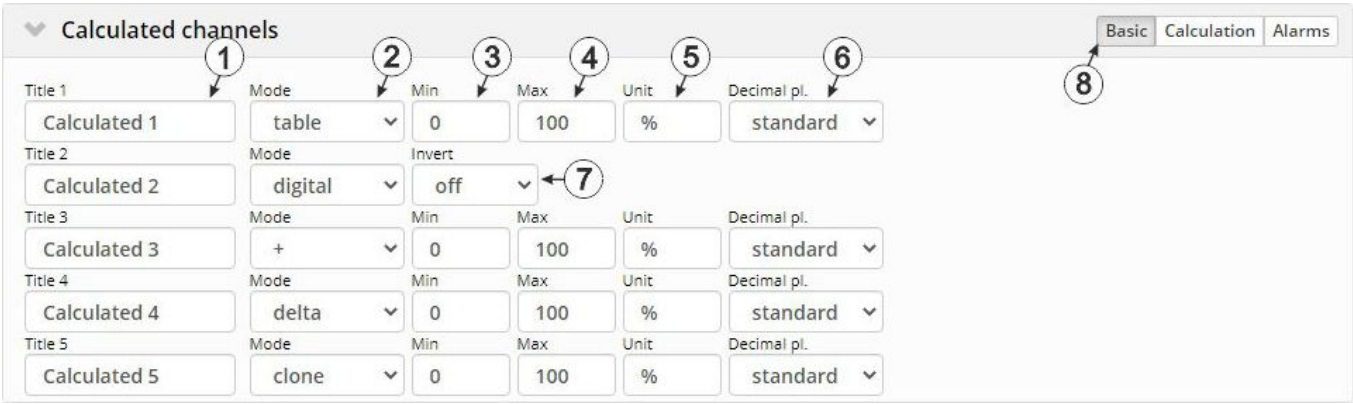
1	Selection of how alarms should be acknowledged	
	Standard	The global server setting is used to determine whether alarms must be acknowledged automatically or manually (see "myDatanet Server Manual " 805002).
	automatic	Alarms are acknowledged automatically as soon as all of the messages have been sent. 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 the event that the device does not report for longer than the set time (00:00 alarm deactivated).	
3	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.	
4	Freely selectable title for user-defined alarm 2	
5	Freely selectable title for user-defined alarm 3	

9.2.1.1.8 Calculated channels

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

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

9.2.1.1.8.1 Basic

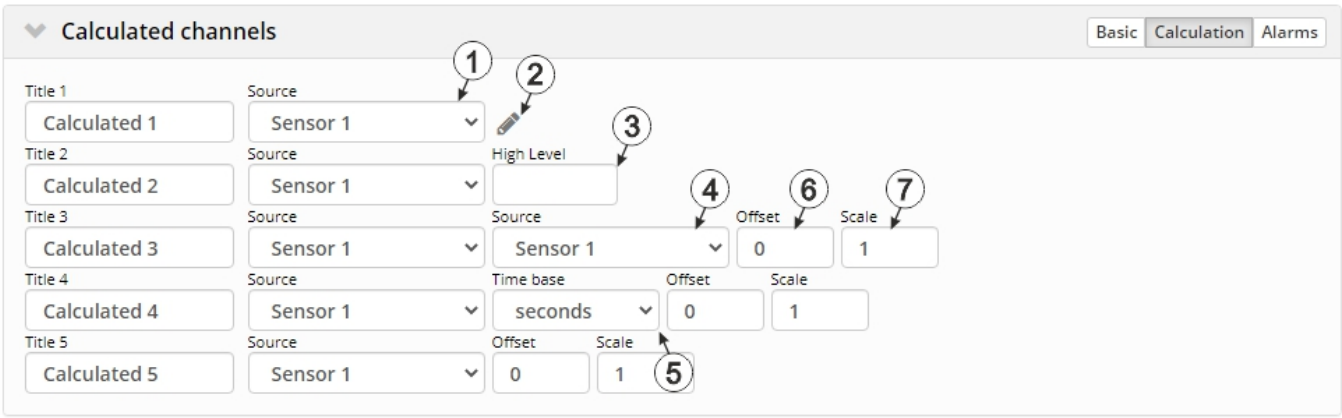


"Calculated channels" configuration section, "Basic" tab

1	Freely selectable channel title for the calculated channels [0-16 characters]	
2	Possible calculation modes for the calculated channels	
	Off	Calculated channel deactivated
	Table	Determines the value for the calculated channel by searching for the row corresponding to the value of a measurement channel in the reference point table. Such a row is made up of the "Measurement channel value" and "Output value for calculated channel" pair of values. Linear interpolation is carried out between the table rows; linear extrapolation is used for values outside the defined table.
	Digital	Converts an analogue value into a digital value. The threshold from which an analogue value is interpreted as "high" can be selected via the "High level" parameter in the "Calculation" tab. In addition the determined digital value can be inverted via the "Invert" parameter.
	+, -, x, /	Links the values of two measurement channels using a mathematic operation (addition, subtraction, multiplication or division)
	Delta	Determines the difference between two measurement values and divides the result by the time difference between the time stamps of the measurement values. The time unit (value/sec., value/min., ...) for the result can be selected via the "Time basis" parameter located in the "Calculation" tab. It is thus possible to convert counter readings (m^3) of the source into a flow rate (m^3/min.) (see "Additional explanation: Delta mode" on page 108).
	clone	Creates a clone of a measurement channel. This ensures it is possible to rename channels, to select different ends of the scale for the pointer instruments, to determine a new string as a measurement unit and to adjust the number of decimal places. The measurement values (numerical value without unit) correspond exactly to those of the source.

3	Defines the lower scale end of the pointer instruments
4	Defines the upper scale end of the pointer instruments in reports
5	String that is used as a measurement unit by all of the server display elements [0-16 characters]. It has no direct influence on the values
6	Number of decimal places that are used by all of the server display elements
7	Inverts the input signal (only for calculated channels in "Digital" mode)
8	Buttons to switch between the individual tabs of the configuration section

9.2.1.1.8.2 Calculation



"Calculated channels" configuration section, "Calculation" tab

"Table" calculation mode

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

"Digital" calculation mode

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

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

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

"Delta" calculation mode

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

"Clone" calculation mode

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

Note:

Additional explanation: Delta mode

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

Required configuration

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

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

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

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

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

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

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

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

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

9.2.1.1.8.3 Alarms

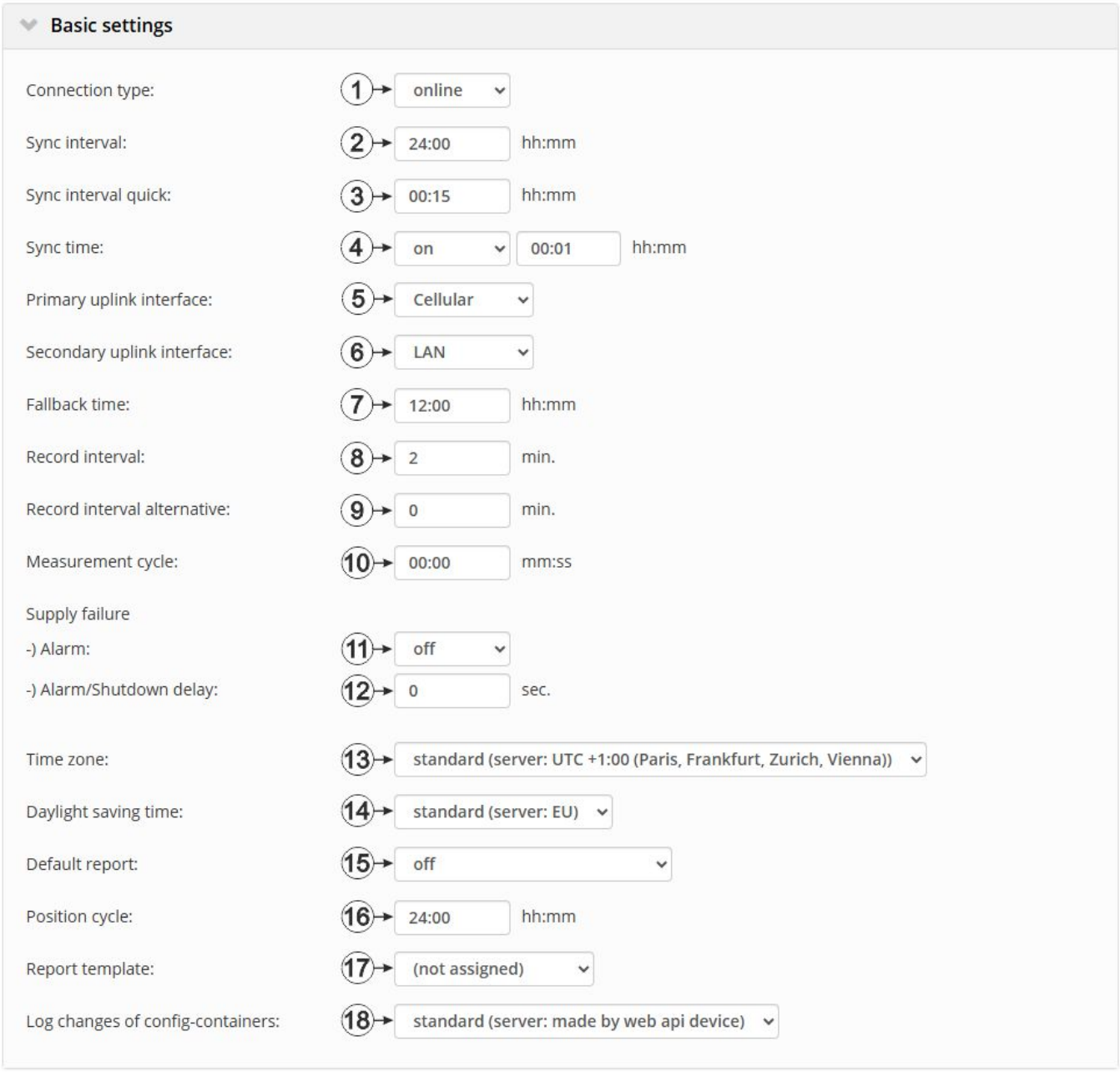
Note: *The evaluation of the alarm thresholds for calculated channels can only occur if the device has transferred the measurement data to the myDatanet server.*



"Calculated channels" configuration section, "Alarms" tab

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

9.2.1.1.9 Basic settings



"Basic settings" configuration section

1	Selection of the connection type With this selection, the labels of the three subsequent input fields are also adjusted.	
	Interval	The device connects in the transmission cycle. Lables used for the input fields: "Transmission cycle", "Transmission cycle quick" and "Transmission time"
	online	The device does not disconnect the connection and continuously transmits the measurement data. However, every 7 days, the connection is temporarily interrupted in order to verify the server assignment. Lables used for the input fields:: "Syn. interval", "Sync interval quick" and "Sync time"
2	Time between transmissions . Upon established online connection, a complete device synchronisation is carried out instead of a connection establishment.	
3	Time between the transmissions, if a alternative transmission cycle should be used because of a trigger being initiated.Upon established online connection, a complete device synchronisation is carried out instead of a connection establishment.	
4	Selection of whether a connection to the server should be established every day at a firmly defined time	
	off	No additional transmissions
	on	The adjacent option can be used to determine the time at which the device establishes a connection to the server regardless of the transmission cycle.Upon established online connection, a complete device synchronisation is carried out instead of a connection establishment. If an additional transmission has been initiated, the internal meter of the device, that determines the time of the transmission, is reset. This means that the next transmission is completed exactly after the time specified via the "transmission cycle" parameter.
5	Selection of the preferred communication channel	
	Cellular	Initially an attempt is made to establish a mobile network connection.
	LAN	Initially an attempt is made to establish a LAN connection. ***Note:*** *Only available with variant myDatalogC33x WIFI/2G/3G/4G World .*
6	Selection of the secondary communication channel in case the connection could not be established via the preferred communication channel. ***Note:*** *Only available with variant myDatalogC33x WIFI/2G/3G/4G World*	
	off	no secondary communication channel If the connection cannot be established via the preferred communication channel, no further action is taken.
	Cellular	If a LAN connection cannot be established, a connection will be established via the mobile network. Only available if LAN has been selected as the preferred communication channel
	LAN	If a mobile connection cannot be established, a LAN connection will be established. Only available if Cellular has been selected as the preferred communication channel.

7	Time after which the preferred communication channel is used again when establishing a connection, after previously switching to the secondary communication channel. If there is an existing online connection, the connection is terminated after this time and then re-established via the preferred communication channel. ***Note:*** *Only available with variant myDatalogC33x WIFI/2G/3G/4G World*	
8	Time between measurement data recordings	
9	Time between measurement data recordings, if an alternative record interval should be used because of a trigger being initiated	
10	Time between measurements (00:00 same as record interval)	
11	Selection of whether an alarm should be triggered in the event of a supply voltage failure	
	off	No alarm generated in the event of a supply voltage failure
	on	An alarm shall be generated in the event of a supply voltage failure
12	If the offset of a failure report is deactivated: The device is only completely deactivated if the supply voltage has failed for longer than the time configured here. This prevents the device from shutting down in the event of brief supply voltage failures. However, an entry is always added to the device log. If the time is set to 0, the device is immediately completely deactivated every time the supply voltage fails. If setting off a failure report is activated: A relevant alarm is only triggered if the supply voltage has failed for longer than the time configured here. This prevents alarms from being triggered in the event of brief supply voltage failures. However, an entry is always added to the device log.If the time is set to 0, an alarm is generated every time the supply voltage fails.	
13	Regional settings (not relevant for raw measurement data as this is stored in UTC)	
14	Configuration for automatic time adjustment (only displayed if a time zone other than "Standard" has been selected)	
	Standard	The configuration for the time adjustment is adopted by the global server setting (see "myDatanet Server Manual " 805002).
	Off	Automatic time adjustment deactivated
	USA	Predefined setting for the American area
	EU	Predefined setting for the European area
15	Selection of the report that is loaded by clicking on the device link in the maps	
	Off	The default graphic is loaded.
	"Name of a report"	The selected report is loaded.
16	Position update interval (00:00 positioning is completed with every connection)	

17	Selection of whether the default graphic or a report template to display the data is used when clicking on the symbol to display the measurement data located in the site/application list. 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.	
	(not assigned)	The default graphic is used to display the measurement data.
	"Name of a report template"	Name of the report template used to display the measurement data
18	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.

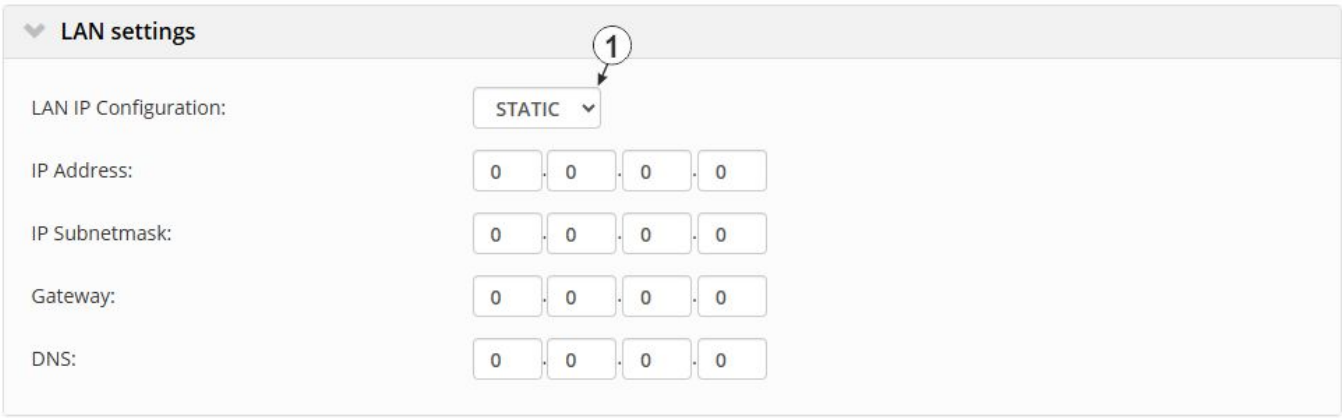
Note: *Additional explanation about the connection types*

Connection type	*Energy consumption*	*Data volumes*	*Response time*
online			
Interval			

9.2.1.1.10 LAN settings

Note: *The LAN interface is only available with variant myDatalogC33x WIFI/2G/3G/4G World .*

Configuration section via which the LAN interface of the device is configured.



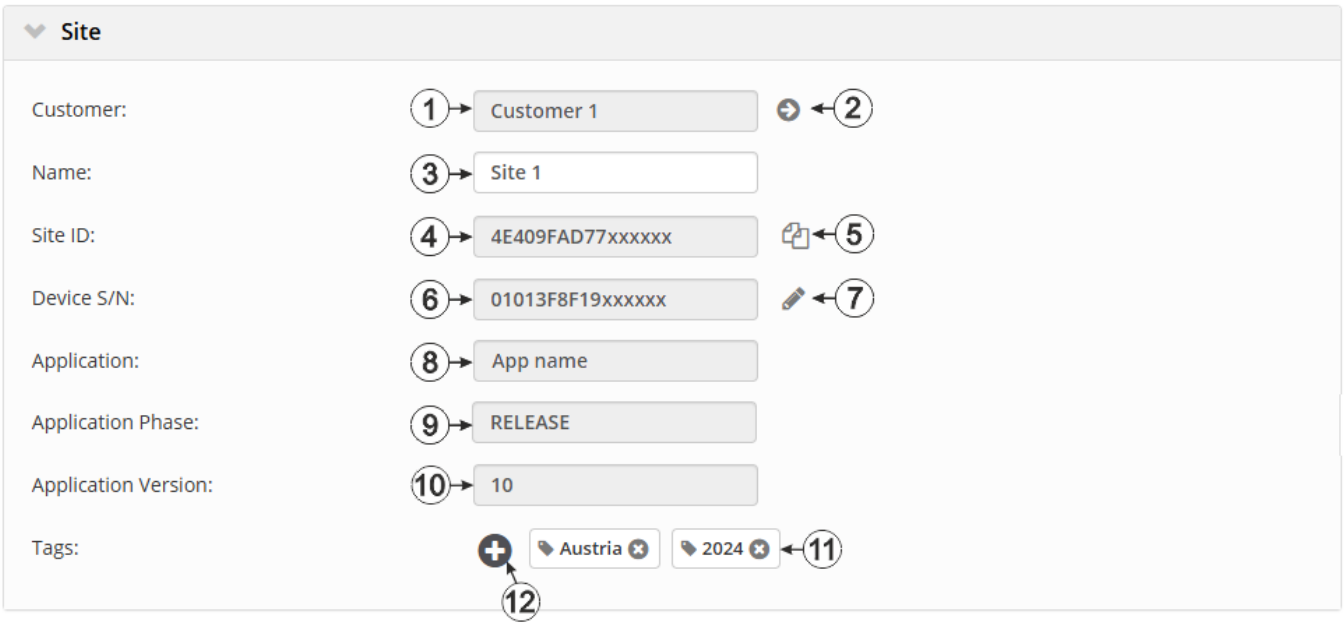
Configuration section "LAN settings"

1	Selection whether the network configuration should be done automatically (DHCP) or entered manually (STATIC).	
	DHCP	There is a DHCP server on the network and the device is automatically assigned the settings for IP address, subnet mask and gateway.
	STATIC	The settings for IP address, subnet mask, gateway and DNS must be entered manually in the fields provided.

9.2.1.2 Default input screen for configuring the site

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

9.2.1.2.1 Site

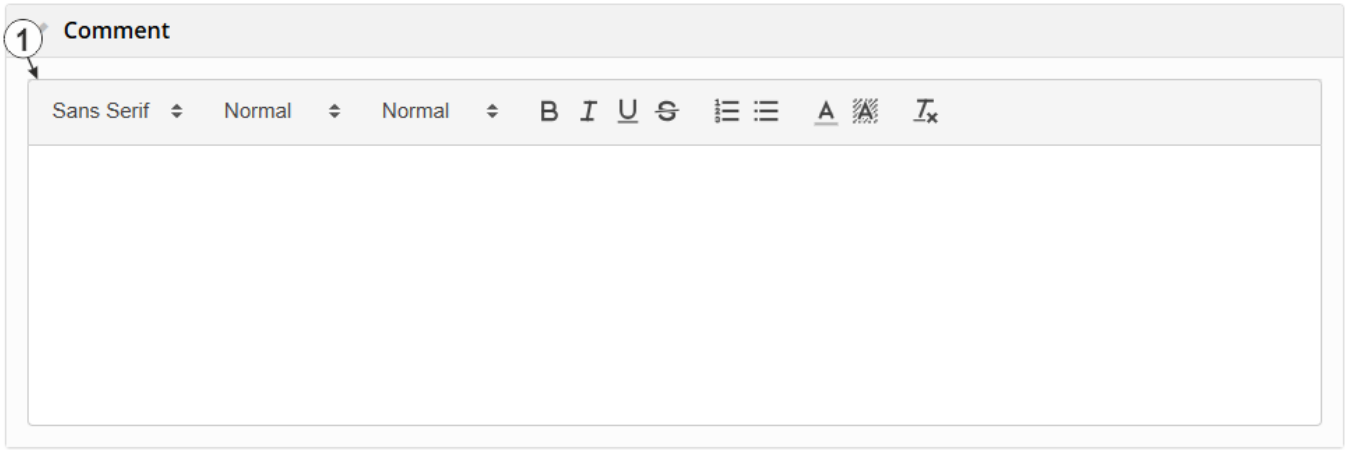


Confiuration section "Site"

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

10	Version number of the IoT application that is currently installed on the site. If the version number of the site is not the same as the version number of the device logic installed on the device then the version number of the device logic installed on the device is displayed in addition to the version number of the site.
11	List of tags already assigned to the site. The assignment can be cancelled by clicking on the cross next to the name of the tag.
12	Opens the input screen for assigning tags

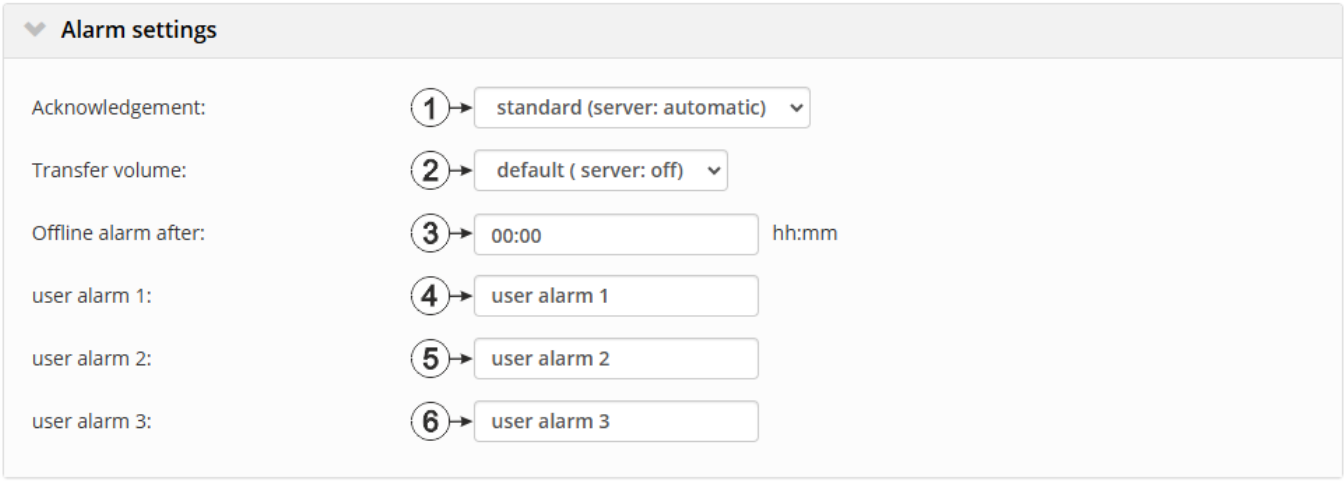
9.2.1.2.2 Comments



Configuration section "Comments"

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

9.2.1.2.3 Alarm settings



Configuration section "Alarms"

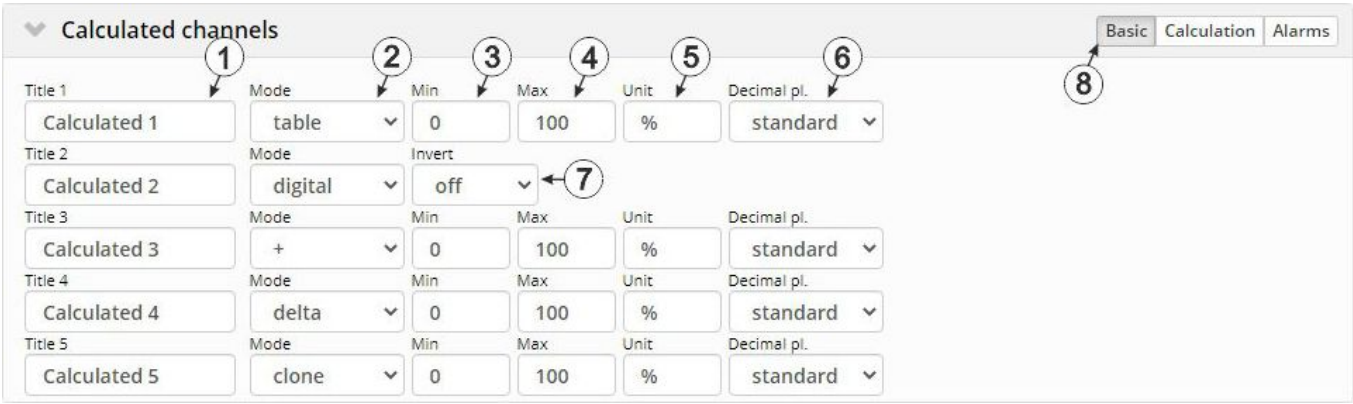
1	Selection of how the alarms should be aknowledged	
	Standard	The global server setting is used to determine whether alarms must be acknowledged automatically or manually
	automatic	Alarms are acknowledged automatically as soon as all of the messages have been sent. If SMS that have a tariff with a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

9.2.1.2.4 Calculated channels

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

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

9.2.1.2.4.1 Basic

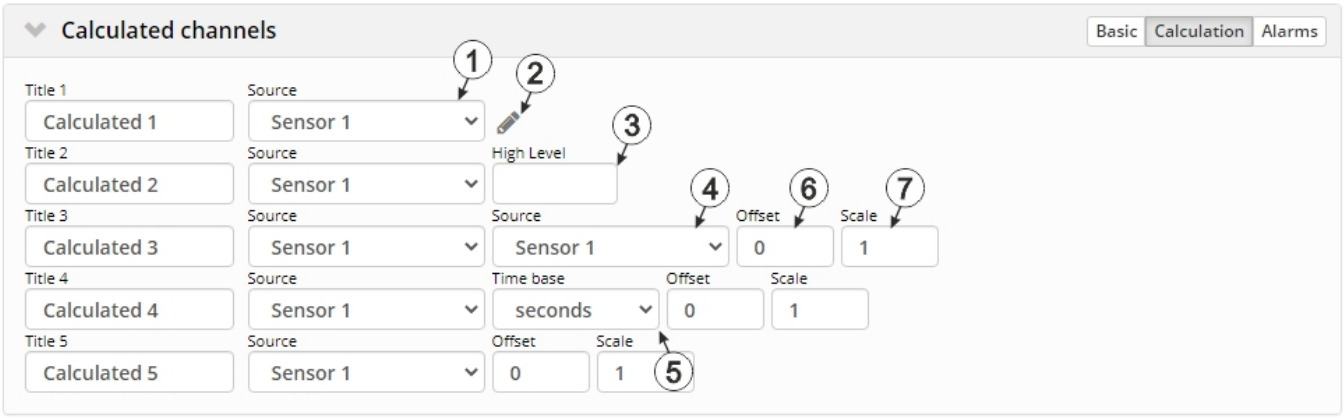


"Calculated channels" configuration section, "Basic" tab

1	Freely selectable channel title for the calculated channels [0-16 characters]	
2	Possible calculation modes for the calculated channels	
	Off	Calculated channel deactivated
	Table	Determines the value for the calculated channel by searching for the row corresponding to the value of a measurement channel in the reference point table. Such a row is made up of the "Measurement channel value" and "Output value for calculated channel" pair of values. Linear interpolation is carried out between the table rows; linear extrapolation is used for values outside the defined table.
	Digital	Converts an analogue value into a digital value. The threshold from which an analogue value is interpreted as "high" can be selected via the "High level" parameter in the "Calculation" tab. In addition the determined digital value can be inverted via the "Invert" parameter.
	+, -, x, /	Links the values of two measurement channels using a mathematic operation (addition, subtraction, multiplication or division)
	Delta	Determines the difference between two measurement values and divides the result by the time difference between the time stamps of the measurement values. The time unit (value/sec., value/min., ...) for the result can be selected via the "Time basis" parameter located in the "Calculation" tab. It is thus possible to convert counter readings (m^3) of the source into a flow rate (m^3/min.) (see "Additional explanation: Delta mode" on page 108).
	clone	Creates a clone of a measurement channel. This ensures it is possible to rename channels, to select different ends of the scale for the pointer instruments, to determine a new string as a measurement unit and to adjust the number of decimal places. The measurement values (numerical value without unit) correspond exactly to those of the source.
3	Defines the lower scale end of the pointer instruments	
4	Defines the upper scale end of the pointer instruments in reports	
5	String that is used as a measurement unit by all of the server display elements [0-16 characters]. It has no direct influence on the values	
6	Number of decimal places that are used by all of the server display elements	

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

9.2.1.2.4.2 Calculation



"Calculated channels" configuration section, "Calculation" tab

"Table" calculation mode

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

"Digital" calculation mode

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

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

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

"Delta" calculation mode

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

"Clone" calculation mode

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

Note:

Additional explanation: Delta mode

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

Required configuration

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

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

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

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

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

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

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

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

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

9.2.1.2.4.3 Alarms

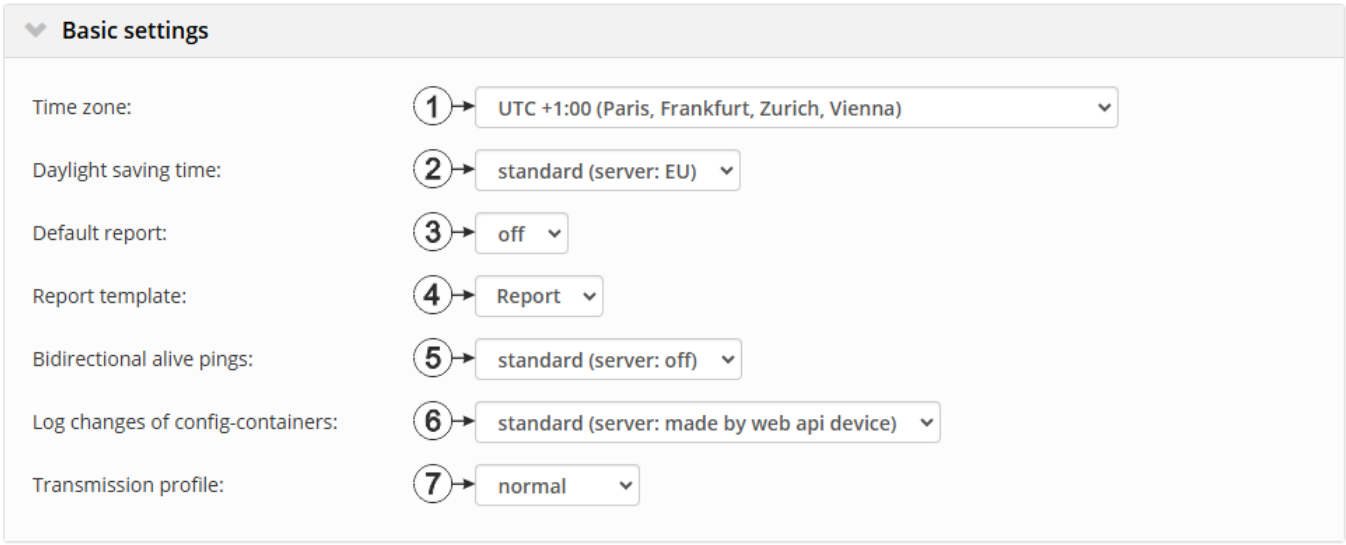
Note: *The evaluation of the alarm thresholds for calculated channels can only occur if the device has transferred the measurement data to the myDatanet server.*



"Calculated channels" configuration section, "Alarms" tab

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

9.2.1.2.5 Basic settings



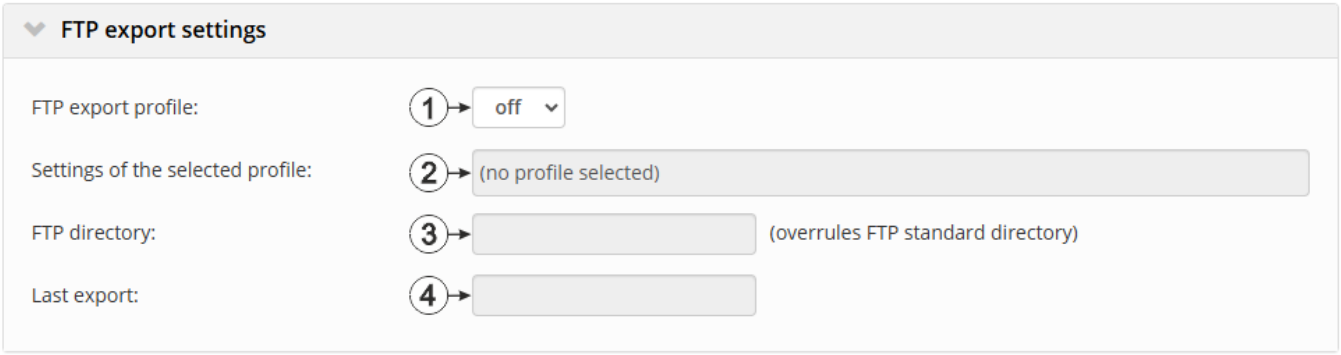
Configuration section "Basic settings"

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

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

9.2.1.2.6 FTP export settings

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



Configuration section "FTP-export settings"

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

9.2.1.3 Default input screen for configuring the site in development mode

This input screen can only be accessed via the "settings" submenu of the title bar of the input screen for configuring the site. Furthermore it is not available for all user levels. The functionality of the contained configuration sections "Site", "Comment", "Alarms", "Calculated channels", "Basic settings" and "FTP-Export settings" corresponds to the functionality of the default input screen for configuring the site (see "Default input screen for configuring the site" on page 103). The difference is that additional configuration sections are displayed between the "Comment" and "Alarm" configuration sections, which can be used to edit the application-specific parameters directly without using the specific input screen for configuring the site. The name and number of configuration sections and the parameters they contain depend on the respective IoT application.

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

9.2.2 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).

9.2.2.1 Comments

Comments

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

9.2.2.2 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).	
Prod. rev.	Product rev. of the myDataconC3 MBM	

9.2.2.3 GPRS

SIM tariff
Selected SIM tariff

9.2.2.4 Features

Features
List of activated chargeable features.

Chapter 10 DeviceConfig

10.1 General

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

www.microtronics.com/deviceconfig

The tool is used for configuration, maintenance, fault analysis and synchronisation purposes. It is compatible with all myDatanet devices equipped with a USB interface or local radio interface.

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

The DeviceConfig enables you to complete the following tasks:

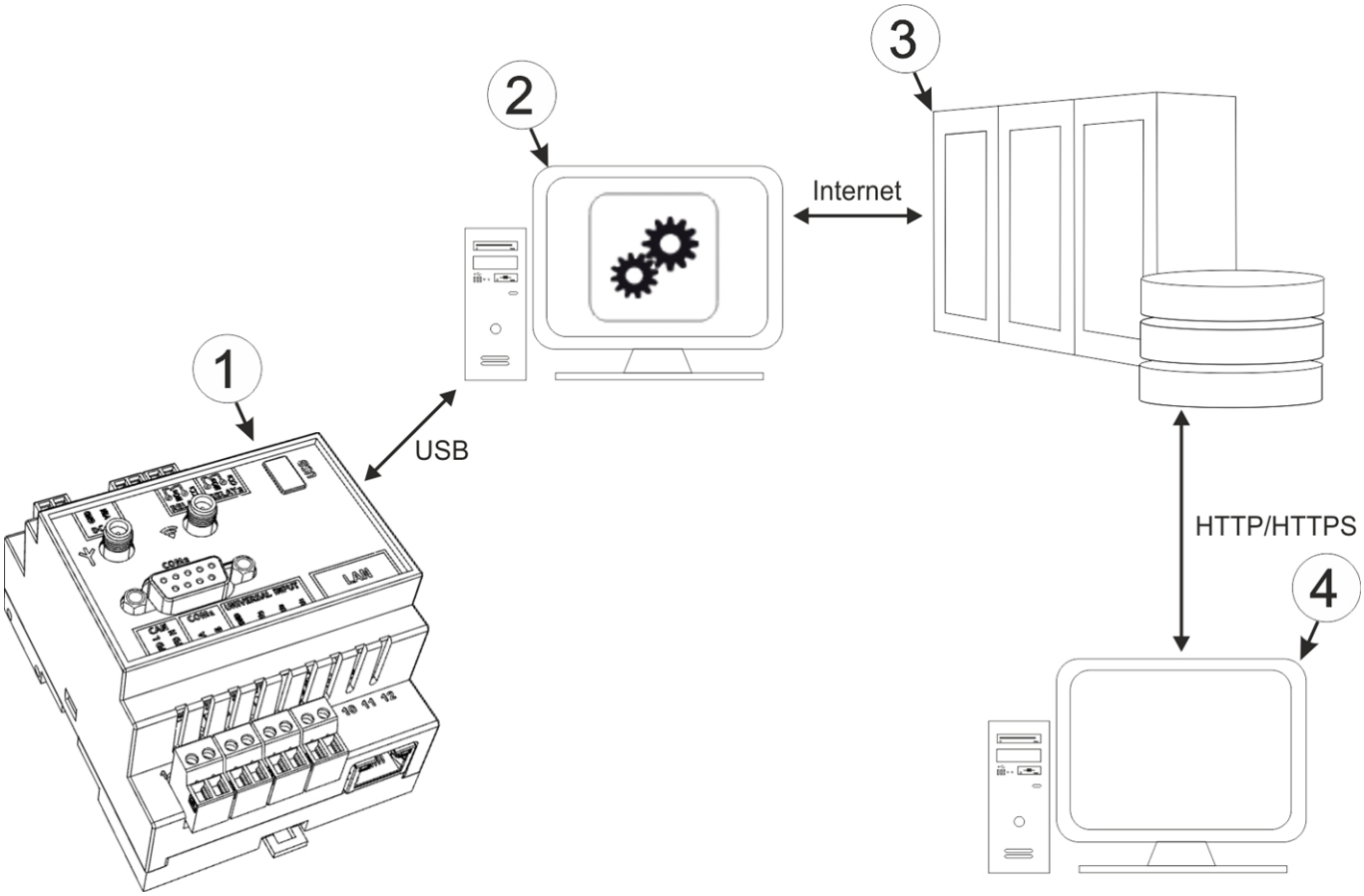
- Synchronisation of measurement data and configuration between device and server (specifically for devices without mobile network modem)
- Basic configuration of the device (e.g. measurement and transmission cycle)
- Read out and analysis of the device log
- Calibration, trimming and zero point adjustment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

10.2 Prerequisites

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

10.3 Functional principle

The following description specifically refers to the use of the configuration program DeviceConfig in conjunction with the myDataconC3 MBM .



Functional principle

1	myDataconC3 MBM	**3**	myDatanet server
2	PC with the DeviceConfig configuration program installed	**4**	Client that accesses the interface of the myDatanet server via the web browser

Important note: *The USB interface is a service interface that must be protected from contamination when not in use by the sealing plug included in the package.*

The configuration program DeviceConfig communicates directly with the myDataconC3 MBM via a USB connection. The functions provided with the DeviceConfig configuration program include:

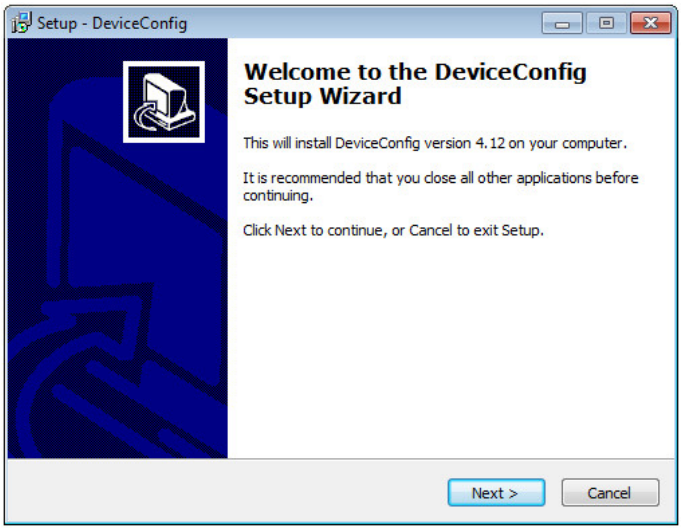
- Read out and analysis of the device log (see ""Log" tab" on page 123)
- Update the firmware(see ""Firmware" tab" on page 125)

10.4 Installation

The following chapter describes the installation process in Windows 7.

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

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



DeviceConfig setup wizard

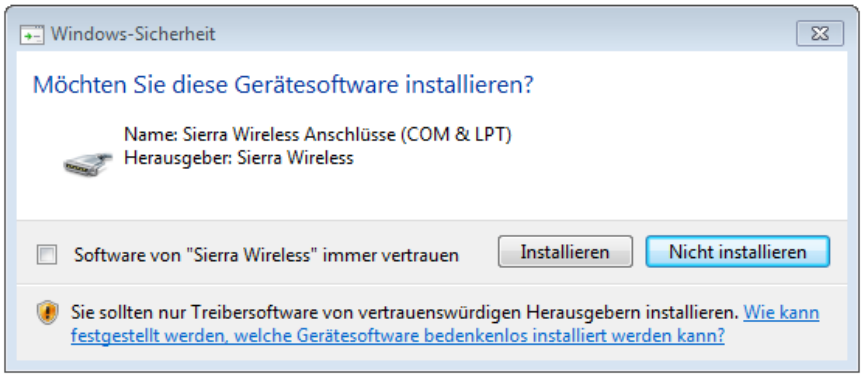
2. Follow the instructions of the setup wizard until the following screen is displayed. The following drivers must be installed to ensure correct operation.



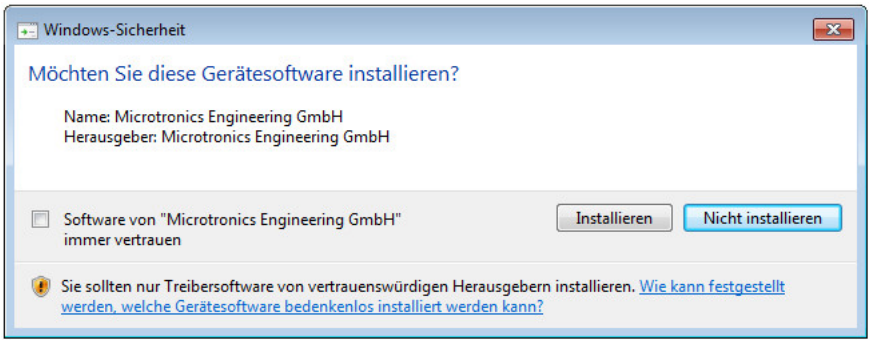
Installation of the USB drivers for the devices



Installation of the drivers for the USB Adapter

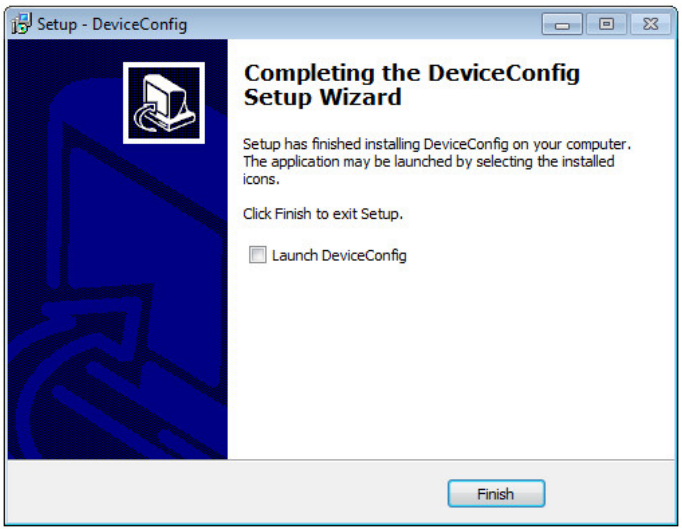


Installation of the USB drivers for the devices on a M1 basis



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

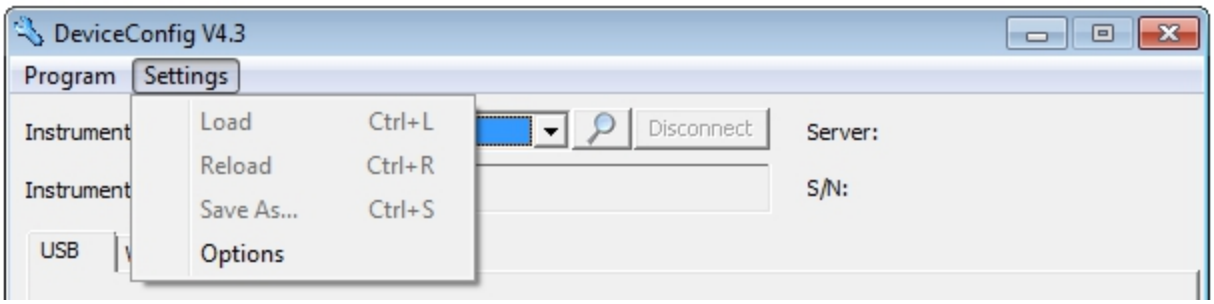
3. Once the following screen is displayed, close the installation process by clicking on the *"Finish"* button.



Complete the setup

10.5 Menu of the DeviceConfig

10.5.1 Settings

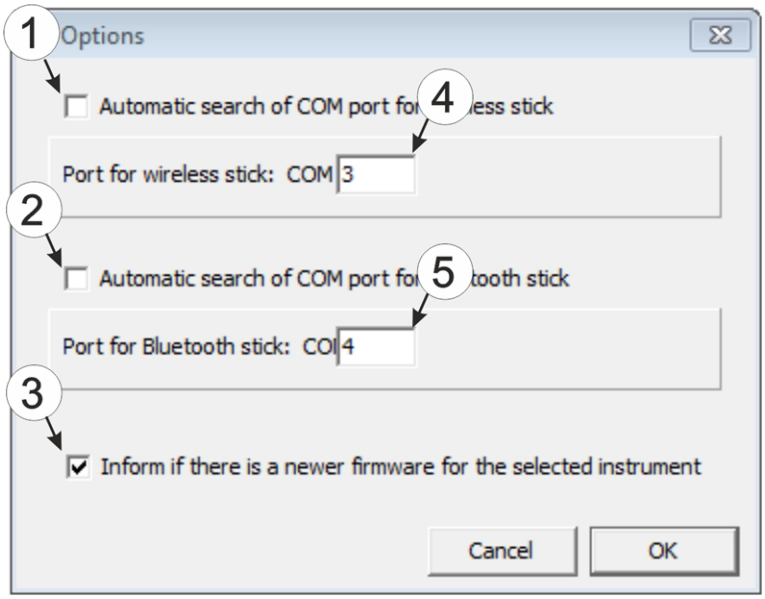


"Settings" menu item

10.5.1.1 Options

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

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

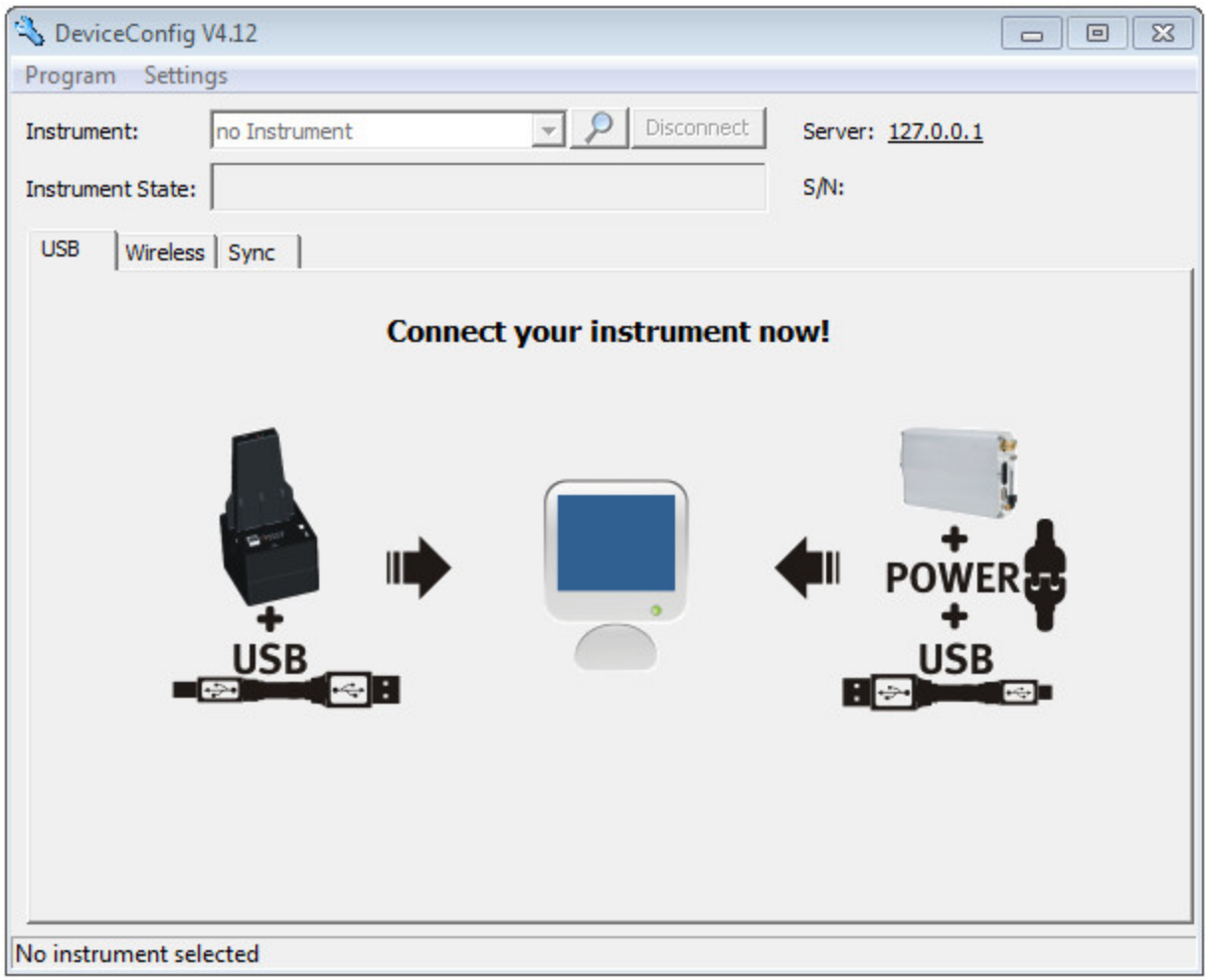


"Settings -> Options" menu item

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

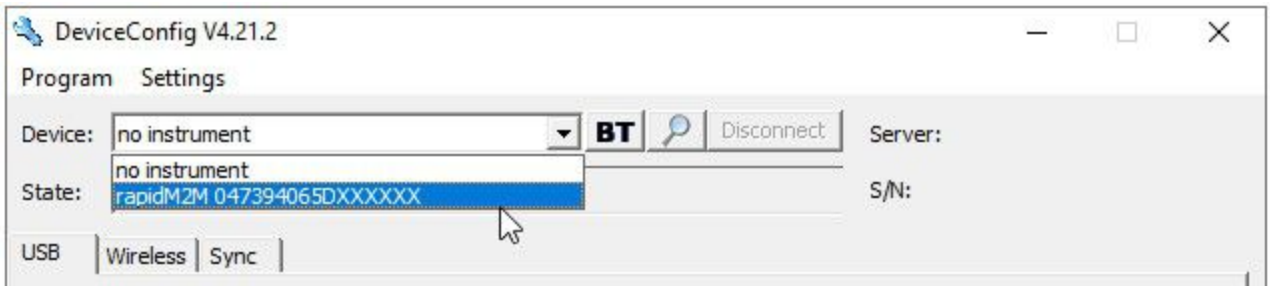
10.6 Connecting a Device via USB

1. Start the DeviceConfig configuration program.



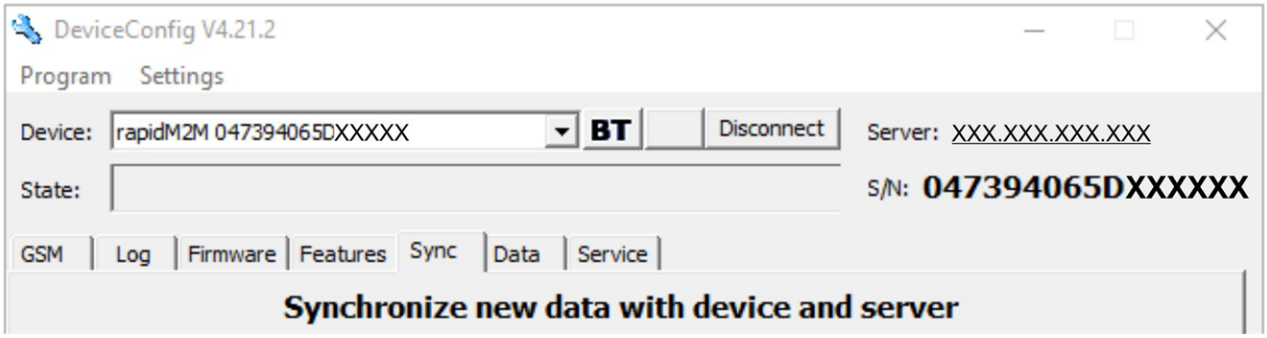
DeviceConfig

2. Connect the myDataconC3 MBM to the PC using a USB cable.
3. Select your device based on the serial number from the list of devices found.



List of devices found

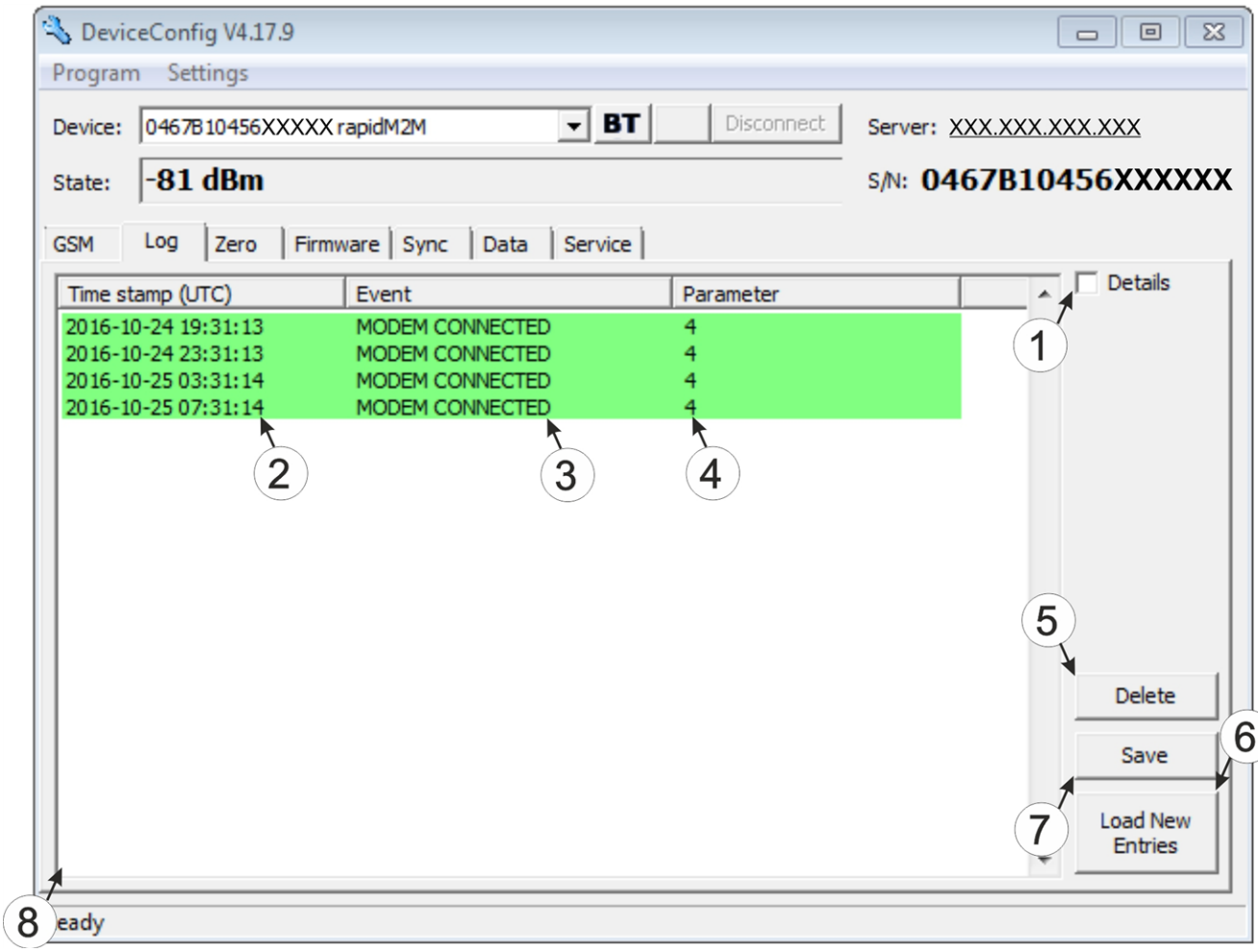
4. Wait until the DeviceConfig has received the configuration of the device. Depending on the device, additional tabs may be displayed.



"Sync" tab when actively connected to the myDataconC3 MBM

10.7 "Log" tab

This tab is designed to manage log entries. It enables the entries to be loaded from the myDataconC3 MBM , to be saved as a *.tsv file and entries to be deleted from the memory of the myDataconC3 MBM .

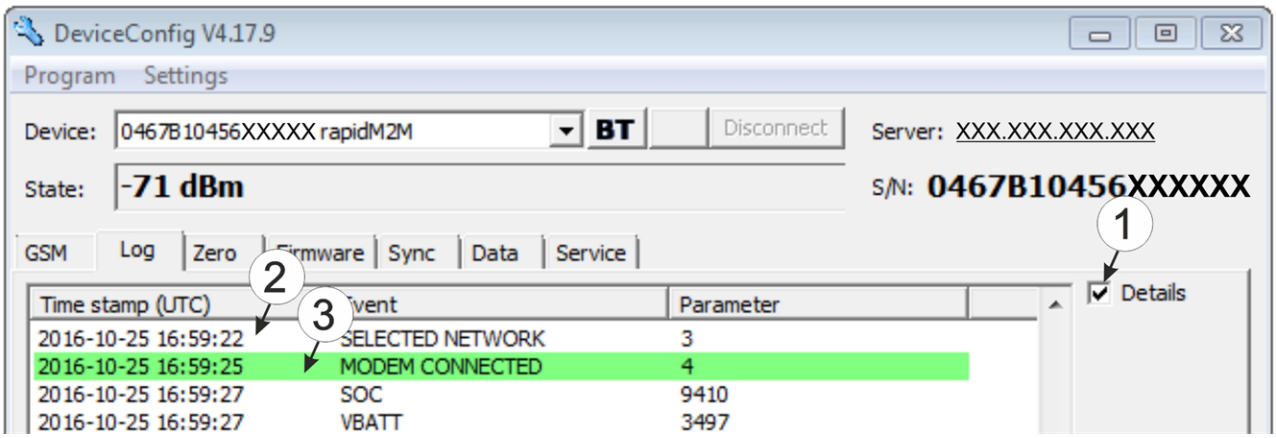


"Log" tab

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 124).

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



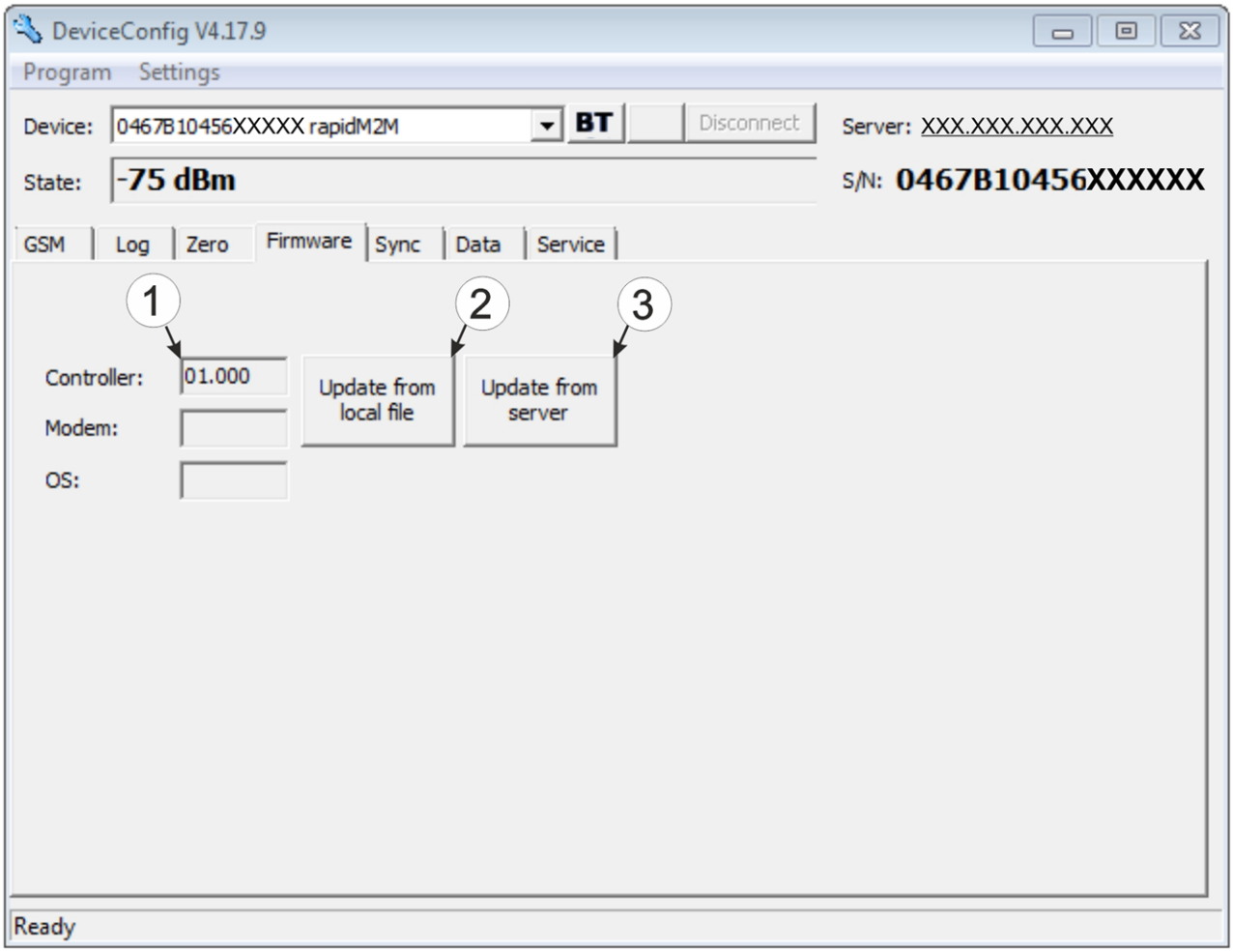
"Log" tab with detailed view activated

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	

10.8 "Firmware" tab

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

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



"Firmware" tab

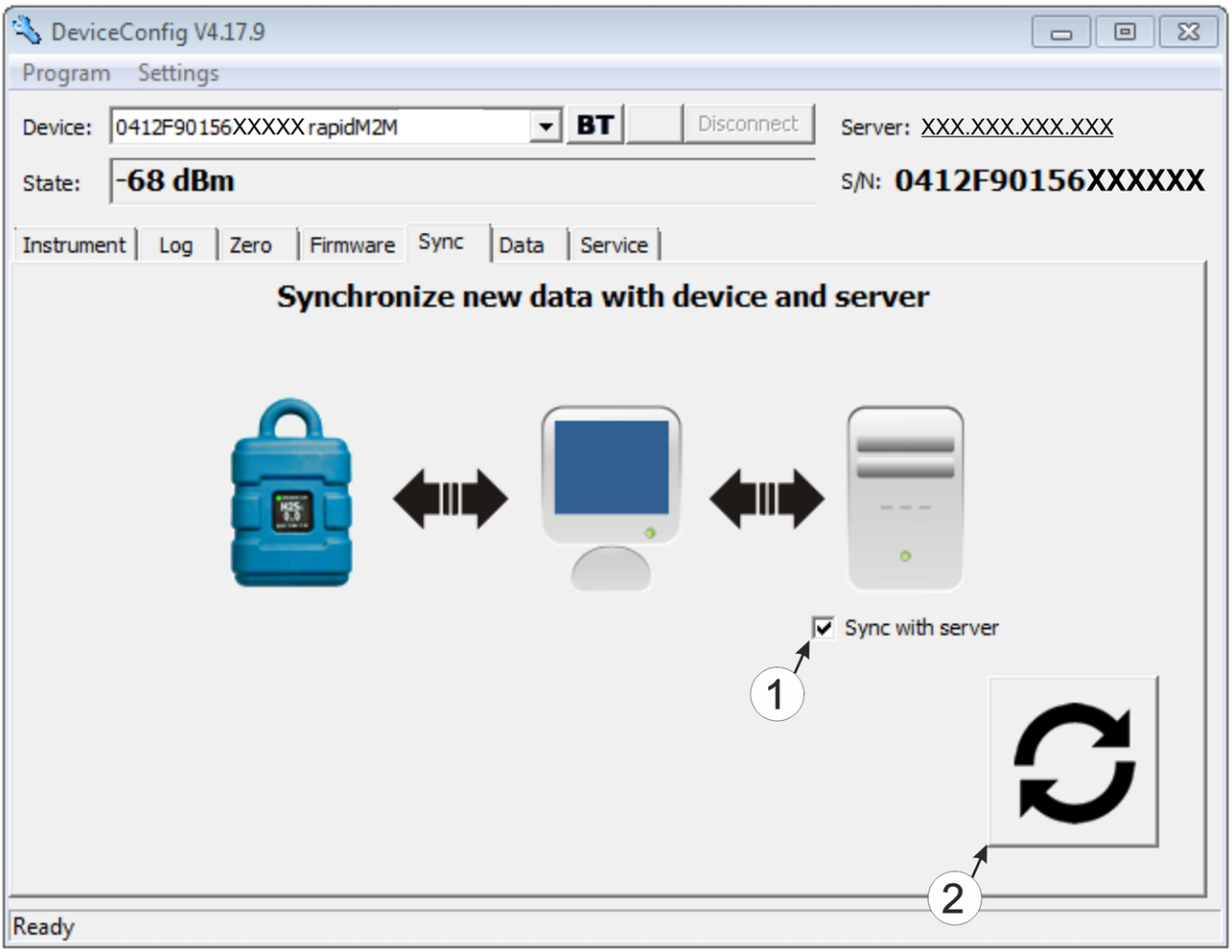
1	Currently installed software version	**3**	The firmware is loaded directly from the server and installed on the device.
2	Button to install a previously downloaded firmware package		

10.9 "Sync" tab

This area is designed to synchronise measurement data and configurations between myDataconC3 MBM , DeviceConfig and myDatanet server. The "Sync" tab is also available if there is no connection (USB or local radio) to a device.

10.9.1 Existing connection to the myDataconC3 MBM

If there is an existing connection to the myDataconC3 MBM , 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 myDatanet 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 myDataconC3 MBM 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 myDatanet server (see "No connection to a device" on page 127).

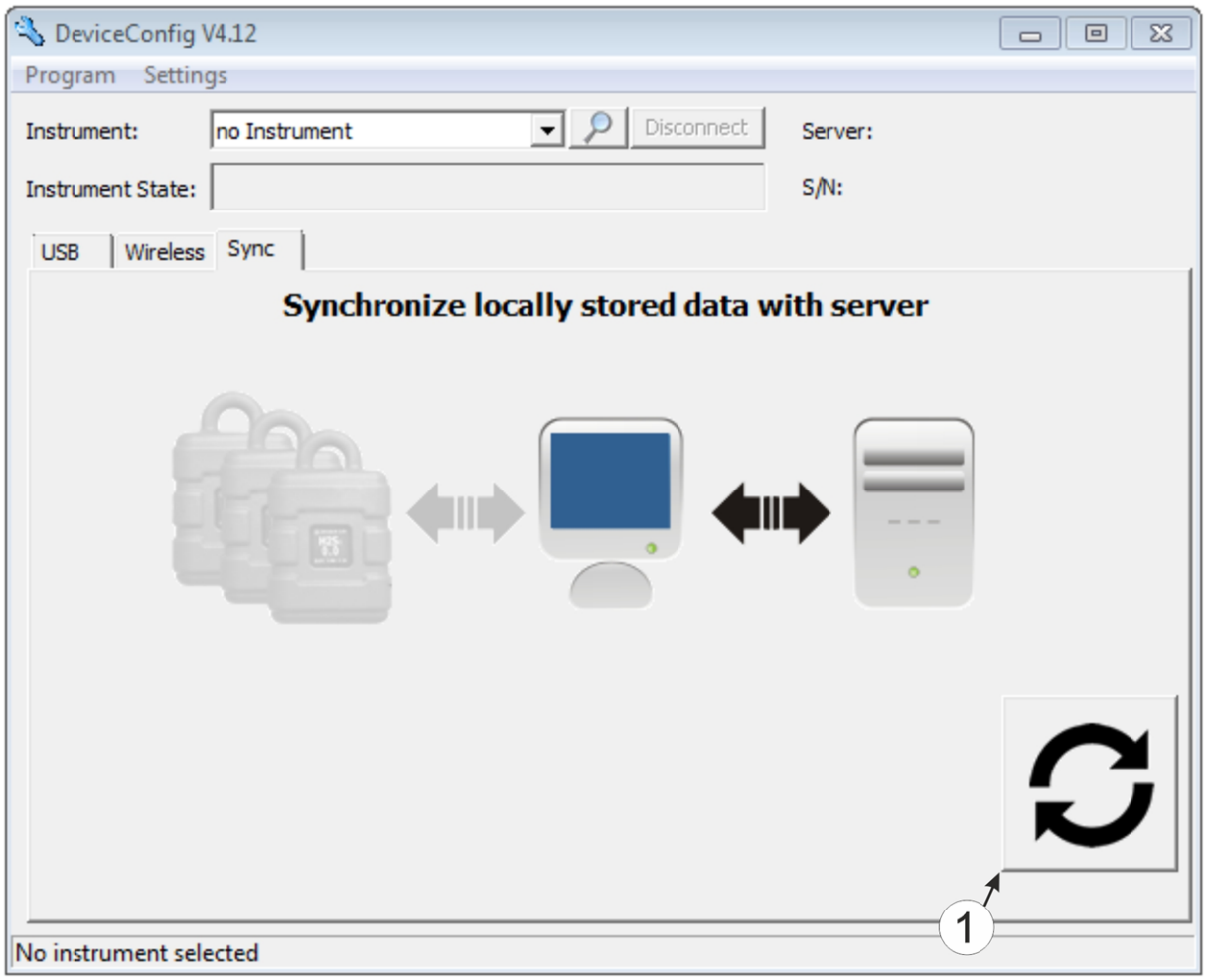


"Sync" tab when connected to the myDataconC3 MBM

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

10.9.2 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 myDataconC3 MBM .



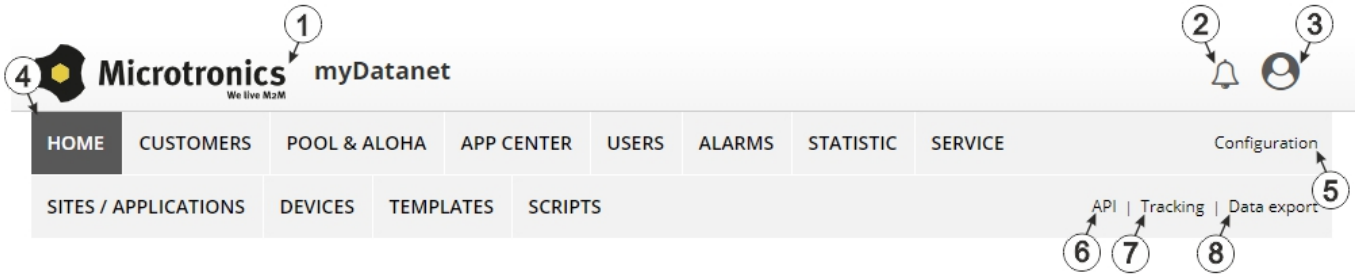
"Sync" tab without connection to a device

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.

Chapter 11 myDatanet server

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

11.1 Overview



Overview of the myDatanet server

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

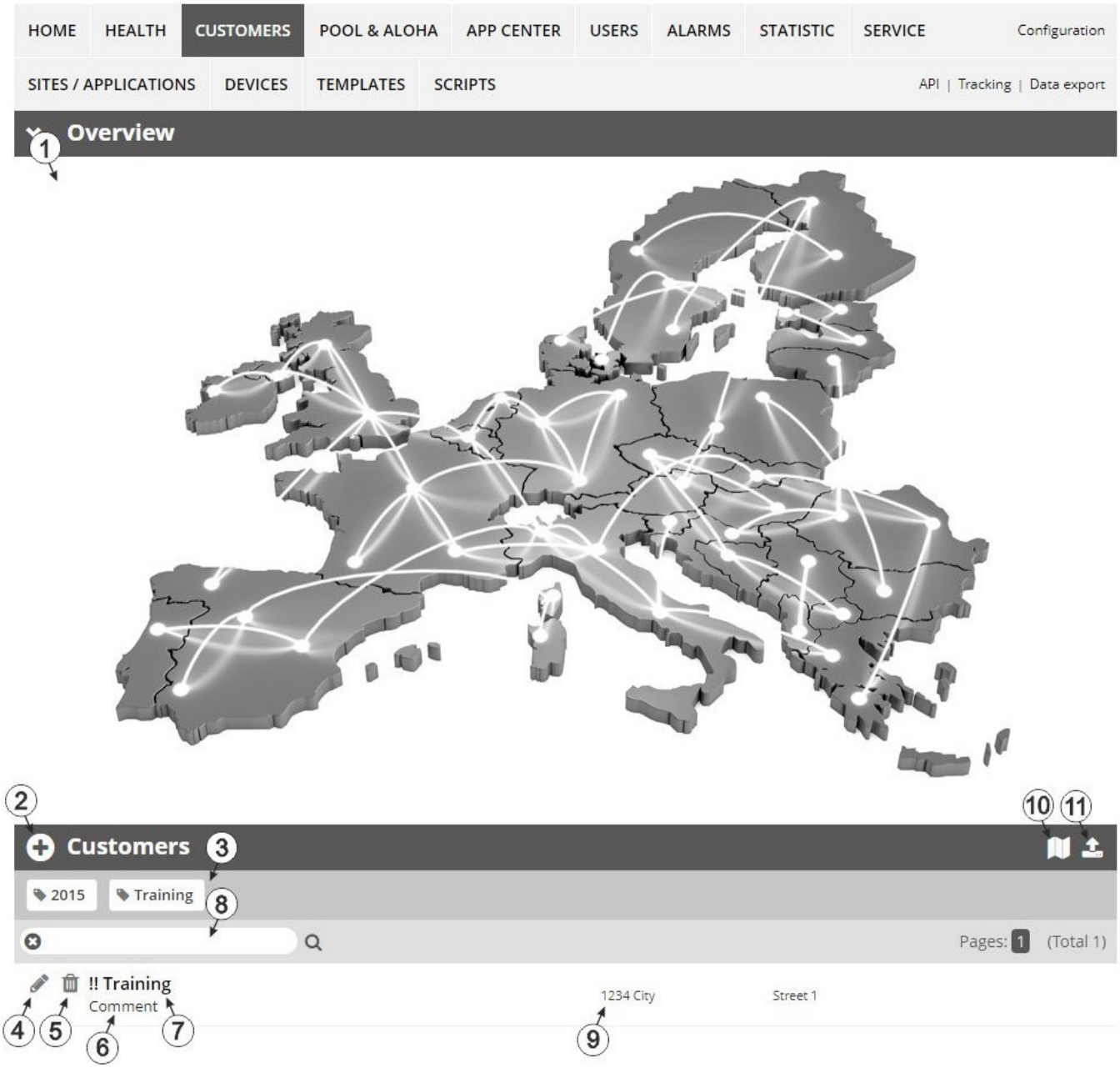
11.1.1 Explanation of the symbols


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


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


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

11.2 "Customer" area

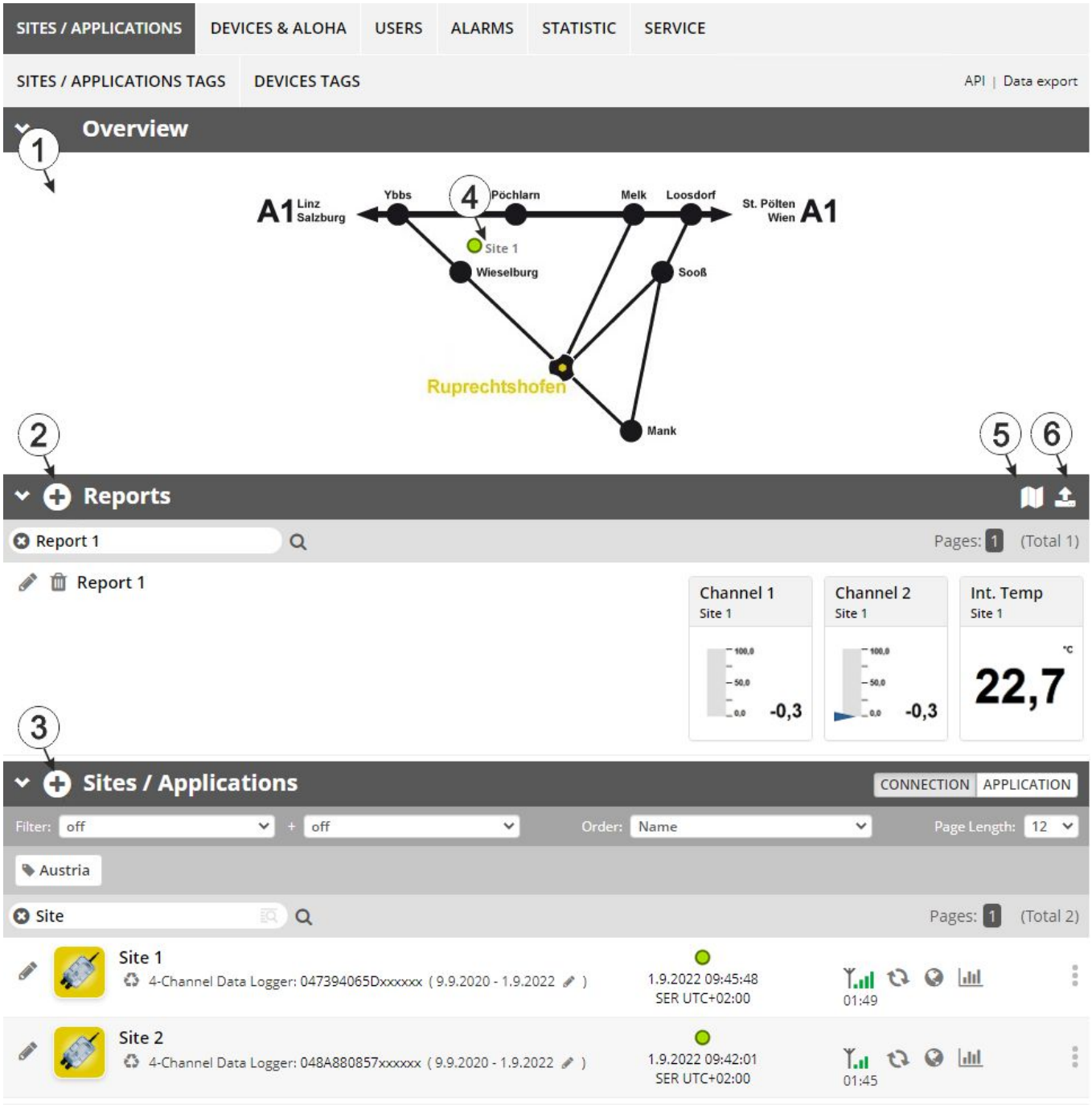


Overview of the "Customer" area

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

3	List of tags that are assigned to at least one of the customers displayed in the list of customers. If the list of customers was limited by the search field or selection of a tag, this is taken into consideration when creating the list of tags. A cross is added to the end of the list of tags as soon as the list of customers is limited by the selection of a tag. Clicking on this cross will reset the selection of all tags and the restriction is cancelled. By clicking on one of the tags with the left mouse button only those customers who have been assigned the corresponding tag are displayed in the list of customers and the selected tag is highlighted in colour. By clicking on one of the tags with the right mouse button all of the customers who have been assigned the corresponding tag are hidden, the selected tag is highlighted in colour and the title of the tag is crossed out. Clicking the same mouse button again will remove the restriction.
4	Opens the input screen for configuring the customer
5	Deletes the customer
6	Comment that can be entered in the configuration of the customer
7	If a default report was defined, the default report is accessed by clicking on the name of the customer. Otherwise the "Sites / Applications" area at customer level is opened by clicking on the name of the customer (see ""Sites / Applications" area at customer level" on page 132 or "Reports" on page 133).
8	Search field to filter the customer list
9	Customer's address that can be entered via the input screen for configuring the customer
10	Symbol via which a OpenStreetMaps map, on which the sites are displayed, can be loaded. (see "Map view" on page 133)
11	Symbol via which an image file can be loaded on to the server as an "Overview map" To remove the "Map" again, open the upload dialogue again and click on "Submit" without selecting an image file beforehand.

11.3 "Sites / Applications" area at customer level



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

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

2	List of reports (see "Reports" on page 133)
3	List of sites/applications (see "Site" on page 103)
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 133)
6	Symbol via which an image file can be loaded on to the server as a "Map" To remove the "Map" again, open the upload dialogue again and click on "Submit" without selecting an image file beforehand.

11.3.1 Reports

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

11.3.2 Map view

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

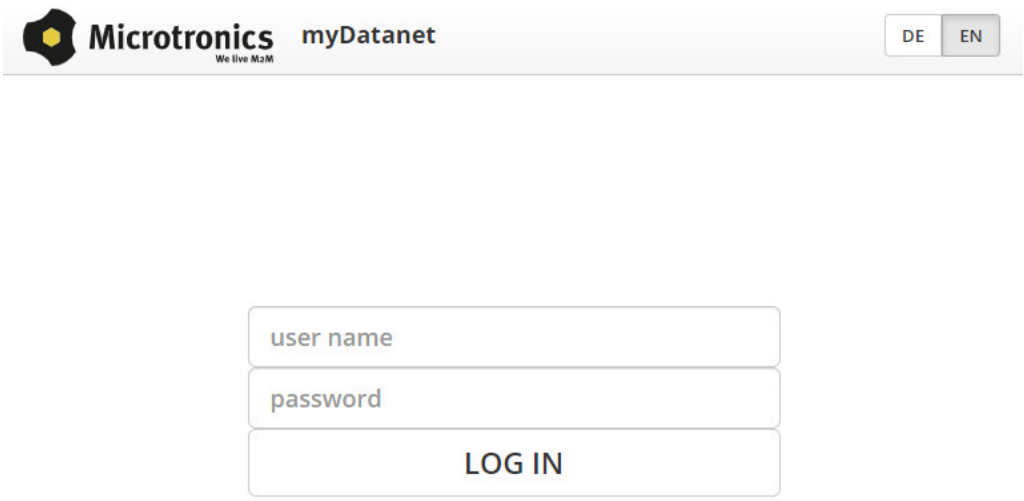
11.4 Recommended procedure

11.4.1 Creating the site

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

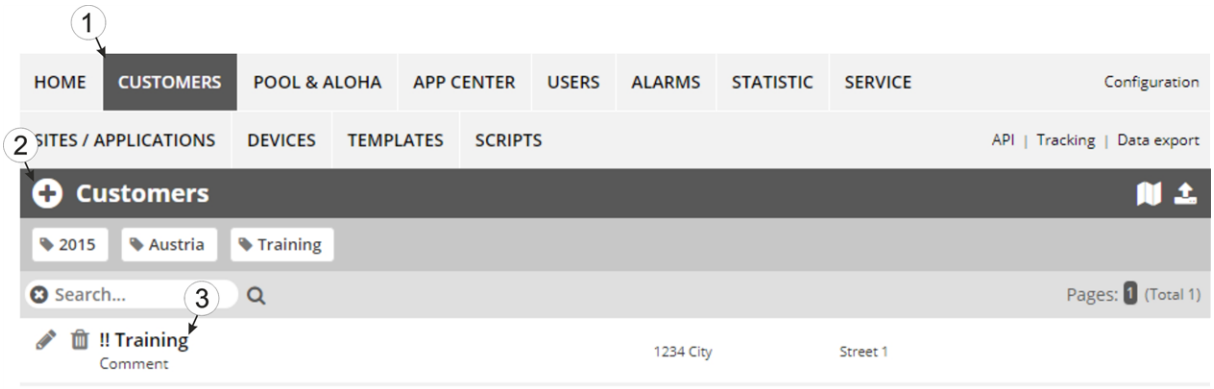
Detailed instructions on creating a new site are provided in myDatanet Server Manual (805002).

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



Login form of the myDatanet server

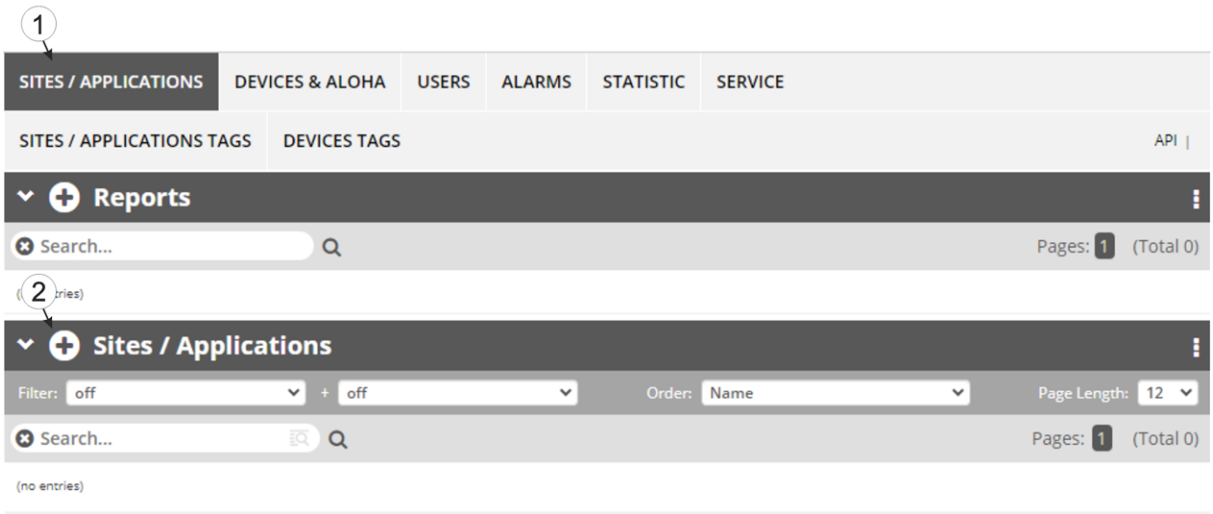
2. Click on the "Customer" menu item of the myDatanet server to call up the list of available customers. Select an existing customer or create a new customer.



Selecting the customer

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

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

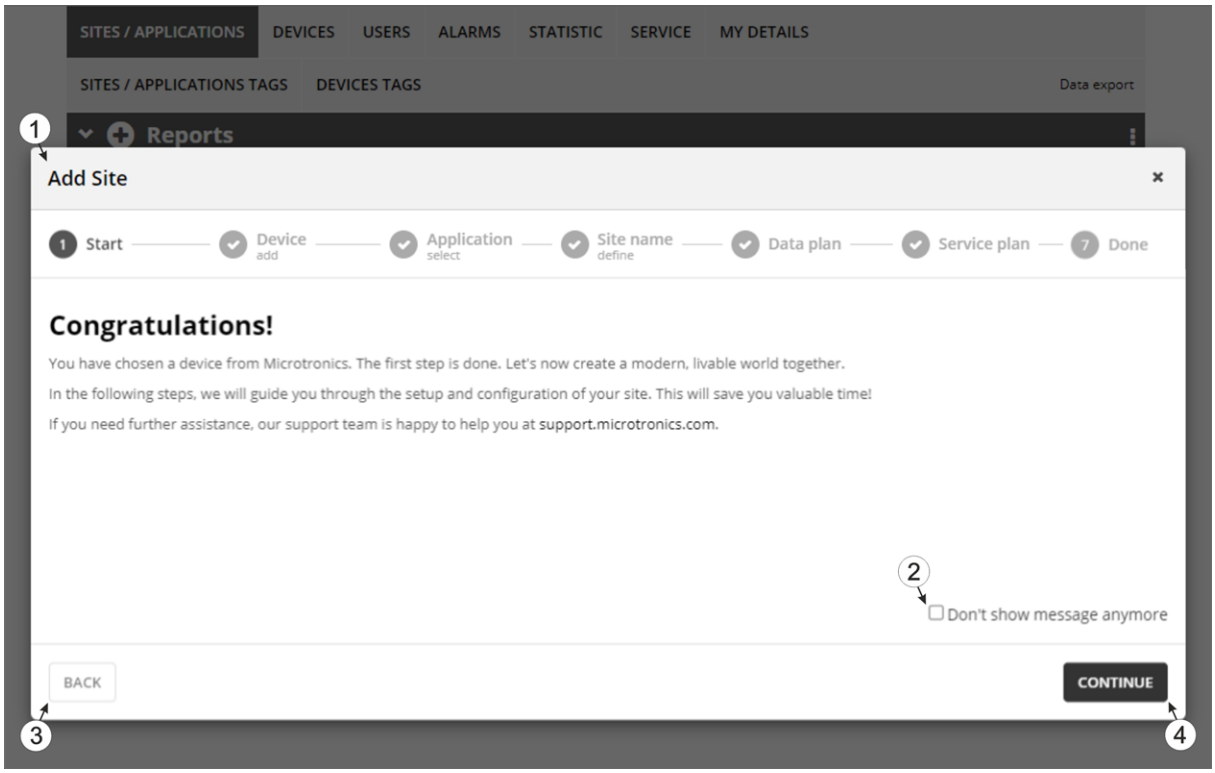


Opening the wizard for creating a site

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

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

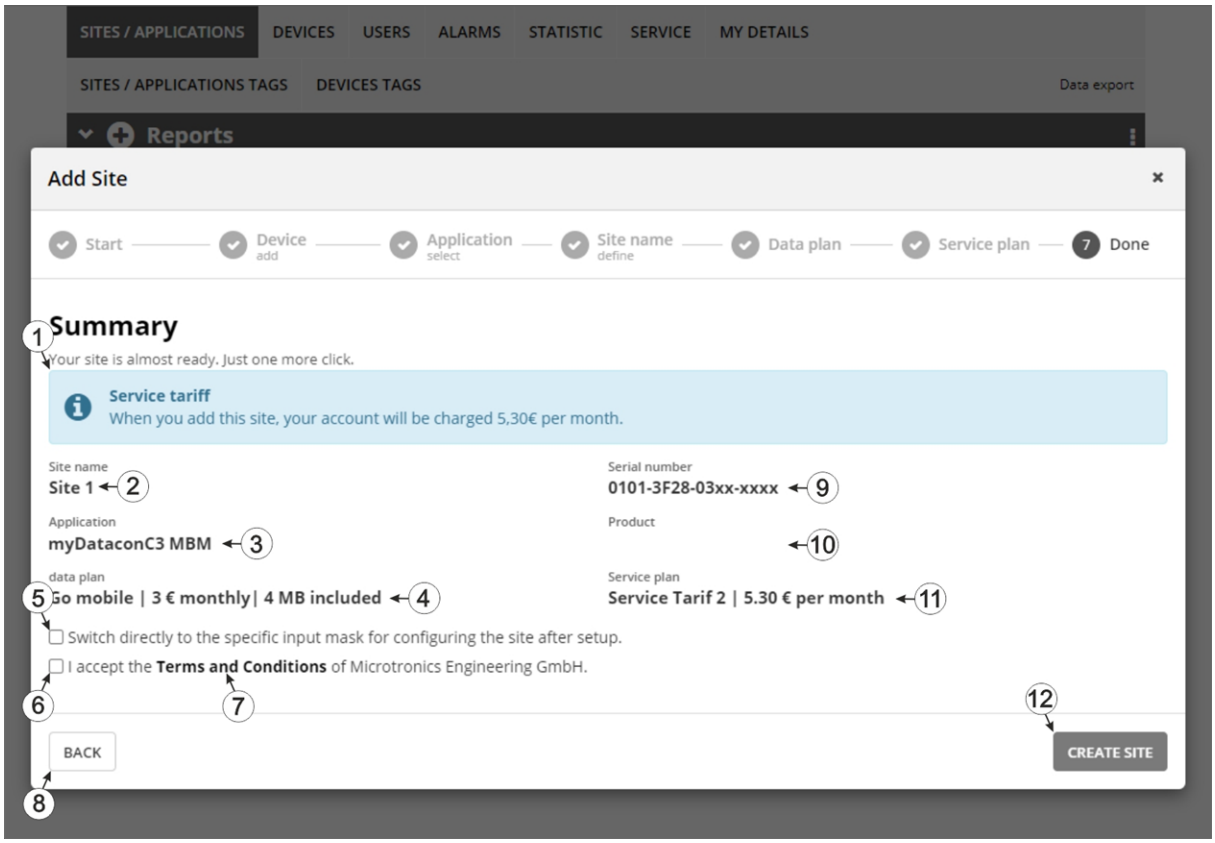
   Note: *Depending on the functions activated on the myDatanet server, some of the steps in the following illustration may not be required and are therefore not displayed.*



Create site using the wizard

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

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



Completing site creation

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

Chapter 12 API

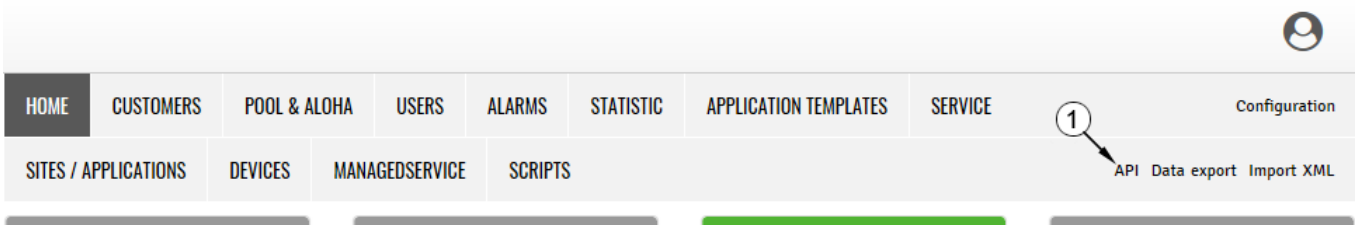
Important note: *The relevant licences are required on the myDatanet server to use the API (Application Programming Interface). For future information contact your responsible sales partner.*

12.1 Backend API

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

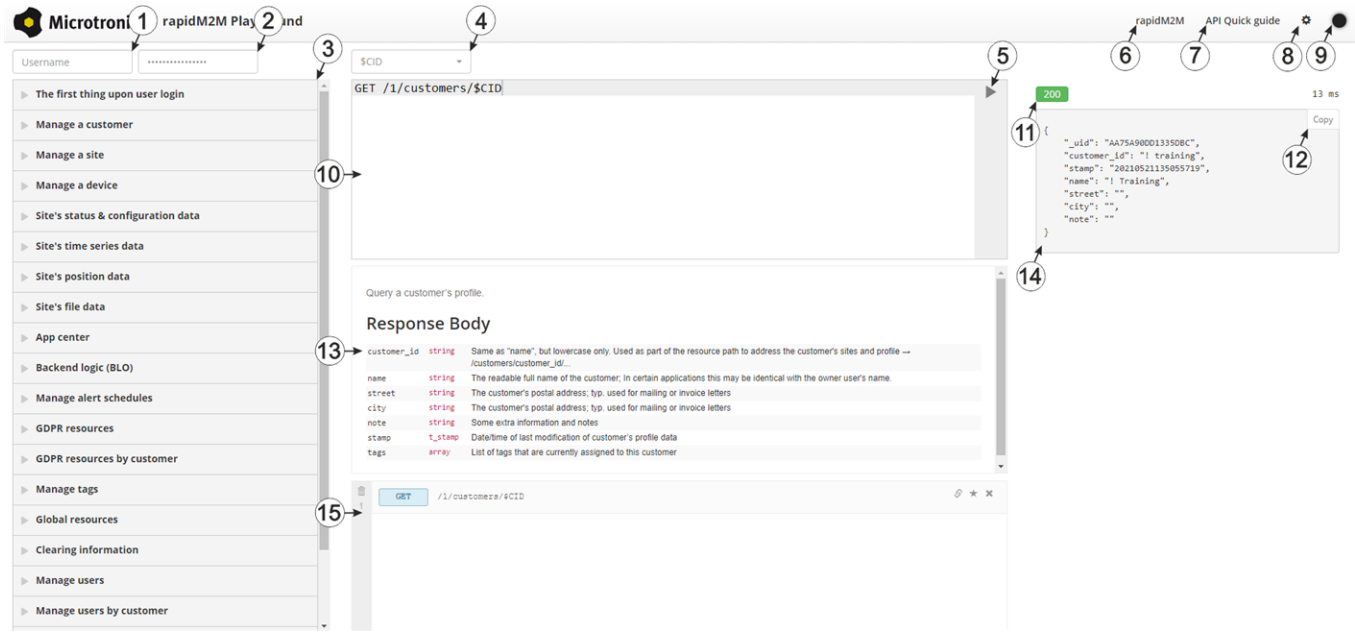
12.2 rapidM2M Playground

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



1	Opens the rapidM2M Playground

12.2.1 Overview



rapidM2M Playground

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

Chapter 13 Maintenance

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

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

13.1 General maintenance

- Regularly check the myDataconC3 MBM for mechanical damage.
- Check all cables for mechanical damage at regular intervals.
- Clean the myDataconC3 MBM with a soft, moist cloth. Use a mild cleaning agent, if necessary.

13.2 Fuse replacement



DANGER:
Risk of fire. An incorrect fuse can cause injuries, damages or emissions. The fuse is located inside the housing. The housing may only be opened by the manufacturer.

If you believe that the fuse of the myDataconC3 MBM is defective (see "Troubleshooting and repair" on page 143), the device must be sent back in its original packaging to the manufacturer (see "Return" on page 42).

13.3 Services

Microtronics Engineering GmbH offers the following maintenance services for the myDataconC3 MBM :

Description	Order number
Inspection fee	206.395
Cleaning flat	206.355
Software Update	206.555

Chapter 14 Removal/disposal

Material separation only by qualified personnel!

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

Incorrect disposal can cause environmental hazards.

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

1. Disconnect any charging voltage that has been used.
2. Disconnect any connected cables using a suitable tool.



Logo of the EU WEEE Directive

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

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

The device contains a lithium button cell that has been soldered on. It must be removed before disposal or the disposal service must be informed that batteries are still located in the device.

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

Chapter 15 Troubleshooting and repair

15.1 General problems

Problem	Cause/solution
The device does not respond (status LED always off).	• Check the cable connections (see "Connection of the sensors, actuators and the supply" on page 46)
Communication problems	• Load the device log from the myDataconC3 MBM using the DeviceConfig (see ""Log" tab" on page 123). A list of all the possible device logic error codes is included in the chapter "Log entries and error codes" (see "Log entries and error codes" on page 148).
Not all or no data is available on the server.	• The connection was aborted during the transmission, which is indicated by a timeout entry in the connection list (see "myDatanet Server Manual " 805002). Solution: Initiate a transmission or wait for the next cyclical transfer. • The assignment of the device and site is not correct (see "Site" on page 103).
The data at universal input is not plausible	• Check the cable connections (see "Connection of the sensors, actuators and the supply" on page 46) • Check whether the output signal of the sensor that you are using is compatible with the electrical characteristics of the universal inputs (see "Technical details about the universal inputs" on page 51). • Check the filter setting of the universal input (see "Measurement channels " on page 67).
The data at the RS485 interface is not plausible.	• Check the cable connections (see "Connection of the sensors, actuators and the supply" on page 46) • Check whether the sensor that you are using is compatible with the electrical charactaristics of the interface (see "Technical details about the RS485 interface" on page 52). • Check wheter the configuration of the interface is suitable for the output signal of the sensor (see "Modbus interface" on page 80). • Check the settings for the terminal resistance and the clamp resistances (see "Modbus interface" on page 80). • Check whether modbus address and the server address are selected correctly in the configuration of the modbus measurement channels (see "Modbus measurement channels" on page 82).
The alarm state of a measurement channel has not been recognised.	• Increase measurement interval
The alarm state has not been transmitted although the data is available.	• Check the alarm settings of the measurement channel • The connection was aborted during the transmission, which is indicated by a timeout entry in the connection list (see "myDatanet Server Manual " 805002). Solution: Initiate an aloha transmission or wait for the next cyclical transfer.

Problem	Cause/solution
The alarm notification was not delivered even though the alarm was signalled.	• Check the settings of the alarm schedule (see "myDatanet Server Manual " 805002) • Check the address data of the alarm schedule (see "myDatanet Server Manual " 805002)
Relay does not respond.	• Failure of the voltage that is fed via the relays.

15.2 App log entries

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

Code	Parameter	Description
Shutdown handling		
MT.BackupSupply	Switched to buffer battery	Supply switched to the internal rechargeable buffer battery.
	Supply voltage available again	Supply switched back to the supply voltage input (VIN).
	Outage timeout expired	Time expired for which a short-term supply voltage failure is ignored.
MT.Shutdown		Command to shut down the system issued by the device logic
Software update		
MT.ModFwUpdated	IO Controller: <previous version> to <current version>	Firmware of the IO controller of the data logger has been updated.
	IO Controller: Downgrade suppressed	Downgrade to a lower Firmware version has been suppressed for the IO controller of the data logger.
	IO Controller: Firmware already up-to-date	Firmware of the IO controller of the data logger has not been updated. The latest version is already installed.
	IO Controller: Update FAILED	Firmware update of the IO controller of the data logger failed.
	IO Extension MT-<#>: Updated	Firmware of the IO controller of the extension with serial number MT-<#> has been updated.
	IO Extension MT-<#>: Downgrade suppressed	Downgrade to a lower Firmware version has been suppressed for the IO controller of the extension with serial number MT-<#>.
	IO Extension MT-<#>: Firmware already up-to-date	Firmware of the IO controller of the extension with serial number MT-<#> has not been updated. The latest version is already installed.
	IO Extension MT-<#>: Update FAILED	Firmware update of the IO controller of the extension with serial number MT-<#> failed.

<table>
<tr><th>Code</th><th>Parameter</th><th>Description</th></tr>
<tr><td colspan="3">Modbus interface</td></tr>
<tr><td>MBMException</td><td>Ch(<channel>):
Exc:<exception>,
FC:<code>,
Slave:<address>,
Reg:<register></td><td>Modbus server (formerly slave) reported an exception.
<table><tr><td><channel></td><td>Modbus measurement channel or Modbus output channel:
0=^ First Modbus measurement channel
20 =^ First Modbus output channel</td></tr><tr><td><exception></td><td>Exception code:
01: Illegal function
02: Illegal data address
03: Illegal data value
04: Server device failure
05: Acknowledge
06: Server device busy
08: Memory parity error
10: Gateway path unavailabe
11: Gateway target device failed to respond</td></tr><tr><td><code></td><td>Modbus function code</td></tr><tr><td><address></td><td>Address of the Modbus server</td></tr><tr><td><register></td><td>Address of the Modbus register to be accessed</td></tr></table></td></tr>
<tr><td></td><td>OK(<channel>)</td><td>A valid response was received again from the Modbus server (formerly slave) after an exception was last reported.
<table><tr><td><channel></td><td>Modbus measurement channel or Modbus output channel:
0=^ First Modbus measurement channel
20 =^ First Modbus output channel</td></tr></table></td></tr>
</table>

<table>
<tr><th>Code</th><th>Parameter</th><th>Description</th></tr>
<tr><td rowspan="2">MBMErrorCRC</td><td>Ch(<channel>):
FC:<code>,
Slave:<address>,
Reg:<register></td><td>The calculated CRC does not match the CRC received from the Modbus server (formerly slave).
<table><tr><td><channel></td><td>Modbus measurement channel or Modbus output channel:
0=^ First Modbus measurement channel
20 =^ First Modbus output channel</td></tr><tr><td><code></td><td>Modbus function code</td></tr><tr><td><address></td><td>Address of the Modbus server</td></tr><tr><td><register></td><td>Address of the Modbus register to be accessed</td></tr></table></td></tr>
<tr><td>OK(<channel>)</td><td>A valid response was received again from the Modbus server (formerly slave) after the calculated and received CRC did not match.
<table><tr><td><channel></td><td>Modbus measurement channel or Modbus output channel:
0=^ First Modbus measurement channel
20 =^ First Modbus output channel</td></tr></table></td></tr>
<tr><td rowspan="2">MBMErrorTimeout</td><td>Ch(<channel>):
FC:<code>,
Slave:<address>,
Reg:<register></td><td>The Modbus server (formerly slave) did not respond within the timeout. [1)]
<table><tr><td><channel></td><td>Modbus measurement channel or Modbus output channel:
0=^ First Modbus measurement channel
20 =^ First Modbus output channel</td></tr><tr><td><code></td><td>Modbus function code</td></tr><tr><td><address></td><td>Address of the Modbus server</td></tr><tr><td><register></td><td>Address of the Modbus register to be accessed</td></tr></table></td></tr>
<tr><td>OK(<channel>)</td><td>A valid response was received again from the Modbus server (formerly slave) after a timeout occurred last time.
<table><tr><td><channel></td><td>Modbus measurement channel or Modbus output channel:
0=^ First Modbus measurement channel
20 =^ First Modbus output channel</td></tr></table></td></tr>
</table>

[1)] If a timeout is detected, the Modbus server is marked faulty. Further access to the Modbus server is prevented during the current measurement cycle. All required accesses for the Modbus measurement channels or Modbus output channels are only performed again in the next measurement cycle (i.e. after the measurement interval has expired). Therefore, if a timeout is detected, this app log entry is only created for the first Modbus measurement channel or Modbus output channel that is linked to the corresponding Modbus server.

15.3 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 169).
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. 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 169).
1038	UV MODEM LOCKOUT	---	---	The device deactivates the modem because the rechargeable battery or battery voltage is too low. A connection cannot be established now.
1039	UV MODEM RECOVER	---	---	The rechargeable battery or battery voltage once again suffices to guarantee a stable connection.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1046	CONTROLLER UPDATE ERROR	##	---	Error updating the firmware of the controller
		0	CRC	The CRC of the firmware pack couldn't be verified
		1	SIGNATURE	The signature of the firmware pack couldn't be verified
		2	TLV	The data structure of the firmware pack is invalid
		3	FW INFO	The firmware pack is not suitable for this device
		4	MIN VERSION	The version of the firmware package is below the minimum version stored in the firmware currently installed on the device.
1126	MODEM COPS MODE	---	---	The modem has changed the mode for the operator selection. Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
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 169).
1192	FUTURE TIMESTAMP	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1194	RTC TIME SET BY DLO	---	---	The system time has been set manually via the device logic.
1195	RTC TIME SET BY SERVER	---	---	A manually set system time has been overwritten during the sync with the server with the time received from the server.
1196	RTC TIME INVALID	---	---	When starting the module, it was recognised that the system time is invalid.
1200	MODEM ERROR			Modem error (see "Modem error" on page 154)
1201	MODEM NOT FOUND	---		Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1202	MODEM CMME ERROR	##	---	The mobile network modem indicates a +CME error. The parameter specifies the type of error.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1203	SELECTED NETWORK	##	---	A new mobile network was selected. The parameter specifies the MCC (Mobile Country Code) and the MNC (Mobile Network Code) of the selected mobile network.
1207	GSM NETWORK REGISTRATION	0	NOT REGISTERED	Not registered, modem is currently not looking for any new operators to register
		1	HOME	Registered, home network
		2	SEARCHING	Not registered, but the modem is currently looking for a new operator with which it can register
		3	DENIED	Registration denied
		4	UNKNOWN	Unknown (e.g. outside the GERAN/UTRAN/E-UTRAN cover)
		5	ROAMING	Registered, roaming
1208	GPRS NETWORK REGISTRATION	0	NOT REGISTERED	Not registered, modem is currently not looking for any new operators to register
		1	HOME	Registered, home network
		2	SEARCHING	Not registered, but the modem is currently looking for a new operator with which it can register
		3	DENIED	Registration denied
		4	UNKNOWN	Unknown (e.g. outside the GERAN/UTRAN/E-UTRAN cover)
		5	ROAMING	Registered, roaming
1212	ERROR MODEM IRREGULAR OFF	##	---	Indicates a faulty connection. The parameter includes a counter that indicates how many consecutive connections have not worked.
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

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1227	WC NWREG PAUSED	0	---	A corresponding log entry is generated again for each change of state of the network registration.
		1	---	The limit for the log entries for the changes of state of the network registrations has been reached. From this point onward, a maximum of one log entry per hour is generated.
1228	EMM REJECT CAUSE	##	---	Device has been rejected by the network. The parameter indicates the reason for the rejection.
1252	MODEM TO CON	##	---	Timeout while a connection is being established. The parameter specifies the reason for the timeout. Contact the manufacturer if the device log contains this error with the same parameter code several times (see "Contact information" on page 169).
1255	MODEM TO EVAL	---	---	Timeout evaluating the connection quality
1281	ZLIB STREAMPROCESS ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1282	ZLIB STREAMFINISH ERR	##	---	Internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1284	BYTE STUFF PENDING	---	---	internal error Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1300	USB CONNECTED	---	---	USB connection to a PC established.
1310	USB DISCONNECTED	---	---	USB connection was disconnected.

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 occured when reading the air humidity value from the internal temperature and air humidity sensor.
		2	SHT2X TEMP ERROR	A communication error occured when reading the temperature value from the internal temperature and air humidity sensor.
		3	SHT2X RH+TEMP ERROR	A communication error occured when reading the measurement value from the internal temperature and air humidity sensor.
		4	SHT2X PLAUSIBILITY ERROR	The values received from the internal temperature and air humidity sensor are not plausible (rH <0% rH or >100% rH or temperature <-40°C or >125°C)
1336	SHT2X COM ERR	---	---	Communication with the internal temperature and air humidity sensor is not possible (sensor not present or faulty)
1337	SHT2X COM ERR1	---	---	Starting the internal temperature measurement failed
1338	SHT2X COM ERR2	---	---	Starting the internal air humidity measurement failed
1339	SHT2X TEMP RAW	##	---	Temperature raw value (register value from the internal temperature and air humidity sensor) if a plausibility error (SHT2X PLAUSIBILITY ERROR) was detected
1340	SHT2X RH RAW	##	---	Air humidity raw value (register value from the internal temperature and air humidity sensor) if a plausibility error (SHT2X PLAUSIBILITY ERROR) was detected
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	
1620	TRANSMISSION PROFILE	##	---	Transmission profile has been changed.
		0	NORMAL	Operation by default has been activated.
		1	ECO	Operation with low energy and data consumption has been activated.
		2	DIAGNOSTIC	Extended logging for troubleshooting has been activated.
		3	ADAPTIVE	Adaptive operation has been activated. It enables stable data transmission, even at the expense of energy consumption.
1910	ACCU 0 E2PROM ERROR	0	---	Rechargeable battery not available
		1	---	Invalid length of the data structure in the EEPROM of the rechargeable battery
		2	---	No charging profile available in the EEPROM (only with Li-ion rechargeable batteries)
		3	---	Error when reading the SoC-value
		4	---	Error when writing the SoC-value
		5	---	The charging profiles of the rechargeable batteries inserted do not match (only with devices that support the simultaneous use of multiple rechargeable batteries)
		6	---	• Permissible charging time exceeded • When restarting the device, it was recognised that the rechargeable battery currently in use has already exceeded the permissible charging time once. The battery is probably defective and should be checked by the manufacturer.
1950	CHARGE START	---		Charging has been started.
1951	CHARGE STOP	0		Charging has been stopped.
		1		The maximum permissible charging time has been exceeded. Charging has been stopped for safety reasons.
1960	SOC	##		State of charge in [0.00 %]
1961	VBATT	##		Internal battery or rechargeable battery voltage in [mV]
1962	VIN	##		External supply or charging voltage in [mV]
2000 - 2199	MODULE ERR	##	---	Module-specific critical error (see "Module-specific critical errors" on page 156)

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2200 - 2399	MODULE WARNING	##	---	Reserved for extensions
2400 - 2599	MODULE INFO	##	---	Module-specific information about the current operating state (see "Module-specific information regarding the current operating state" on page 156)
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 169).

15.3.1 Modem error

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

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1200	NETLOCK ERROR	-966		Error when selecting the network. Check whether the device is in the coverage area.
TCP channel error				
1200	CHANNEL ABORTED	-965	---	An attempt is being made to write to/read a TCP client that is no longer available. Try again later
	TCP DNS FAILURE	-958	---	The name could not be resolved in an IP address. Internal error
	CHANNEL REFUSED	-955	---	The TCP connection has been refused by the server. Try again later
	CHANNEL HOST UNREACHABLE	-954	---	No route to the host. Try again later
	CHANNEL NETWORK UNREACHABLE	-953	---	No network available Try again later
	CHANNEL PIPE BROKEN	-952	---	TCP connection interrupted Try again later
	CHANNEL TIMEOUT	-951	---	Timeout (DNS request, TCP connection, ping response, etc.) Try again later
1200	MODEM POSITION UPDATE ERROR	-943	---	Timeout during determination of the GSM position data
1200	MODEM NETINFO STALL	-941	---	Error detected during online connection Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1200	MODEM RESETLOOP	-940	---	Restart loop on modem detected. Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
1200	MODEM UNDERVOLTAGE	-939	---	Undervoltage on the modem detected. The power supply should be checked.
1200	MODEM OVERHEAT	-938	---	Overheating of the modem detected.

15.3.2 Module-specific critical errors

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2003	i/o controller not responding	0	---	I/O Controller does not respond. Contact the manufacturer if the device log includes this error several times (see "Contact information" on page 169).
2005	i/o controller updated failed	##	---	Error updating the firmware of the I/O controller
		-1	---	Error not specified in more detail when updating the firmware of the I/O controller
		-2	---	It was attempted to install an older version of the firmware on the I/O controller. A firmware downgrade is not allowed.
		-3	---	The firmware version to be installed is already installed on the I/O controller.

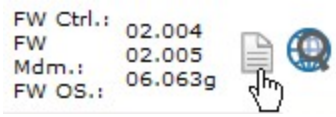
15.3.3 Module-specific information regarding the current operating state

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
2400	TX forced start	1	---	Additional connection establishment initiated independently of the transmission cycle
2402	operation mode changed to XXX	##	---	Operating mode changed
	operation mode changed to NORMAL	1	---	Normal operating mode. The supply is effected via V IN.
	operation mode changed to PRODUCTION	4	---	Production mode or no site is linked to the device.
	operation mode changed to BACKUP	5	---	The supply was switched to the rechargeable buffer battery..
2406	i/o controller update finished	0	---	Firmware update of the IO controller was successful

15.4 Evaluating the device log

15.4.1 Evaluating the device log on the myDatanet server

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



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

15.4.2 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 myDataconC3 MBM via the USB interface.

A more detailed description about the evaluation of the device log using DeviceConfig is included in chapter ""Log" tab" on page 123.

Chapter 16 Spare parts and accessories

Use only original spare parts and accessories of the myDataconC3 MBM o avoid negative effects on safety and performance.

16.1 Suitable data loggers

Description	Quantity	Order number
Data loggers of the myDatalogC3xx family:		
myDatalogC32x M1/NB1 EU	1	301293
myDatalogC32x 2G/4G World	1	301629
myDatalogC33x WIFI/2G/3G/4G World	1	301331

16.2 Assembly sets

Description	Quantity	Order number
Housing complete	1	301219
Wall mounting set for housing 300x200x150mm	1	301185

16.3 Antennas

Description	Quantity	Order number
Extension cable for antenna SMA-M/SMA-F 2,5m	1	206.807
Angle adapter SMA-M/SMA-F	1	300318
Rod antenna multi band 2G/3G SMA-M	1	301075
Flat antenna Disc Multi Band SMA-M 1,5m	1	301362
Dome antenna multi band SMA-M 3m	1	301212

16.4 Power supply

Description	Quantity	Order number
Power supply 24V 0,63A for top-hat rail mounting	1	301066
Power supply 24V 1,5A 36W for DIN rail mounting	1	301251

16.5 Other accessories

Description	Quantity	Order number
Tool Pen	1	206.646

Chapter 17 Document history

Rev.	Date	Changes
01	18.03.2024	**First version**
02 (1/2)	12.08.2024 (1/2)	**Chapter "Declarations of conformity" on page 9** *Variant myDatalogC32x 2G/3G/4G World removed* *Variant myDatalogC32x 2G/4G World added* **Chapter "Specifications" on page 13** *Number of antenna connections reduced to one, in accordance with variant myDatalogC32x 2G/4G World* *Variant myDatalogC32x 2G/3G/4G World removed* *Variant myDatalogC32x 2G/4G World added* **Chapter "Overview" on page 20** *Explanation adapted to account for the fact that the secondary mobile radio antenna (AUX) is no longer available on variant myDatalogC32x 2G/4G World .* **Chapter "Block diagram" on page 21** *Explanation adapted to account for the fact that the secondary mobile radio antenna (AUX) is no longer available on variant myDatalogC32x 2G/4G World .* **Chapter "Intended use" on page 22** *Link to the list of countries and regions in which the integrated SIM chip can be used has been removed.* **Chapter "Device labelling" on page 24** *Link to the list of countries and regions in which the integrated SIM chip can be used has been removed.* **Chapter "Disclaimer" on page 26** *Note added indicating that no liability is assumed for missing or incorrect measurement values due to incorrect parameterisation/programming.* **Chapter "Control module" on page 35** *Explanation adapted to account for the fact that when using trigger "D1" or "D2" the setpoint entered via the interface is ignored and the output is controlled directly via the trigger function.* **Chapter "Automatic selection of the mobile network" on page 40** *Link to the list of countries and regions in which the integrated SIM chip can be used has been removed.* **Chapter "Installing the myDataconC3 MBM " on page 43** *Note added indicating that the device is not suitable for outdoor use.* **Chapter "Assembly in a control cabinet" on page 45** *Reference to the antenna to be used in case of the assembly in a control cabinet changed to the Flat antenna Disc Multi Band SMA-M 1,5m (301362).* **Chapter "Connection of the sensors, actuators and the supply" on page 46** *Table added which indicates the permissible conductor cross-section and torques for the terminals of the data logger.* **Chapter "Status LED" on page 63** *Link to the list of countries and regions in which the integrated SIM chip can be used has been removed.*

Rev.	Date	Changes
02 (2/2)	12.08.2024 (2/2)	**Chapter "Measurement channels " on page 67** *Explanation adapted to account for the fact that when using trigger "D1" or "D2" the setpoint entered via the interface is ignored and the output is controlled directly via the trigger function.* **Chapter "Output channels " on page 78** *Note added indicating that when using trigger "D1" or "D2", the setpoint is ignored. Example to explain the determination of the switching state at the output using a trigger has been revised so that the output is controlled directly via the trigger function and not the release of the control value entered via the interface.* **Chapter "Internal channels " on page 91** *Explanation adapted to account for the fact that when using trigger "D1" or "D2" the setpoint entered via the interface is ignored and the output is controlled directly via the trigger function.* **Chapter "DeviceConfig " on page 115** *Windows XP, Windows Vista, Windows 7 and Windows 8 removed from the list of supported operating systems.* *Windows 11 added to the list of supported operating systems.* **Chapter "Creating the site" on page 133** *Explanation and illustrations adapted to account for the new wizard for creating new sites. The wizard replaces the previous procedure and supports the customer to correctly set up sites.* **Chapter "App log entries" on page 145** *Chapter added* **Chapter "Modem error" on page 154** *Link to the list of countries and regions in which the integrated SIM chip can be used has been removed.* **Chapter "Suitable data loggers" on page 159** *Variant myDatalogC32x 2G/3G/4G World removed* *Variant myDatalogC32x 2G/4G World added* **Chapter "Antennas" on page 159** *List of accessories revised* **Chapter "Glossary" on page 167** *Link to the list of countries and regions in which the integrated SIM chip can be used has been removed.*
03 (1/4)	28.08.2025 (1/4)	**Chapter "Declarations of conformity" on page 9** *Variant myDatalogC32x M1/NB1 EU updated* *Variant myDatalogC32x 2G/4G World updated* **Chapter "Specifications" on page 13** *Description adapted to the fact that in interval mode, a connection can be established using the button.* *LAN added to the list of available data transmission channels of the myDatalogC33x WIFI/2G/3G/4G World* **Chapter "Overview" on page 20** *Explanation adapted to the fact that the LAN interface can be used with variant myDatalogC33x WIFI/2G/3G/4G World*

Rev.	Date	Changes
03 (2/4)	28.08.2025 (2/4)	**Chapter "Block diagram" on page 21** *Block diagram updated to include the LAN interface, which is only available with variant myDatalogC33x WIFI/2G/3G/4G World .* **Chapter "Limitations of use" on page 22** *Chapter added* **Chapter "General product information" on page 23** *Description adapted to the fact that, in addition to the connection mode "online" set by default, the connection mode "interval" can now also be selected.* **Chapter "Storage of the product" on page 25** *Description revised to take into account the new connection type "interval".* **Chapter "Functional principle" on page 29** *Explanation and illustrations adapted to the fact that the LAN interface can be used with variant myDatalogC33x WIFI/2G/3G/4G World .* **Chapter "Record module" on page 36** *Explanation of the parameters adapted to the fact that the event trigger "XM" (activate transmission) and the level triggers "ON" (activate online mode) and "QX" (use alternative transmission cycle)bare now available for the measurement channels, the Modbus measurement channels and the internal channels.* **Chapter "Procedure in case of connection aborts" on page 39** *Description revised to take into account the new connection type "interval".* **Chapter "Determining the strength of the mobile network signal " on page 40** *Explanation revised to take into account the new connection type "interval".* **Chapter "Automatic switching between the mobile network technologies "LTE-M" and "NB-IoT"" on page 40** *Description adapted to account for the fact that the modem now automatically switches between mobile network technologies.* **Chapter "Assembly in a control cabinet" on page 45** *Reference to the antenna to be used in case of the assembly in a control cabinet changed to the Flat antenna Disc Multi Band SMA-M 1,5m (301362)* **Chapter "Connection of the mobile network antenna" on page 50** *Note added indicating that the total length of the cable connection to the antenna must not exceed 30 m if extension cables are used.* **Chapter "Testing communication with the device" on page 58** *Description revised to take into account the new connection type "interval".* **Chapter "Button" on page 62** *Explanation revised to take into account the new connection type "interval".* **Chapter "Status LED" on page 63** *Chapter revised* **Chapter "User interface on the myDatanet server" on page 64** *Note added indicating that some configuration fields may be hidden depending on the respective user level.* *Explanation of the title bar displayed at the top of the input screens added.* **Chapter "Site configuration" on page 67** *Note removed indicating that some configuration fields may be hidden depending on the respective user level.*

Rev.	Date	Changes
03 (3/4)	28.08.2025 (3/4)	**Chapter "Specific input screen for configuring the site" on page 67** *Note added explaining how to open the specific input screen for configuring the site and that the configuration sections contained therein are specific to the IoT application on which the site is based.* **Chapter "Measurement channels " on page 67** *Note added indicating that a transmission is triggered both when a warning or alarm occurs and when a warning or alarm is cancelled.* *Screenshot and explanation of the "Trigger" tab adapted to the fact that the event trigger "XM" (activate transmission) and the level triggers "ON" (activate online mode) and "QX" (use alternative transmission cycle) are now available.* **Chapter "Modbus measurement channels" on page 82** *Note added indicating that a transmission is triggered both when a warning or alarm occurs and when a warning or alarm is cancelled.* *Screenshot and explanation of the "Trigger" tab adapted to the fact that the event trigger "XM" (activate transmission) and the level triggers "ON" (activate online mode) and "QX" (use alternative transmission cycle) are now available.* **Chapter "Internal channels " on page 91** *Note added indicating that a transmission is triggered both when a warning or alarm occurs and when a warning or alarm is cancelled.* *Screenshot and explanation of the "Trigger" tab adapted to the fact that the event trigger "XM" (activate transmission) and the level triggers "ON" (activate online mode) and "QX" (use alternative transmission cycle) are now available.* **Chapter "Calculated channels" on page 94** *Example added to explain the "Delta" mode* **Chapter "Basic settings" on page 99** *Screenshot of the configuration section updated.* *Description adapted to the fact that, in addition to the connection mode "online", the connection mode "interval" can now also be selected.* *Explanation of the drop-down lists "Primary communication channel" and "Secondary communication channel" as well as the input field "Fallback time" added.* *Additional explanation regarding the connection types added* **Chapter "LAN settings" on page 102** *Chapter added* **Chapter "Default input screen for configuring the site" on page 103** *Note added explaining how to open the standard input screen for configuring the site and that the configuration sections contained therein are identical for all rapidM2M -based devices.* *Screenshots of the user interface of the myDatanet server added.* **Chapter "Site" on page 103** *Explanation of the "Application Phase" field added. It indicates the phase of the release process that the currently used version of the IoT application is in.*

Rev.	Date	Changes
03 (4/4)	28.08.2025 (4/4)	**Chapter "Basic settings" on page 110** *Explanation of the parameter for selecting the transmission profile added. The transmission profiles can be used to customise the site to specific requirements (energy consumption, fault diagnosis, connection stability).* **Chapter "Default input screen for configuring the site in development mode" on page 112** *Chapter added* **Chapter "Services" on page 139** *Chapter added* **Chapter "App log entries" on page 145** *Footnote added indicating that further accesses to the Modbus server are prevented in the current measurement cycle if a timeout has been detected.* **Chapter "Log entries and error codes" on page 148** *Explanation of the error codes "EMM REJECT CAUSE" and "MODEM TO EVAL" added* *Explanation of the log entries "TRANSMISSION PROFILE", "CHARGE START", "CHARGE STOP", "SOC", "VBATT" and "VIN" added* **Chapter "Spare parts and accessories" on page 159** *Note added indicating that only original spare parts and accessories should be used.*

Chapter 18 Glossary

App centre

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

App model

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

Footprint

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

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 19 Contact information

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