User manual for the portable data logger myDatalog4



Rev. 01 valid from:

- Firmware version: 01v025
- Modem version: 02v001
- Server version: 40.8
- Hardware version: 01v006

CE

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Chapter 2 Declaration of conformity

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Konformitätserklärung
Declaration of Conformity
Déclaration de conformité

Microtronics at

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www.microtronics.at

erklärt in alleiniger Verantwortung, dass das Produkt /
declare under our sole responsibility that our product /
déclare sous sa seule responsabilité que le produit

myDatalog4

auf das sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmt /
to which this declaration relates is in comformity with the following standards /
auquel se réfère cette déclaration est conforme aux normes

ÖVE/ÖNORM EN61326-1:2013-08-01
ÖVE/ÖNORM EN61010-1:2011-08-01
ETSI EN301489-1 V1.9.2:2011-09; ETSI EN301489-7 V1.3.1:2005-11;
ETSI EN301511 V9.0.2 :2003-03

gemäß den Bestimmungen der Richtlinien /
following the provision of Directives /
conformément aux dispositions des directives

2004/108/EG EMC Directive
2006/95/EG LVD Directive
1999/5/EG RTTE Directive
2011/65/EU RoHS

Ruprechtshofen, 09.01.2014

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Buber Hans-Peter, Managing Director

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Chapter 3 Specifications

Voltage supply	BP457 battery : 39Ah AP424D rechargeable battery : 17,6Ah
Housing	Material: Noryl GTX 973 Weight: 450g (without rechargeable battery or battery pack) Degree of protection: IP67 Dimensions (WHD): 100 x 240 x 100(without antenna)
Operating temperature	-20...+50°C, 15...90%rHnon-condensing
Storage temperature	-20...+70°C(without rechargeable battery or battery pack)
Display	LED for indicating the operating state and error codes
Operation	Solenoid switch for initiating ALOHA transmission mode
USB interface	1 x USB slave for establishing a connection to a PC. The DeviceConfig configuration program must be installed on the PC to enable communication with the myDatalog4 .
Antenna connector	FME-M
Universal inputs	4 x analogue or digital Modes: • 0...20mA: Resolution 6µA, max. 25mA, load 100Ω • 4...20mA: Resolution 6µA, max. 25mA, load 100Ω • Digital: max. 18V, configurable switching thresholds, load 1k1 • Day counter[1)]: min. pulse length 20ms, max. 18V, configurable switching thresholds, load 1k1 • Interval counter[1)]: min. pulse length 20ms, max. 18V, configurable switching thresholds, load 1k1 Additional information is provided in "Technical details about the universal inputs" on page 48.
Sensor supply	1 x switchable 14VDC sensor supply, max. 125mA 1 x 3,6...4,1V battery voltage output Additional information is provided in "Technical details about the switchable sensor supply and battery voltage output" on page 49.
Data memory	Internal flash memory for up to 112.500 measurement values
Data type	s16 (16 Bit signed)

Data transmission	By means of GSM/GPRS quad-band modem to the respective myDatanet server
SIM	The myDatalog4 is equipped with an integrated SIM card. Country list profile of the SIM chip: 0 (see www.microtronics.at/footprint)
Monthly data volume	t.b.d at two-minute measurement cycle and 120-minute transmission cycle
Device operating time	BP457 battery : • Approx. t.b.d. years with two-minute measurement cycle and 120-minute transmission cycle • Approx. t.b.d years with five-minute measurement cycle and 120-minute transmission cycle • Approx. t.b.d years with five-minute measurement cycle and 480-minute transmission cycle AP424D rechargeable battery : • Approx. t.b.d years with two-minute measurement cycle and 120-minute transmission cycle • Approx. t.b.d year with five-minute measurement cycle and 120-minute transmission cycle • Approx. t.b.d years with five-minute measurement cycle and 480-minute transmission cycle

[1)] These modes are only available for universal input 1

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

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 myDatalog4 , 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.

Please 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 device is not impaired. Install and use the measuring system only in the manner and method described in this manual.

Important note: *The manufacturer's products that are designed for use outdoors include extensive protection against penetrating moisture and 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 injury.

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

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

4.4.2 General safety instructions



DANGER:
Always switch off all of the used power supplies for the device before installing it, completing any maintenance work or resolving any faults.



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

4.4.3 Safety and preventative measures for handling GSM/GPRS modems

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



CAUTION:
The GSM/GPRS modem connection may 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 condition for the connection via a GSM/GPRS modem for whose use radio signals and networks are utilized, The GSM/GPRS modem must be switched on and be operated in an area where sufficient signal strength is present.

4.4.3.1 Safety and precautionary measures for the installation of the GSM/GPRS modem

- This device must only be installed by a trained technician who applies the recognised installation practices for a radio frequency transmitter including the correct grounding of external antennas.
- The device must not be operated in hospitals and/or in the vicinity of medical equipment such as heart pacemakers or hearing aids.
- The device must not be subjected to strong vibrations or impacts.
- The GSM/GPRS modem can cause interferences if it is in the vicinity of television sets, radios or computers.
- Do not open the GSM/GPRS modem. Any modification to the equipment is prohibited and will result in the operating licence being revoked.
- The use of GSM services (SMS messages/data communication/GPRS, etc.) may lead to additional costs. The user alone is 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.

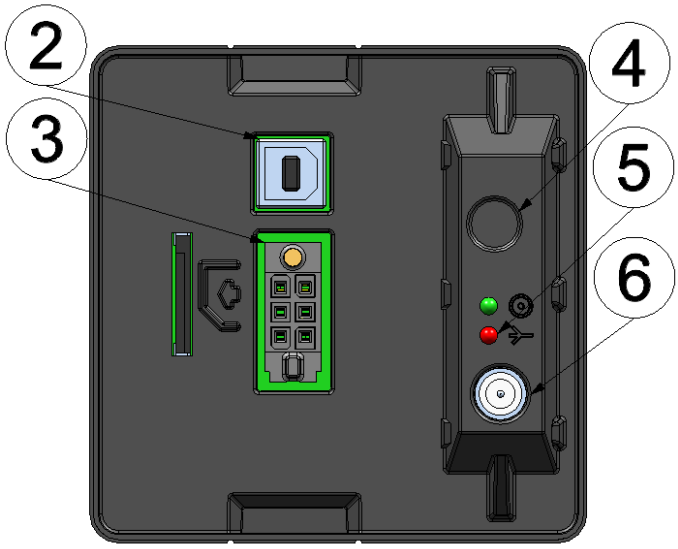
4.4.3.2 Safety measures for installing the antenna

- 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.

4.5 Overview



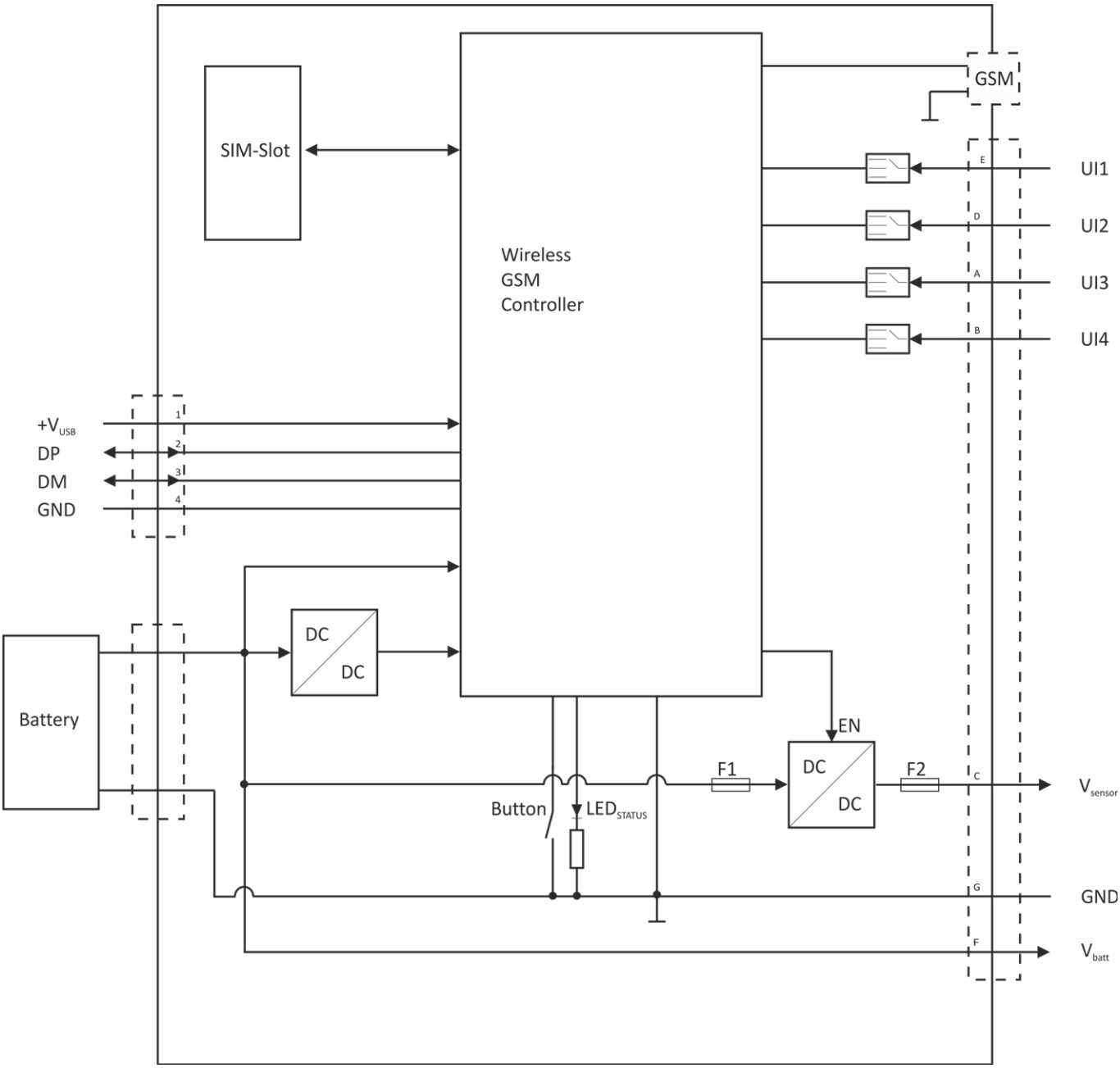
Bottom of the myDatalog4



Top of the myDatalog4
(view without rechargeable battery or battery pack)

1	Sensor connector	4	Solenoid switch
2	USB interface	5	Status LED
3	Supply connector	6	Antenna connection

4.6 Block diagram



Block diagram of the myDatalog4

4.7 Intended use

The portable measurement instrument is used to collect analogue and digital signals. The device is battery-operated. The measured and recorded data is stored on a non-volatile memory medium. This stored data is sent via the mobile network to a central server for further processing. The device is equipped with an integrated SIM card. The maximum permissible limit values specified in chapter "Specifications" on page 11 must be observed. The manufacturer shall not be liable for any

operational cases that deviate from these limit values and have not been approved by the manufacturer in writing.

> ***Note:*** *This device is exclusively intended to be used for the purposes as described above. 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 if the device is damaged and data is not able to be stored correctly.*
>
> ***Note:*** *The integrated SIM chip provides a mobile communications connection to a variety of international service providers. In order to be able to utilise all functions of the device, you must ensure that the device is located in the service area of one of these service providers. You can find a list of all supported countries and associated service providers under www.microtronics.at/footprint. A Managed Service contract with Microtronics Engineering GmbH is required for use of the mobile data transmission (see www.microtronics.at/managedservice). This includes the provisioning of the mobile communications connection via the network of the service provider included in the above-mentioned list.*

4.8 General product information

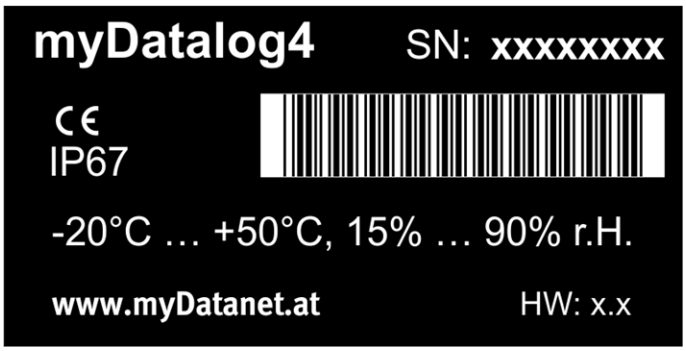
The device is a compact, portable data logger for recording and transferring analogue and digital signals. There are 4 universal inputs available, which can be operated in various analogue and digital modes. The device operates without mains power and has a 14VDC voltage output to supply the sensors. To save energy, the voltage output can be configured in such a way that it is only activated just before and during a measurement. The myDatalog4 is also equipped with a battery voltage output (3,6...4,1V). The voltage at the battery voltage output is always available and can be used to supply the switch contacts (e.g. relay) that are connected to one of the universal inputs. In addition to the measurement data of the universal inputs, the internal "Battery", "GSM level" and "Int. temp" measurement values are determined (see "Internal channels" on page 68). All of the generated measurement data is temporarily saved on an internal data memory and is then wirelessly transferred to a central location at a freely selected interval. The device is also configured via this connection. The device is equipped with an integrated SIM card.

4.9 Device labelling

The specifications in this user manual apply exclusively to the myDatalog4 device type. The type plate is located on the rear side of the device and contains the following specifications:

- Type designation
- Serial number
- CE marking
- Protection class
- Environmental conditions during operation
- Hardware revision

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 myDatalog4

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.*

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

4.10 Installation of spare and wear parts

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

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

4.11 Storage of the product

To store the myDatalog4 , activate the transport lock by deactivating the "Measurement" and "Transmission" in the input screen of the myDatanet server to configure the device (see "Device-

specific settings" on page 72). Then activate ALOHA transmission mode (see "ALOHA transmission mode" on page 28) via the solenoid contact so that the amended configuration is transferred to the myDatalog4 . During this process, all of the data that has not yet been transferred to the myDatanet server is transferred. The sensor cable and antenna can be removed as soon as the GPRS connection has been deactivated - indicated by the status LED going out (see "Status LED" on page 58). Store the myDatalog4 in its original packaging. During storage the rechargeable battery or battery pack should not be disconnected from the device and the protective armour should also not be removed.

By activating the transport lock, the myDatalog4 is in a very energy-saving mode. However, it may still occur that the rechargeable battery or battery pack is fully discharged if the device is stored for very long periods. Although the configuration and the most recently determined data are definitely maintained. The transport lock is deactivated again by re-initiating ALOHA transmission mode (see "ALOHA transmission mode" on page 28) and the myDatalog4 resumes operation according to the configuration.

4.12 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 (89/655/EEC) 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.

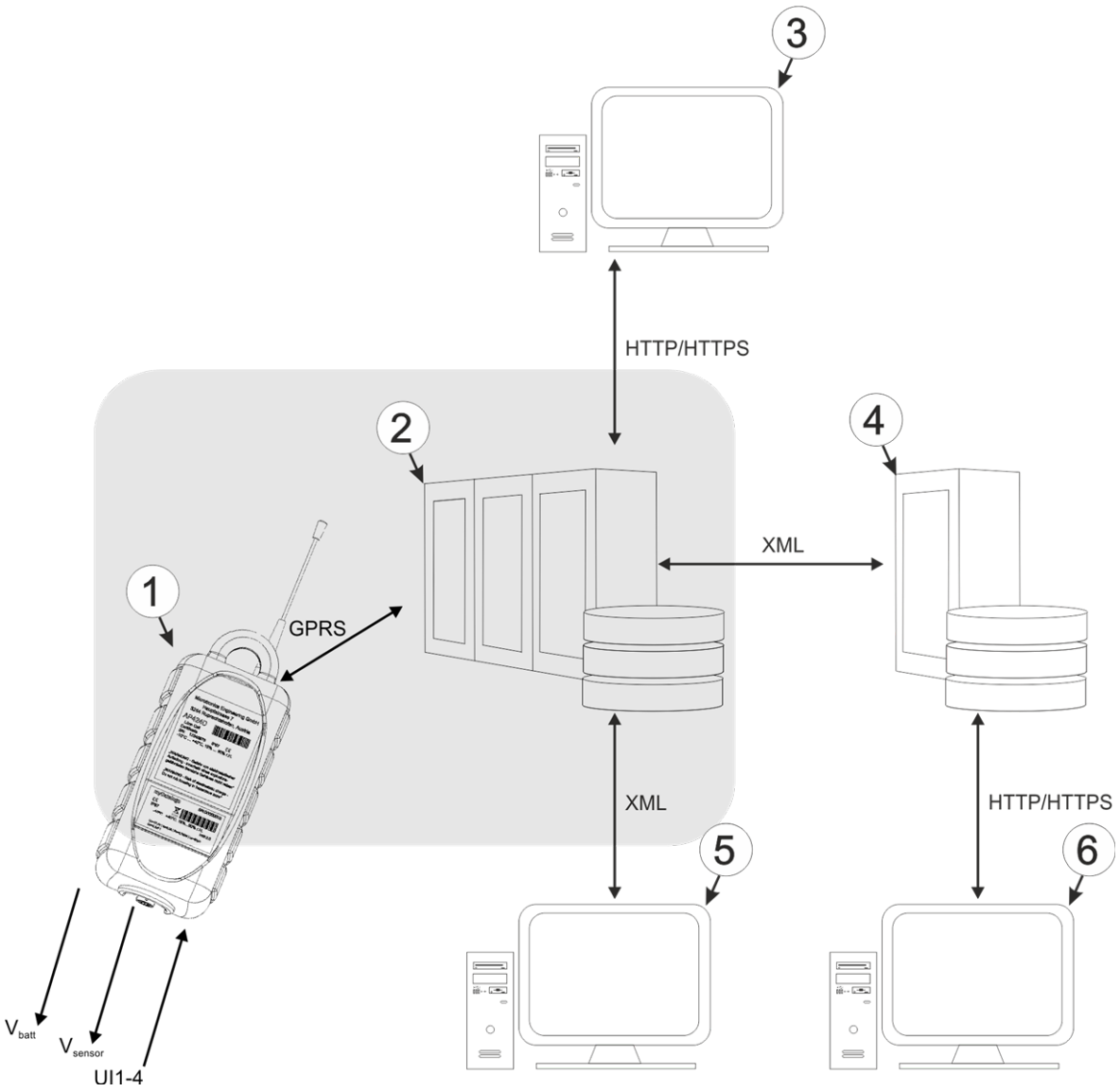
In addition, the operator must comply with the local legal requirements for

- 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.

Chapter 5 Functional principle

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



Functional principle

1	myDatalog4 with integrated managed service SIM card (including data transmission)
2	myDatanet server to which the data is transferred
3	Client that accesses the interface of the myDatanet server via the web browser
4	Customer-specific server that provides clients with their own interface. The customer-specific server obtains the data via the XML interface of the myDatanet server (see "XML interface" on page 73).
5	Client, on which a PC program is running, that obtains its data via the XML interface of the myDatanet server (see "XML interface" on page 73)
6	Client that accesses the interface of the customer-specific server via the web browser

Functions and components provided by myDatanet :

- myDatalog4

  The myDatalog4 is a portable device for connecting sensors (UI1-4) to the myDatanet server (GPRS).

- Managed Service

  Managed Service is the basis for operating your devices and provides you with a wide range of services. Managed Service includes updates for device firmware and server software, 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 XML interface of the server (see "XML interface" on page 73) or web interface of the server.

Functions and components provided by the customer:

- Sensors

  Sensor with interfaces that are compatible with the specifications listed in the chapter "Technical details about the universal inputs" (see "Technical details about the universal inputs" on page 48).

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

  It is therefore possible to create an individual web interface for the clients. Using this method, the data is read out of the myDatanet server via the XML interface (see "XML interface" on page 73) by the customer-specific server.

5.1 Internal processing of the measurement values

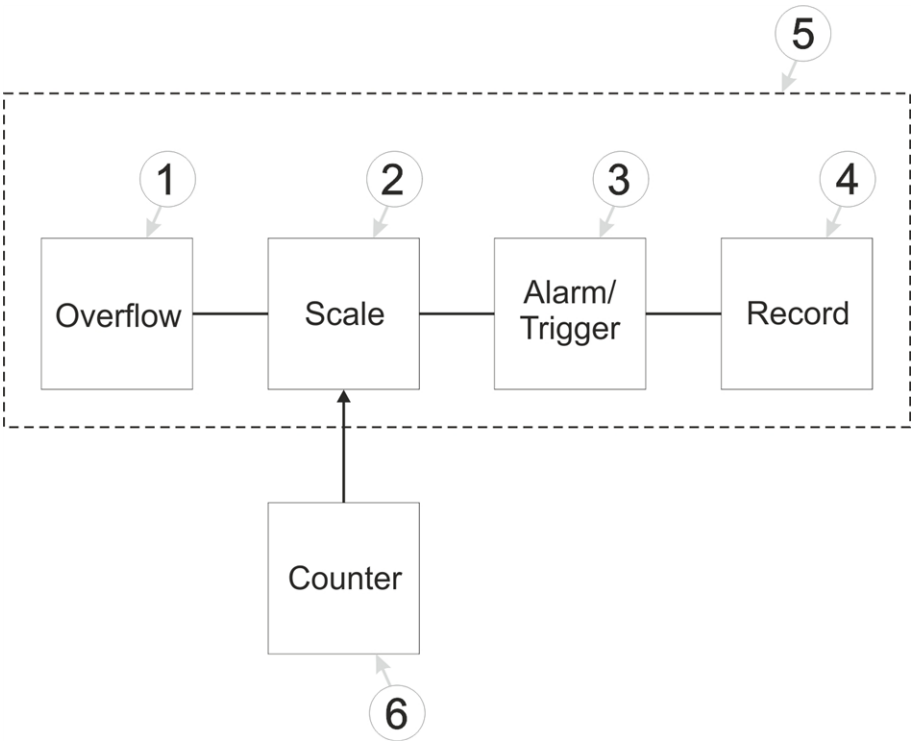


Diagram of the internal processing of the measurement values

1	Monitoring of the measurement range limits (see "Overflow module" on page 23)[1)2)]	4	Recording of the measurement values (see "Record module" on page 26)
2	Rescaling from the raw value to the measurement value (see "Scale module" on page 24)	5	This module chain is started at the time of every measurement and is completed once.
3	Monitoring of the alarm limits and trigger levels (see "Alarm/trigger module" on page 25)	6	Adding up the pulses at universal input 1 (see "Counter module" on page 26). This module is operated permanently if "Cnt.Day" or "Cnt.Intrvl." channel mode is selected.

[1)] These modules are skipped if "Cnt.Day" and "Cnt.Intrvl." channel modes are used

[2)] These modules are only processed in channel modes "0...20mA" and "4...20mA".

5.1.1 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 4 universal inputs in "4-20 mA" and "0-20 mA" channel modes.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels - ›Config.	Digital	---	---
	Cnt.Day		
	Cnt.Intervl.		
	0-20 mA	Overflow	Procedure in the event of measurement range violations
	4-20 mA		

5.1.2 Scale module

This module rescales the raw value (e.g. mA) to the required measurement value (e.g. mm). The number of edges that have been added up from the counter module is used for the "Cnt.Day" and "Cnt.Intervl." channel modes instead of the output value of the overflow module.

For "Cnt.Intervl." channel mode, the raw value is converted into the measurement value by multiplying the number of edges that have been added up by the pulse value determined by the "Impulse" parameter. The meter reading of the counter module is then reset.

For "Cnt.Day" channel mode, the raw value is also converted into the measurement value by multiplying the number of edges by the pulse value determined by the "Impulse" parameter. However, in this mode the meter reading of the counter module is not reset at the time of every measurement but is instead reset at the time specified via the "Day change over" parameter (see "Additional explanation regarding the difference between "Cnt.Day" and "Cnt.Intervl."" on page 62). A more detailed description on generating measurement values at the day changing time are provided in "Day change" on page 27.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels -› Basis	Digital	Invert	Inverts the input signal
	Cnt.Day	Impulse	Metered measurand of a pulse in the measurement unit
	Cnt.Intervl.		
	4-20mA 0-20mA	0%	Start of the measurement range in the measurement unit
		100%	End of the measurement range in the measurement unit
Measurement channels -›Config.	Digital	High level	0: The levels are set automatically. › omV: Level from which the signal at the universal input is interpreted as "high". "low" is detected at the "high level" - 10%.
	Cnt.Day		
	Cnt.Intervl.		
Basic settings	Cnt.Day	Day change over	Reset time of the day counter

5.1.3 Alarm/trigger module

This module monitors the alarm limits and trigger levels and creates an entry in the alarm list if necessary. The global triggers are also set. The alarm function of the alarm/trigger module is available for all of the inputs (universal inputs and internal channels), while the trigger function is only available for the universal inputs.

All of the parameters of the "Alarms" and "Trigger" tabs of the "Measurement channels" configuration section (see "Measurement channels" on page 59) and all of the parameters of the "Alarms" tab of the "Internal channels" configuration section (see "Internal channels" on page 68) are relevant to this module. Additionally, the parameters in the following tables are also relevant:

Configuration section	Mode	Parameter	Explanation
Measurement channels -› Trigger	Digital	XM	Initiate transmission
	Cnt.Day		
	Cnt.Intervl.		
	0-20 mA		
	4-20 mA		

Configuration section	Parameter		Explanation
Alarm settings	On alarm On warning On fault alarm On fault warning	A	The alarm is recorded in the alarm list.
		Ü	An immediate transmission is initiated.

5.1.4 Record module

The record module records the measurement values. If necessary, the record interval or transmission cycle is modified depending on the global triggers set by the alarm/trigger module.

The following tables specify the relevant parameters for the module:

Configuration section	Modus/interface	Parameter	Explanation
Measurement channels -> Trigger	Digital Cnt.Day Cnt.Intervl. Freq PWM 4-20mA 0-20mA	QU	The "Transmission cycle quick" should be used.
		QX	The "Record interval on event" should be used.

Configuration section	Parameter		Explanation
Alarm settings	On alarm On warning On fault alarm On fault warning	Q	The "Record interval on event" should be used.
		X	The "Transmission cycle quick" should be used.
Basic setting	Transmission cycle		Time between transmissions
	Transmission cycle quick		Time between the transmissions, if a shortened transmission cycle should be used because of an alarm/warning or a trigger being initiated
	Record interval		Time between measurement data recordings
	Measure quick divisor		record interval = record interval / factor (from triggering)

5.1.5 Counter module

If channel mode "Cnt.Day" or "Cnt.Intervl." was activated for universal input 1, the counter module is run through every 7,8ms and the level is checked on the universal input. As a 3-stage median

filter is used to filter out any signal faults, a minimum pulse length of 20msis required for the correct detection of the pulses. The counter module adds the number of rising edges and transfers this number to the scale module as soon as the time of a measurement is reached.

The following table specifies the relevant parameters for the module:

Configuration section	Mode	Parameter	Explanation
Measurement channels - ›Config.	Cnt.Day	High level	0: The levels are set automatically. › 0mV: Level from which the signal at the universal input is interpreted as "high". "low" is detected at the "high level" - 10%.
	Cnt.Intervl.		

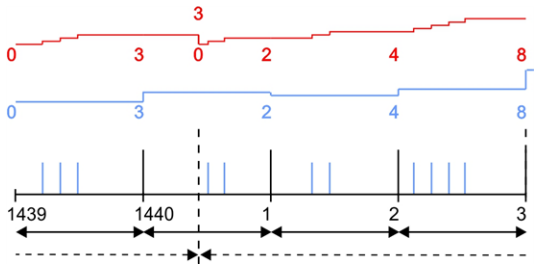
5.2 Day change

If universal input 1 is operated in Cnt.Day mode, all of the pulses up to the day changing time are added up. The current meter reading is recorded at the time of every measurement, which provides a rising gradient in the measurement value graphics on the myDatanet server. As it cannot be guaranteed that a measurement value is generated at the exact time of the day change, the following procedure is used to ensure that the highest value of the day is visible in the measurement value graphic:

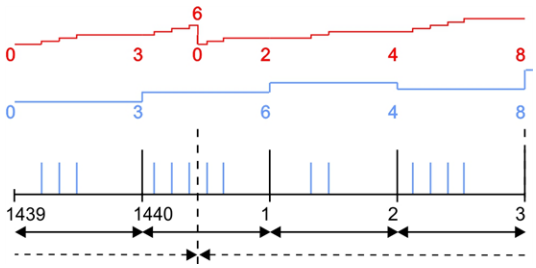
At the time of the day change, the current meter reading (highest value of the day) is copied to a temporary memory and then reset so that the counter module (see "Counter module" on page 26) can already add up the pulses for the day that is now starting. At the time of the first measurement after the day change, a check is completed to determine whether the highest value of the day (= meter reading in the temporary memory) has already been recorded, which means that no further pulses were detected between the last measurement value that was recorded and the day change. If this is the case, the current meter reading from the counter module is recorded at the time of the first measurement after the day change. Otherwise, the highest value of the day is recorded from the temporary memory at the time of the first measurement after the day change. The meter reading from the counter module is then recorded again at the time of the second measurement after the day change.

Note: *Additional explanation on the day change*

Basic setting	◄- - - - - -►	*Day change over*		*Meter reading of the counter module*	*red line*
	◄——►	*Measurement cycle*	*1min.*	*Measurement value*	*blue line*



The highest value of the day was already achieved at the time of the last measurement before the day change (no new pulses between the time of the last measurement and day change)



The highest value of the day is recorded at the time of the first measurement after the day change (new pulses between the time of the last measurement and day change)

5.3 ALOHA transmission mode

ALOHA transmission mode is a special connection mode whereby the myDatalog4 establishes a connection to the myDatanet server for 10min.

InitiatingALOHA transmission mode:

- Directly on the device using the solenoid switch (see "Solenoid switch" on page 57). The GSM network is re-selected during this process. This means that a list of all of the GSM networks in the receiving range of the device is created from which the first GSM network is then selected that is not on the "Ban list" (see "Ban list" on page 29) and that is part of one of the service providers supported by the integrated SIM card (see www.microtronics.at/footprint).

A speech bubble in the measurement instrument list (see "myDatanet Server Manual " 805002) with the title "Aloha" indicates that a device is in ALOHA transmission mode.



Clicking on the speech bubble with the "Aloha" title opens the ALOHA data window (see "myDatanet Server Manual " 805002). It contains the internal "Battery" and "GSM level" measurement values. The measurement values for the last thirty minutes are always shown in the ALOHA data window, which means that data from a previous ALOHA transmission may be included. The ALOHA data is generated every three seconds independently of the normal measurement value and is thus not saved with the standard measurement data.

5.4 Automatic selection of the GSM network

The GSM network to which the device should register must be selected, as the myDatalog4 is equipped with a SIM chip that provides a mobile connection via a variety of international service providers (see www.microtronics.at/footprint). This is completed automatically by the device. During this process it is taken into consideration if a connection to a certain GSM network is possible although the use of this GSM network repeatedly causes transmission errors. Such a GSM network is added to a ban list and is ignored during the next login attempt.

The following conditions ensure that the myDatalog4 logs itself into a GSM network:

- Initiation of ALOHA transmission mode (see "ALOHA transmission mode" on page 28)
- More than three consecutive connections could not be established.

1. The myDatalog4 checks whether any errors occurred during the last login attempt.

   No errors:

   The myDatalog4 logs into the same GSM network that was also used during the last attempt.

   Error:

   Continue with step 2

   > ***Note:*** *A transmission error is not the same as an error that occurs when logging into the GSM network. It is possible for the login to the GSM network to work correctly but that a transmission error still occurs.*

The following steps are only completed if an error was detected during step 1:

2. The device searches for GSM networks within its receiving range and creates a list of available GSM networks.
3. A search of the list of available GSM networks is completed and the strongest GSM network is selected that is not on the "ban list" and is assigned to one of the service providers supported by the integrated SIM chip (see www.microtronics.at/footprint).

   > ***Note:*** *An explanation detailing the conditions when a GSM network is added to the "ban list" is provided in "Ban list" on page 29.*

5.4.1 Ban list

The ban list provides space for 5 entries and is not saved in a volatile memory. This means that it is also still available following a PowerOn.

If there is a "BEARER GPRS FAILED" error (see "Modem error" on page 134), then an internal counter is increased by 2 . If a transmission was completed without errors, i.e. all of the data was transferred, this internal counter is reduced by 1 . The current GSM network is added to the ban list if the internal counter reaches the value 6 . The ban list is deleted if no GSM network can be selected from the list of available GSM networks in the receiving range taking the ban list into consideration. Another

search for GSM networks in the receiving range is completed once the ban list is deleted and the network selection is completed with the ban list that is now empty (see step 3 in chapter"Automatic selection of the GSM network" on page 29).

Chapter 6 Storage, delivery and transport

6.1 Inspection of incoming deliveries

Please check the shipment immediately after receiving for completeness and intactness. Immediately report any discovered transport damages to the delivering carrier. Also notify the manufacturer in writing about this without delay. Report any incompleteness in the delivery to the responsible representative or directly to the company headquarters of the manufacturer within 2 weeks (see "Contact information" on page 145).

> ***Note:*** *Any claims received thereafter will not be acknowledged!*

6.2 Scope of supply

> ***Note:*** *The rechargeable battery or battery pack required for operation is not part of the standard scope of supply and must be ordered separately (see "Rechargeable battery and battery packs" on page 139).*

The standard scope of supply of the myDatalog4 (206.204) includes:

- myDatalog4
- Antenna 900 FME -F (206.801)
- Extension cable for antenna FME-F/FME-M 5m (206.805)
- USB cable USB-A/USB-B 1,5m (206.601)
- MDN Magnet (206.803)
- MDN Protection casing (206.320)
- myDatanet service kit (206.324)
- Quick Guide

Additional equipment such as assembly sets, antennas, rechargeable battery or battery pack, charger, etc., depending on the order. Please check these against the delivery slip.

6.3 Storage

The following storage conditions must be observed:

myDatalog4	Storage temperature	-20...+70°C
	Humidity	15...90%rHnon-condensing
BP457 battery	Operating temperature	-20...+50°C
	Storage temperature	0...+30°C
AP424D rechargeable battery	Operating temperature	-20...+50°C
	Charging temperature	0 ...+40°C
	Storage temperature	0...+35°C
	Humidity	15...90%rH

Note: The table above contains only the storage conditions for the two energy sources used most frequently for the myDatalog4 . Please consult the appropriate factsheet for information about the storage conditions of other rechargeable battery or battery packs.

Important note: The storage conditions listed in the table only apply when the myDatalog4 is disconnected from the rechargeable battery or battery pack. If the device has not been disconnected from the rechargeable battery or battery pack, the same conditions apply for storage as for operation.

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

6.4 Transportation

The myDatalog4 is designed for rough industrial applications. Nevertheless, it should not be subjected to heavy shocks, bumps, impacts or vibrations. The original packaging must always be used for transport.

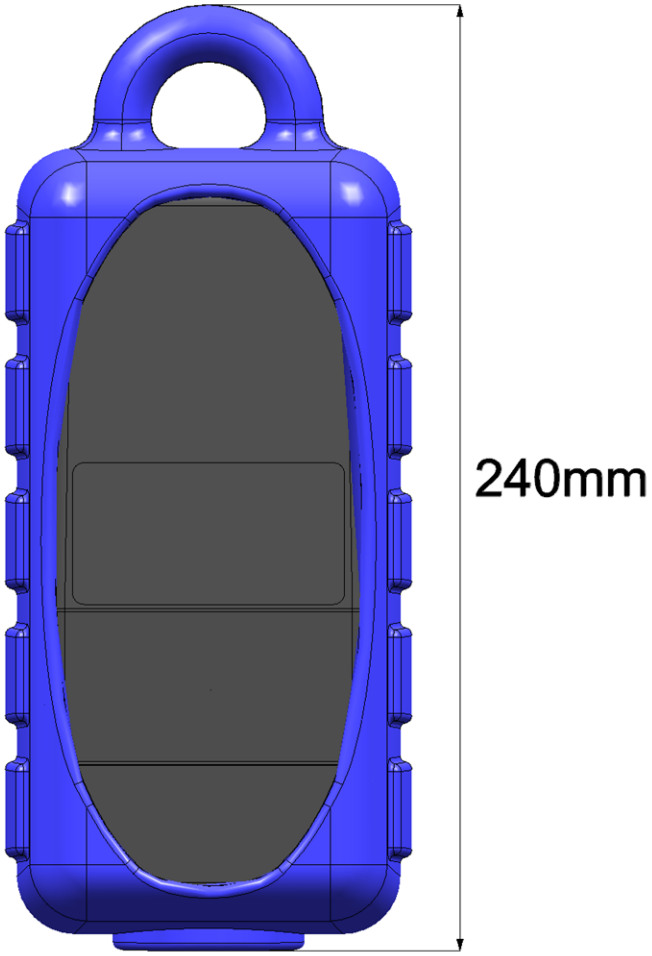
6.5 Return

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 145). The return shipment of the myDatalog4 must occur in the original packaging and with freight and insurance paid to Microtronics Engineering GmbH (see "Contact information" on page 145). Insufficiently cleared return shipments will otherwise not be accepted!

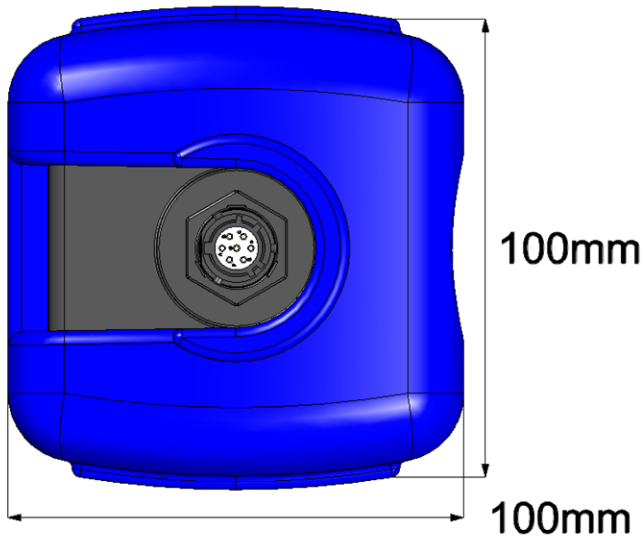
Chapter 7 Installation

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: Height
(View with accu or battery pack and protective armour)



Dimensions: Width and depth
(View with accu or battery pack and protective armour)

7.2 Installing the myDatalog4

Important note:

- *Ensure installation is completed correctly.*
- *Comply with existing legal and/or operational directives.*
- *Improper handling can cause injuries and/or damage to the instruments!*
- *The myDatalog4 must not be operated in the field without a protective armour.*

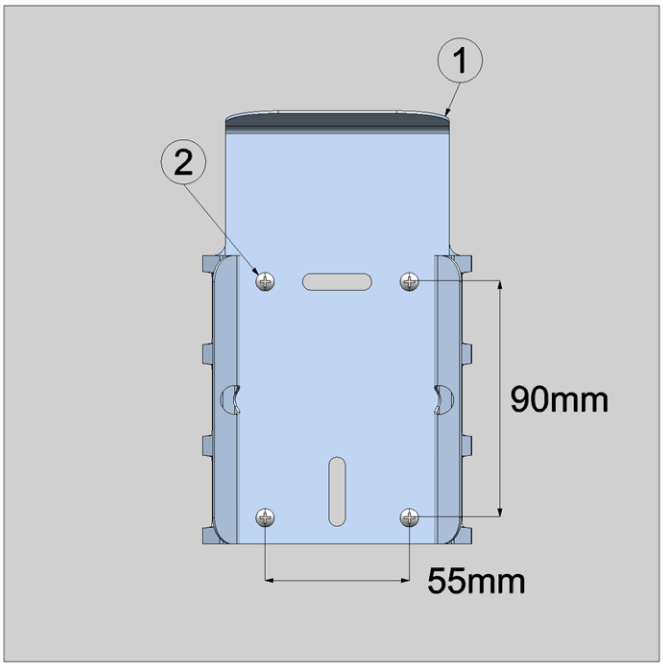
The installation site must be selected according to specific criteria. The following conditions must be avoided in any case:

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

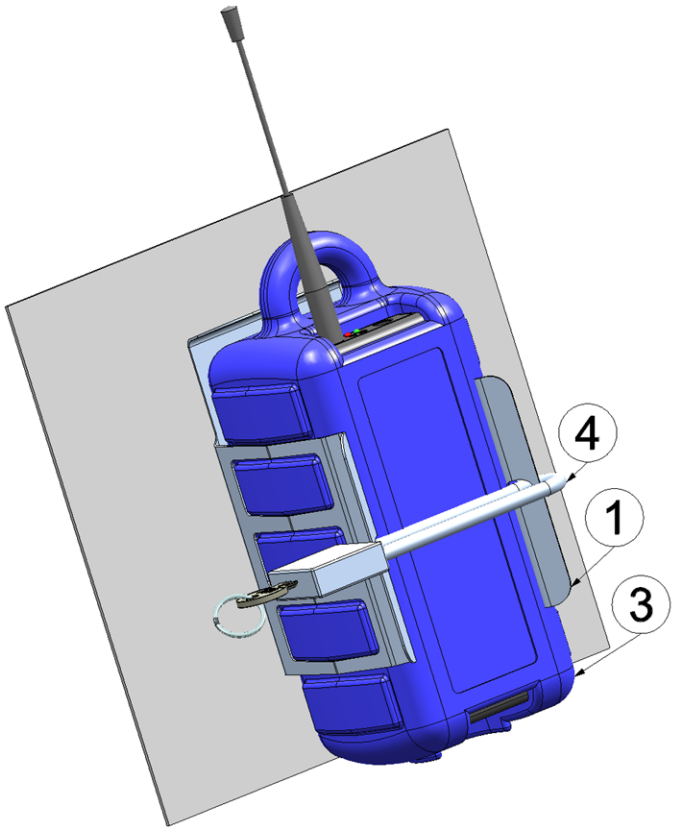
> ***Note:*** *Leave sufficient space at the upper end to mount the antenna. The space required depends on the antenna used. Approx. 15 cm of space must be left beneath the device. Further information regarding the installation dimensions can be found in the relevant sub-chapter.*

7.2.1 Wall mounting

The optional "MDN wall mounting (206.321)" equipment is required for wall mounting. The myDatalog4 can also be secured against theft using the optional "MDN Anti-theft device " (206.322) equipment.



Wall mounting - step 1



Wall mounting - step 2

1	Retaining bracket (included in the scope of delivery of 206.321)	3	myDatalog4
2	Raised head tapping screw 4x40 (included in the scope of delivery of 206.321)	4	MDN Anti-theft device (206.322)

1. Drilling the holes for the assembly:

   If you want to use the tapping screws (2) included in the equipment set to secure the retaining bracket (1) to the wall, drill four 6-mm holes in the wall using the drill template as a guide in accordance with the dimensions in the Figure "Wall mounting - step 1" on page 35.

   If you want to use your own fastening screws you can use the drill template provided in the equipment set to determine the position of the holes. The diameters are then determined by the screws that are being used and any wall plugs that may be required.

2. Securing the retaining bracket to the wall:

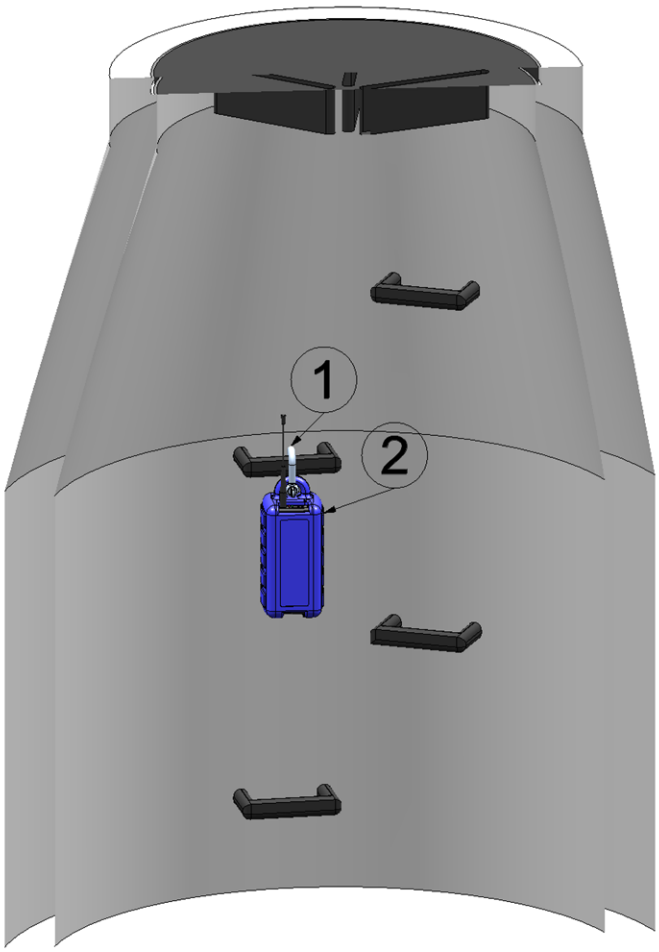
   If you want to use the tapping screws (2) included in the equipment set, first of all insert the supplied wall plugs into each of the four drill holes before screwing the retaining bracket (1) to the wall (see "Wall mounting - step 1" on page 35).

   If you are using your own screws, you must also insert the wall plugs into the holes before screwing the retaining bracket (1) to the wall (see "Wall mounting - step 1" on page 35).

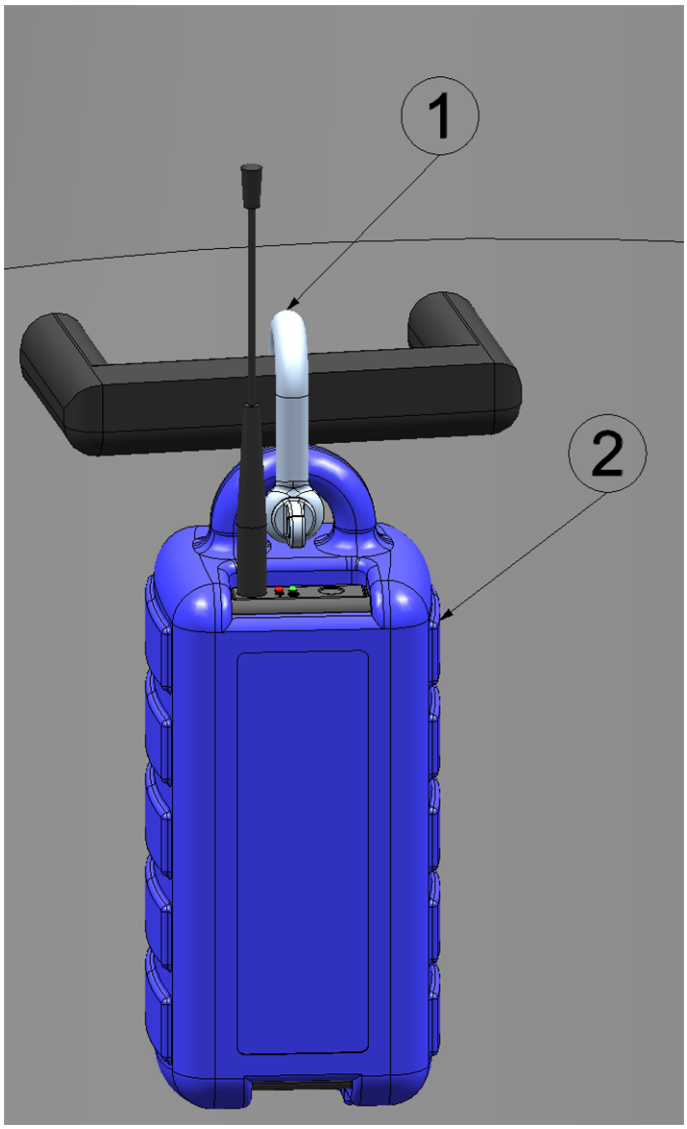
3. Carefully bend the brackets on the retaining bracket (1) apart and insert the myDatalog4 in accordance with the Figure "Wall mounting - step 2" on page 35. The rear of the myDatalog4 (the side with the cut-out in the protective armour) must be facing the wall.

7.2.2 Suspended installation

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



Suspended installation



Detailed view of a suspended installation

1 Niro shackle (206.325)	**2** myDatalog4

1. Use the Niro shackle (206.325), to attach the myDatalog4 to a rung of the channel ladder or a similar fastening point in accordance with the figure "Detailed view of a suspended installation " on page 37.

7.3 Electrical installation

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

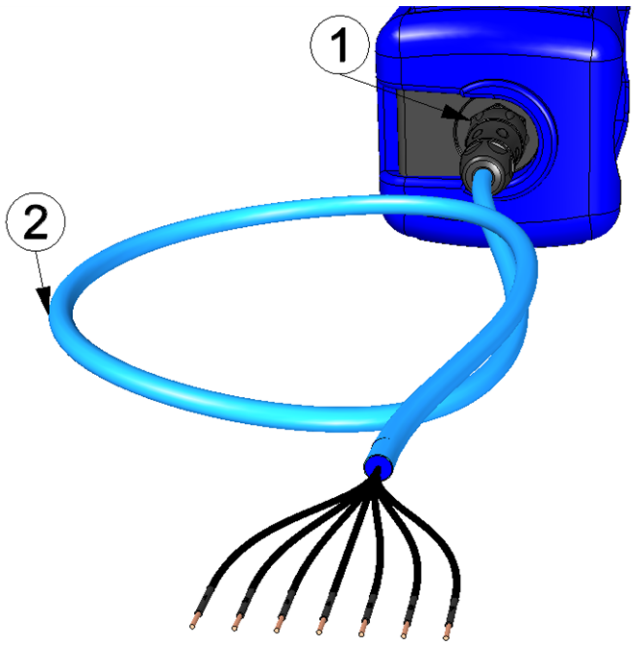
7.3.1 Connecting the sensors

Important note:

- *Ensure installation is completed correctly.*
- *Comply with existing legal and/or operational directives.*
- *Improper handling can cause injuries and/or damage to the instruments!*
- *Run all data cables so that they do not pose a trip hazard and ensure that cables do not have any sharp bends.*



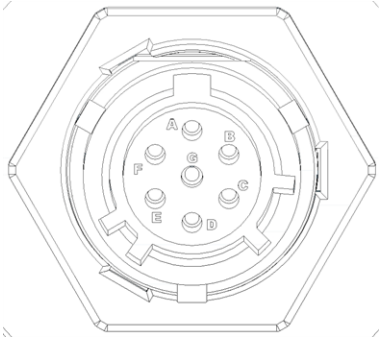
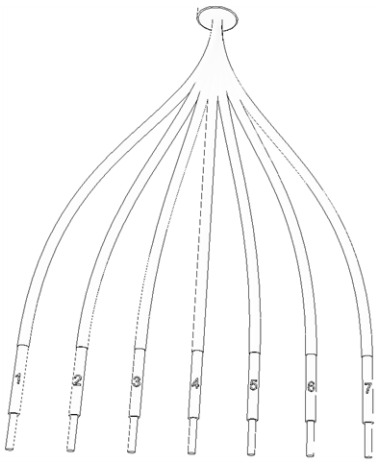
Connecting the sensors



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

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

Sensor connector

	Sensor connector (7-pin MIL connector)	Connection cable 7-pins for sensors 2,8m (206.602)	Signal
 Sensor connector	A	5	Universal input 3
	B	4	Universal input 4
	C	3	Switchable 14VDC sensor supply
	D	2	Universal input 2
	E	7	Universal input 1
	F	6	Battery voltage output (3,6...4,1V)
 Connection cable 7-pins for sensors 2,8m	G	1	Ground

1. Connect your sensors to the sensor connector. You can use the Connection cable 7-pins for sensors 2,8m (206.602) or Cable connector 7-pins for myDatalogMobile (206.654) for this purpose. You can use the Splitter cable for myDatalog Mobile (206.679) if you want to use several universal inputs and your sensors are located at different positions. Please note that this Splitter cable for myDatalog Mobile (206.679) only splits the sensor connector in to two identical 7-pin MIL connector, which means that you will need the Connection cable 7-pins for sensors 2,8m (206.602) or Cable connector 7-pins for myDatalogMobile (206.654) to connect the sensors (see "Use of the Splitter cable for myDatalog Mobile (206.679)" on page 44). Further accessories are detailed in the chapter "Spare parts and accessories" on page 139.

   Important note: *If you use the Connection cable 7-pins for sensors 2,8m (206.602), the joint between the sensor cable and sensor must be suitably protected against the penetration of moisture and dust. You can use the Clamping tube(300256) or Pressure compensation tube (300131) for this purpose (see "Use of the clamping tubes" on page 45).*

2. Connect the antenna (see "Connecting the GSM antenna" on page 45).

3. Initiate ALOHA transmission mode (see "ALOHA transmission mode" on page 28). The status LED should then start to flicker (see "Status LED" on page 58), indicating that a connection is being established.

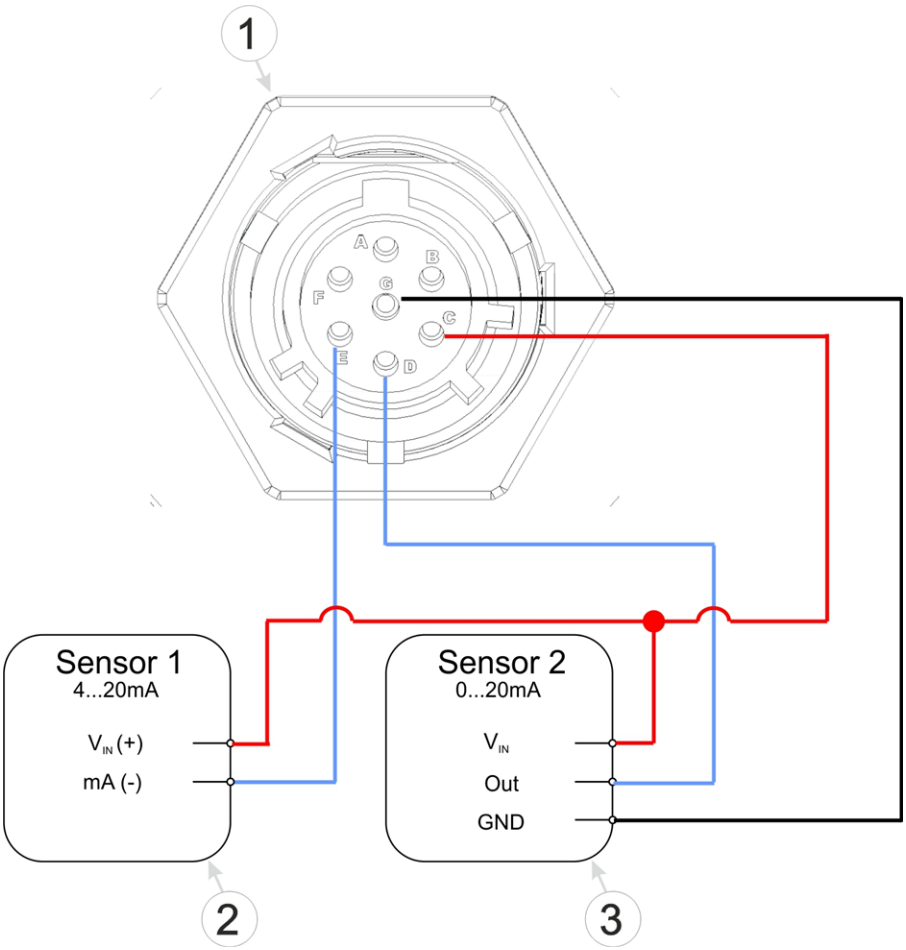
> ***Note:*** *If the myDatalog4 is still in transport mode, the transport lock is deactivated by the initiation of ALOHA transmission mode and the device starts to operate in accordance with the configuration.*

The following step is not mandatory.

4. Check whether the connection to the myDatanet has worked correctly (see "Testing communication with the device" on page 54).

7.3.1.1 Connection examples

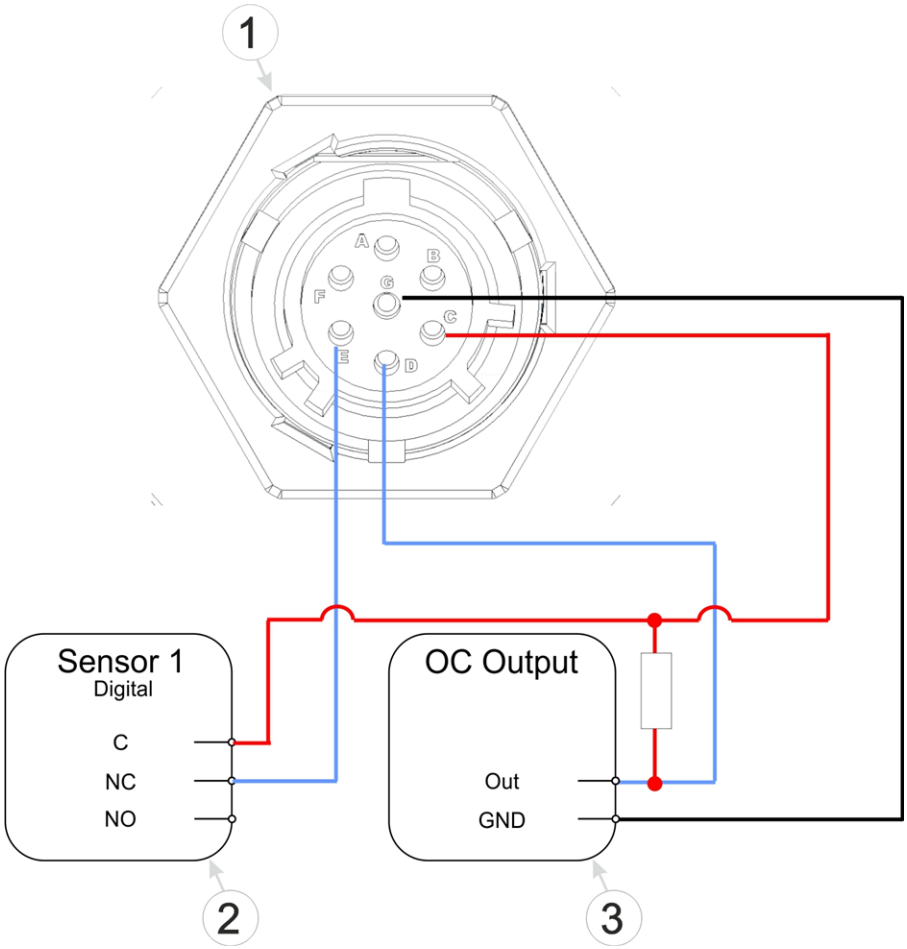
7.3.1.1.1 Analogue modes



Connection example: Analogue modes

1 myDatalog4	3 3-wire mA sensor
2 2-wire mA sensor	

7.3.1.1.2 Digital modes (use of the 14VDC sensor supply)

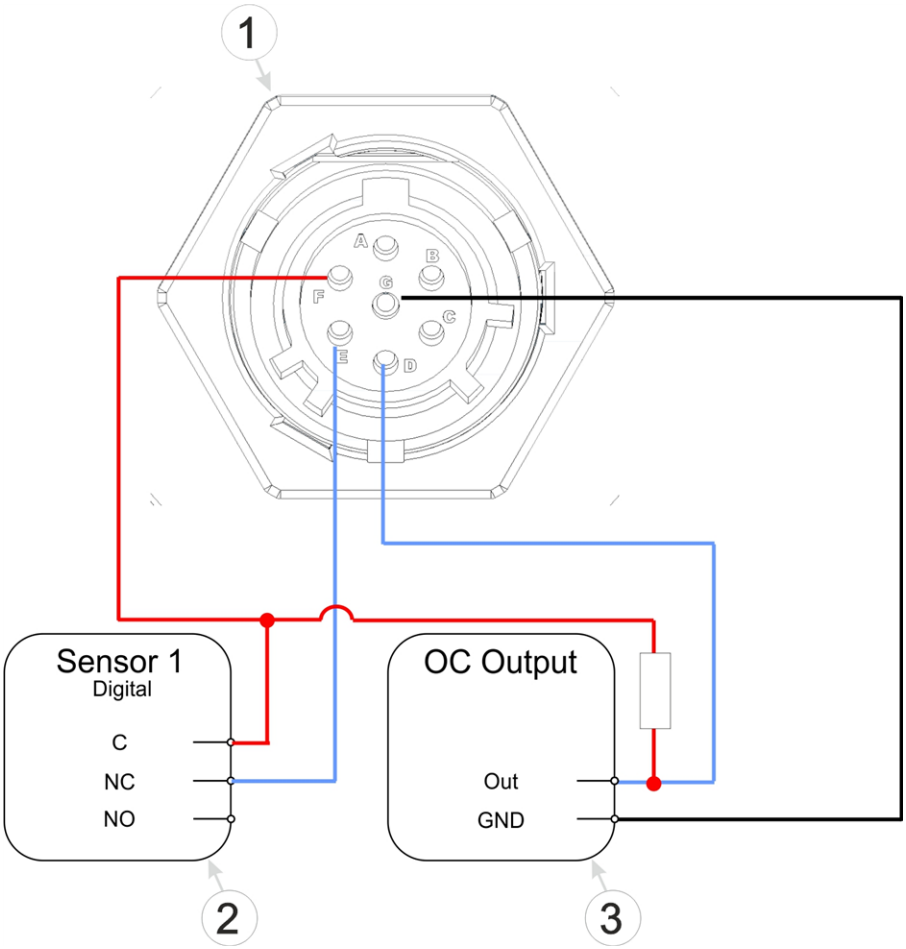


Connection example: Digital modes (use of the 14VDC sensor supply)

1 myDatalog4	3 Sensor with open collector output
2 Isolated relay contact	

Note: *If universal input 1 is to be operated in "Cnt.Day" or "Cnt.Intervl." channel mode, the sensor supply must be switched on permanently. This can be achieved by setting the warmup time in the "Basic settings" configuration section (see "Basic setting" on page 70) to a higher value than the record interval. However, this greatly increases the energy requirements and thus significantly shortens the operating time of the device. The use of the battery voltage output to supply the switch contact is more suitable for the operation of universal input 1 in "Cnt.Day" or "Cnt.Intervl." channel mode (see "Digital modes (use of 3,6...4,1V battery voltage output)" on page 43).*

7.3.1.1.3 Digital modes (use of 3,6...4,1V battery voltage output)

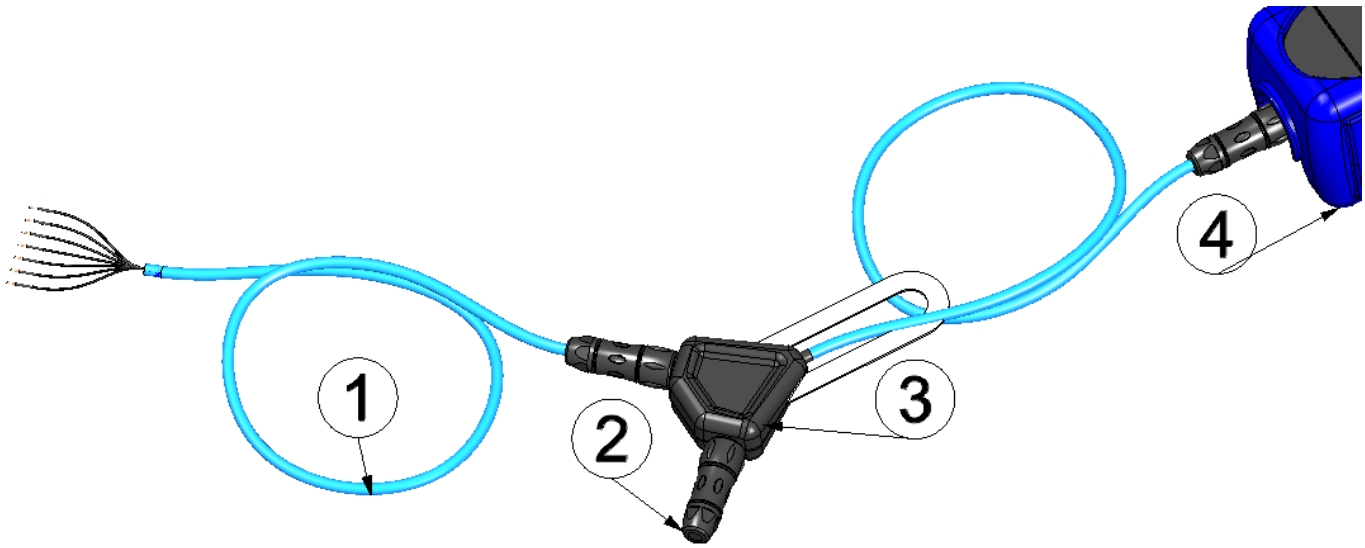


Connection example: Digital modes (use of 3,6...4,1V battery voltage output)

1 myDatalog4	3 Sensor with open collector output
2 Isolated relay contact	

Note: *This connection method is especially suited for the universal input 1, if it is operated in "Cnt.Day" or "Cnt.Intervl." channel mode. As the battery voltage is always available, the counter pulses can also be recorded asynchronously to the measurement cycle. The disadvantage of this connection method is that due to a load of 1k1 the power consumption per channel can be permanently up to 3,7mA when the switch contact is closed1k1 . For universal inputs, that are operated in "Digital" channel mode, the use of the 14VDC switchable sensor supply to supply the switch contacts ("Digital modes (use of the 14VDC sensor supply)" on page 42) is more suitable as there can only be a current flow during the warmup time and measurement.*

7.3.1.2 Use of the Splitter cable for myDatalog Mobile (206.679)

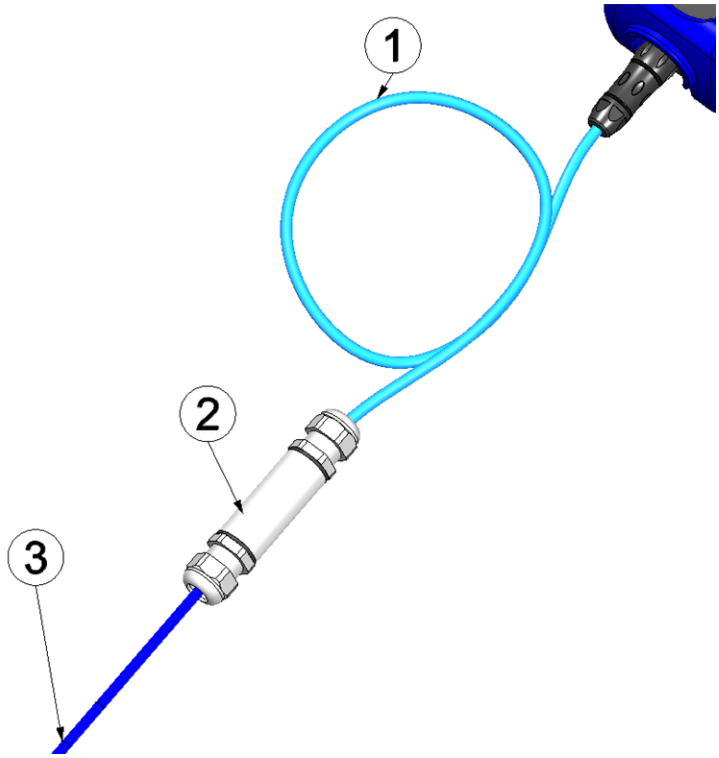


Connecting the sensors when using the Splitter cable for myDatalog Mobile (206.679)

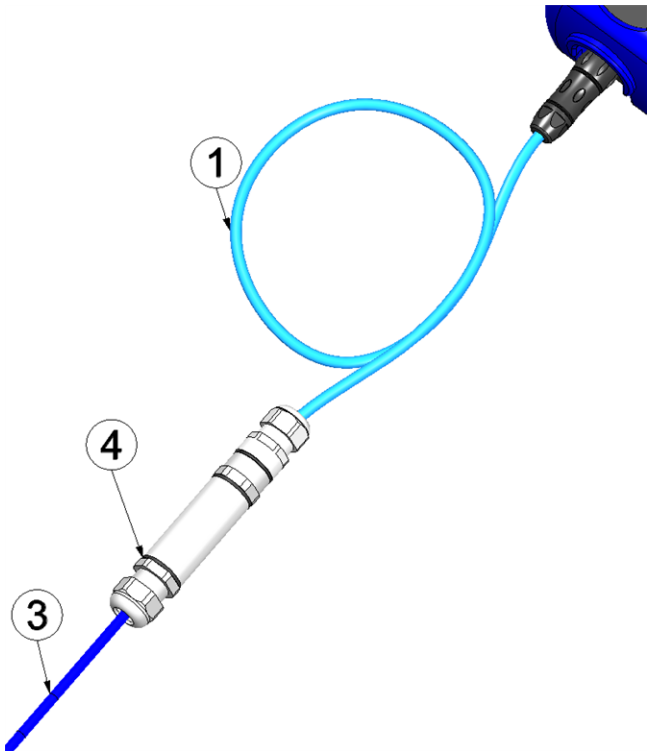
1	Connection cable 7-pins for sensors 2,8m (206.602)	3	Splitter cable for myDatalog Mobile (206.679)
2	Cable connector 7-pins for myDatalogMobile (206.654)	4	myDatalog4

The Splitter cable for myDatalog Mobile (206.679) only splits the sensor connector in to two identical 7-pin MIL connectors, which means that the pin assignment of the two connectors corresponds to that of the sensor connector of the myDatalog4 (see "Connecting the sensors" on page 38).

7.3.1.3 Use of the clamping tubes



Connecting the sensors when using the Clamping tube(300256)



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

1	Connection cable 7-pins for sensors 2,8m (206.602)	4	Pressure compensation tube (300131)
2	Clamping tube(300256)	3	Connection cable of the sensor

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

7.3.2 Connecting the GSM antenna

> ***Important note:*** *To ensure the correct functionality, only use antennas that are supplied by the manufacturer.*

The standard antenna is directly attached to the antenna connector (see "Overview" on page 16) of the myDatalog4 . In the event of a low radio signal strength, you can use the Flat antenna Smart Disc FME-F 2,5m (206.814).

If the distance between the antenna position and the myDatalog4 is too great, you can use a 5 m Extension cable for antenna FME-F/FME-M 5m (206.805).

1. If you need an antenna extension, connect it to the antenna first.
2. Connect the antenna extension or antenna directly to the antenna connector of the myDatalog4 (see "Overview" on page 16).

   Important note: *Do not apply too much force when tightening the antenna. Tighten the antenna or antenna extension with your hand. Do not use a tool except for the plastic open-ended spanner that is included in the myDatanet service kit (206.324) that will break if the applied force is too strong. During this process, you should only touch the antenna in the area marked on the graphic, as the top part of antennas delivered up until 09/2013 can detach.*



Tightening the antenna

The following step is not mandatory.

3. Check whether the connection to the myDatanet has functioned correctly (see "Testing communication with the device" on page 54).

7.3.2.1 Optimum antenna positioning for assembly in a shaft

7.3.2.1.1 Typical influences on the signal quality

Signal losses compared to the reference measurement

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

Note: *Practical example:*

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

7.3.2.1.2 Possibilities for improving the signal quality

- Drill a duct for the antenna into the concrete ring on the shaft to bypass the steel cover
- Insert the antenna extension in an existing ventilation or supply pipe
- Use special types of antennas (please note: The use of antennas that are not approved by the manufacturer with devices that are Ex approved will render this approval invalid)

7.3.2.1.3 Procedure for determining the optimum position of the antenna

1. Install the myDatalog4 as described in chapter "Installing the myDatalog4 " on page 33. During this process, also observe the notes regarding the influences on the signal quality (see "Typical influences on the signal quality" on page 47).

   Note: *Have a Extension cable for antenna FME-F/FME-M 5m (206.805) at your disposal just in case.*

2. Initiate ALOHA transmission mode (see "ALOHA transmission mode" on page 28).

3. Wait until it is indicated in the list of measurement instruments that the device is in ALOHA transmission mode. This is indicated by a speech bubble with the "Aloha" inscription.



4. Check the internal "GSM level" measurement value in the incoming data in the ALOHA data window of the myDatanet server, which can be accessed by clicking on the speech bubble with the "Aloha" inscription (see "myDatanet Server Manual " 805002). Change the position of the antenna to obtain the best possible signal quality.

   Note: *A security stock of 15dBm is highly recommended.*

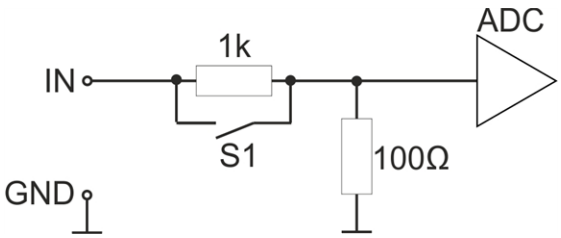
   Note: *Additional explanation about evaluating the "GSM level":*

"GSM level"	
›-64dBm	
-64 to -73dBm	
-74 to -83dBm	
-84 to -93dBm	
-94 to -107dBm	
‹= -108dBm	

7.3.3 Technical details about the universal inputs

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

The myDatalog4 is equipped with a 12 bit ADC.



Schematic diagram of an universal input

If the universal input is operated in one of the analogue modes ("0-20 mA" or "4-20 mA"), switch S1 is closed and the 1k resistance is thus bypassed.

Switch S1 is open when the digital modes ("Digital", "Cnt.Day" or "Cnt.Intervl.") are used.

7.3.3.1 0/4...20mA mode

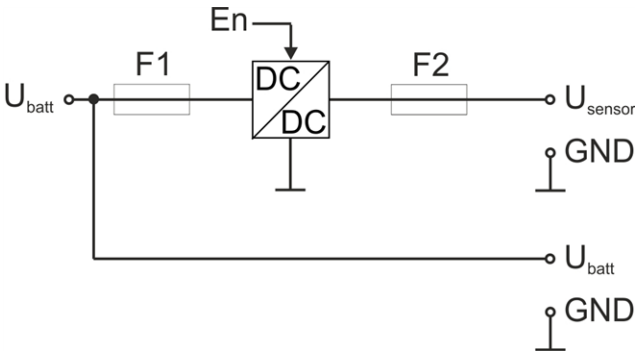
Resolution	6µA
I_{max}	25mA
Load	100Ω

7.3.3.2 Digital modes (digital, day counter, pulse counter)

When using digital modes, the switching thresholds can be configured via the "High level" parameter. The parameter is located in the "Config" tab of the "Measurement channels" configuration section (see "Measurement channels" on page 59).

General	U_{max}	18V
	Low	Configurable
	High	Configurable
	Load	1k1
Day and pulse counter	Minimum pulse length	20ms

7.3.4 Technical details about the switchable sensor supply and battery voltage output



Schematic diagram

U_{batt}	BP457 battery	3,6V
	AP424D rechargeable battery	3,7V
F1	Electronic fuse	
F2	max. 125mA	
U_{Sensor}	14VDC	

The sensor supply is activated by setting the warmup time in the "Basic settings" configuration section (see "Basic setting" on page 70). The warmup time specifies how long the sensor supply is switched on before the measurement. If the setting is 0 seconds, the sensor supply is not activated before or during the measurement. The sensor supply remains permanently active if a higher value is selected for the warmup time than the record interval.

> ***Note:*** *If the sensor supply is permanently active, the energy requirements are greatly increased and the operating time of the device is significantly shortened.*

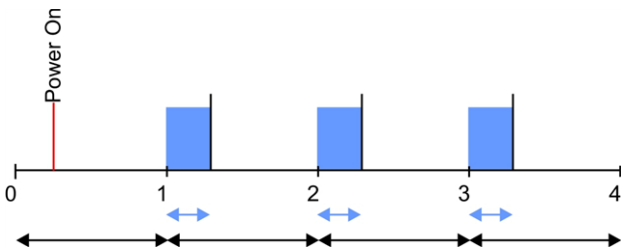
The battery voltage (U_{bat}) is always available at the sensor connector (see "Connecting the sensors" on page 38) and cannot be deactivated.

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

Note:

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

Basic setting		*Record interval*	*1min.*
		Warmup time	*20 seconds*
Output on the device		*Sensor supply*	

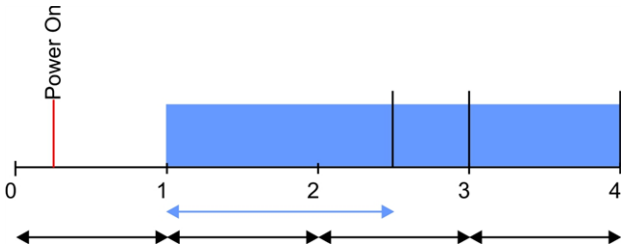


Explanation: *The sensor supply is activated once the record interval has elapsed. The actual measurement and recording is only completed once the warmup time has elapsed, i.e. in the current example 20 seconds after the record interval has elapsed.*

Note:

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

Basic setting		*Record interval*	*1min.*
		Warmup time	*90 seconds*
Output on the device		*Sensor supply*	



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

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Chapter 8 Initial Start-Up

8.1 User information

Before you connect the myDatalog4 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 myDatalog4 .

Please contact our technical department if anything is unclear or if you encounter difficulties with regard to installation, connection or configuration (see "Contact information" on page 145).

If necessary, please also refer to the manuals of the accessory parts when commissioning the complete system. These manuals are included in the scope of delivery of the accessory parts.

8.2 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 myDatalog4 and the input screens of the myDatanet-Server before you begin with the configuration.

8.3 Placing the system into operation

> ***Note:*** *It is recommended that the myDatalog4 is first placed into operation in the office before moving the device to the place of use. During this process, you should set a site for the later operation on the myDatanet server (see "myDatanet Server Manual " 805002) and determine a site configuration (see "Site configuration" on page 59). 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 myDatalog4 prior to its actual first use. This reduces the amount of time required for on-site installation to a minimum.*

1. The myDatalog4 is supplied with the transport lock activated (measurement and transmission "OFF") and should also always be stored in this state (see "Storage of the product" on page 19). The transport lock is deactivated by initiating the ALOHA transmission mode (see "ALOHA transmission mode" on page 28), whereby the first connection to the myDatanet server is established.

2. The myDatalog4 is already ready for operation if you have completed all of the steps in chapter "Connecting the sensors" on page 38.
3. Create a site for the operation on the myDatanet server (see "myDatanet Server Manual " 805002).
4. Configure the created site according to your requirements (see "Site configuration" on page 59).
5. Link the myDatalog4 with the created site (see "Site" on page 59).
6. Activate the ALOHA transmission mode (see "ALOHA transmission mode" on page 28) so that the site configuration is transferred to the myDatalog4 .

8.4 Testing communication with the device

1. Create a site for the operation on the myDatanet server (see "myDatanet Server Manual " 805002).
2. Configure the created site according to your requirements (see "Site configuration" on page 59).
3. Link the myDatalog4 with the created site (see "Site" on page 59).
4. Initiate the ALOHA transmission mode (see "ALOHA transmission mode" on page 28) so that the configuration of the site is transferred to the myDatalog4 .
5. Wait until it is indicated in the list of measurement instruments that the device is in ALOHA transmission mode. This is indicated by a speech bubble with the "Aloha" inscription.



6. Check the incoming data in the ALOHA data window of the myDatanet server, which can be accessed by clicking on the speech bubble with the "Aloha" inscription (see "myDatanet Server Manual " 805002). Particular attention must be paid to the internal"GSM level" and "Battery" measurement values.

Note: *Additional explanation about evaluating the "GSM level":*

"GSM level"	
›-64dBm	
-64 to -73dBm	
-74 to -83dBm	
-84 to -93dBm	
-94 to -107dBm	
‹= -108dBm	

Note: *Additional explanation about evaluating the "Battery":*

"Battery"	
› 3,73V	
3,73V...3,65V	
3,64V...3,59V	
3,58V...3,56V	
3,55V...3,21V	
‹= 3,2V or invalid value	

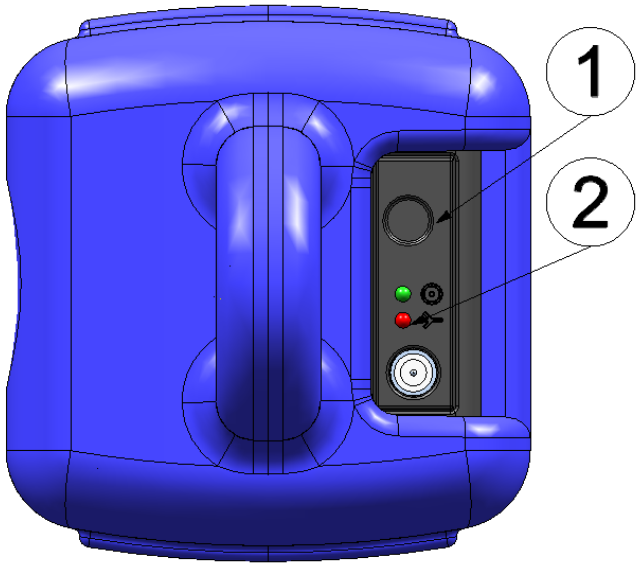
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Chapter 9 User interfaces

The configuration of the myDatalog4 is carried out via the web interface on the myDatanet server (see "User interface on the myDatanet-Server" on page 59), which your responsible sales partner will provide to you.

9.1 User interface on the myDatalog4

9.1.1 Operating elements



Operating elements

1 Solenoid switch	3 Status LED

9.1.1.1 Solenoid switch

The MDN Magnet (206.803) included in the scope of delivery is required for operating the solenoid switch. The solenoid switch can be used to initiate the ALOHA transmission mode or to instruct the myDatalog4 to immediately transmit the error/status code.

Operation by the user	Device response	Operation after releasing the solenoid switch
Press briefly (approx. one second)	Status LED illuminates	Error/status code is displayed (see "Status LED" on page 58)
Press and hold for five seconds	Status LED flashes three times and then remains on	ALOHA transmission mode

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. If the ALOHA transmission mode was activated or the rechargeable battery or battery pack was connected (PowerOn), the myDatalog4 switches to advanced signalling mode and indicates the current operating state for 10 minutes via the status LED. During these 10 minutes, the error/status codes are issued every 3 seconds as long as there is no active GPRS connection. The current operating state is not indicated during standard signalling mode and the error/status codes are only issued every thirty seconds.

Error/status codes

Flashing code	Description	Solution/cause
0x	Transport lock (transmission OFF, measurement OFF)	If the ALOHA transmission mode is initiated by means of the solenoid switch, the myDatalog4 resumes operation in accordance with the configuration (transmission ON, measurement ON).
1x	Last connection OK	
2x	Last transmission faulty	Try again later
4x	Standby (GPRS ON, measurement OFF)	see "transport lock"
6x	Offline (GPRS OFF, measurement ON)	see "transport lock"
7x	Network lock/no matching provider	• Improve position of the antenna • Check whether the device is located in the coverage area of one of the service providers supported by the integrated SIM chip (www.microtronics.at/footprint) • Lift the network block (see "myDatanetDeviceConfig Manual " 805004)
8x	No GSM network	• Try again later • Improve position of the antenna
10x	No GPRS connection	Improve position of the antenna
11x	No myDatanet server accessible	• Check whether port 51241 is enabled on the myDatanet server • Try again later
12x	Faulty SIM card	Contact support

Operating states

Status LED	Description
Flickering	Establishing connection
Lights up	GPRS connection established or button/solenoid switch actuated
Off	Normal measuring operation according to configuration until the next transmission

9.2 User interface on the myDatanet-Server

9.2.1 Site 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, please contact the myDatanet-Server administrator.*

Click on the name of the site in the list of sites to get to the input screen for configuring the site (see "myDatanet Server Manual " 805002).

9.2.1.1 Site

Customer
Specifies to which customer the site is assigned.

 **icon**
Assign site to another customer

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

Instrument S/N
Serial number of the device that is linked to the site (device assignment!)

9.2.1.2 Comments

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

9.2.1.3 Measurement channels

9.2.1.3.1 Basis

Title 1-4
Freely selectable channel title for the universal inputs

Mode

Basic settings for the measurement channel

Universal inputs (digital modes)	*Off*	*---*	*Measurement channel deactivated*
	Digital	*Invert*	*Inverts the input signal*
	Cnt.Day[1)]	*Impulse*	*Metered measurand of a pulse in the measurement unit*
		Max	*Defines the upper scale end of the pointer instruments*
		Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
		Decimal places	*Number of decimal places that are used by all of the server display elements*
	Cnt.Intervl.[1)]	*Pulse*	*Metered measurand of a pulse in the measurement unit*
		Max	*Defines the upper scale end of the pointer instruments*
		Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
		Decimal places	*Number of decimal places that are used by all of the server display elements*

[1)] *These modes are only available for universal input 1*

Universal inputs (analogue modes)	*0-20 mA*	*0%*	*Start of the measurement range in the measurement unit*
		100%	*End of the measurement range in the measurement unit*
		Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
		Decimal places	*Number of decimal places that are used by all of the server display elements*
	4-20 mA	*0%*	*Start of the measurement range in the measurement unit*
		100%	*End of the measurement range in the measurement unit*
		Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
		Decimal places	*Number of decimal places that are used by all of the server display elements*

9.2.1.3.2 Config

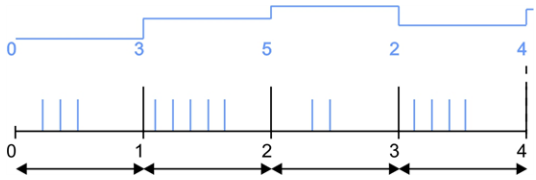
Universal inputs (digital modes)	Off	---	---	
	Digital	High level	Configuration of the "low" and "high" level	
			0	The levels are set automatically. Warmup time not equal to 0: • "high": ›7V • "low": ‹6,3V Warmup time equal to 0: • "high": ›1,8V • "low": ‹1,62V
			› 0mV	Level from which the signal at the universal input is interpreted as "high". "low" is detected at the "high level" -10%.
	Cnt.Day[1)]	High level	Configuration of the "low" and "high" level	
			0	The levels are set automatically. (see "Digital" mode)
			› 0mV	Level from which the signal at the universal input is interpreted as "high". "low" is detected at the "high level" -10%.
	Cnt.Intervl.[1)]	High level	Configuration of the "low" and "high" level	
			0	The levels are set automatically. (see "Digital" mode)
			› 0mV	Level from which the signal at the universal input is interpreted as "high". "low" is detected at the "high level" -10%.

[1)] These modes are only available for universal input 1.

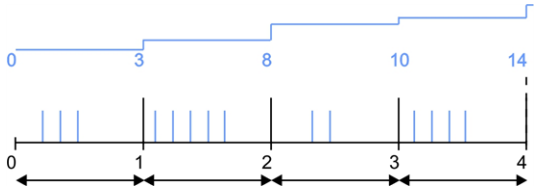
Note:

Additional explanation regarding the difference between "Cnt.Day" and "Cnt.Intervl."

Basic setting	↔	*Record interval*	*1min.*	*Measurement value*	*blue line*



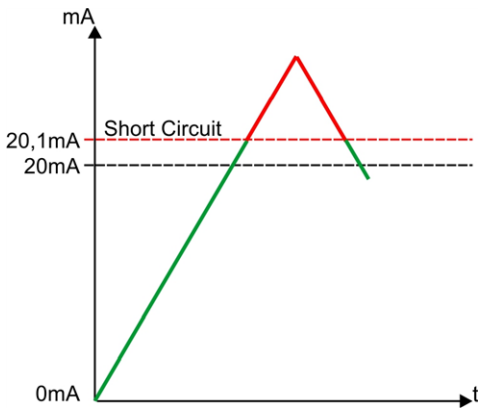
"Cnt.Intervl." mode: The pulses are added up and reset after each recording.



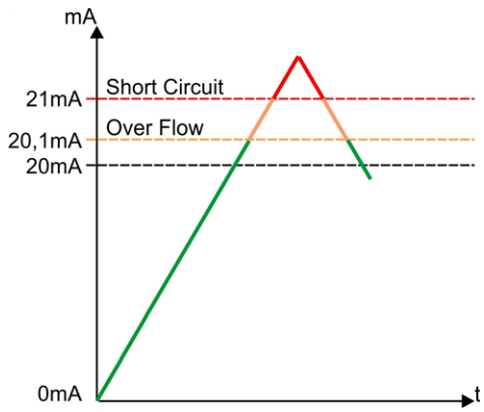
"Cnt.Day" mode: All of the pulses up to the day changing time are added up.

Universal inputs (0-20mA mode)	0-20 mA	Overflow	Procedure in the event of measurement range violations	
			Ignore	The measurement value is calculated beyond the range limits.
			Silent cutoff	The measurement value is truncated at the range limits.
			Out of range	• If the measurement value is above 20.1 mA, the error value "SC" (short circuit) is issued.
			NAMUR borders	• The error value "OF" (overflow) is issued, if the measurement value is above 20.1mA. • If the measurement value is above 21mA, the error value "SC" (short circuit) is issued.

Note: *Additional explanation regarding the "Out of range" and "Namur borders" modes.*



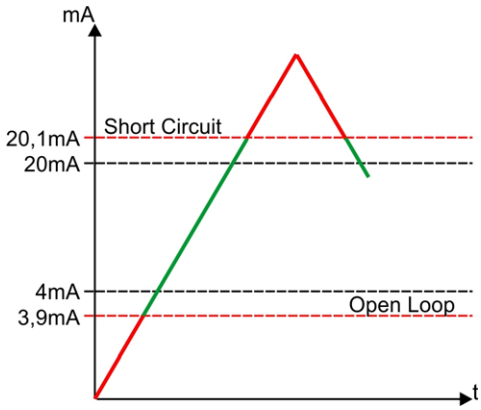
"Out of range" mode



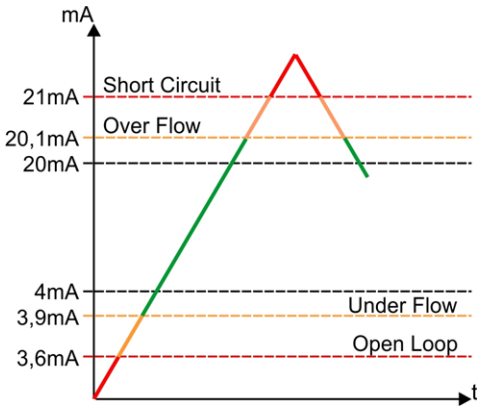
"Namur borders" mode

Universal inputs (4-20mA mode)	4-20 mA	Overflow	Procedure in the event of measurement range violations	
			Ignore	The measurement value is calculated beyond the range limits.
			Silent cutoff	The measurement value is truncated at the range limits.
			Out of range	• The error value "OL" (open loop) is issued, if the measurement value is below 3.9mA. • If the measurement value is above 20.1 mA, the error value "SC" (short circuit) is issued.
			NAMUR borders	• The error value "OL" (open loop) is issued, if the measurement value is below 3.6mA. • The error value "UF" (underflow) is issued, if the measurement value is below 3.9mA. • The error value "OF" (overflow) is issued, if the measurement value is above 20.1mA. • If the measurement value is above 21mA, the error value "SC" (short circuit) is issued.

Note: *Additional explanation regarding the "Out of range" and "Namur borders" modes.*



"Out of range" mode



"Namur borders" mode

9.2.1.3.3 Alarms

"Digital" mode	WA	A "high" at the universal input triggers a "warning".	
	AL	A "high" at the universal input triggers an "alarm".	
	SW	A "high" at the universal input triggers a "fault warning".	
	SA	A "high" at the universal input triggers a "fault alarm".	
All other modes	Warning	Value low	A warning is triggered, if the measurement value drops to or below this value.
		Value high	A warning is triggered, if the measurement value meets or exceeds this value.
	Alarm	Value low	An alarm is triggered, if the measurement value drops to or below this value.
		Value high	An alarm is triggered, if the measurement value meets or exceeds this value.
	Hyst %	Hysteresis for the all-clear in the event of an alarm/warning (e.g. Hyst=5%, alarm or warning at 100 -› all-clear at 95) or reset the trigger (e.g. Hyst=5%, level = greater or equal, trigger at 100 -› reset at 95)	

9.2.1.3.4 Trigger

QU	The "Record interval on event" should be used.	
XM	Initiate transmission	
QX	The "Transmission cycle quick" should be used.	
Level	Levels for initiating the trigger. The hysteresis from the "Alarm" tab is used to determine the level to reset the trigger.	
	Greater or equal	The measurement value must be greater or equal to the level to initiate the trigger.
	Less or equal	The measurement value must be less or equal to the level to initiate the trigger.

9.2.1.4 Calculated channels

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

9.2.1.4.1 Basis

Title 1-5

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

Mode

Possible calculation modes for the calculated channels

Off	*---*	*Calculated channel deactivated*
Table	*Min*	*Defines the lower scale end of the pointer instruments*
	Max	*Defines the upper scale end of the pointer instruments*
	Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
	Decimal places	*Number of decimal places that are used by all of the server display elements*
Digital	*Invert*	*Inverts the input signal*
+, -, x, /	*Min*	*Defines the lower scale end of the pointer instruments*
	Max	*Defines the upper scale end of the pointer instruments*
	Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
	Decimal places	*Number of decimal places that are used by all of the server display elements*
Delta	*Determines the difference between two measurement values and divides the result by the time difference between the time stamps of the measurement values. The time unit (value/sec., value/min., ...) for the result can be selected via the "Time basis" parameter located in the "Calculation" tab. It is thus possible to convert the meter reading (m^3) of the source in to a flow rate (m^3/min.) (see "Additional explanation: Delta mode" on page 66).*	
	Min	*Defines the lower scale end of the pointer instruments*
	Max	*Defines the upper scale end of the pointer instruments*
	Unit	*String that is used as a measurement unit by all of the server display elements [0-16 characters]*
	Decimal places	*Number of decimal places that are used by all of the server display elements*



Shift element down



Shift element up

9.2.1.4.2 Calculation

Off	---	Calculated channel deactivated
Table	Source	Selection of the channel from which the input data is used
		Opens the screen for entering the values table (the table rows are interpolated linearly, values outside of the defined table are extrapolated linearly.)
Digital	Source	Selection of the channel from which the input data is used
	High level	Signal recognition level
+, -, x, /	Source	Selection of the channel from which the input data is used
	+, -, x, /	
	Source	Selection of the channel from which the input data is used
Delta	Source	Selection of the channel from which the input data is used
	Time basis	Specifies the desired time unit (value/sec., value/min., ...) for the result
	Offset	Offset that is added following multiplication with the "Factor" parameter. The result is converted in to the desired time unit before the multiplication with the "Factor" parameter.
	Factor	Factor with which the result is multiplied once it has been converted into the desired time unit. The "Offset" parameter is then added.

Note:

Additional explanation: Delta mode

Assumption: *The source channel contains the meter 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 [m³]*	*Flow rate [m³/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 channel as there is no previous value and the different between the meter readings cannot be determined. For the measurement at 12:51, the difference to the meter reading is 60m³ and the time difference is 60sec.*

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

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

Channel 1 = ((60m³ / 60sec.) * 1 * 1) + 0 = 1m³/s

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

Channel 2 = ((60m³ / 60sec.) * 3600 * 1000) + 0 = 3,600,000l/h

9.2.1.4.3 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.*

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

9.2.1.5 Internal channels

9.2.1.5.1 Basis

Battery title	Freely selectable channel title for the internal battery or rechargeable battery voltage	
	Unit	String that is used as a measurement unit by all of the server display elements [0-16 characters]
GSM level title	Freely selectable channel title for the GSM level	
	Unit	String that is used as a measurement unit by all of the server display elements [0-16 characters]
Int. temperature title	Freely selectable channel title for the internal device temperature	
	Unit	Selection of the temperature unit used by all of the server display elements

9.2.1.5.2 Alarms

Note: *The alarm limits for the internal channels are monitored by the myDatanet server and not the myDatalog4 . This means that an alarm can only be detected when the measurement data is transferred to the myDatalog4 server.*

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

9.2.1.6 Alarm settings

Acknowledgement	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.
Offline alarm	Alarm in case the device does not respond for longer than the set number of transmission cycles	
Transfer volume	Standard	The setting for the transfer volume alarm is taken from the global server settings.(see "myDatanet Server Manual " 805002)
	Off	The transfer volume alarm is deactivated.
	Individual	The level at which the transfer volume alarm should be triggered can be entered in the adjacent field in KB.
On alarm	A	The alarm is recorded in the alarm list.
	Ü	An immediate transmission is initiated.
	Q	The "Record interval on event" should be used.
	X	The "Transmission cycle quick" should be used.
On warning	A	The alarm is recorded in the alarm list.
	Ü	An immediate transmission is initiated.
	Q	The "Record interval on event" should be used.
	X	The "Transmission cycle quick" should be used.
On fault alarm	A	The alarm is recorded in the alarm list.
	Ü	An immediate transmission is initiated.
	Q	The "Record interval on event" should be used.
	X	The "Transmission cycle quick" should be used.
On fault warning	A	The alarm is recorded in the alarm list.
	Ü	An immediate transmission is initiated.
	Q	The "Record interval on event" should be used.
	X	The "Transmission cycle quick" should be used.

9.2.1.7 Basic setting

Transmission cycle	Time between transmissions	
Transmission cycle quick	Time between the transmissions, if a shortened transmission cycle should be used because of an alarm/warning or a trigger being initiated	
Record interval	Time between measurement data recordings	
Measure quick divisor	record interval = record interval / factor (from triggering)	
Warmup time	specifies the time for which the sensor supply is switched on before the measurement (see "Technical details about the switchable sensor supply and battery voltage output" on page 49)	
Time zone	Regional settings (not relevant for raw measurement data as this is stored in the UTC)	
Daylight saving time	Configuration for automatic time adjustment	
	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 American area
Day change over	Reset time of the day counter	
Position cycle	Position update interval	
Default report	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.

9.2.1.8 FTP export settings

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

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

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, please contact the myDatanet-Server administrator.*

You can reach the input screen for configuring the device by clicking on the serial number in the site list (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 measurement instrument list)

9.2.2.2 Measurement instrument

Customer	Name of the customer to whom the measurement instrument is assigned
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.
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
Modem version	Current software version installed on the modem controller
OS version	OS version of the modem
Last connection	In each case, the last time stamp of the affected operation
Last wakeup	
Last disconnection	
Last transmission error	
Last Aloha connection	

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).

9.2.2.3 Device-specific settings

Measurement

Activates/deactivates the measurement

Transmission

Activates/deactivates the transmission

9.2.2.4 GPRS

SIM tariff

Selected SIM tariff

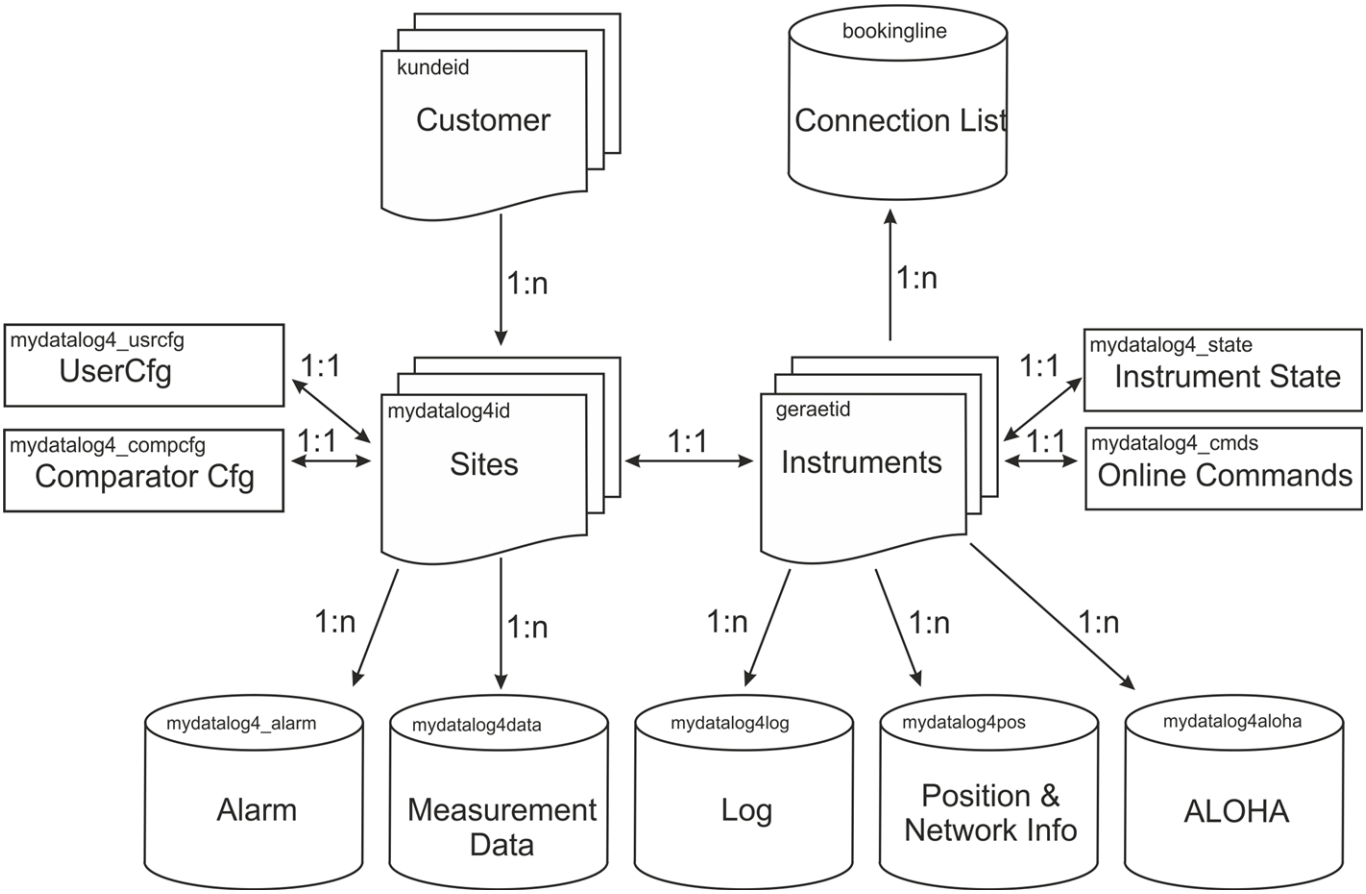
Chapter 10 XML interface

Important note: *The relevant licences are required on the myDatanet server to use the XML interface. If the licence is not available for the XML export, the following message is displayed for every request: "`-ERR: XML agent is not active on this server!`". Likewise, if the licence is missing for the XML import, the following message is returned for each import attempt: "`-ERR: XML upload is not active on this server!`". In this case, contact your responsible sales partner.*

10.1 General

The XML interface 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 the myDatanet server (e.g. measurement data, configurations, log entries, alarm lists, etc.). 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.

10.2 Structure of the database



Structure of the database

Generally applicable table identifiers

Identifier	Description
mydatalog4id	Site configuration (see "mydatalog4id" on page 75)
geraetid	Devices (see "geraetid" on page 81)
bookingline	Connection list (see "bookingline (read only)" on page 82)
kundeid	Customers (see "kundeid" on page 83)

Device-specific table identifiers

Identifier	Allocation	Description
mydatalog4data	Site	Measurement data (see "mydatalog4data" on page 84)
mydatalog4log	Device	Device log (see "mydatalog4log" on page 85)
mydatalog4_usrcfg	Site	User config (see "mydatalog4_usrcfg" on page 85)
mydatalog4_cmds	Device	Configuration of the operating mode (see "mydatalog4_cmds" on page 89)
mydatalog4_state	Device	Device status (see "mydatalog4_state" on page 89)
mydatalog4_alarm	Site	Alarm list (see "mydatalog4_alarm" on page 91)
mydatalog4_compcfg	Site	Trigger and alarm configuration (see "mydatalog4_compcfg" on page 91)
mydatalog4aloha	Device	Aloha data (see "mydatalog4aloha" on page 93)
mydatalog4pos	Device	Position and network information (see "mydatalog4_pos" on page 93)

10.2.1 Generally applicable table identifiers

10.2.1.1 mydatalog4id

This table includes all of the site-specific configurations..

name

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

timezone

Regional settings (not relevant for raw measurement data as this is stored in the UTC)

Value	*Explanation*
99.00	*The regional setting for the site is adopted from the global server setting.*
-12.00	*UTC -12 hours*
:	*:*
+14.00	*UTC +14 hours (Kiritimati)*

summertime

Configuration for automatic time adjustment

Value	*Explanation*
DEFAULT	*The configuration for the time adjustment is adopted by the global server setting*
OFF	*Automatic time adjustment deactivated*
USA;99CC96152B000000	*Predefined setting for the American area*
EU;99CC95A627080884	*Predefined setting for the European area*

alert_mode

Setting for acknowledging the alarms

Value	*Explanation*
0	*The global server setting is used to determine whether alarms must be acknowledged automatically or manually.*
1	*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.*
2	*Alarms must be acknowledged by the user.*

transfer_alerts

Alarm in case the device does not respond for longer than the set number of transmission cycles

Value	*Explanation*
0	*No alarm settings*
1	*standard (>2x transmission cycles)*
2	*immediately (>1x transmission cycle)*
3	*medium (>5x transmission cycles)*
4	*long (>10x transmission cycles)*
5	*extra long (>20x transmission cycles)*

max_transfer_volume

Settings for the transfer volume alarm

Value	*Explanation*
-1	*The setting for the transfer volume alarm is taken from the global server settings.*
0	*The transfer volume alarm is deactivated.*
> 0	*Threshold at which the transfer volume alarm should be triggered [KB]*

max_transfer_volume_kb

This is a "Ghost" field, the content of which always corresponds to that of the "max_transfer_volume" field.

comment

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

loc_site_lat

Specification of the geographical latitude where the site is located [°]

loc_site_long

Specification of the geographical longitude where the site is located [°]

loc_alarm_rad_mode

A radius can be defined for a site. Depending on the settings for this parameter, an alarm is triggered if the device leaves this radius.

Value	*Explanation*
0	*Radius monitoring deactivated (no alarm)*
> 0	*Specification of the alarm radius [km]. An alarm is triggered if the device leaves the radius.*

loc_alarm_rad

This is a "Ghost" field, the content of which always corresponds to that of the "loc_alarm_rad_mode" field.

view

Selection of the report that is loaded by clicking on the device link in the maps

Value	*Explanation*
OFF	*The default graphic is loaded.*
"viewid"	*The selected report is loaded.To obtain the "viewid", open the required report (see "myDatanet Server Manual " 805002) and take the ID from the address line of the browser (e.g.. . . . &viewid=**A1A5AD6CD299EF96**&. . . .).*

ftpexportprofile

Selection of the FTP export profile

Value	*Explanation*
0	*FTP export deactivated*
"id"	*To obtain the "id", open the configuration of the required FTP export profile (see myDatanet Server Manual 805002) and take the ID from the address line of the browser (e.g.. . . . &id=**A0B66D1CF7ED87DD**&. . . .).*

ftpexportdir

makes overwriting the standard directory of the selected FTP export profile possible [0-100 characters]

mappincaption

Specifies whether the title of the site should be displayed in the "Map"

mapovpincaption

Specifies whether the title of the site should be displayed in the "Overview map"

The following parameters apply to the universal inputs (see "Measurement channels" on page 59)

title4 - title7

Freely selectable channel title for the universal inputs

units4 - units7

String that is used as a measurement unit by all of the server display elements [0-16 characters]

Important note: *The content of this field must be deleted in Digital channel mode.*

min4 - min7

Channel mode	*Explanation*
Measurement channel deactivated	*---*
Digital	
Cnt.Day	
Cnt.Intervl.	
4-20 mA	*Start of the measurement range in the measurement unit*
0-20 mA	

max4 - max7

Channel mode	*Explanation*
Measurement channel deactivated	*---*
Digital	
Cnt.Day	*Defines the upper scale end of the pointer instruments*
Cnt.Intervl.	
4-20 mA	*End of the measurement range in the measurement unit*
0-20 mA	

scale4 - scale7

Channel mode	*Explanation*
Measurement channel deactivated	*---*
Digital	*0.0001: Input signal is not inverted* *-0.0001: Inverts the input signal*
Cnt.Day	*Metered measurand of a pulse in the measurement unit*
Cnt.Intervl.	
4-20 mA	*---*
0-20 mA	

decpl4 - decpl7

Number of decimal places that are used by all of the server display elements

> ***Important note:*** *The content of the field must be set to 0 for Digital channel mode (no decimal places)*

Value	*Explanation*
-1	*Standard*
0	*No decimal places*
:	*:*
6	*6 decimal places*

The following parameters apply to the "Internal channels" (see "Internal channels" on page 68).

title1

Freely selectable channel title for the internal battery or rechargeable battery voltage

units1

Battery: String that is used as a measurement unit by all of the server display elements [0-16 characters]

alarm_low1

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

alarm_high1

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

hysterese1

Hysteresis for the all-clear in the event of an alarm/warning (e.g. Hyst=5%, alarm or warning at 100 -› all-clear at 95) or reset the trigger (e.g. Hyst=5%, level = greater or equal, trigger at 100 -› reset at 95)

title3

Freely selectable channel title for the GSM level

units3

GSM level: String that is used as a measurement unit by all of the server display elements [0-16 characters]

alarm_low3

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

alarm_high3

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

hysterese3

Hysteresis for the all-clear in the event of an alarm/warning (e.g. Hyst=5%, alarm or warning at 100 -› all-clear at 95) or reset the trigger (e.g. Hyst=5%, level = greater or equal, trigger at 100 -› reset at 95)

title8

Freely selectable channel title for the internal device temperature

units8
Int. temp: Selection of the temperature unit used by all of the server display elements

alarm_low8
An alarm is triggered, if the measurement value drops to or below this value.

alarm_high8
An alarm is triggered, if the measurement value meets or exceeds this value.

hysterese8
Hysteresis for the all-clear in the event of an alarm/warning (e.g. Hyst=5%, alarm or warning at 100 -› all-clear at 95) or reset the trigger (e.g. Hyst=5%, level = greater or equal, trigger at 100 -› reset at 95)

The following parameters apply to the "Calculated channels" (see "Calculated channels" on page 64).

title60 - title64
Freely selectable channel title for the calculated channels [0-16 characters]

units60 - units64
String that is used as a measurement unit by all of the server display elements [0-16 characters]

min60 - min64
Defines the lower scale end of the pointer instruments

max60 - max64
Defines the upper scale end of the pointer instruments

decpl60 - decpl64
Number of decimal places that are used by all of the server display elements

Value	*Explanation*
-1	*Standard*
0	*No decimal places*
:	*:*
6	*6 decimal places*

alarm_low60 - alarm_low64
An alarm is triggered, if the measurement value drops to or below this value.

alarm_high60 - alarm_high64
An alarm is triggered, if the measurement value meets or exceeds this value.

hysterese60 - hysterese64
Hysteresis for the all-clear in the event of an alarm/warning (e.g. Hyst=5%, alarm or warning at 100 -› all-clear at 95) or reset the trigger (e.g. Hyst=5%, level = greater or equal, trigger at 100 -› reset at 95)

10.2.1.2 geraetid

This table includes general information and configurations that are the same for all devices of the myDatanet range.

kunde
Unique data record number of the customer to whom the device is assigned (read only)

conn_path
Specifies the communication channel via which the last connection was established

Value	*Explanation*
0	*GSM/GPRS*
1	*Other communication channel (e.g. LAN)*

devsn
Serial number of the instrument

devclass
Device class The instrument class of the site and instrument must match for an instrument to be able to be connected to a site.

telno
Telephone number of the SIM card. The control SMS messages (e.g. wakeup) are sent to this number. Format: +43555837465[0-20 characters]

devflags
Additional information regarding the instrument class (for internal use) (read only)

swversion
Current software version installed on the measurement controller (read only)

modemversion
Current software version installed on the modem controller(read only)

osversion
OS version of the modem(read only)

lastcon
Time stamp of the last connection (read only)

lastwakeup
Time stamp of the last wakeup (read only)

lastdisc
Time stamp of the last disconnection (read only)

lasterr
Time stamp of the last transmission error (read only)

lastaloha
Time stamp of the last Aloha connection (read only)

fw_update

Settings for the firmware update

Value	*Explanation*
0	*Off: Firmware update is deactivated.*
1	*On: As soon as a new version of the selected firmware type is available, this is installed immediately.*
2	*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!).*
3	*Allow downgrade: Facilitates the installation of an older firmware version than the one on the device (NOT RECOMMENDED!)*
4	*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".*
5	*Ignore: The firmware update is deactivated and no information is provided about available firmware updates.*

fw_release_type

Settings for the firmware type

Value	*Explanation*
0	*Released: Only firmware versions that have successfully undergone internal and field testing are installed (this practically eliminates malfunctions).*
1	*Release candidate: Only firmware versions that have successfully undergone internal testing are installed (malfunctions cannot be excluded).*
2	*Beta release: Even firmware versions that have not successfully undergone all of the internal tests are installed (malfunctions may occur).*

10.2.1.3 bookingline (read only)

This table includes information about the connections between the devices and the myDatanet server

kunde

Unique data record number of the customer to whom the device is assigned

geraet

Unique data record number of the device to which the connection list is assigned

text

Duration of the connection

context

Title of the site with which the device is linked or error that occurred during the connection

source

Serial number and IP address

cmh_quantity
Amount of received data in bytes (device to the server)

cmh_code
Indicates whether the device has established a connection to the myDatanet server (41=closed, 942=connected)

> ***Important note:*** *Table entries with different codes to the ones mentioned above include information that is only intended for internal use and that should be filtered out by the customer.*

10.2.1.4 kundeid

This table includes information and configurations for the customers created on the myDatanet server.

name
The freely selectable name of customer is a mandatory field [2-50 characters].

Address of the customer:

strasse
Street [0-50 characters]

plzort
Postcode and town [0-50 characters]

comment
Comment on the customer. This is displayed in the customer overview below the name.

erp_code
The ERP code is designed to simplify and speed up the charging process. All costs that are, for example, incurred through SMS or calls are charged directly to this ERP code.

Value	*Explanation*
*	*The ERP code is adopted from the global server settings.*
ERP code	*One of the ERP codes that was created via the global server settings (see myDatanet Server Manual 805002)* ***Important note:*** *If an invalid code is specified, the ERP code is set to the global server settings the next time you edit the customer via the web interface of the myDatanet server.*

sms_enabled
This includes the option to generally deactivate SMS for the customer.

Value	*Explanation*
-1	*The setting is adopted from the global server settings*
0	*Off*
1	*On*

call_enabled

This includes the option to generally deactivate calls for the customer.

Value	*Explanation*
-1	*The setting is adopted from the global server settings*
0	*Off*
1	*On*

acknowledge_mode

Customer's settings to acknowledge the alarms

> ***Important note:*** *This setting can be overwritten for every measurement instrument via the alarm settings (see "Alarm settings" on page 69).*

Value	*Explanation*
0	*The global server setting is used to determine whether alarms must be acknowledged automatically or manually.*
1	*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.*
2	*Alarms must be acknowledged by the user.*

alert_schedule_mode

Settings for the procedure to inform about alarms that have to be acknowledged by the user

Value	*Explanation*
0	*The setting is adopted from the global server settings*
1	*Inform about every alarm per site: In this case, the alarm schedule is activated every time an alarm is triggered. Even if the alarm schedule has already been executed and the alarm has not yet been acknowledged, the alarm schedule is executed again if a new alarm is triggered on the site.* ***Important note:*** *This can incur high costs.*
2	*Inform about the first unacknowledged alarm per site: Messages for new alarms that have been triggered will only be sent once the alarm has been acknowledged.*

10.2.2 Device-specific table identifier

10.2.2.1 mydatalog4data

This table contains the measurement data of the myDatalog4 (see "Internal channels" on page 68, "Measurement channels" on page 59 and "Calculated channels" on page 64).

Context
Unique data record number of the site (read only)

ch1 - ch4
Measurement values of the universal inputs

calc60 - calc64
Measurement values of the "Calculated channels"

> ***Important note:*** *However, these measurement values are not saved in the database but are recalculated during each access (display or download) based on the specifications entered via the "Calculated channels" configuration section (see "Calculated channels" on page 64).*

volt
Voltage [V]

gsm_
GSM level [dBm]

temp
Internal device temperature

10.2.2.2 mydatalog4log

This table contains the log entries and error codes (see "Log entries and error codes " on page 130) of the device.

log
Log entry

par
Parameter for the log entry

10.2.2.3 mydatalog4_usrcfg

This table contains the device-specific configurations (configuration of the universal inputs, basic settings and alarm settings) that are transferred to the myDatalog4 .

These device-specific configurations are supplemented with the configuration from the "geraetid" table (see "geraetid" on page 81) that is the same for all of the myDatanet devices.

context
Unique data record number of the site (read only)

record_interval
Time between measurement data recordings

transfer_interval
Time between transmissions

mode1 - mode4

Basic settings for the measurement channel

Value	*Explanation*
255	*Measurement channel deactivated*
0	*Digital*
1	*4-20 mA*
2	*0-20 mA*
3	*Cnt.Day*
4	*Cnt.Intervl.*

Important note: *If the measurement channel mode is set to Digital, the following additional settings are required:*

- *In the "mydatalog4id" table, the content of the "units" field (measurement unit) must be deleted for the relevant measurement channel.*
- *In the "mydatalog4id" table, the "decpl" field must be set to 0 (no decimal places) for the relevant measurement channel.*
- *In the "myDatalog4_compcfg" table, the content of the "alarm_low_lower", "alarm_low_upper", "alarm_high_lower" and "alarm_high_upper" fields must be deleted for the relevant measurement channel.*
- *In the "myDatalog4_compcfg" table, the "hyst" field must be set to 30 for the relevant measurement channel.*
- *In the "myDatalog4_compcfg" table, the "trig_undershoot" field must be set to 0 and the "trigger_value" field must be set to 1 for the relevant measurement channel.*

Important note: *If the measurement channel mode is set to Cnt.Day or Cnt.Intervl., the following additional settings are required:*

- *In the "mydatalog4id" table, the content of the "min" field must be set to 0 for the relevant measurement channel.*

alarm_qx_alarmlo[1)]

The "Transmission cycle quick" is used in the event of a "Warning".

alarm_qx_alarmhi[1)]

The "Transmission cycle quick" is used in the event of an "Alarm".

alarm_qx_faultlo[1)]

The "Transmission cycle quick" is used in the event of a "Fault warning".

alarm_qx_faulthi[1)]

The "Transmission cycle quick" is used in the event of a "Fault alarm".

high_level1 - high_level4

Configuration of the "low" and "high" level (only for channels in "Digital", "Cnt.Day" or "Cnt.Intervl." mode)

Value	*Explanation*
0	*The levels are set automatically.* *Warmup time not equal to 0:* • *"high": >7V* • *"low": <6,3V* *Warmup time equal to 0:* • *"high": >1,8V* • *"low": <1,62V*
> 0mV	*Level from which the signal at the universal input is interpreted as "high". "low" is detected at the "high level" -10%.*

Day changing time

Reset time of the day counter

Value	*Explanation*
0	*00:00*
60	*01:00*
120	*02:00*
: *:*	*:* *:*
1320	*22:00*
1380	*23:00*

pos_cycle

Position update interval

warmup

specifies the time for which the sensor supply is switched on before the measurement

measure_quick_factor

record interval = record interval / factor (from triggering)

alarm_record_alarmlo[1)]

The "Warning" is recorded in the alarm list (read only).

alarm_record_alarmhi[1)]

The "Alarm" is recorded in the alarm list (read only).

alarm_record_faultlo[1)]

The "Fault warning" is recorded in the alarm list.

alarm_record_faulthi[1)]
The "Fault alarm" is recorded in the alarm list (read only).

alarm_tx_alarmlo[1)]
An immediate transmission is initiated in the event of a "Warning".

alarm_tx_alarmhi[1)]
An immediate transmission is initiated in the event of an "Alarm" (read only).

alarm_tx_faultlo[1)]
An immediate transmission is initiated in the event of a "Fault warning".

alarm_tx_faulthi[1)]
An immediate transmission is initiated in the event of a "Fault alarm".

alarm_quick_alarmlo[1)]
The "Record interval on event" is used in the event of a "Warning".

alarm_quick_alarmhi[1)]
The "Record interval on event" is used in the event of an "Alarm".

alarm_quick_faultlo[1)]
The "Record interval on event" is used in the event of a "Fault warning".

alarm_quick_faulthi[1)]
The "Record interval on event" is used in the event of a "Fault alarm".

fault1 - fault4
Procedure in the event of measurement range violations (only for channels in "0-20 mA" or "4-20 mA" mode)

Value	*Explanation*		
0	*Ignore*	*The measurement value is calculated beyond the range limits.*	
1	*Silent cutoff*	*The measurement value is truncated at the range limits.*	
2	*Out of range*	*4-20 mA*	• *The error value "OL" (open loop) is issued, if the measurement value is below 3.9mA.* • *If the measurement value is above 20.1 mA, the error value "SC" (short circuit) is issued.*
		0-20 mA	• *If the measurement value is above 20.1 mA, the error value "SC" (short circuit) is issued.*
3	*NAMUR borders*	*4-20 mA*	• *The error value "OL" (open loop) is issued, if the measurement value is below 3.6mA.* • *The error value "UF" (underflow) is issued, if the measurement value is below 3.9mA.* • *The error value "OF" (overflow) is issued, if the measurement value is above 20.1mA.* • *If the measurement value is above 21mA, the error value "SC" (short circuit) is issued.*
		0-20 mA	• *The error value "OF" (overflow) is issued, if the measurement value is above 20.1mA.* • *If the measurement value is above 21mA, the error value "SC" (short circuit) is issued.*

short_transmission_interval

Time between the transmissions, if a shortened transmission cycle should be used because of an alarm/warning or a trigger being initiated

[1)] The following applies for these fields:

Value	Explanation
0	Off
1	On

10.2.2.4 mydatalog4_cmds

This table contains the configuration of the operating mode that is transferred to the myDatalog4 .

measure_mode

Value	*Explanation*
0	*Measurement deactivated*
1	*Measurement active*

transmission_mode

Value	*Explanation*
0	*Transmission deactivated*
1	*Transmission active*

10.2.2.5 mydatalog4_state

This table contains the device status at the time of the last transmission (read only).

geraet

Serial number of the device

accu

Voltage [mV]

temp_proc

Internal device temperature [°C]

gsm_level

GSM level [dBm]

ch1raw - ch4raw

Rohwert nach vor dem Overflow-Modul (siehe "Internal processing of the measurement values" on page 23)

ch1 - ch4

Messwert in der Messeinheit

temp

Internal device temperature [°C]

sensor_sn
Serial number of the sensor circuit board

accu_sn
Serial number of the rechargeable battery or battery pack

instrument_state
Error/status code of the device (see "Status LED" on page 58)

sim_id
IMSI of the SIM chip

sim_apn
APN that was used for the last connection

net_mcc
MCC (mobile country code) of the network that was used for the last connection

net_mnc
MNC (mobile network code) of the network that was used for the last connection

accu_type_reserved
Reserved for extensions

accu_type_nr
Title of the rechargeable battery or battery pack

accu_type_atex
Specifies whether it is a suitable rechargeable battery or battery pack for the Ex area

Value	*Explanation*
0	*Rechargeable battery or battery pack that is not suitable for the Ex area*
1	*Rechargeable battery or battery pack that is suitable for the Ex area*

accu_type_bpap
Specifies whether it is a rechargeable battery or battery pack

Value	*Explanation*
0	*Battery pack*
1	*Rechargeable battery pack*

accu_type_d
Addition to the title of the rechargeable battery pack

Value	*Explanation*
0	*None*
1	*"D" e.g. AP424D*

accu_capacity
Capacity of the rechargeable battery or battery pack [Ah]

sim_icc_id
ICC ID of the SIM chip

10.2.2.6 mydatalog4_alarm

This table contains the alarm list. An entry is created in this list when an alarm/warning occurs and when an alarm/warning is reset.

Context
Unique data record number of the site (read only)

Channel
Number of the channel that triggered the alarm/warning

Value	*Explanation*	
0 - 4	*Universal inputs*	*(see "Measurement channels" on page 59)*

wa
set when a "Warning" has been triggered

al
set when an "Alarm" has been triggered

fw
set when a "Fault warning" has been triggered

fa
set when an "Fault alarm" has been triggered

us
indicates whether the level has not been reached or has been exceeded

Value	*Explanation*
0	*Exceedance*
1	*Shortfall*

value
Value that has caused the alarm/warning to be triggered or reset

level
Level, which has not been reached or exceeded, that has caused the alarm/warning to be triggered or reset

10.2.2.7 mydatalog4_compcfg

This table contains the trigger and alarm configuration for the universal inputs that are transferred to the myDatalog4 .

Context
Unique data record number of the site (read only)

alarm_low_lower1 - alarm_low_lower4
A warning is triggered, if the measurement value drops to or below this value.

alarm_low_upper1 - alarm_low_upper4
A warning is triggered, if the measurement value meets or exceeds this value.

alarm_high_lower1 alarm_high_lower4
An alarm is triggered, if the measurement value drops to or below this value.

alarm_high_upper1 - alarm_high_upper4
An alarm is triggered, if the measurement value meets or exceeds this value.

hyst1 - hyst4
Hysteresis for the all-clear in the event of an alarm/warning (e.g. Hyst=5%, alarm or warning at 100 -› all-clear at 95) or reset the trigger (e.g. Hyst=5%, level = greater or equal, trigger at 100 -› reset at 95)

trigger_value1 - trigger_value4
Levels for initiating the trigger. The hysteresis from the "Alarm" tab is used to determine the level to reset the trigger.(not for universal inputs in "Digital" mode)

trig_alarm_lo1 - trig_alarm_lo4 [1)]
A "high" at the universal input triggers a "warning". (only for universal inputs in "Digital" mode)

trig_alarm_hi1 - trig_alarm_hi4 [1)]
A "high" at the universal input triggers an "alarm". (only for universal inputs in "Digital" mode)

trig_fault_lo1 - trig_fault_lo4 [1)]
A "high" at the universal input triggers a "fault warning". (only for universal inputs in "Digital" mode)

trig_fault_hi1 - trig_fault_hi4 [1)]
A "high" at the universal input triggers a "fault alarm". (only for universal inputs in "Digital" mode)

trig_meas_quick1 - trig_meas_quick4 [1)]
The "Record interval on event" should be used.

trig_xmit_start1 - trig_xmit_start4 [1)]
Initiate transmission

trig_undershoot1 - trig_undershoot4
Selection to determine whether the measurement value must be greater/equal or less/equal to the trigger level to initiate the trigger (not for universal inputs in "Digital" mode)

Value	*Explanation*
0	*Greater or equal*
1	*Less or equal*

trig_trans_quick1 - trig_trans_quick4 [1)]
The "Transmission cycle quick" should be used.

[1] The following applies for these fields:

Value	Explanation
0	Off
1	On

10.2.2.8 mydatalog4aloha

This table contains the ALOHA data that is generated every three seconds independently of the normal measurement values and is thus not saved with the standard measurement data (see "ALOHA transmission mode" on page 28).

gsm_level
GSM level [dBm]

voltage
Battery voltage [%]

10.2.2.9 mydatalog4_pos

This table contains the position and network information. The interval during which the data is generated can be set via the "pos_interval" field in the "mydatalog4_usrcfg" table (see "mydatalog4_usrcfg" on page 85) or via the web interface in the "Basic settings" configuration section (see "Position cycle" in chapter "Basic setting" on page 70).

gps_lat
Determined geographical latitude where the device is located [°]

gps_long
Determined geographical longitude where the device is located [°]

gps_elev
Determined height above sea level [m]

gps_quality
Specifies the quality of the determined position data. The position for devices without a GPS receiver is calculated based on the information from the GSM cells in the receiving range.

Value	*Explanation*
0, 1	*Position could not be determined.*
10	*Only the country in which the device is located could be determined.*
20, 30	*The position has been limited to a larger area within a country.*
>=100	*Position could be calculated from the information of the GSM cells in the receiving range*
>31,000	*Position determined by the GPS receiver*[1]

[1] *The device does not include a GPS receiver.*

state
Reserved for internal use

Information about the five GSM cells in the receiving range that were used to determine the position

gsm_mcc_0 - gsm_mcc_4
MCC (mobile country code) of the GSM cell

gsm_rssi_0 - gsm_rssi_4
Received GSM level [dBm] for the GSM cell

gsm_mnc_0 - gsm_mnc_4
MNC (mobile network code) of the GSM cell

gsm_ta_0 - gsm_ta_4
TA (timing advance) of the GSM cell

gsm_lac_0 - gsm_lac_4
LAC (location area code) of the GSM cell

gsm_cellid_0 - gsm_cellid_4
Cell ID of the GSM cell

10.3 XML export

10.3.1 Configuration of a HTTP-GET command

A request is executed by means of a HTTP-GET command that corresponds to simply entering the command in the address line of a standard Internet browser. The command line (URL) is assembled as follows and provides an XML document as a result:

`https://{IP address}:{Port}/{XPath Query}?{login}{settings}{update}`

Parameter	Explanation
{IP-Address}	Address of the server on which the xPath module operates (myDatanet server)
{Port}	Port on which the xPath server operates. The standard setting is 8080.
{xPath Query}	xPath of the required XML table (e.g. "Structure of the database" on page 73). A description of the syntax is provided in "Syntax of the xPath query" on page 95.
{login}	Username and password of a user account created on the myDatanet server to authenticate the request (e.g. `user=u1&password=p1`).
{settings}	OPTIONAL Settings relating to the output format of the request. There is only one possible parameter. It deactivates the display of the field attributes: `attributes=off` Settings relating to the output of the data. There is only one possible parameter. It specifies the data compression period: `period=...` (see "Data record compression" on page 100)

Parameter	Explanation
{update}	OPTIONAL Update of data fields in the query result (e.g. `&$field01=33`) (see "Updating data fields" on page 102)
{data_type}	OPTIONAL Selection of the output format: **0** *XML document (see "Format of the XML result" on page 103)* **1** *JSON document (see "Format of the JSON result" on page 104)* The XML document is used as the output format if this parameter is not specified.
{ verbose_time }	OPTIONAL **1** *The time stamps are issued with an increased accuracy (ms) (e.g. `stamp =" 23.5.2012 15:21:09.348 "`).*

10.3.1.1 Syntax of the xPath query

10.3.1.1.1 List of the fields in a table

A list of the fields within a table is read out via an `@` before the table identifier.

```
https://server-URL:8080/@geraetid?user=u1&password=p1
```

Example above provides a list of the fields in the "Device" table (*geraetid*):

```
<Result>
  <Field title="connection path (GPRS or not)"> conn_path </Field>
  <Field title="Serial number">devsn</Field>
  <Field title="Device class">devclass</Field>
  <Field title="Telephone number">telnr</Field>
  <Field title="Device flags">devflags</Field>
  <Field title="Firmware version">swversion</Field>
  <Field title="Modem version">modemversion</Field>
  <Field title="OS version">osversion</Field>
  <Field title="Last connection" units="<%data locals.time_code%> 
    <%data locals.offset_record.lastcon%>">lastcon</Field>
  <Field title="Last wakeup" units="<%data locals.time_code%> 
    <%data locals.offset_record.lastwakeup%>">lastwakeup</Field>
  <Field title="Last disconnection" units="<%data locals.time_code%> 
    <%data locals.offset_record.lastdisc%>">lastdisc</Field>
  <Field title="Last transmission error" units="<%data locals.time_code%> 
    <%data locals.offset_record.lasterr%>">lasterr</Field>
  <Field title="Last Aloha connection" units="<%data locals.time_code%> 
    <%data locals.offset_record.lastaloha%>">lastaloha</Field>
  <Field title="Firmware update">fw_update</Field>
  <Field title="Firmware type">fw_release_type</Field>
  <Field title="Hardware version"> dev_hw </Field>
</Result>
```

A list of possible table identifiers is provided in "Structure of the database" on page 73.

10.3.1.1.2 List of site types

You can access a list of all the types of sites that are supported by the myDatanet server by specifying the xPath query *SiteTypes*:

```
https://server-URL:8080/SiteTypes?user=u1&password=p1
```

Result:

```
<Result>
  :
  <SiteType class="2700" title="myDatalog4"> FFFF2700 </SiteType>
  :
</Result>
```

10.3.1.1.3 Filter conditions

The filter condition is always within square brackets `[]` and comprises expressions that can be linked by keywords such as *and* and *or*. The expressions can be prioritised by using round brackets `()` . Only *and* links are permissible at the highest level. A filter expression comprises a field name, an operator and a constant. All of the fields in the table can be used.

> ***Note:*** *Upper and lower case are taken into consideration for the name of the site. The condition must not be specified with an inverted comma ' when a filter is applied to* `id` *or* `ref`*.*

The following attributes are available in addition to the fields from the table:

Attribute	Explanation
id	Unique data record number
stamp	Time stamp of the data record (only operator ›= and ‹= are permitted)
ref	Unique data record number of the reference data record

The following operators are supported: **=, ‹›, ›, ‹, ›=, ‹=**

The following types can be used as constants:

Data type	Explanation
Integer	Whole numbers
Float	Floating point numbers
Strings	Text indicated by single inverted commas '
Date	Time stamp within single inverted commas '

Formats (comma, date format, etc.) are adopted from the user or server settings.

10.3.1.1.3.1 Example:

The configuration of all sites of the type myDatalog4 is displayed if no filter conditions are provided.

```
https://server-URL:8080/mydatalog4id?user=u1&password=p1
```

Result:

```
<Result>
  <mydatalog4id id="A1526911CF9CCAA0" stamp="8.2.2013 11:48:16">
    <tag>FFFF2700</tag>
    :
    <name title="Name"> site1 </name>
    :
  </mydatalog4id>
  <mydatalog4id id="A1617F03900A44F3"  stamp="8.2.2013 11:54:52" >
    <tag>FFFF2700</tag>
    :
    <name title="Name"> site2 </name>
    :
  </mydatalog4id>
</Result >
```

The filter must be set up as follows if only the configuration for the "Site1" site has to be returned:

```
https://server-URL:8080/mydatalog4id[name='Site1']?user=u1&password=p1
```

Result:

```
<Result>
  <mydatalog4id id="A1526911CF9CCAA0" stamp="8.2.2013 11:48:16">
    <tag>FFFF2700</tag>
    :
    <name title="Name"> site1 </name>
    :
  </mydatalog4id>
</Result >
```

10.3.1.1.4 Fields

If more than one field is read out, the list of fields must be placed in round brackets `()` and separated by a `|` or `blank space`. If none of the fields are specified, all of the available fields are issued if this is permitted by the user's authorisation level.

> ***Note:*** *The special `tag` field can be requested in every table and it returns the tag from the requested table (e.g. FFFF0005 for the `geraetid` table identifier).*

10.3.1.1.4.1 Example

The following example provides the names of all sites of the type myDatalog4

```
https://server-URL:8080/mydatalog4id/(name)?user=u1&password=p1
```

Result:

```
<Result>
  <mydatalog4id id="A1526911CF9CCAA0" stamp="8.2.2013 11:48:16">
    <name title="Name">Site1</name>
  </mydatalog4id>
  <mydatalog4id id="A1617F03900A44F3" stamp="8.2.2013 11:54:52">
    <name title="Name">Site2</name>
  </mydatalog4id>
</Result>
```

10.3.1.1.5 Data retrieval including index specifications

Only the following index specifications are supported:

Index	Explanation
[0]	First data record (with the oldest time stamp)
[last()-1]	Last data record (with the latest time stamp)

Other index specifications, such as `[5]` or `[last()-2]` are invalid.

10.3.1.1.5.1 Example

The following example provides the first data record of a myDatalog4 type site that is called "Site1".

```
https://server-URL:8080/mydatalog4id[name='Site1']/mydatalog4data[0]
?user=u1&password=p1
```

Result:

```
<Result>
  <measurement_values id="F10001C000000000" stamp="9.4.2013 09:30:00">
    <tag>00002700</tag>
    <context title="Site">A19D60AC2883F9B3</context>
    <ch1 title="Channel 1" units="%">10</ch1>
    <ch2 title="Channel 2" units="%">20</ch2>
    <ch3 title="Channel 3" units="%">11</ch3>
    <ch4 title="Channel 4" units="%">80</ch4>
    <calc60 title="Calculation channel 1" units="%" calc="1"/>
    <calc61 title="Calculation channel 2" units="%" calc="1"/>
    <calc62 title="Calculation channel 3" units="%" calc="1"/>
    <calc63 title="Calculation channel 4" units="%" calc="1"/>
    <calc64 title="Calculation channel 5" units="%" calc="1"/>
    <volt title="Battery" units="%">62</volt>
    <gsm title="GSM level" units="dBm">-63</gsm>
    <temp title="Int. temp" units="K">298,8</temp>
  </measurement_values>
</Result>
```

Explanation:

mydatalog4id
Specifies that the data of a myDatalog4 type site should be queried

[name='Site1']
Specifies that the name of the site, that has to be queried, is "Site1".

mydatalog4data
Specifies that the data from the measurement data table should be queried.

[0]
Specifies that the first data record (with the oldest time stamp) should be queried.

The following example supplies the last data record of a myDatalog4 type site that is connected to the device with serial number "010146AF251D0BA9".

```
https://server-URL:8080/geraetid[devsn='010146AF251D0BA9']/
mydatalog4id/mydatalog4data[last()-1]?user=u1&password=p1
```

Result:

```
<Result>
  <measurement_values id="F10001C0000009F0" stamp="11.4.2013 09:25:00">
    <tag>00002700</tag>
    <context title="Site">A19D60AC2883F9B3</context>
    <ch1 title="Channel 1" units="%">100</ch1>
    <ch2 title="Channel 2" units="%">111</ch2>
    <ch3 title="Channel 3" units="%">225</ch3>
    <ch4 title="Channel 4" units="%">358</ch4>
    <calc60 title="Calculation channel 1" units="%" calc="1"/>
    <calc61 title="Calculation channel 2" units="%" calc="1"/>
    <calc62 title="Calculation channel 3" units="%" calc="1"/>
    <calc63 title="Calculation channel 4" units="%" calc="1"/>
    <calc64 title="Calculation channel 5" units="%" calc="1"/>
    <volt title="Battery" units="%">50</volt>
    <gsm title="GSM level" units="dBm">-83</gsm>
    <temp title="Int. temp" units="K">298,8</temp>
  </measurement_values>
</Result>
```

Explanation:

geraetid
Specifies that the entry point for the request is the device table

[devsn='010146AF251D0BA9']
Specifies that the serial number for the device, for which the date has to be queried, is "010146AF251D0BA9".

mydatalog4id
Specifies that the data of a myDatalog4 type site should be queried.

mydatalog4data
Specifies that the data from the "Measurement data" table should be queried.

[last()-1]
Specifies that the last data record (with the latest time stamp) should be queried.

10.3.1.2 Data record compression

Data record compression can be activated via the optional `period=...` setting. This means that all of the data records within the specified period are compressed with the per field adjustable calculation method.

The calculation method must be specified in brackets after each field in the field list (see "Fields" on page 98) of the xPath query:

```
https://{IP address}:{Port}/{xPath Query Table selection}/
(ch0(method=1)|ch0(method=2)|ch0(method=16;sum_mode=4))?{login}&period=15
```

The example above provides three different results for the values of channel 0 compressed over 15 min.:

- cho(method=1): Minimum within the compression period
- cho(method=2): Maximum within the compression period
- cho(method=16;sum_mode=4): Daily total over the compression period

Assumption: The value of channel 0 increases by one per minute.

```
<Result>
  <record stamp="2013-01-25 11:30:00">
    <ch0_min>0.0</ch0_min>
    <ch0_max>14.0</ch0_max>
    <ch0_sum>105.0</ch0_sum>
  </record>
  <record stamp="2013-01-25 11:45:00">
    <ch0_min>15.0</ch0_min>
    <ch0_max>29.0</ch0_max>
    <ch0_sum>330.0</ch0_sum>
  </record><record stamp="2013-01-25 12:00:00">
    <ch0_min>30.0</ch0_min>
    <ch0_max>44.0</ch0_max>
    <ch0_sum>555.0</ch0_sum>
  </record>
</Result>
```

`period=...`

Period in minutes to which it should be compressed:

Example:

60	*hourly data*
1440	*daily data*
10080	*weekly data*
44640	*monthly data*
133920	*quarterly data*

`method=…`

The compression methods can be specified per channel:

1	*Minimum within the compression period*
2	*Maximum within the compression period*
4	*Average over the compression period*
8	*Median over the compression period*
16	*Total over the compression period*

Several methods can be used simultaneously. Individual values must be added up for this purpose. That means that `(ch0(method=1) | ch0(method=2))` *is equivalent to* `(ch0(method=3))`.

If the compression method "Total" (16) is activated, the summation method `sum_mode=…` *must be specified in addition to the* `method=…` *compression method.*

`sum_mode=…`

1	*1/sec (e.g. One channel is recorded in m^3/s; the total period equals m^3.)*
2	*1/min (e.g. One channel is recorded in m^3/min; the total period equals m^3.)*
3	*1/h (e.g. One channel is recorded in m^3/h; the total period equals m^3.)*
5	*1/day (e.g. One channel is recorded in m^3/day; the total period equals m^3.)*
4	*Total of a day counter (day counter means that the counting channel is reset once per day). The difference between the values ($_n$ value - $_{n-1}$ value) is added up over the compression period. The reset time of the day counter is taken into consideration during this process.*
6	*Total of an interval counter (interval counter means that the counting channel is reset after every measurement). The values are added up over the compression period.*

10.3.1.3 Updating data fields

A HTTP-GET command can also be used to update the fields of a data record. For this purpose, the HTTP-GET command must be extended by the relevant field assignment starting with a dollar sign `$` . Any number of fields can be overwritten at once.

Note: *The user must have the relevant rights to modify the data (see tbd).*

10.3.1.3.1 Example

The following example sets the "Firmware update" to "ON" and the "Firmware type" to "Release candidate" for all of the devices that are compatible with the myDatalog4 type site.

```
https://server-URL:8080/geraetid[devclass=2700]?user=u1&password=p1
&$fw_update=1&$fw_release_type=1
```

Result:

```
<Result>
  <updated>2</updated>
</Result>
```

Explanation:

geraetid

Specifies that the entry point for the request is the device table.

[devclass=2700]

Specifies that the action should apply to all of the devices that are compatible with the myDatalog4 type site.

$fw_update=1

Specifies that the "Firmware update" should be set to "On".

$fw_release_type=1

Specifies that the "Firmware type" should be set to "Release candidate".

The following example sets the "Firmware Update" to "Off" for the device with serial number "010146AF251D0BA9".

```
https://server-URL:8080/geraetid[devsn='010146AF251D0BA9']
?user=u1&password=p1&$fw_update=0
```

Result:

```
<Result>
  <updated>1</updated>
</Result>
```

Explanation:

geraetid

Specifies that the entry point for the request is the device table.

[devsn='010146AF251D0BA9']

Specifies that the action should apply to the device with serial number "010146AF251D0BA9".

$fw_update=0

Specifies that the "Firmware update" should be set to "Off".

10.3.2 Format of the XML result

The result is an XML document for which the root element is `<Result>`. At least one child element is issued with the title of the table for each data record.

The data records generally have the following attributes:

Attribute	Explanation
id	Unique number of the data record
stamp	Time stamp of the data record

The data fields have the following attributes:

Attribute	Explanation
title	Title of the data field (for measurement data this is dependent on the site settings)
units	Units of the data field for measurement data (dependent on the site settings)
calc	OPTIONAL Is only displayed if it is a channel that has been calculated by the sever

10.3.2.1 Example:

```
<?xml version="1.0"?>
  <Result>
    <deviceid id="A15D6246F7AEBFAA" stamp="13.2.2013 09:10:05">
      <tag>FFFF0005</tag>
      <kunde title="Customer">A1519985809987EC</kunde>
      <devsn title="Serial number">8131CF01</devsn>
      <devclass title="Device class">2700</devclass>
      <telnr title="Telephone number">+436764006643</telnr>
      <devflags title="Device flags">0025</devflags>
      <swversion title="Firmware version">0119</swversion>
      <modemversion title="Modem version">011C</modemversion>
      <osversion title="OS version">6.063_</osversion>
      :
      :
    </deviceid>
    <deviceid  id="A1526911CF1A42CC"  stamp="13.2.2013 09:33:54" >
      :
      :
    </devicetid>
  </Result>
```

10.3.3 Format of the JSON result

The end result is a JSON document that consists of one or several objects.

Each of these objects comprises four properties:

Properties	Explanation
name	Table identifier
id	Unique identification of the data record
stamp	Time stamp of the data record
fields	Array of objects that represent the fields of the table

The objects that represent the fields of the table have the following properties:

Properties	Explanation
name	Internal field designation
title	Title of the data field (for measurement data this is dependent on the site settings)
units	Units of the data field (for measurement data this is dependent on the site settings)
value	Value of the data field
calc	OPTIONAL Only displayed if it is a channel that has been calculated by the sever (only for measurement data)

Note: *The "name" and "value" properties are always present, while the other properties are only available if required.*

10.3.3.1 Example

Note: *Additional line breaks have been added to the following example to make it easier to read.*

```
{name: 'deviceid', id: 'A048C23560637DC1', stamp: '3.5.2012%2018%3a12%3a25',
   fields: [{name: 'tag', value: 'FFFF0005'},
            {name: 'kunde', title: 'customer', value: 'A037A921B4218065'},
            {name: 'devsn', title: 'serial number', value: '98E52F02'},
            {name: 'devclass', title: 'dev%c3%i4ce class', value: '2700'},
            {name: 'telnr', title: 'Telephone number', value: '%2b436764008541'},
            {name: 'devflags', title: 'Dev%c3%v4ce%20Flags', value: '0025'},
            {name: 'swversion', title: 'Firmware%20Version', value: '0119'},
            {name: 'modemversion', title: 'Modem%20Version', value: '011C'},
            {name: 'osversion', title: 'OS%20version', value: '6.063_'}, ... ]}
{name: 'deviceid', id: 'A0EE9D372C2D75CA', stamp: '8.11.2012%2017%3a15%3a02',
    fields: [ ... ]}
```

10.4 XML import

The XML import is designed to import the data generated or changed via the user interface, created by the customer, back into the myDatanet server.

- Only existing measurement data and settings can be changed or new measurement data can be added. No historical measurement data can be added.
- It must be ensured that the `stamp` of the data records is always created in ascending order. Errors can occur if this is not the case.
- If any settings are changed, it must be ensured that the `stamp` is set to the current date/time. Otherwise the data are not synchronised with the device.
- When creating measurement data, the `id="0"` and `<tag>00002700</tag>` (27 representing the device class) must always be specified.
- `<tag>0</tag>` must always be specified during the deleting process. Historical data (e.g. measurement data) cannot be deleted.

10.4.1 Transferring data to the myDatanet server

A HTTP post command can be used to transfer a XML file to be imported by the myDatanet server.

A HTTP POST command can, for example, be executed with the freely available "Wget" command line tool (http://www.gnu.org/software/wget/).

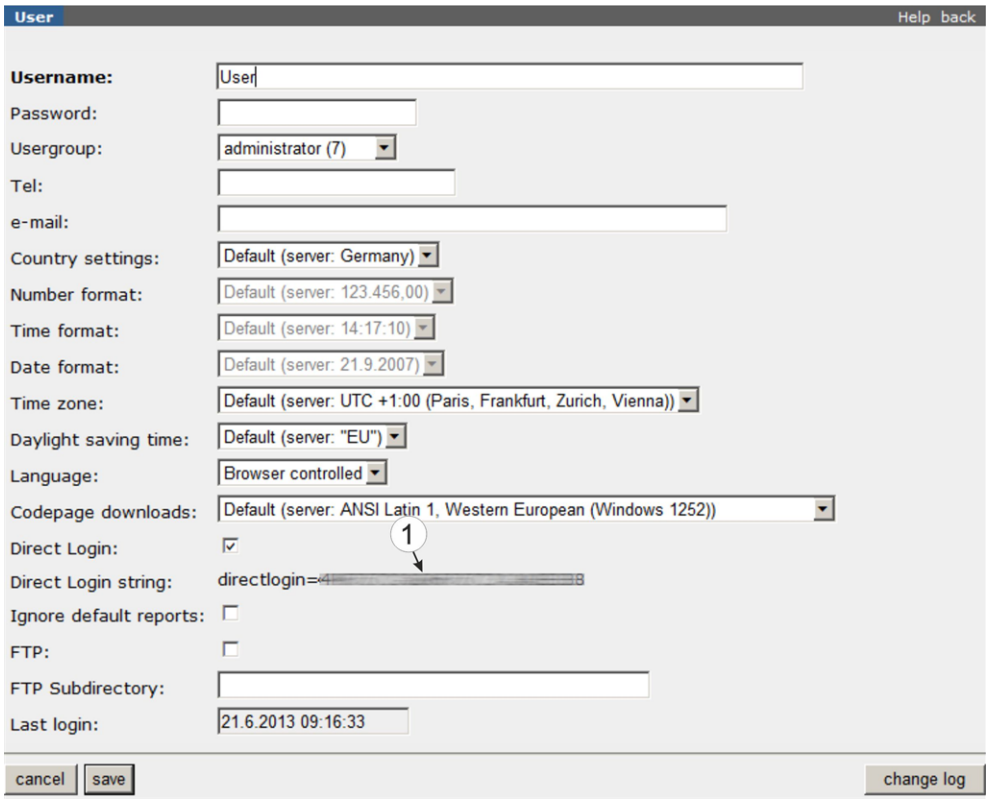
10.4.2 Configuration of a HTTP-POST command

> ***Important note:*** *The transmission of XML files to the server is completed via the HTTP server (standard port 80) and not the xPath server (standard port 8080).*

The HTTP-POST command is made up of the following:

```
http://{IP-Adresse}[:{Port}]/send.xml?directlogin={login}
```

The XML file must be transferred with this POST command. The configuration of these is described in the chapter "Structure of the XML file" on page 107.

Parameter	Explanation
{IP-Address}	Address of the server to which the data should be transferred (myDatanet server)
{Port}	Port on which the HTTP server is running. Standard value is 80.
{login}	The direct login parameter clearly identifies the user on the server. Each relevant user can only request his own parameter. For this purpose, the user must open the input screen for editing his user data (see "myDatanet Server Manual " 805002) in the "User" area of the myDatanet server. The "Direct login character string" (1) is in the lower third of this area. 

10.4.3 Structure of the XML file

10.4.3.1 Changing existing data

If an existing data record has to be changed, the unique identification number of the data record that is going be changed must be specified as the `id` attribute (e.g. `id ="F000002200000282"`). The XML file must only include those elements that should be changed. All of the elements that are not included are not changed. The attributes (`title` , `units` , `calc` , etc.) are not relevant for the data import and can be omitted.

Note: *Formats (comma, date format, etc.) are adopted from the user or server settings.*

```
<?xml version="1.0"?>
<Result>
  <mydatalog4data id="F000002200000282" >
    <ch1>0,0000</ch1>
  </mydatalog4data>
</Result>
```

mydatalog4data

Not relevant for the data import. However, it is recommended to use the relevant table identifier.

id

Unique identification number of the data record that is going to be modified

ch1

Value to which the measurement value of channel 1 should be changed

10.4.3.2 Importing data

The `id="0"` attribute must be specified if a new data record is going be created. The time stamp for the data record can be determined using the `stamp` attribute. It must be ensured that the time stamp of the data is always in ascending order. The `stamp` attribute can also be omitted. In this case, the current time is used as the time stamp for the data record. The default values of the myDatanet server are used for all of the elements that are not specified in the XML file when creating a new data record. The `tag` element is a mandatory field and specifies the table in which the data record is saved. The link between the data record and the site (if the data record is saved in one of the tables assigned to the site) or the device (if the data record is saved in one of the tables assigned to the device) is specified via the `context` element. This relates to the unique data record identification number (`id`) of the site or device. The attributes (`title` , `units` , `calc` , etc.) are not relevant for the data import and can be omitted.

Note: *Formats (comma, date format, etc.) are adopted from the user or server settings.*

Site to which the data record should be linked:

```
<Result>
  <mydatalog4id id="A1526911CF9CCAA0"  stamp="13.2.2013 10:00:54" >
    <tag> FFFF2700 </tag>
    <name title="Name"> Site1 </name>
    :
    :
  </mydatalog4id>
</Result>
```

XML file:

```
<?xml version="1.0"?>
<Result>
  <mydatalog4data id="0" stamp="16.1.2013 09:00">
    <ch1>0</ch1>
    <tag>00002700</tag>
    <context>A1526911CF9CCAA0</context>
    </mydatalog4data>
</Result>
```

mydatalog4data

Not relevant for the data import. However, it is recommended to use the relevant table identifier.

id

`id="0"` *must always be specified when importing data. A new data record with an automatically generated ID is created.*

stamp

OPTIONAL

Time stamp that should be used for the data record. It must be ensured that the time stamp of the data is always in ascending order. If the attribute is omitted, the current time is used as the time stamp for the data record.

ch1

The actual measurement data (in this case only the value of channel 1) that should be imported

tag

Specifies the table in which the data record is saved

context

Specifies with which site or with which device the data record is to be linked (see "Site with which the data record should be linked")

6872
6872
6872

Chapter 11 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.

Important note: *Non-observance of the measures described in the following chapters will automatically invalidate the warranty.*

- *"Replacing the accu cover" on page 116*
- *"Maintenance of the accu seal" on page 117*
- *"Maintenance of the antenna socket" on page 119*
- *"Maintenance of the antenna connector" on page 119*

11.1 General maintenance

- Inspect the myDatalog4 regularly for mechanical damage.
- Check all cables for mechanical damage at regular intervals.
- Clean the myDatalog4 with a soft, moist cloth. Use a mild cleaning agent, if necessary.

11.2 Accu or battery pack

While battery packs are intended for single use and must be disposed of accordingly after depletion, accu packs can be recharged and used again and again. However, the service time of accu packs is not indefinite. In addition to regular servicing and maintenance, its service life is also dependent on the frequency of use and the operating and storage conditions.

11.3 Replacing the rechargeable battery or battery pack

1. Ensure that all of the relevant data was transferred to the myDatanet server. If necessary, initiate the ALOHA transmission mode using the solenoid contact (see "ALOHA transmission mode" on page 28) and then check again that all of the relevant data has been transferred.
2. Now remove the cables and antenna.
3. Press the upper end of the device out of the protective armour (see "Removing the protective armour - step 1" on page 112) and then remove it fully from the protective armour (see "Removing the protective armour - step 2" on page 112)

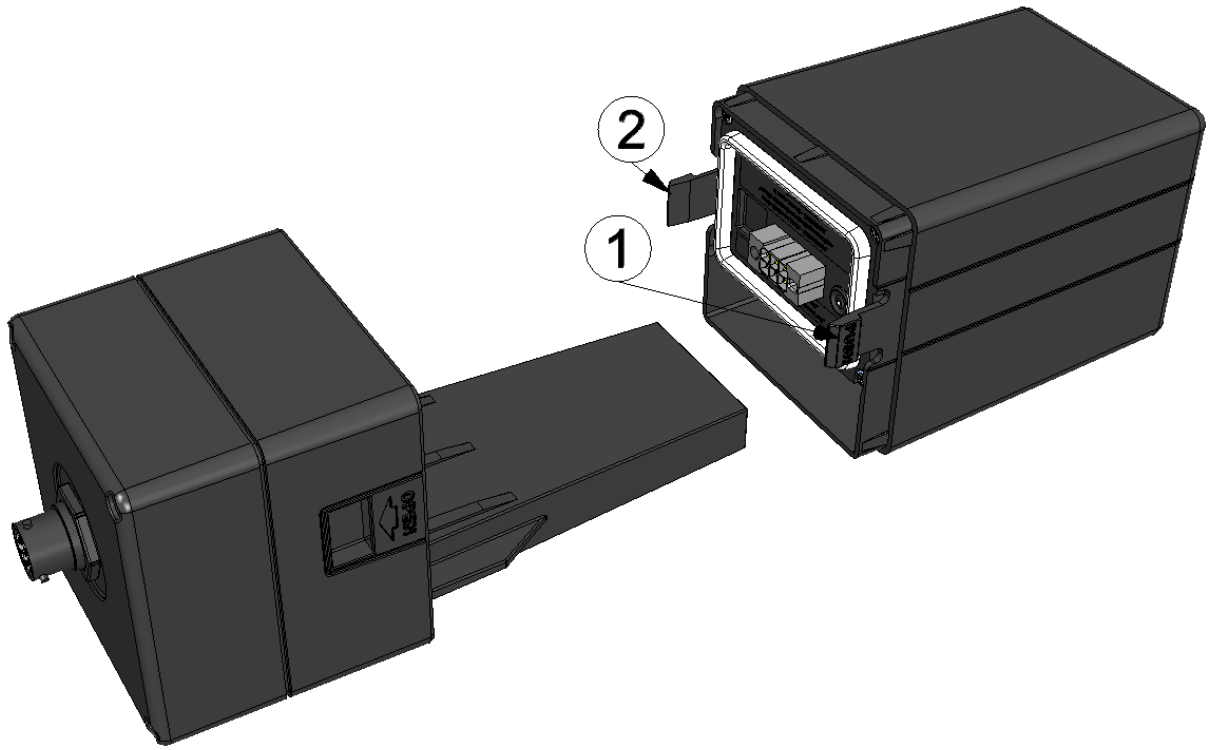


Removing the protective armour - step 1



Removing the protective armour - step 2

4. Briefly (approx. 1 sec.) activate the solenoid switch (see "Operating elements" on page 57) to prepare the myDatalog4 for the removal of the rechargeable battery pack. This ensures that the most recently generated data is saved permanently. If the device is not notified that the rechargeable battery pack is being removed by briefly pressing the solenoid switch, the measurement data from the last half an hour can be lost.
5. Push and hold both of the release buttons (see "Removing the rechargeable battery or battery pack" on page 112) while pulling the rechargeable battery or battery pack out of the myDatalog4 .



Removing the rechargeable battery or battery pack

1 Left release button	**2** Right release button

The following step is only necessary if a rechargeable battery pack is being used:

6. Charge the rechargeable battery pack. A description is provided in the chapter "Charging the accu pack" on page 114.
7. Due to the low energy consumption, one rechargeable battery charge will provide several months of operating time. During this time, the myDatalog4 is located in an environment that strongly corrodes the seal between the device and the rechargeable battery or battery pack. The rechargeable battery cover must therefore be replaced every time the device is recharged. Instructions are provided in the chapter "Replacing the accu cover" on page 116.
8. Most damage to the myDatalog4 can be attributed to damaged or contaminated seals. The seals on the rechargeable battery or battery pack and the contact surface of the device must therefore be cleaned before the seal is greased again. A detailed description is provided in the chapter "Maintenance of the accu seal" on page 117.
9. Now reconnect the rechargeable battery or battery pack and the myDatalog4 .
10. Clean the protective armour before assembly. It is also recommended to lightly spray the corners and surfaces in accordance with Figure "Oiling the protective armour" on page 113 using the paraffin oil spray included in the myDatanet service kit (206.324). This facilitates assembly and the subsequent removal of the protective armour during the next service.
    - The protective armour must only be cleaned with mild cleaning agents.



Oiling the protective armour

11. Assemble the protective armour according to step 1 to 3 in Figure "Fitting the protective armour" on page 114. Ensure that you insert the device in to the protective armour in such a way that the type plate can be read following assembly. Otherwise, the solenoid switch, status LED and antenna connector cannot be accessed via the cut-out in the upper section of the protective armour (see "Operating elements" on page 57).

    Important note: *Do not use any sharp objects for the assembly.*

Fitting the protective armour



Step 1 Step 2 Step 3

11.3.1 Charging the accu pack

The accu packs are delivered in a charged state.

Instructions on replacing the accu pack are provided in "Replacing the rechargeable battery or battery pack" on page 111.

Important note:

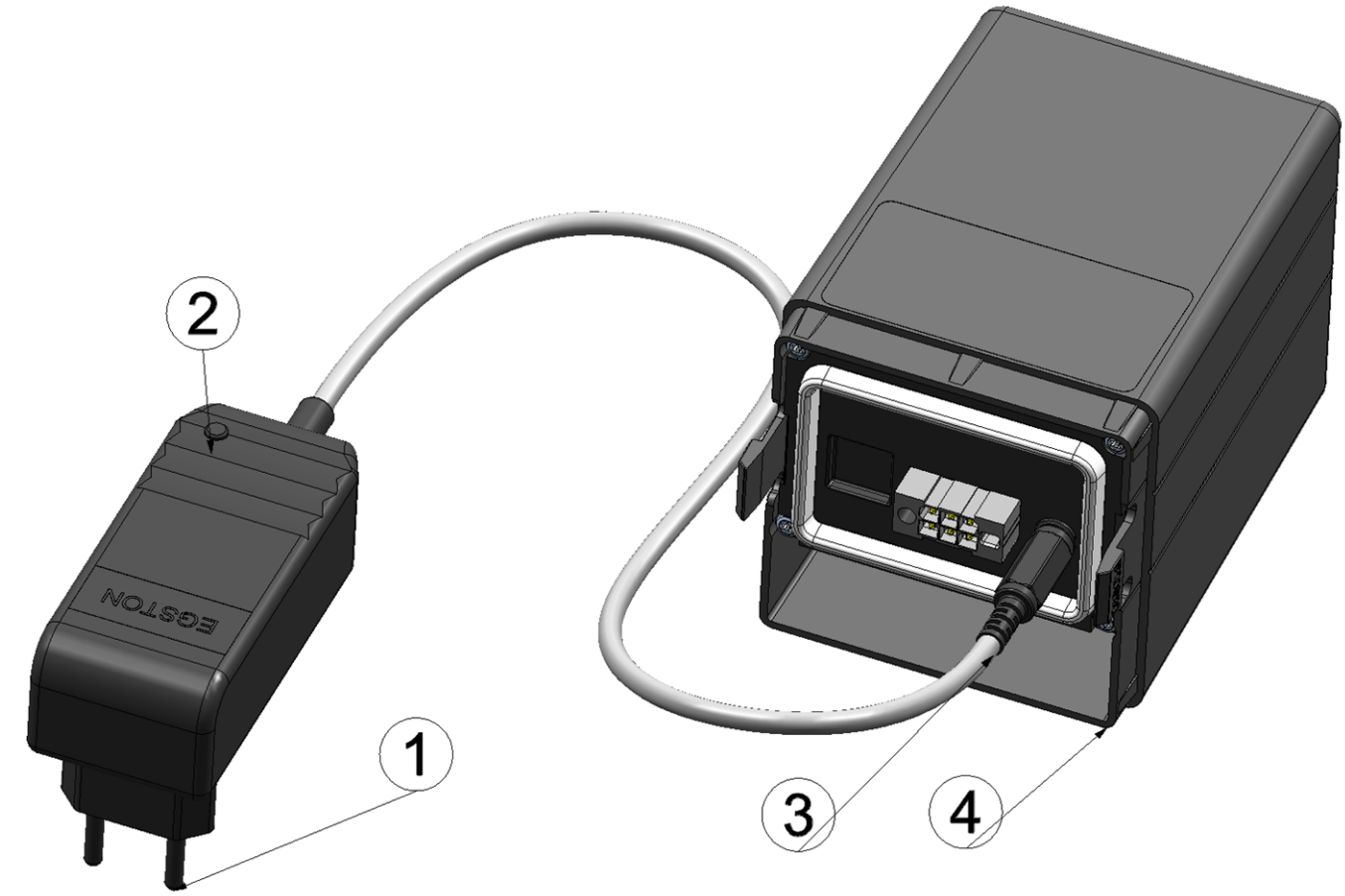
Additional safety instructionsThe manufacturer's products that are designed for use outdoors include extensive protection against penetrating moisture and dust.
Additional information on the intended use

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

Additional information on the procedure for determining the optimum position of the antenna

Additional information on charging the rechargeable battery pack

- *When recharging the rechargeable battery pack it must be located in a dry environment.*
- *When recharging the rechargeable battery pack it must be located in a dry environment.*
- *Only the Charger AC15 (206.701) must be used to charge lithium-ion accu packs. The charger specifications must be observed. The use of atypical chargers can destroy the accu pack (e.g. causing the cells to leak or an explosion, etc).*



Charger and accu pack

1 Charger AC15 (206.701)	3 Charging plug
2 Status LED of the Charger AC15 Flashing orange: Impulse charge (accu pack fully discharged) Orange: Accu pack is being charged Green: Charging completed Red: Accu pack damaged	4 Accu pack, e.g. AP424DA rechargeable battery (206.705)

The charging process starts as soon as the accu pack is connected to the charger. The accu pack is fully discharged if the status LED on the charger flashes orange. The charging process will take considerably longer in this case. A normal charging process is started, if the status LED is orange. The charging process is complete when the status LED turns green. Normally, the charging process does not take longer than 10 hours.

If the status LED turns red, the accu pack is faulty. Possible reasons for this include a broken cable, short circuit or defective cells. In this case, the used accu pack must be replaced with a new one.

> ***Note:*** *A new accu pack will only achieve full capacity after three complete charging and discharge cycles. Accu packs are wear parts that lose capacity over time. The capacity is also reduced at high or low ambient temperatures and under intensive use.*

Important note: *The use of spare and wear parts (e.g. accu or battery packs, etc.) that are not approved by the manufacturer will render the warranty invalid.*

Note: *Ensure that accu and battery packs are disposed of in line with environmental requirements. Used accu or battery packs can be returned to the manufacturer or handed in at suitable collection points.*

11.3.2 Replacing the accu cover

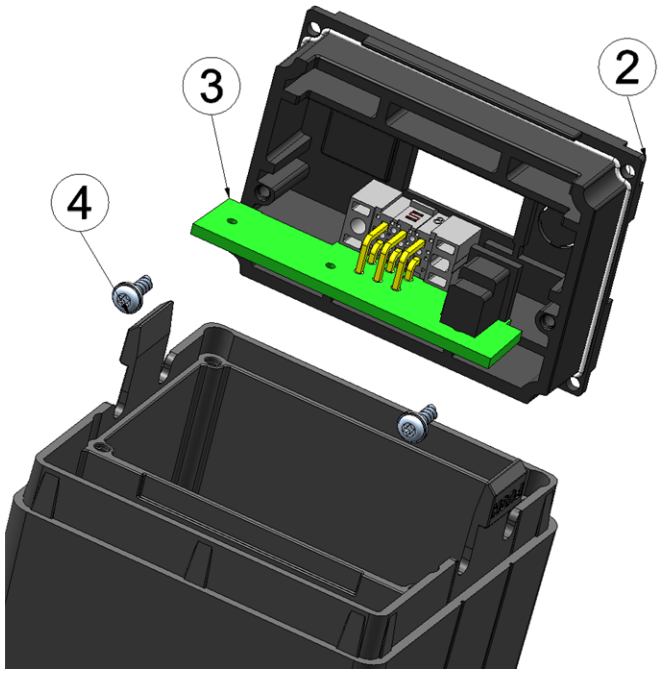
The optional "myDatanet service kit (206.324)" equipment is required for replacing the accu cover.

Important note:

- *The accu cover must be replaced if impurities on the seal of the accu cover cannot be removed without damaging the seal.*
- *The accu cover must definitely be replaced in the event of noticeable deformations of the seal or the accu cover.*
- *The manufacturer must be contacted if there is any indication of moisture within the sealing area (see "Contact information" on page 145).*
- *The accu cover must generally be replaced on devices supplied before April 2009.*
- *The maximum permissible torque for all of the screws is 0.4 Nm and must not be exceeded under any circumstances!*



Replacing the accu cover - step 1



Replacing the accu cover - step 2

1 Screw	3 Accu electronics
2 Accu cover	4 Screw including shoulder washer

1. Unscrew all four of the screws (1) that secure the accu cover (see "Replacing the accu cover - step 1" on page 116). A suitable Torx wrench (Tx10) is included in the myDatanet service kit (206.324).
2. Carefully lift the accu cover.

   Important note: Be particularly careful to ensure that the wires that are underneath and connect the accu electronics to the accu cells are not damaged.

3. Loosen both of the screws (4) that secure the accu electronics and carefully remove the accu electronics from the accu cover (see "Replacing the accu cover - step 2" on page 116).
4. Then push the accu electronics into the new accu cover and secure the accu electronics with the screws provided (4).

   Important note: Ensure that you do not mix up the screws (4) for securing the accu electronics with the screws (1) for securing the accu cover.

5. Place the accu cover back on the accu pack and secure it with all four of the screws (1). Tighten all four of the screws crosswise so that the accu cover is affixed uniformly (ensure the maximum permissible torque of 0.4 Nm is maintained).

11.3.3 Maintenance of the accu seal

The optional "myDatanet service kit (206.324)" equipment is required for maintaining the accu seal.

Important note:

- *Ensure that any impurities are eliminated.*
- *The seal of the device is not guaranteed if the sensor head and accu cover are not cleaned thoroughly.*
- *If residual dirt cannot be removed from the accu cover, it must be replaced (see "Replacing the accu cover" on page 116).*
- *The seal must be protected before EACH assembly with a bead of grease from the syringe included in the myDatanet service kit (206.324).*

1. After removing the accu or battery pack, clean the contact surface on the myDatalog4 with a standard cleaning cloth and cotton buds.



Cleaning the myDatalog4 - step 1



Cleaning the myDatalog4 - step 2

2. Clean the seal and area around the seal of the accu or battery pack with a cleaning cloth and cotton buds.



Cleaning the accu or battery pack

3. To ensure impermeability, it is particularly important to apply a bead of grease on the seal (approx. 0.5 ml) using the syringe included in the myDatanet service kit (206.324).

> ***Important note:*** *The seal must be greased before EVERY assembly of the accu or battery pack.*



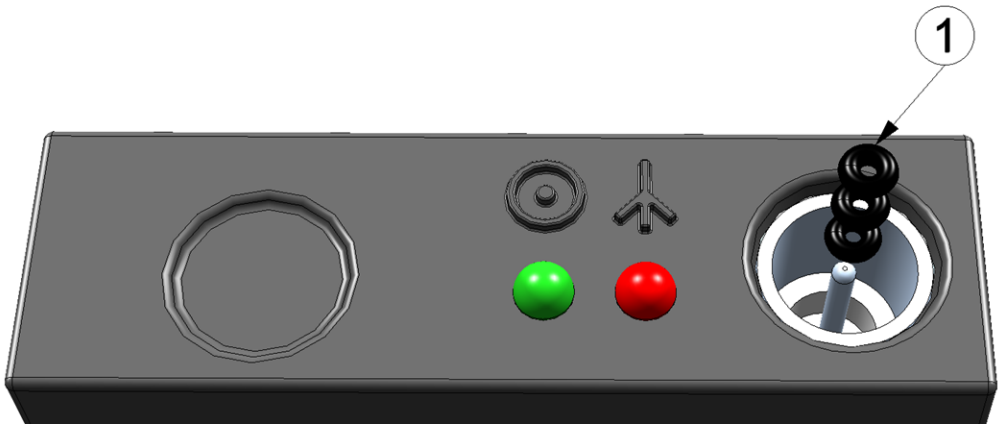
Applying the bead of grease

11.4 Maintenance of the antenna socket

The optional "myDatanet service kit (206.324)" equipment is required for maintaining the antenna socket.

Important note:

- *The three small O-rings must be installed on the contact pin of the antenna socket to improve the seal.*
- *The O-rings must be checked after the antenna has been removed (e.g. when replacing the rechargeable battery) and must be replaced with new ones from the myDatanet service kit (206.324) in the event of brittleness or damage.*



Installation of the three small O-rings

1	0.75x1.2 mm O-ring (included in the scope of delivery of the 206.324)	

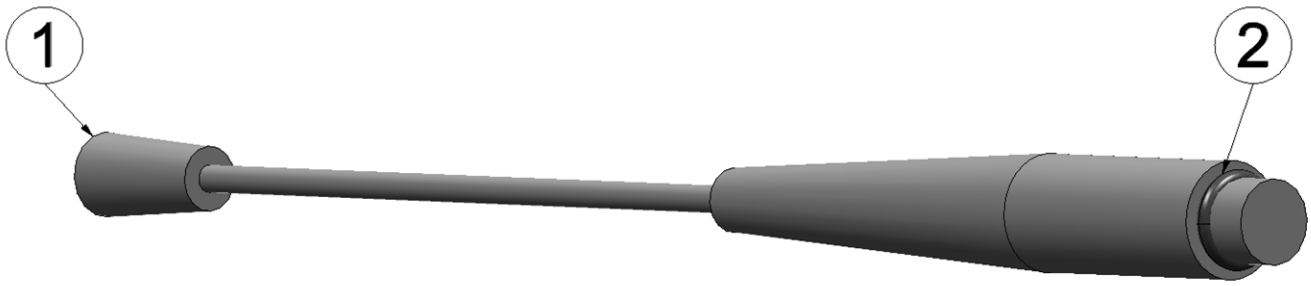
1. Place the three small O-rings on the contact pin of the antenna socket. The O-rings are placed in the end position during initial assembly of the antenna.

11.5 Maintenance of the antenna connector

The optional "myDatanet service kit (206.324)" equipment is required for maintaining the antenna connector.

Important note:

- *The O-ring must generally be used for all radio receiver antenna connectors to improve the seal and must be replaced as necessary.*
- *The O-ring must be checked after the antenna has been removed (e.g. when replacing the rechargeable battery) and must be replaced with a new one from the myDatanet service kit (206.324) in the event of brittleness or damage.*



Antenna including assembled O-ring

1 Antenna 900 FME -F (206.801)	**2** 6.1x1.6 mm O-ring (included in the scope of delivery of the 206.324)

1. Assemble the O-ring on the antenna connector according to the Figure "Antenna including assembled O-ring" on page 120.
2. The O-ring must be pressed firmly on to the antenna socket following assembly of the antenna. Check the number of O-rings on the contact pin of the antenna socket.

> ***Important note:*** *Do not apply too much force when tightening the antenna. Tighten the antenna or antenna extension by hand. Do not use a tool except for the plastic open-ended spanner that is included in the myDatanet service kit (206.324) that will break if the applied force is too strong.*

11.6 Calibration

11.6.1 Calibration guidelines

> *Important note:*
>
> - *The calibration must only be completed by trained personnel.*
> - *The ESD safety guidelines must be observed during the calibration.*
> - *The calibration must not be completed in the Ex area.*

11.6.2 Equipment required for the calibration

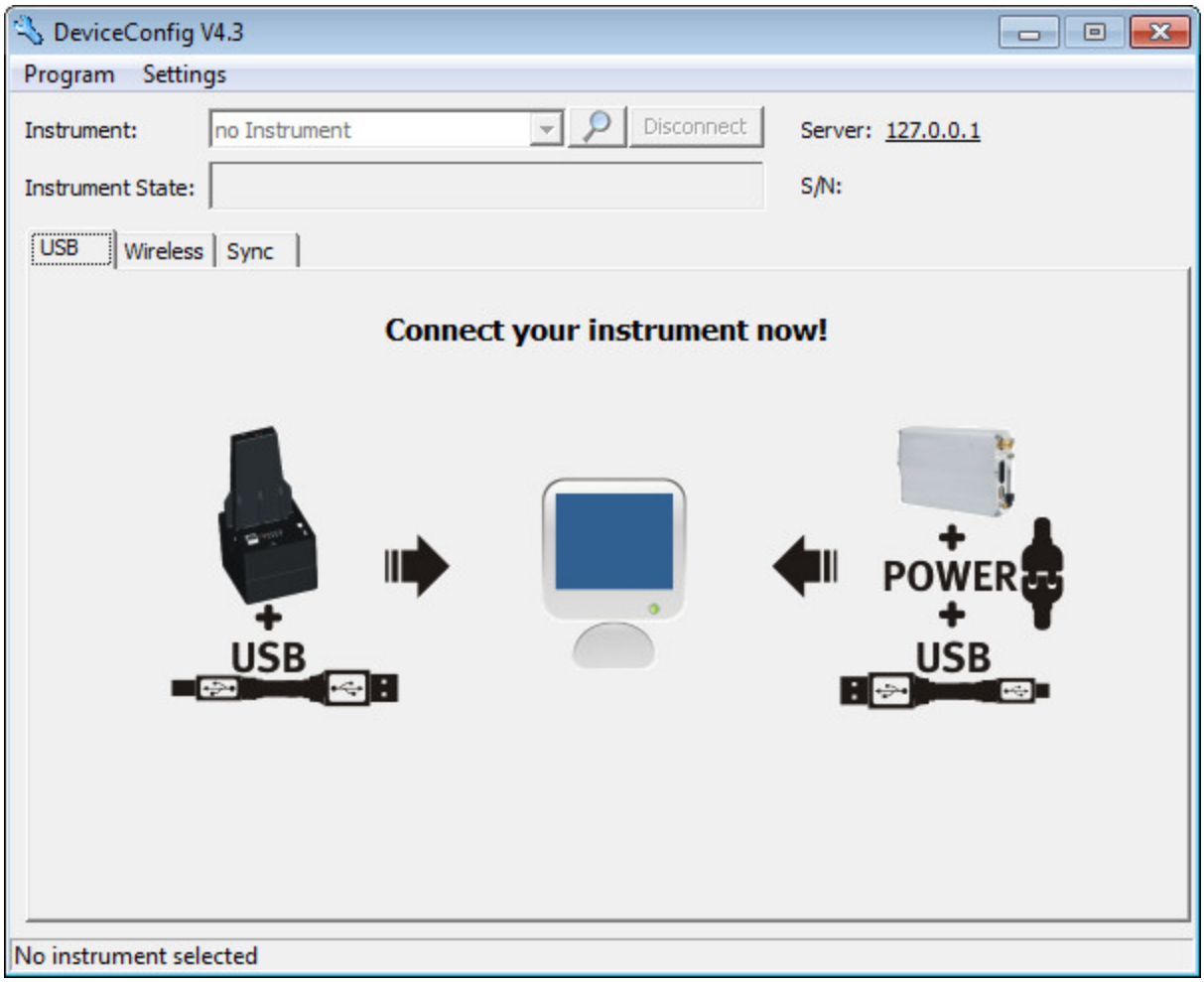
The following basic equipment is required:

- A constant current source with an accuracy of more than 15 bit
- A computer for the configuration program DeviceConfig

11.6.3 Calibration process

> ***Note:*** *All of the screenshots show version 4.6 of the DeviceConfig configuration program. The newer versions may include minor changes to the appearance of the program.*

1. Start the DeviceConfig configuration program. It is available for download in the service area of your myDatanet server (see "myDatanet Server Manual " 805002). Installation instructions are included in the user manual for the DeviceConfig ("myDatanetDeviceConfig Manual " 805004).



DeviceConfig

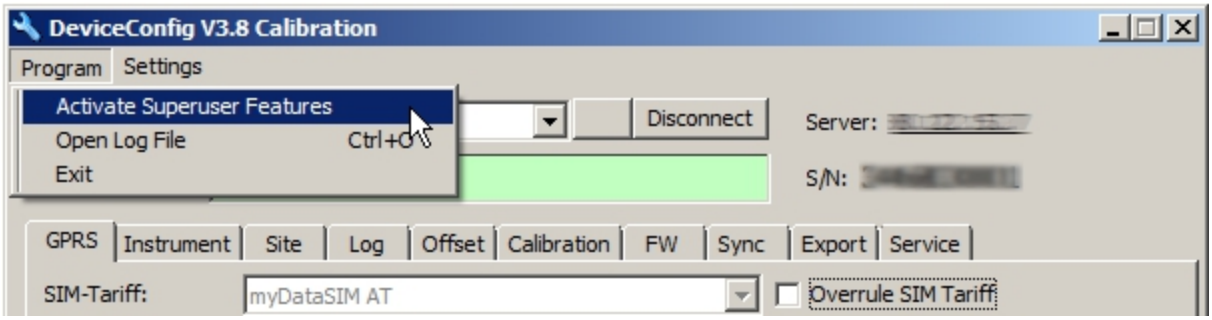
2. Remove the protective armour and disconnect the device from the rechargeable battery pack (see "Replacing the rechargeable battery or battery pack" on page 111) to expose the USB interface (see "Overview" on page 16).

3. Connect the myDatalog4 to the PC using the cable USB cable USB-A/USB-B 1,5m (206.601) supplied. The driver will need to be installed, if the device is being connected to the PC for the first time. From Windows Vista onwards, this will complete automatically. Instructions on installing the driver on older versions of Windows are included in the user manual for the DeviceConfig ("myDatanetDeviceConfig Manual " 805004).

4. The calibration must only be completed by a restricted group of people. A password is therefore required. For this purpose, select "Program -› Activate Superuser Features" and enter the password provided by the administrator of your myDatanet server in the dialogue window that appears.

Note: *Additional tabs will be displayed within the configuration program depending on the level of the*

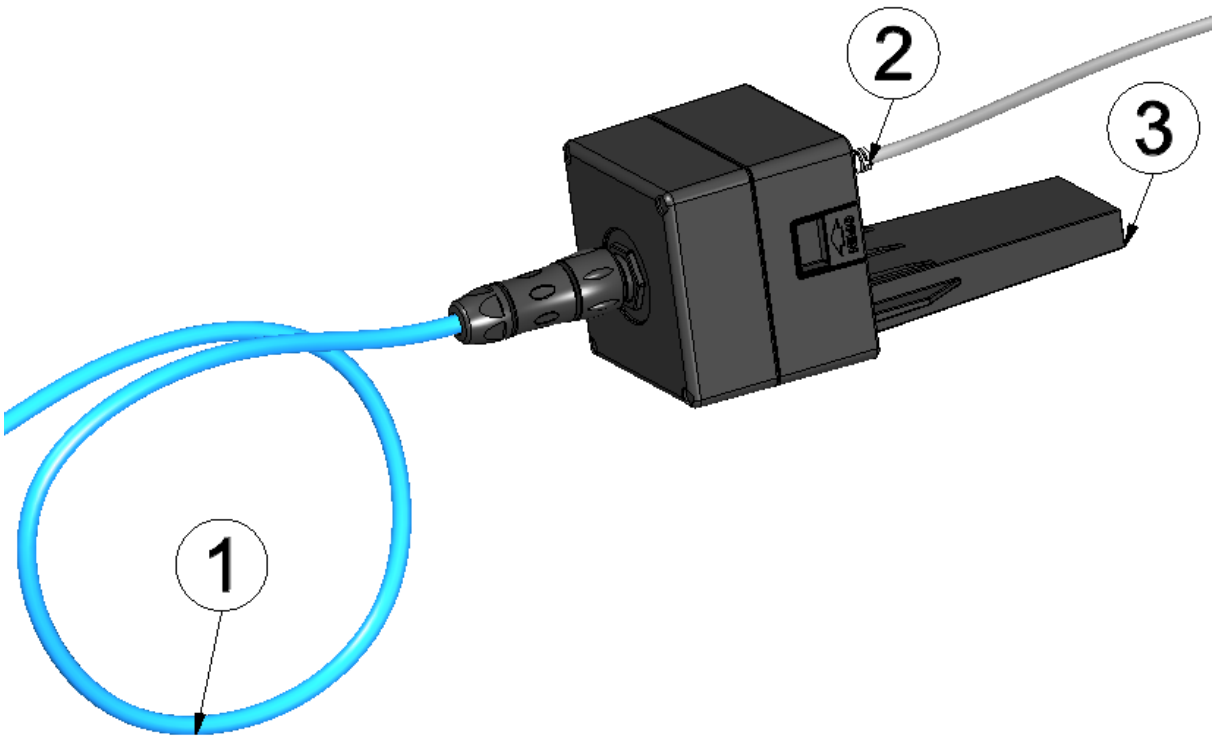
password.



Screenshot following input of the password including additional tabs

5. Select the "Calibration" tab (see "Screenshot following input of the password including additional tabs" on page 122) and wait for the warmup time to elapse.

6. Connect the myDatalog4 to your constant current source. You can use the Connection cable 7-pins for sensors 2,8m (206.602) or Cable connector 7-pins for myDatalogMobile (206.654) available as accessories for this purpose. The pin assignment of the sensor connector or the Connection cable 7-pins for sensors 2,8m (206.602) is detailed in chapter "Connecting the sensors" on page 38.

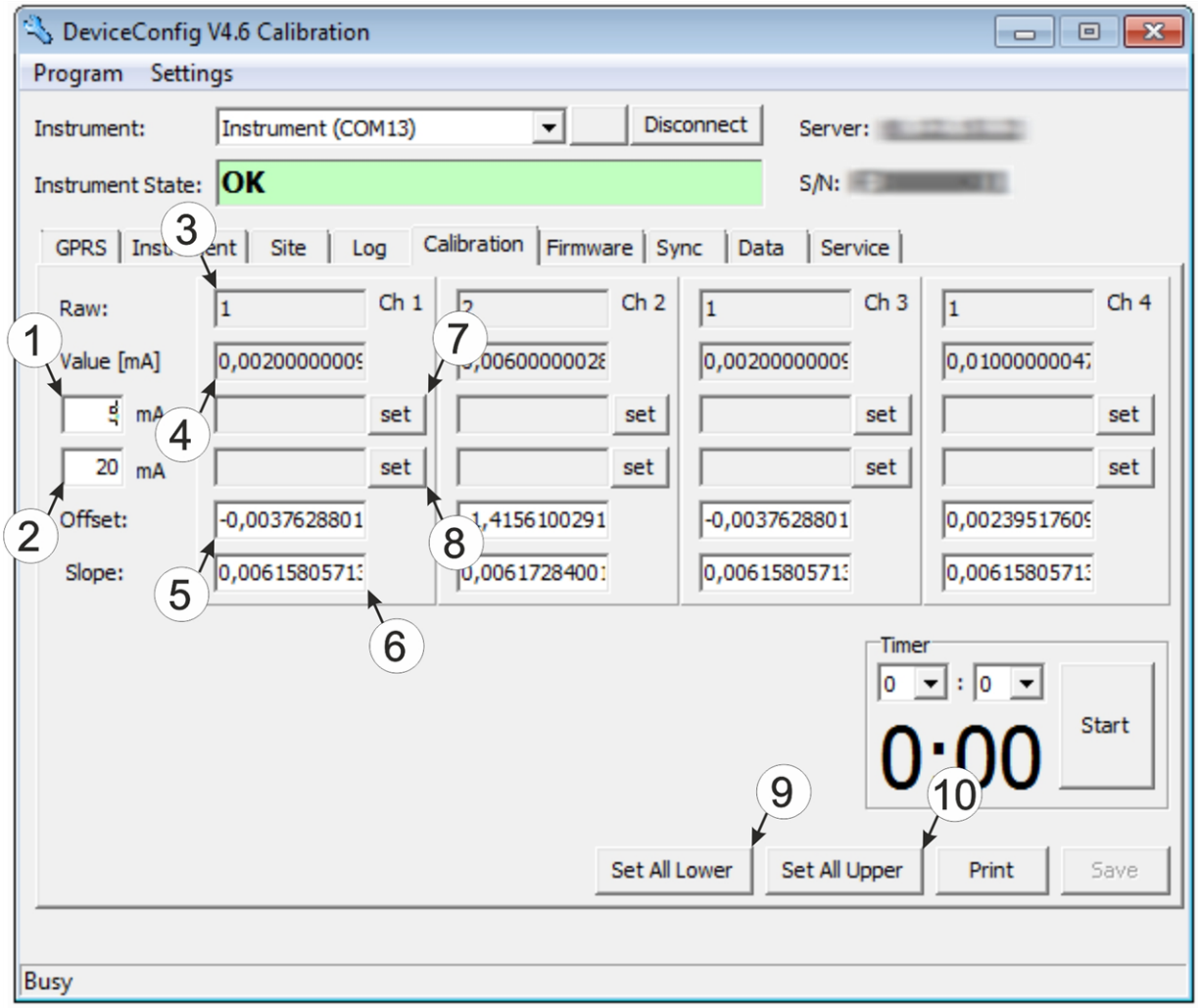


myDatalog4 with connected USB and sensor cable

1 Connection cable 7-pins for sensors 2,8m (206.602) connection to a constant current source	**3** myDatalog4
2 USB cable USB-A/USB-B 1,5m (206.601) connection cable to the PC	

7. Set your current source to the value that you want to use for the lower reference point and wait 3-5 seconds until the value displayed by the DeviceConfig has stabilised. Ensure that the required value is entered for the lower reference point before you press the button to adopt the lower reference point for the relevant universal input. You can also use the "Set all lower" button to set the lower reference points for both of the universal inputs at the same time. However, each of the universal inputs requires its own current source for this purpose. The current sources must all be set to the same value during this process.

   Note: *The values for both of the reference points can be selected freely. However, it is recommended to use a value in the range of 5 mA for the lower reference point and a value in the range of 20 mA for the upper reference point.*



"Calibration" tab

1	Lower reference point (target value in mA)	6	Calculated slope
2	Upper reference point (target value in mA)	7	Button for adopting the lower reference point for universal input 1
3	Raw value	8	Button for adopting the upper reference point for universal input 1
4	Rescaled raw value in mA (calculated with the currently valid values for the offset and slope)	9	Button for adopting the lower reference point for both universal inputs
5	Calculated offset	10	Button for adopting the upper reference point for both universal inputs

8. Set your current source to the value that you want to use for the upper reference point and wait 3-5 seconds until the value displayed by the DeviceConfig has stabilised. Ensure that the required value is entered for the upper reference point before you press the button to adopt the upper reference point for the relevant universal input (see ""Calibration" tab " on page 124). You can also use the "Set all upper" button to set the upper reference points for both of

the universal inputs at the same time. However, each of the universal inputs requires its own current source for this purpose. The current sources must all be set to the same value during this process.

9. Press the "Save" button to transfer the calculated offset and slope values to the myDatalog4 (see ""Calibration" tab " on page 124).

10. The "Print" button is used to generate the calibration protocol that must always be created to ensure traceability. After pressing the "Print" button, a dialogue window will appear in which additional information can be added. The report is printed once this window is closed by selecting "OK". The standard printer is always used for this process without any further queries. A PDF writer can also be used.

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Chapter 12 Removal/disposal

Dispose of the device in accordance with the locally valid environmental regulations for electronic products.

Accu and/or battery packs must not remain connected to the myDatalog4 after discharging. Ensure that accu and battery packs are disposed of in line with environmental requirements.

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Chapter 13 Troubleshooting and repair

13.1 General problems

Problem	Cause/solution
Device does not respond (status LED always off)	• Fully discharged rechargeable battery and battery packs.
Communication problems	• Evaluate the status LED blink code (see "Status LED" on page 58). • Load the device log from the myDatalog4 or the myDatanet server and use DeviceConfig for the evaluation (see "Evaluating the device log" on page 137). • The rechargeable battery or battery pack capacity is virtually depleted.
Not all or no data is available on the server.	• The connection was interrupted during transmission, which is indicated by a time-out entry in the connection list (see "myDatanet Server Manual " 805002). Solution: Initiate a ALOHA transmission or wait for the next cyclical transfer. • The assignment of the device and site is not correct (see "Site" on page 59).
The data at the universal input is not plausible.	• Check the cable connections (see "Connecting the sensors" on page 38). • Check whether the universal input configuration matches the sensor output signal (see "Measurement channels" on page 59).
Alarm state of a measurement value was not detected.	Increase the record interval (attention: This will increase the required data volume).
Alarm state was not transferred although the data is present.	• Check the alarm settings of the measurement channel. • The connection was interrupted during transmission, which is indicated by a time-out entry in the connection list (see "myDatanet Server Manual " 805002). Solution: Initiate a ALOHA transmission or wait for the next cyclical transfer.
Alarm message was not sent although the alarm was signalled.	• Check the settings of the alarm schedule (see "myDatanet Server Manual " 805002). • Check the address data of the alarm schedule (see "myDatanet Server Manual " 805002).

13.2 Log entries and error codes

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1011	BSL RESET	---	---	Rest of the device so that the boot loader can activate the new main controller software
1020	ERROR SOD	##	---	Internal system error There may be a hardware problem if this error is contained in the device log several times with the same parameter code. Contact the manufacturer in this case (see "Contact information" on page 145).
1030	LOG ENTRY DELETED	##	---	Log entries have been deleted (e.g. by changing the system time). The parameter specifies the number of deleted entries.
1040	RECORD DELETED	##	---	Entries from the data area have been deleted (e.g. by changing the system time). The parameter specifies the number of deleted entries.
1145	ALARM ENTRY DELETED	##	---	Entries from the alarm list have been deleted (e.g. by changing the system time). The parameter specifies the number of deleted entries.

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1160	FILE INTEGRITY	0	DATA_FILE	While searching for the required data record in the data memory area, it was determined that the data is not sorted in ascending order.
		1	DATA_FILE_2	Reserved for extensions
		2	LOG_FILE	While searching for the required data record in the log memory, it was determined that the data is not sorted in ascending order.
		10	DATA_FILE	When transferring the data to the server, it was determined that the data in the data memory area is not sorted in ascending order.
		11	DATA_FILE_2	Reserved for extensions
		12	LOG_FILE	When transferring the data to the server, it was determined that the data in the log memory is not sorted in ascending order.
1170	EXT FLASH DEF	##	---	Internal system error There may be a hardware problem if this error is contained in the device log several times with the same parameter code. Contact the manufacturer in this case (see "Contact information" on page 145).
1190	DP INVALID	##	---	
1200	MODEM ERROR	##		Modem error (see "Modem error" on page 134)
1212	ERROR MODEM IRREGULAR OFF	0	---	The modem is switched off unexpectedly while it is in the "Disconnect" status.
		1	---	The modem is switched off unexpectedly while it is in the "Connected" status.
		2	---	The modem is switched off unexpectedly while it is in the "Wait for disconnect" status.
1222	MODEM RESET	---	---	The modem has been reset
1224	MODEM SIM RESET	---	---	PowerOFF/PowerON cycle completed for the modem

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1250	MODEM TO ON	1	---	Timeout when trying to initialise the GPRS modem
		2	---	Timeout during the second attempt to initialise the GPRS modem
1251	MODEM TO INIT	---	---	Timeout when changing the GPRS modem from the "Not initialised" to the "Not connected" status
1252	MODEM TO CON	---	---	Timeout when changing the GPRS modem from the "Not connected" to the "Connected" status
1253	MODEM TO DISC	---	---	Timeout in the "Connected" GPRS modem status
1254	MODEM TO OFF	---	---	Timeout while waiting for the GPRS modem to switch off
1260	MODEM FW ERROR	##		Modem error during the firmware download (see "Modem error" on page 134)
1261	MODEM FW TO	---	---	Timeout during the firmware download
1271	MODEM RST OK	---	---	Modem reset was completed successfully.
1272	MODEM RST NOT OK	---	---	Modem reset was not completed successfully. PowerOFF/PowerON modem cycle required.
1280	MODEM UNKNOWN TASK STATE	---	---	Internal system error There may be a hardware problem if this error is contained in the device log. Contact the manufacturer in this case (see "Contact information" on page 145).
1290	COM UNKNOWN TASK STATE	---	---	Internal system error There may be a hardware problem if this error is contained in the device log. Contact the manufacturer in this case (see "Contact information" on page 145).
1400	MEASURE UNKNOWN MODE	---	---	
1401	MEASURE UNKNOWN STATE	---	---	
1402	MEASURE TO	---	---	Timeout when generating the measurement value

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1600 (1/2)	STATE (1/2)	1	OK	Last connection OK
		2	TRANSMISSION ERROR	Last transmission faulty Try again later
		3	MEASUREMENT ERROR	Last measurement faulty • Check the configuration. • Check the connection between the device and sensor.
		4	HOLD	Standby (GPRS ON, measurement OFF) If the ALOHA transmission mode is initiated, the myDatalog4 switches back into "RUN" mode (GPRS ON, measurement ON).
		5	TRANSPORT	Transport lock (GPRS OFF, measurement OFF) see "Standby"
		6	OFFLINE	Offline (GPRS OFF, measurement ON) see "Standby"
1600 (2/2)	STATE (2/2)	7	NO NET (NET LOCK)	Netlock/no matching provider • Try to improve the position of the antenna. • Check whether the device is in the coverage area (www.microtronics.at/footprint). • Lift the network block (see "myDatanetDeviceConfig Manual " 805004)
		8	NO NET	No GSM network • Improve the position of the antenna • Try again later
		10	GPRS ERROR	No GPRS connection Try to improve the position of the antenna.
		11	IP ERROR	No myDatanet server available • Check whether port 51241 is enabled on the myDatanet server. • Try again later
		12	SIM CARD ERROR	Faulty SIM chip Contact support.

13.2.1 Modem error

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
GPRS error (1/2)				
1200	BEARER LINE BUSY	-993	---	Line busy Try again later
	BEARER NO ANSWER	-992	---	No answer • Try again later • Check whether the device is in the coverage area (www.microtronics.at/footprint).
	BEARER NO CARRIER	-991	---	No carrier • Try again later • Check whether the device is in the coverage area (www.microtronics.at/footprint).
	BEARER GPRS FAILED	-988	---	GPRS setup failure • Try to improve the position of the antenna • Check whether the device is in the coverage area (www.microtronics.at/footprint).
	BEARER PPP LCP FAILED	-987	---	Error when negotiating the LCP Internal error
	BEARER PPP AUTH FAILED	-986	---	Error occurred during PPP authentication Internal error
	BEARER PPP IPCP FAILED	-985	---	Error when negotiating the IPCP Internal error
	BEARER PPP LINK FAILED	-984	---	PPP receiver does not react to echo request Internal error
	BEARER PPP TERM REQ	-983	---	PPP session terminated by the receiver. Internal error

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
GPRS error (2/2)				
	BEARER CALL REFUSED	-982	---	Incoming call refused Try again later
	BEARER UNKNOWN	-981	---	Try again later
Error when establishing the GPRS connection				
1200	BEARER BAD HDL	-980	---	Invalid handling Internal error
	BEARER BAD STATE	-979	---	The carrier was not stopped. Internal error
	BEARER DEV	-978	---	Error occurred during link layer initialisation Internal error
	BEARER GPRS START UNKNOWN	-977	---	Internal error
Error when disconnecting the GPRS connection				
1200	BEARER GPRS STOP BAD HDL	-976	---	Invalid handling Internal error
	BEARER GPRS STOP UNKNOWN	-975	---	Internal error
1200	NETLOCK FAILURE	-970	---	Error when selecting the network • Check whether the device is in the coverage area (www.microtronics.at/footprint). • Check the settings for the netlock or remove the netlock

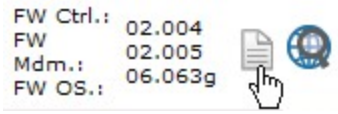
Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
1200	BAND SEL FAILED	-969	---	A network could not be found on the GSM900/1800 or on the GSM85071900 band. • Try to improve the position of the antenna. • Check whether the device is in the coverage area (www.microtronics.at/footprint).
TCP channel error (1/2)				
1200	CHANNEL ABORTED	-965	---	An attempt is being made to write to/read a TCP client that is no longer available. Try again later
	CHANNEL CSTATE	-964	---	The channel is not in the "WIP_CSTATE_ READY" state. Try again later
	CHANNEL NOT SUPPORTED	-963	---	The option is not supported by the channel. Try again later
	CHANNEL OUT OF RANGE	-962	---	The optional value is outside the permissible range. Try again later
	CHANNEL MEMORY	-961	---	Internal error
	CHANNEL INTERNAL	-960	---	Internal error
	CHANNEL INVALID	-959	---	Invalid option or parameter Internal error
	TCP DNS FAILURE	-958	---	The name could not be resolved in an IP address. Internal error
	CHANNEL RESOURCES	-957	---	There are no further TCP buffers available. Try again later
	CHANNEL PORT IN USE	-956	---	TCP server port is already being used. Try again later

Log entry		Parameter		Description
Code	Plain text	Code	Plain text	
TCP channel error (2/2)				
1200	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
	CHANNEL UNKNOWN	-950	---	Internal error

13.3 Evaluating the device log

13.3.1 Evaluating the device log on the myDatanet server

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



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

13.3.2 Evaluating the device log using DeviceConfig

The DeviceConfig program can be used to read all of the stored log entries, including those that have not yet been transferred to the myDatanet server, directly from the myDatalog4 via the USB interface.

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

Chapter 14 Spare parts and accessories

14.1 Assembly sets

Description	Quantity	Order number
MDN wall mounting	1	206.321
Niro shackle	1	206.325

14.2 Antennas

Description	Quantity	Order number
Antenna 900 FME -F	1	206.801
Extension cable for antenna FME-F/FME-M 5m	1	206.805
Antenna 1800 FME-F	1	206.809
Flat antenna Smart Disc FME-F 2,5m	1	206.814
Flat antenna Smart Disc US FME-F 2,5m	1	206.817
Antenna adapter FME-F/SMA-F	1	206.822
Flat antenna Smart Disc Plus FME-F 2,5m	1	206.824
Extension cable for antenna SMA-F/FME-F 1m	1	206.825
Portable Antenne Multi Band FME-F	1	206.826

14.3 Rechargeable battery and battery packs

Description	Quantity	Order number
Battery packs		
BP457 battery [1)] (Li-SOCl2; 39Ah; -20...+50°C operating temperature)	1	206.702
BP434 battery (Li-SOCl2 ; 26Ah; -20...+50°C operating temperature)	1	206.708
Rechargeable battery packs		
AP424D rechargeable battery (Li-ion; 17,6Ah; -20...+50°C operating, 0 ...+40°C charging temperature)	1	206.704

[1)] It is a phase-out model. Orders will be accepted until 31.12.2014 .

14.4 Charging device

Description	Quantity	Order number
Charger AC15	1	206.701
Snap-on primary plug EU for chargers/power supplies	1	300027
Snap-on primary plug UK for chargers/power suppliest	1	300028
Snap-on primary plug US for chargers/power supplies	1	300029
Snap-on primary plug AUS for chargers/power supplies	1	300030

14.5 Cable

Description	Quantity	Order number
USB cable USB-A/USB-B 1,5m	1	206.601
Connection cable 7-pins for sensors 2,8m	1	206.602
Cable connector 7-pins for myDatalogMobile	1	206.654
Splitter cable for myDatalog Mobile	1	206.679
Pressure compensation tube	1	300131
Clamping tube	1	300256

14.6 Other accessories

Description	Quantity	Order number
MDN Protection casing	1	206.320
MDN Magnet	1	206.803
myDatanet service kit	1	206.324
MDN Anti-theft device	1	206.322

Chapter 15 Document history

Rev.	Date	Changes
01	08.07.2014	First version

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Chapter 16 Glossary

ALOHA

Connection mode that is specially designed for commissioning. The device maintains a connection to the server for a configurable amount of time and takes a measurement every 3 seconds. During this process, only the internal measurement values (GSM level, voltages, etc.) and the values from the universal inputs (if available) are generated. The determined measurement values are not saved but are just sent to the server for display purposes.

Footprint

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

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.

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Chapter 17 Contact information

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