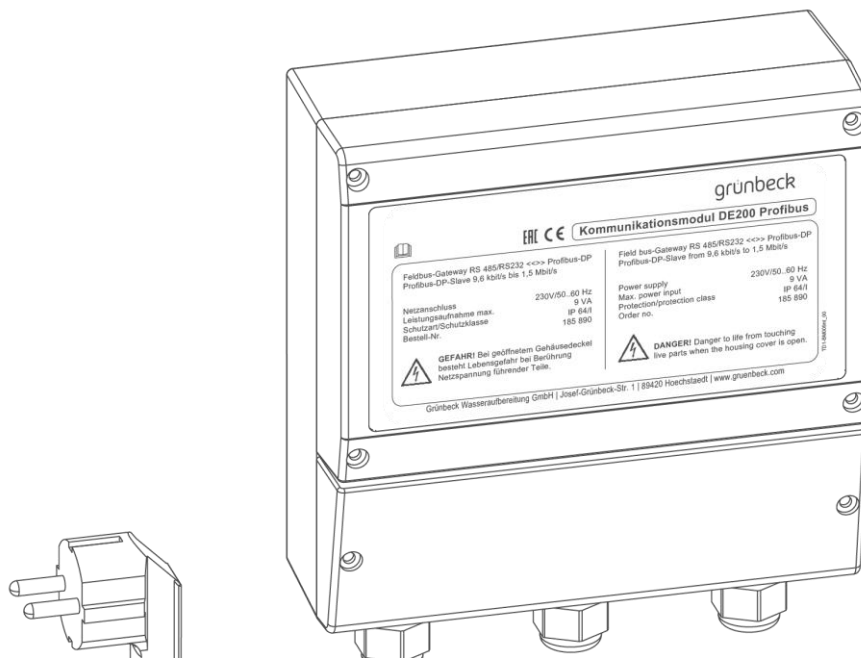


We understand water.



Accessories | Communication module DE200 Profibus for Delta-p as of software V3.04

Operation manual

grünbeck

**General Contact
Germany**

International Sales
Phone +49 9074 41-145

Technical Service
Phone +49 9074 41-333
Fax +49 9074 41-120

Availability
Monday to Thursday
7:00 am - 6:00 pm

Friday
7:00 am - 4:00 pm

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We reserve the right to technical modifications.
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Original operation manual

Edition of the operation manual: November 2019
Order number: 185 958_054_en

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1 About this manual

1.1 Other applicable documents

The following documents shall be considered as applicable documents for communication module DE200 Profibus Delta-p:

- For Grünbeck's technical service/authorised service company:
Technical service manual Water softener Delta-p
Order no.: 185 951

1.2 Target group

This manual is intended for qualified specialists and owners/operators/operating companies.

1.3 Storage of documents

Keep this manual and all other applicable documents, so that they are available when needed.

1.4 Symbols used



This symbol identifies instructions that you must comply with for your own personal safety as well as to avoid damage to property.



This symbol identifies instructions that you must comply with in order to avoid damage to property.



This symbol identifies important information about the product or its handling.



This symbol identifies work that must be carried out by qualified specialists only. In Germany, the installation company must be registered in an installation directory of a water supply company acc. to §12(2) AVB Wasser V (German Ordinance on General Conditions for the Supply of Water).



This symbol identifies work that must only be carried out by qualified electronics experts according to the VDE guidelines or according to the guidelines of similar local institutions.

1.5 Typographical conventions

The typographical conventions below are used in this manual:

| Description | Depiction |
|---|--|
| Instruction Single-step instruction or chronological sequence of actions does not matter | ▶ Action |
| Instruction Multi-step instruction and chronological sequence of actions is important | <ol style="list-style-type: none"> 1. First action <ol style="list-style-type: none"> a first step b second step 2. Second action |
| Result following an instruction | » Result |
| Lists | <ul style="list-style-type: none"> • Listed item <ul style="list-style-type: none"> • Listed sub-item |
| Menu paths | Status level>Menu level>Submenu |
| Display texts | Display text |
| Control elements | Button/key |

1.6 Validity of the manual

This manual applies to the products below:

- Communication module DE200 Profibus for Delta-p/Delta-p-I

1.7 Type plate

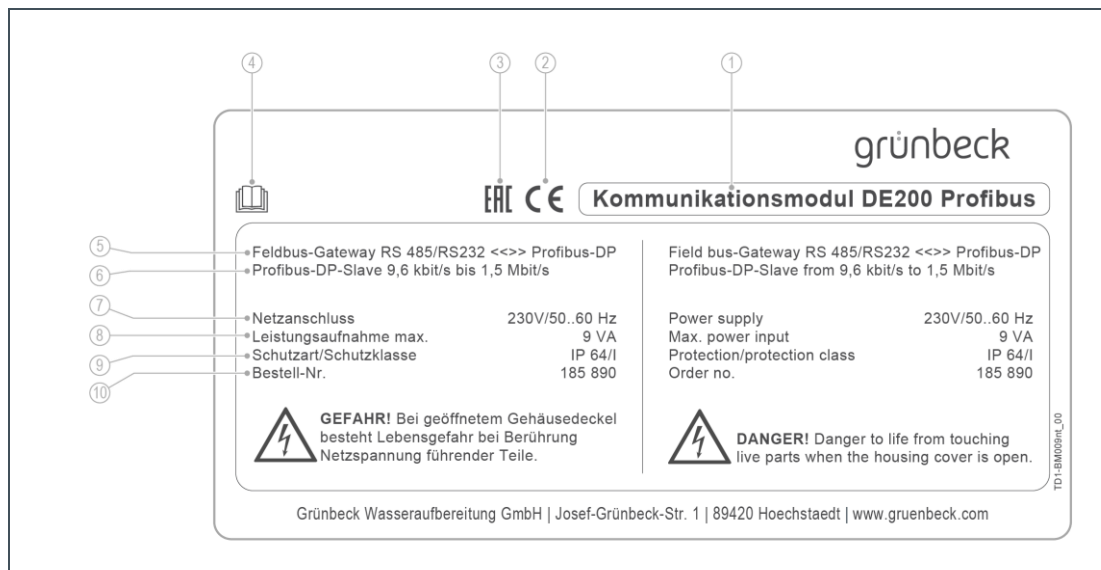
The type plate is located on the front of the housing.

For the serial number (SN), please refer to the middle of the circuit board in the housing.

The software version is indicated on the lower right side of the circuit board.

Please specify the data shown on the type plate in order to speed up the processing of your inquiries or orders.

- Therefore, enter the necessary information in the table below to have it readily available whenever necessary.



| Item | Designation | Item | Designation |
|------|--------------------------------|------|---------------------------|
| 1 | Product designation | 2 | CE mark |
| 3 | EAC mark | 4 | Obey the operation manual |
| 5 | Fieldbus gateway RS 485/RS 232 | 6 | Profibus DP slave |
| 7 | Rated voltage range/frequency | 8 | Max. power input |
| 9 | Protection/protection class | 10 | Order no. |

- Product designation: Communication module DE200 Profibus
- Order no.: 185 890
- Serial no.: _____
- Software version: _____

2 Safety

2.1 Safety measures

- Carefully read this manual before operating your product.
- Only operate the product if all components are installed properly.
- Only have persons working on your product that have read and understood the present manual and that are qualified to do such work due to their vocational training.
- You must never remove, bridge, or otherwise tamper with safety equipment.
- Do not operate any products which have a damaged mains cable. This can lead to injuries due to electric shock.
- Have damaged mains cables replaced without delay.
- Mains cables must only be replaced by the manufacturer or authorised personnel.

2.2 Technical safety instructions

This manual contains instructions that you must comply with for your own personal safety as well as to avoid damage to property. The instructions are highlighted by a warning triangle and have the following structure:



CAUTION: Type and source of danger.

- Possible consequences
 - ▶ Preventive measures
-

The signal words below are defined subject to the degree of danger and might be used in the present document:

- **DANGER** means that death or serious injury will result.
- **WARNING** means that death or serious injury can result.
- **CAUTION** means that minor bodily injuries can occur.
- **NOTE** (without warning triangle) means that damage to property can occur.

2.3 Regulations

When installing and starting up the product, amongst others, comply with the regulations and guidelines below:

- Statutory regulations on environmental protection
- Provisions of the employers' liability insurance companies

2.4 Responsibilities of the qualified specialist

Comply with the instructions below to ensure the proper and safe functioning of the product:

- Only perform activities described in this manual.
- Perform all activities in accordance with all applicable standards and regulations.
- Brief the owner/operator/operating company on the function and operation of the product.
- Instruct the owner/operator/operating company on the maintenance of the product.
- Advise the owner/operator/operating company of possible hazards that can arise during the operation of the product.

2.5 Responsibilities of the owner/operator/operating company

Comply with the instructions below to ensure the proper and safe functioning of the product:

- Arrange for a qualified specialist to carry out installation, start-up and maintenance.
- Have the product explained to you by a qualified specialist.
- Only perform activities described in this manual.
- Do not carry out any activities that are explicitly designated for a qualified specialist.
- Only use this product as intended.
- Make sure that the required inspection and maintenance work is carried out.
- Keep this manual.

2.6 Transport and storage

Transport

- ▶ Transport the product in its original packaging.

Storage

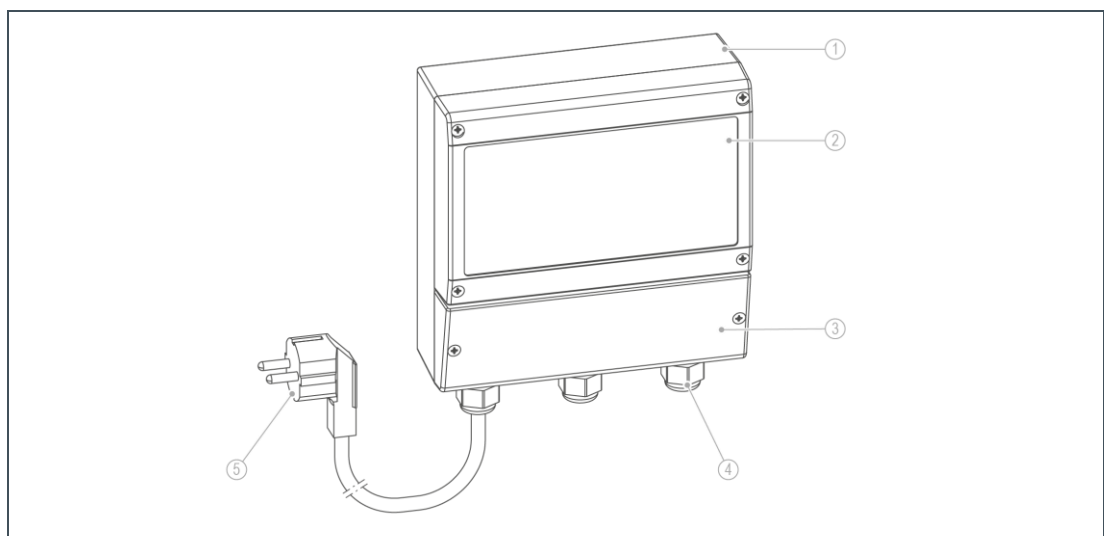
- ▶ Protect the product from the impacts below when storing it:
 - Damp, moisture, environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours

3 Product description

3.1 Intended use

- The communication module DE200 Profibus for Delta-p/Delta-p-I transfers operating and fault signals to the building management system.
- The product is designed exclusively for use in industrial and commercial applications.

3.2 Product components



| Item | Description | Item | Description |
|------|-----------------------------|------|-------------|
| 1 | Housing | 2 | Housing lid |
| 3 | Lid of terminal compartment | 4 | Interface |
| 5 | Schuko mains plug | | |

3.3 Functional description

The communication module DE200 Profibus is suitable for water softeners Delta-p and Delta-p-I. The assignment of the input and output data is specified by the respective control software.

The measured values and status information indicated on the display of the control unit are available at the PROFIBUS DP interface for collection and further processing by a PROFIBUS DP master on site.

The functions "manual regeneration" and "regeneration lock" can be triggered from the Profibus side within the GENO-IONO-matic₃ (control unit of Delta-p).

4 Installation



NOTE: Incorrect settings can result in faulty operating states.

- Functional failure/faulty data transfer, system malfunctions.
- ▶ Only make the settings described in this chapter.



Settings in the technical service programming level must only be performed by Grünbeck's technical customer service/authorised service company or by authorised experts.



The work described below must only be performed by qualified electronics experts according to the VDE guidelines or according to the guidelines of similar local institutions.

4.1 Requirements for the installation site

Obey the local installation directives, general guidelines and technical specifications.

- A Schuko socket is required within a distance of approx. 1.2 m from the system. The socket outlet requires permanent power supply and must not be coupled with light switches, emergency heating switches or the like.
- The connecting cables for the data transfer (interface RS 485/RS 232 and Profibus DP) must not exceed a length of max. 10 m.
- The ambient temperature must not fall below -5 °C and not exceed +55 °C.

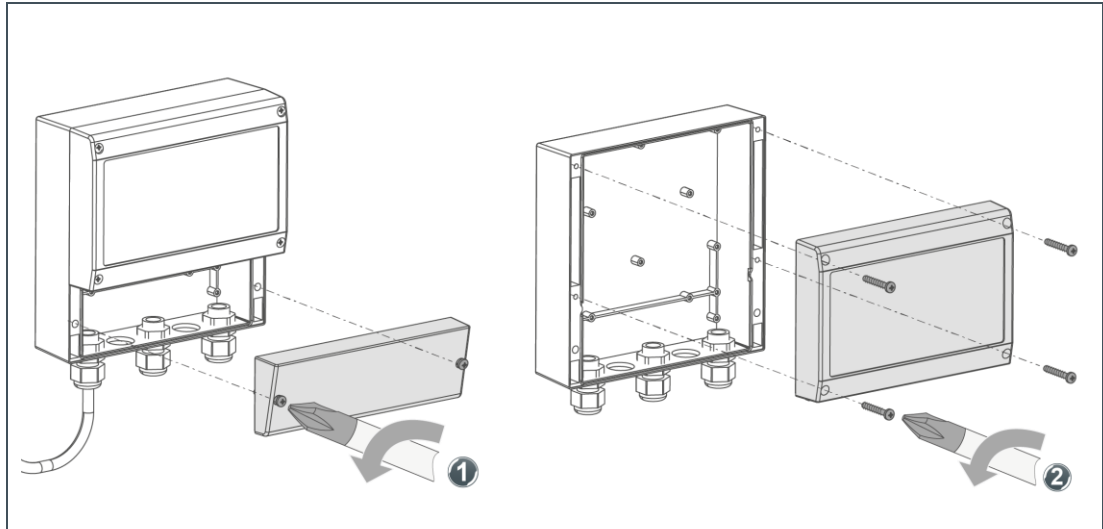
4.2 Checking the scope of supply

The components below are included in the scope of supply:

- Communication module DE200 Profibus
- Operation manual
- CD (GSD file, A list)
- ▶ Check the scope of supply for completeness and damage.

4.3 Installing the product

4.3.1 Opening the housing

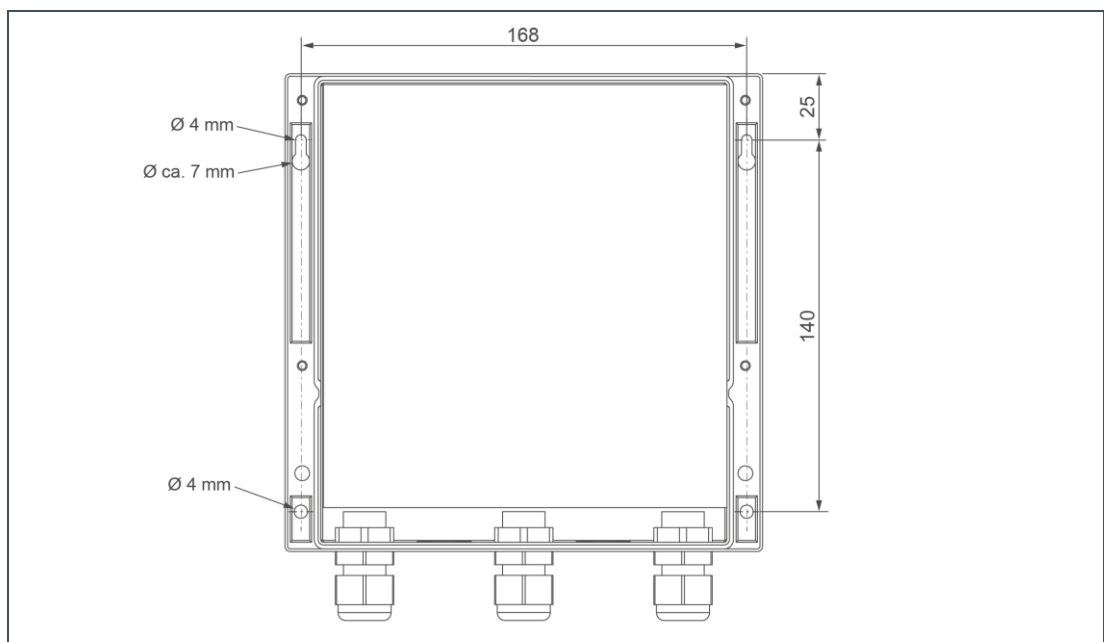


1. Open the lid of terminal compartment – loosen 2x screws.
2. Open the housing lid – loosen 4x screws.

4.3.2 Fastening the housing



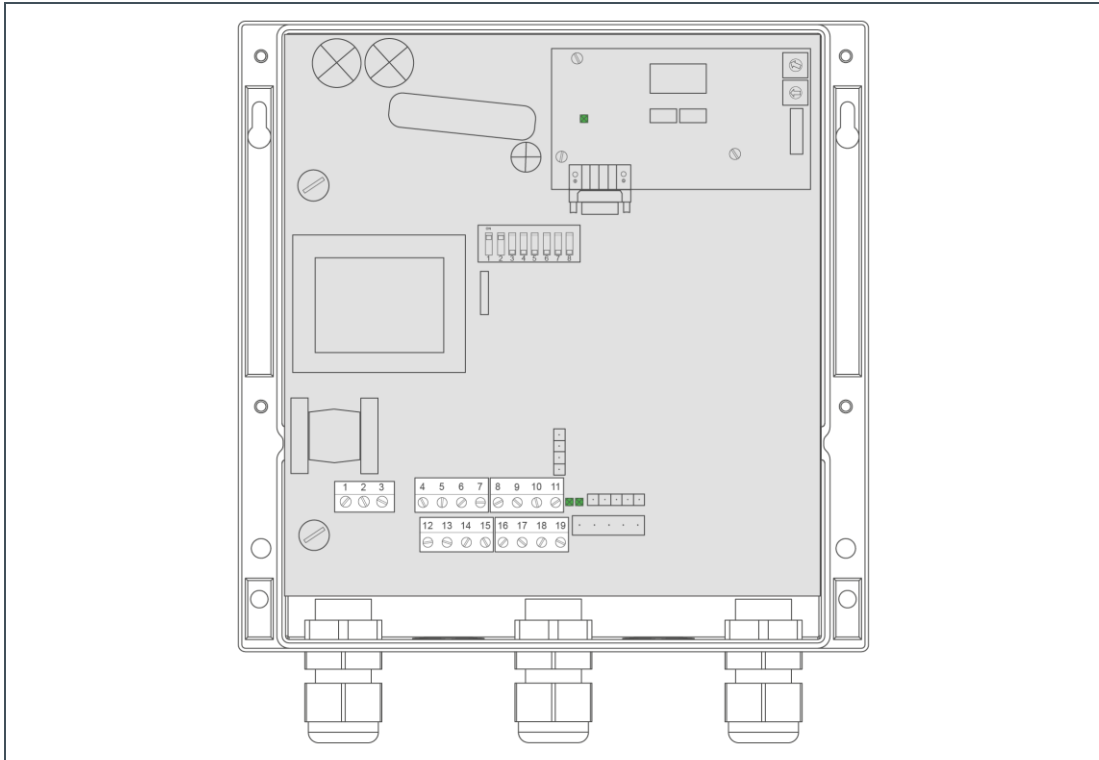
The client is responsible for firmly installing the communication module according to the wall situation on site. The fastening material is not included in the scope of supply.



1. Position the communication module near the water softener Delta-p – pay attention to the length of the cables for power supply and interfaces when doing so.
2. Fasten the housing smoothly and evenly using the fastening material provided by the client on site (aligned horizontally and vertically)

4.3.3 Electrical installation

Connection terminals

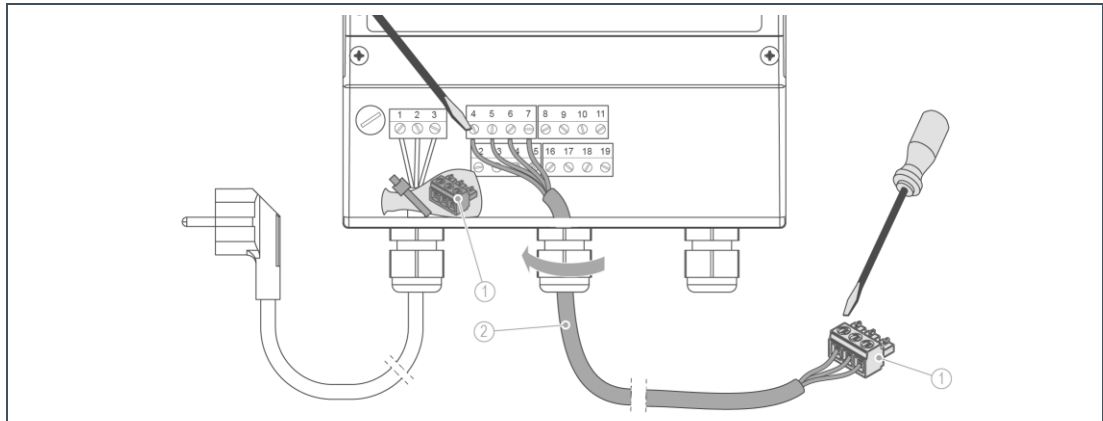


| Function | Terminal | Signal | Remarks |
|------------------|---|----------|--------------|
| Mains cable | 1 | L1 | brown |
| | 2 | N | blue |
| | 3 | PE | green/yellow |
| RS 485 interface | GENO-IONO-matic ₃ (connector on circuit board of the lid) | | |
| | 4 | Signal A | Terminal 52 |
| | 5 | Signal B | Terminal 51 |
| | 6 | Ground | Terminal 50 |
| | 7 | Shield | - |
| RS 232 interface | 8 | RX | |
| | 9 | TX | |
| | 10 | Ground | |
| | 11 | Shield | |
| | 12 – 19 | not used | |

RS 485 interface



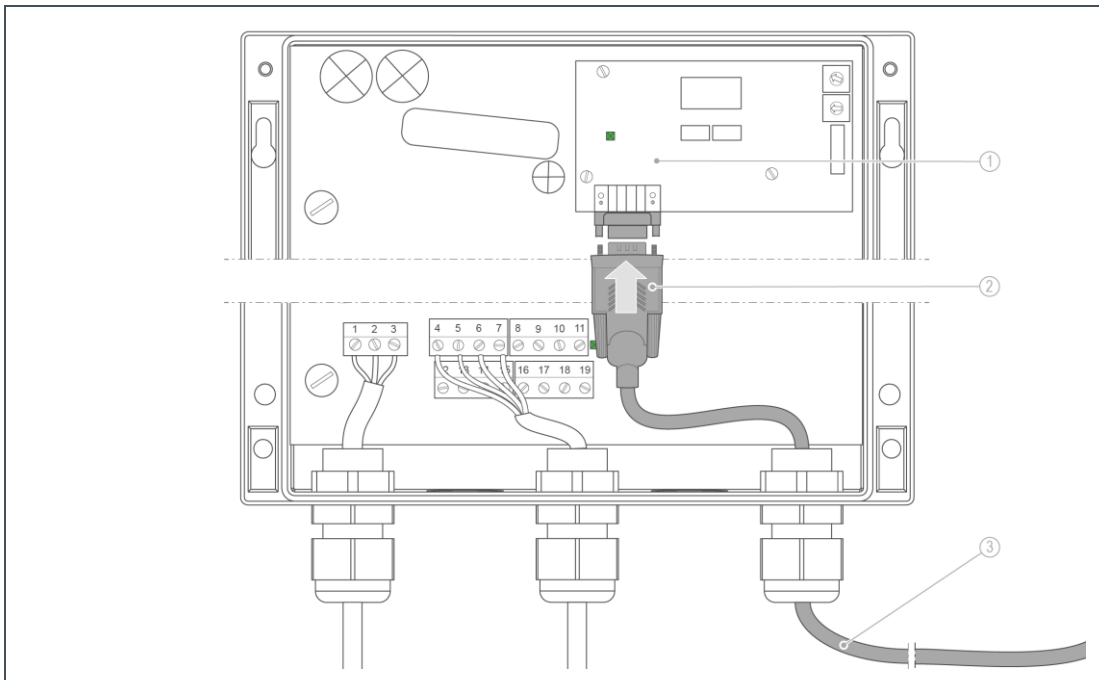
The serial connection between the “Communication module DE200 Profibus” and the GENO-IONO-matic₃ is done via the RS 485 interface or the RS 232 interface.



| Item | Designation | Item | Designation |
|------|--|------|--|
| 1 | Plug-in screw-type terminal MC1,5/3-ST-3,81, 3-pin | 2 | Connecting line to be provided by the client on site (max. 10 m) |

1. Remove the plug-in screw-type terminal from the housing – loosen the cable tie.
2. Establish a connecting line to the GENO-IONO-matic₃ on site – connect the plug-in screw-type terminal according to the terminal configuration.
3. Plug the plug-in screw-type terminal into the plug-in position of the circuit board in the lid of the GENO-IONO-matic₃.

Profibus DP interface



| Item | Designation | Item | Designation |
|------|--|------|-----------------|
| 1 | Profibus plug-in module | 2 | Sub-D connector |
| 3 | Connecting line to be provided by the client on site (max. 10 m) | | |

1. Connect the Sub-D connector to the profibus plug-in module.
2. Note the PIN configuration of the building management system on site.

| Function | Pin | Signal | Remarks |
|--------------|-----|----------|--|
| | 1 | | Not assigned |
| | 2 | | Not assigned |
| Profibus | 3 | Signal B | |
| Profibus RTS | 4 | | Send request |
| Ground | 5 | | |
| 5 V supply | 6 | | (fed by communication module DE200 Profibus) |
| | 7 | | Not assigned |
| Profibus | 8 | Signal A | |
| | 9 | | Not assigned |

3. Establish a connection line to the GENO-IONO-matic₃ on site.

5 Start-up/commissioning

5.1 Terminating resistors



WARNING: Life-threatening voltage when the housing lid is open.

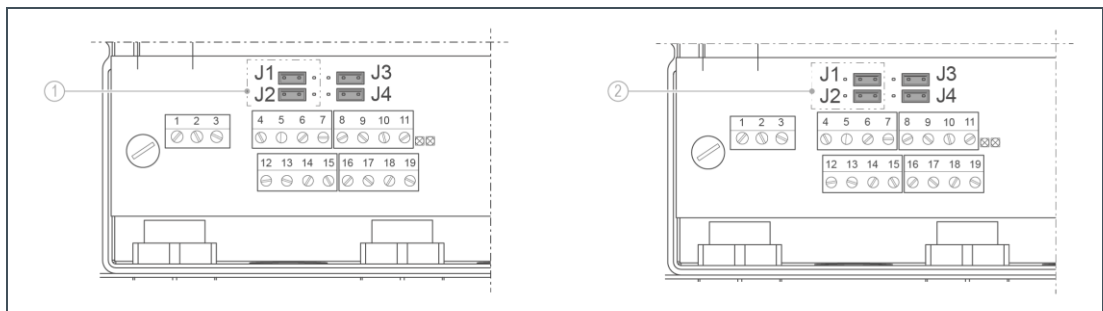
- Severe burns, cardiovascular failure, fatal electric shock
- ▶ Switch off the supply voltage before opening the housing lid.

5.1.1 Terminating resistors RS 485 interface

If the length of the line between the control unit GENO-IONO-matic₃ and the communication module DE200 Profibus is long, the terminating resistors for the COM1 interface must be activated. If the line is short, activation is not necessary.



The interface COM2 (J3 and J4) is not used. The setting of J3 and J4 is not to be taken into consideration.



| Item | Designation | Item | Designation |
|------|---------------------------------------|------|--|
| 1 | COM 1 (terminating resistors enabled) | 2 | COM 1 (terminating resistors disabled) |

1. Plug the jumpers J1 and J2 into the left position to activate the terminating resistors for the COM1 interface used.

5.1.2 Terminating resistors for the Profibus interface



The terminating resistors for the Profibus are not available on the Profibus plug-in module. In general, they are installed in the sub-D connectors.

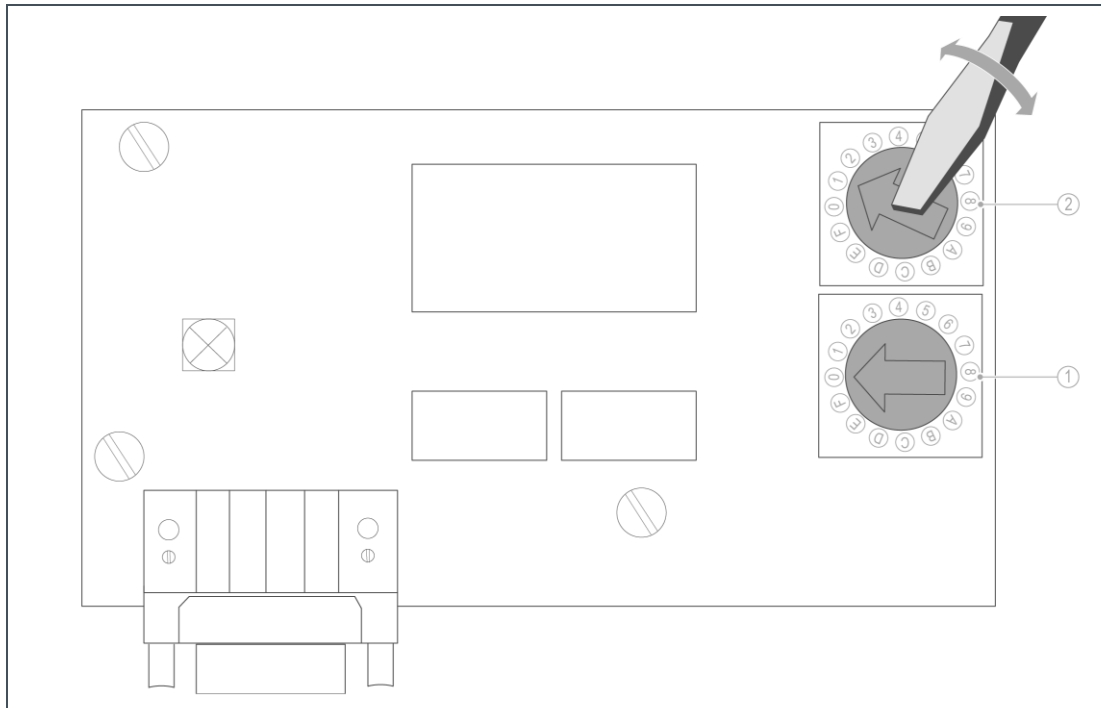
5.2 Setting the Profibus address



The Profibus address is set using two rotary switches that are located on the Profibus plug-in module.



The address is set as a hexadecimal number in the range from 01h ... FEh. Rotary switch 1 sets the higher-value and rotary switch 2 the lower-value hexadecimal digit.



| Item | Designation | Item | Designation |
|------|-----------------|------|-----------------|
| 1 | Rotary switch 1 | 2 | Rotary switch 2 |

1. Set the rotary switches using a slotted screwdriver (refer to address table).
 - » The Profibus address was set.



Data transfer and diagnostics require a power supply.

| Rotary switch 1 | Rotary switch 2 | Hexadecimal address | Decimal address |
|-----------------|-----------------|---------------------|-----------------|
| 0 | 1 | 01h | 1 |
| 0 | 2 | 02h | 2 |
| ⋮ | ⋮ | ⋮ | ⋮ |
| 0 | 9 | 09h | 9 |
| 0 | A | 0Ah | 10 |
| 0 | B | 0Bh | 11 |
| ⋮ | ⋮ | ⋮ | ⋮ |
| 0 | F | 0Fh | 15 |
| 1 | 0 | 10h | 16 |
| 1 | 1 | 11h | 17 |
| ⋮ | ⋮ | ⋮ | ⋮ |
| F | E | FEh | 254 |

5.2.1 Data transfer

The Profibus input and output data is allocated by the respective control software and is each recorded in a separate document (A list) – refer to chapter 6 “Operation”.

The A list and the GSD file are located on the CD.

The GSD file is required by the Profibus master for configuration purposes, and serves as a driver.

5.3 Activating the data transfer in the GENO-IONO-matic₃



Refer to the operation manual of the water softener Delta-p/Delta-p-I.

The data range is valid as of software V3.04 in the GENO-IONO-matic₃ (you can call up the software version via **Code 999**).

In the “Extended installer level (**Code 113**)”,

- ▶ program the parameter Index 4 to the value 1.

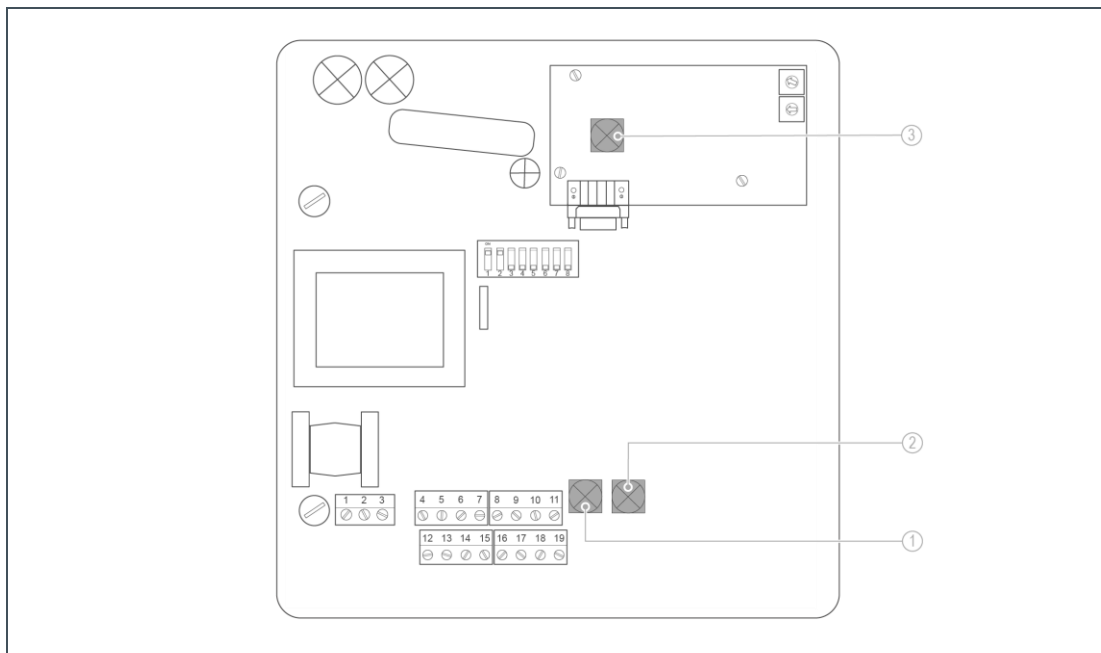
5.4 Diagnostics



WARNING: Life-threatening voltage when the housing lid is open.

- Severe burns, cardiovascular failure, fatal electric shock.
- ▶ Do not touch live components.

The communication module DE200 Profibus features 3 SMD light-emitting diodes. Via these SMD light-emitting diodes, the module's operating state can be read.

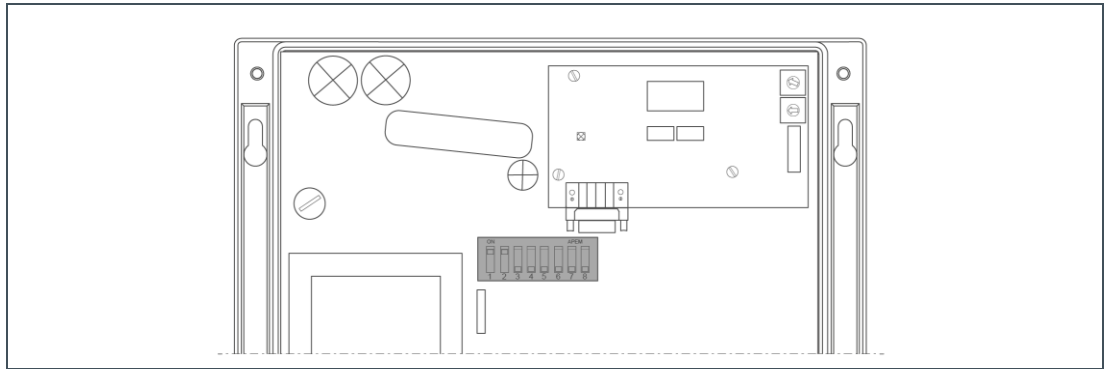


| LED | Description |
|-----|--|
| 1 | Signals connection to control unit GENO-IONO-matic ₃ Lights up when there is a connection (normal state) Flashes when there is no connection |
| 2 | Signals detection of the Profibus plug-in module Off, when the module has been detected (normal state) Flashes when the module has not been detected |
| 3 | Signals Profibus connection Lights up when there is a connection to the Profibus master (normal state) Off, when there is no connection to the Profibus master |

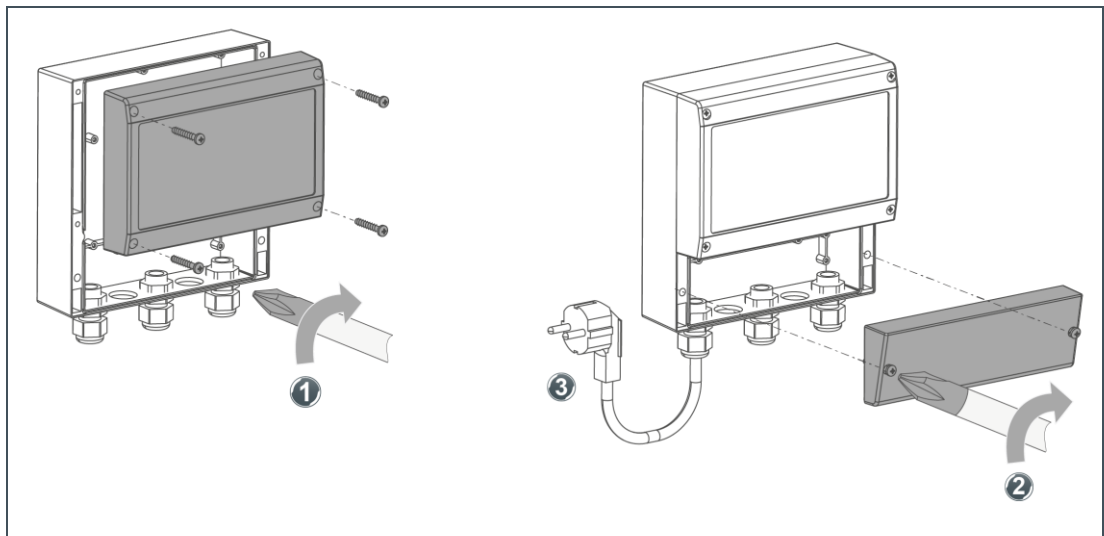
5.5 DIP switches



The DIP switches located under the Profibus plug-in module have reserved functions and must not be changed.



5.6 Closing the housing



1. Close the housing lid – tighten 4x screws.
 2. Close the lid of the terminal compartment – tighten 2x screws.
 3. Plug the mains plug into the Schuko socket.
- » Start-up is completed.

6 Operation

6.1 GENO-IONO-matic₃ Data range – Profibus (A list)

6.1.1 Data from Profibus to GENO-IONO-matic₃

| Byte | Bit | Comments |
|---------|--------|--|
| 0 Byte | Bit 0: | Manual regeneration (Exchanger* regenerates) ⁽¹⁾ |
| | Bit 1: | Regeneration lock ⁽²⁾ |
| | Bit 2: | Free |
| | Bit 3: | Free |
| | Bit 4: | Free |
| | Bit 5: | Free |
| | Bit 6: | Free |
| | Bit 7: | Free |
| 1. Byte | | Free or reserved |

⁽¹⁾ To enable the function, a status change is required

⁽²⁾ As long as the bit is set, the function is active

6.1.2 Data from GENO-IONO-matic₃ to Profibus

| Byte | Bit | Comments |
|---------|--|--|
| 0 Byte | Bit 0: | Er 0 |
| | Bit 1: | Er 1 |
| | Bit 2: | Er 2 |
| | Bit 3: | Er 3 |
| | Bit 4: | Er 4a (Chlorine current too high) |
| | Bit 5: | Er 4b (Chlorine current too low) |
| | Bit 6: | Er 6 (Code 290, Index A = F) |
| | | Er 7 (Code 290, Index A = b) |
| Bit 7: | Er 8a (Error Water meter – Exchanger 1) | |
| | | |
| 1. Byte | Bit 0: | Er 8a (Error Water meter – Exchanger 2) |
| | Bit 1: | Er 9 |
| | Bit 2: | A |

| Byte | Bit | Comments |
|-----------------------------------|--------|---|
| | Bit 3: | Er 8a (Error Water meter – Exchanger 3) |
| | Bit 4: | Er C |
| | Bit 5: | Er d |
| | Bit 6: | Reserved |
| | Bit 7: | Maintenance due |
| 2. Byte | Bit 0: | Exchanger 1 in operation |
| | Bit 1: | Exchanger 2 in operation |
| | Bit 2: | Exchanger 3 in operation |
| | Bit 3: | Regeneration running |
| | Bit 4: | Free |
| | Bit 5: | Free |
| | Bit 6: | Free |
| | Bit 7: | Free |
| 3. Byte | | Current regeneration step (0 ... 5; 0 = Standby) |
| 4. Byte / 5. Byte (MSB/LSB) | | Time since last regeneration [h] |
| 6. Byte / 7. Byte (MSB/LSB) | | Remaining duration of maintenance interval [d] |
| 8. Byte | | Residual capacity Exchanger 1 [%] |
| 9. Byte | | Residual capacity Exchanger 2 [%] |
| 10. Byte | | Residual capacity Exchanger 3 [%] |
| 11. Byte 14. Byte (MSB/ ... /LSB) | | Flow Exchanger 1 XXXX.X [m³/h] |
| 15. Byte 18. Byte (MSB/ ... /LSB) | | Flow Exchanger 2 XXXX.X [m³/h] |
| 19. Byte 22. Byte (MSB/ ... /LSB) | | Flow Exchanger 3 XXXX.X [m³/h] |
| 23. Byte 26. Byte (MSB/ ... /LSB) | | Flow Blending XXXX.X [m³/h] |
| 27. Byte 30. Byte (MSB/ ... /LSB) | | Regeneration counter (XXXXXX) |
| 31. Byte 34. Byte (MSB/ ... /LSB) | | Soft water meter XXXXXX [m³] |
| 35. Byte 60. Byte | | Free or reserved |

| Byte | Bit | Comments |
|----------|--------|------------------|
| 61. Byte | Bit 0: | Free |
| | Bit 1: | Free |
| | Bit 2: | Free |
| | Bit 3: | Free |
| | Bit 4: | Free |
| | Bit 5: | Free |
| | Bit 6: | Free |
| | Bit 7: | Communication OK |

Communication status
between
GENO-IONO-matic₃
and Profibus modules

7 Troubleshooting



Troubleshooting.

Refer to operation manual of water softener Delta-p/Delta-p-I (BA-TD3-BM001) and technical service manual of Delta-p/Delta-p-I (BA-185 951).

8 Disposal

- ▶ Obey the applicable national regulations.

8.1 Packaging

- ▶ Dispose of the packaging in an environmentally sound manner.

8.2 Product



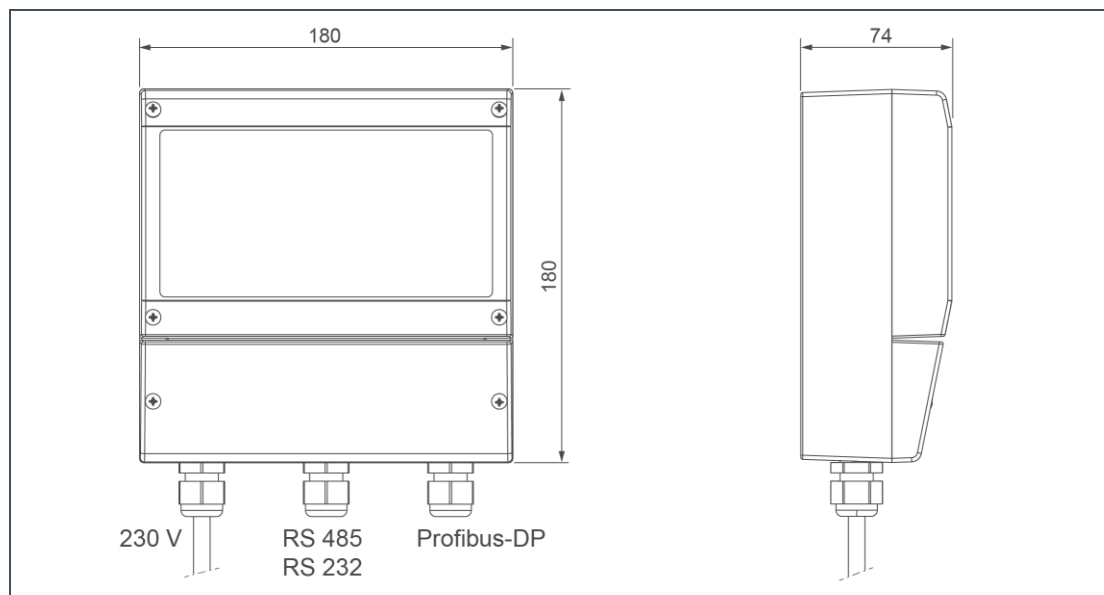
If this symbol (crossed out wheeled bin) is on the product, this product is subject to the European Directive 2012/19/EU. This means that this product and the electrical and electronic components must not be disposed of as household waste.

- ▶ Find out about the local regulations on the separate collection of electrical and electronic products.
- ▶ Make use of the collection points available to you for the disposal of your product.



For information on collection points for your product contact your municipality, the public waste management authority, an authorised body for the disposal of electrical and electronic products or your waste disposal service.

9 Technical specifications



| Dimensions and weight | | Communication module DE200 Profibus |
|--|-----------|--|
| Width x height x depth | [mm] | 180 x 180 x 74 |
| Operating weight, approx. | [kg] | 0.9 |
| Shipping weight, approx. | [kg] | 1.0 |
| Connection data | | |
| Rated voltage range | [V] | 230 |
| Rated frequency | [Hz] | 50 – 60 |
| Max. power input | [VA] | 9 |
| Protection/protection class | | IP 64/I |
| Primary fuse | [A] | 0.25 slow-blow (next to terminals 1, 2, 3) |
| Secondary fuse | [A] | 0.8 slow-blow (above transformer) |
| Profibus-DP | | EN 50170 |
| Interface | | RS485 (9-pin D-sub socket), voltage-free |
| Transfer rate | | 9.6 kbit/s ... 1.5 Mbit/s |
| Address setting | | 2 hex rotary switches |
| Max. cable length | [m] | 200 |
| Serial interface | | RS 485 or RS 232, voltage-free |
| Max. cable length | [m] | 10 |
| Data transfer | | |
| Data from GENO-IONO-matic ₃ to Profibus | [bit] | Detailed faults, maintenance signal, exchanger in operation, regeneration signal |
| | [decimal] | Current regeneration step, time since last regeneration, remaining time of maintenance interval, residual capacity of exchanger, flow rate of exchanger, flow rate of blending, regeneration counter, soft water meter |
| Data from Profibus to GENO-IONO-matic ₃ | [bit] | Manual regeneration, regeneration lock |
| General data | | |
| Ambient temperature | [°C] | -5 – +55 |
| Order no. | | 185 890 |

EU Declaration of Conformity

In accordance with the EU Low-Voltage Directive 2014/35/EU, Appendix IV



This is to certify that the system designated below meets the safety and health requirements of the applicable European guidelines in terms of its design, construction and execution.

This certificate becomes void if the system is modified in any way not approved by us.

Communication module DE200 Profibus

Serial no.: Refer to type plate

The aforementioned system also complies with the following directives and provisions:

- EMC (2014/30/EU) Electromagnetic Compatibility

The following harmonised standards have been applied:

- DIN EN 60335-1:2012-10
- DIN EN 61000-6-2:2006-03
- DIN EN 61000-6-3:2011-09

The following national standards and regulations have been applied:

- DIN EN 14743:2007-09
- DIN 19636-100:2008-02

Responsible for documentation:

Dipl.-Ing. (FH) Markus Pöpperl

Manufacturer


Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1
89420 Hoechstädt/Germany

Hoechstädt/Germany, 30/10/2019

A handwritten signature in blue ink, appearing to be 'Markus Pöpperl', written in a cursive style.

By power of attorney Dipl. Ing. (FH) Markus Pöpperl
Head of Technical Product Design

Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1
89420 Hoechstädt/Germany

 +49 9074 41-0

 +49 9074 41-100

info@gruenbeck.com
www.gruenbeck.com



For more information go
to www.gruenbeck.com