

GEMÜ 127x

Instrument sensor

EN

Operating instructions



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02.08.2021

Contents

1	General information	4
1.1	Information	4
1.2	Symbols used	4
1.3	Warning notes	4
2	Safety information	5
3	Manufacturer's information	5
3.1	Delivery	5
3.2	Transport	5
3.3	Packaging	5
3.4	Storage	5
4	Product description	6
4.1	Construction	6
4.1.1	GEMÜ 1270/1271 construction	6
4.1.2	GEMÜ 1272/1273 construction	6
4.2	GEMÜ 1272/1273 status LED	6
4.3	Function	6
4.3.1	GEMÜ 1270 / 1271 function	6
4.3.2	GEMÜ 1272 / 1273 function	6
4.4	GEMÜ CONEXO	6
4.5	Product label	7
5	Correct use	7
6	Order data GEMÜ 1270, 1272	8
7	Order data GEMÜ 1271, 1273	9
8	Technical data	10
8.1	Mechanical data	10
8.2	Electrical data	10
9	Dimensions	11
10	Assembly	12
11	Electrical connection	13
11.1	Inserting the cable	13
11.2	GEMÜ 1270 / 1271 electrical connection	13
11.3	GEMÜ 1272 / 1273 electrical connection	13
11.4	Mounting the plug	13
12	Commissioning	14
12.1	Initialization of 1272, 1273	14
12.1.1	Resetting the product	14
12.2	Commissioning the flowmeter	14
13	Operation	14
14	Maintenance	15
14.1	Inspection	15
14.2	Spare parts	15
15	Troubleshooting	16
15.1	Troubleshooting	16
15.2	LED error message	16
16	Disposal	17
17	Returns	17

1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document the basic information contained herein applies in combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 Symbols used

The following symbols are used in this document:

Symbol	Meaning
●	Tasks to be performed
▶	Response(s) to tasks
–	Lists

1.3 Warning notes


Wherever possible, warning notes are organised according to the following scheme:

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ Possible consequences of non-observance. ● Measures for avoiding danger.


Warning notes are always marked with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

⚠ DANGER	
	Imminent danger! ▶ Non-observance can cause death or severe injury.
⚠ WARNING	
	Potentially dangerous situation! ▶ Non-observance can cause death or severe injury.
⚠ CAUTION	
	Potentially dangerous situation! ▶ Non-observance can cause moderate to light injury.

NOTICE	
	Potentially dangerous situation! ▶ Non-observance can cause damage to property.

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Risk of electric shock

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects.
- Hazard to nearby equipment.
- Failure of important functions.
- Hazard to the environment due to the leakage of dangerous materials.

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance.
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel.

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Manufacturer's information

3.1 Delivery

- Check that all parts are present and check for any damage immediately upon receipt.

The product's performance is tested at the factory. The scope of delivery is apparent from the dispatch documents and the design from the order number.

3.2 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. Avoid knocks and vibration.
3. Dispose of transport packing materials according to relevant local or national disposal regulations/environmental protection laws after installation.

3.3 Packaging

The product is packaged in a cardboard box which can be recycled as paper.

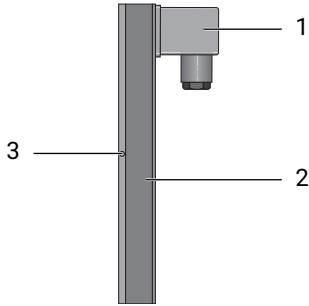
3.4 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.
5. Store the product with the connections blocked off.

4 Product description

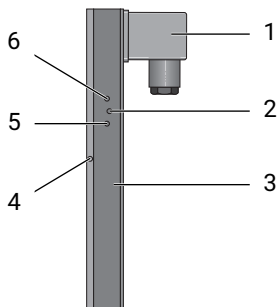
4.1 Construction

4.1.1 GEMÜ 1270/1271 construction



Item	Name
1	Plug
2	Instrument sensor
3	Locking screw

4.1.2 GEMÜ 1272/1273 construction



Item	Name
1	Plug
2	LED display
3	Instrument sensor
4	Locking screw
5	"Min" key
6	"Max" key

4.2 GEMÜ 1272/1273 status LED

LED	Status	Description
red	●	Product not ready for operation and not initialized: Output 21 mA (standard range: 4–20 mA)

LED	Status	Description
	☀	Magnet not recognized: <ul style="list-style-type: none"> Float is within the range of the instrument sensor: Wrong float/inappropriate variable area flowmeter Float is outside the range of the instrument sensor: Value outside the measuring range
green	●	Product ready for operation and initialized
	☀	Acceptance of the value upon initialization of the product

LED conditions			
●	lit (on)	☀	flashes

4.3 Function



Fig. 1: Instrument sensor operating principle

The float in the flowmeter, which is equipped with a permanent magnet, is pushed past the instrument sensor by the flow. The instrument sensor is equipped with a reed contact chain. This enables reading out the float position.

4.3.1 GEMÜ 1270 / 1271 function

The GEMÜ 1270 / 1271 instrument sensors output the measured values as a voltage signal via a voltage divider ($R_g = 10\text{ k}\Omega$).

4.3.2 GEMÜ 1272 / 1273 function

The GEMÜ 1272 / 1273 instrument sensors output the measured values as a 2-wire current signal 4 - 20 mA. This signal can be directly processed.

4.4 GEMÜ CONEXO

The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.



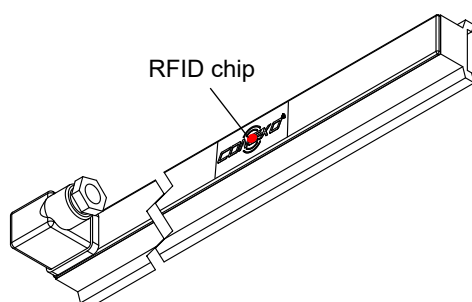
Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves the "installation qualification" process, but also makes the maintenance process much more transparent and easier to document. The app actively guides the maintenance technician through the maintenance schedule and directly provides him with all the information assigned to the valve, such as test reports, testing documentation and maintenance histories. The CONEXO portal acts as a central element, helping to collect, manage and process all data.

For further information on GEMÜ CONEXO please visit:

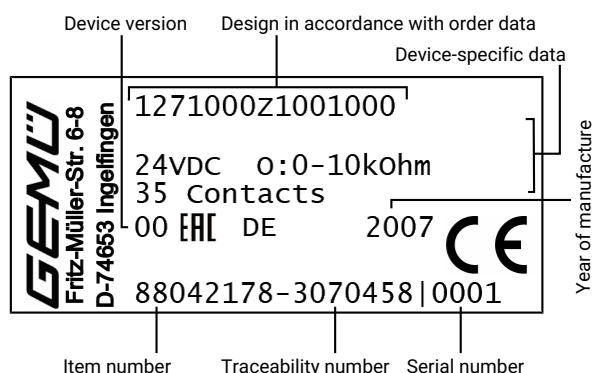
www.gemu-group.com/conexo

In the corresponding design with CONEXO, this product has an RFID chip (1) for electronic recognition. The position of the RFID chip can be seen below.

Installing the RFID chip



4.5 Product label



The manufacturing month is coded under the traceability number and can be requested from GEMÜ. The product was manufactured in Germany.

5 Correct use

⚠ WARNING

Improper use of the product

- ▶ Risk of severe injury or death.
- ▶ Manufacturer liability and guarantee will be void.
- Only use the product in accordance with the operating conditions specified in the contract documentation and in this document.

The products must:

- only be used for measuring the flowmeters of the GEMÜ 800, GEMÜ 840 and GEMÜ 850 series.
- only be operated within the performance limits.
- not be modified from a constructional point of view.

The product is not intended for use in potentially explosive areas.

6 Order data GEMÜ 1270, 1272**Order codes**

1 Type	Code
Instrument sensor for variable area flowmeter	1270
Instrument sensor for variable area flowmeter	1272

2 Fieldbus	Code
Without	000

3 Accessory	Code
Accessory	Z

4 Series	Code
Series 800, DN 20 - DN 65	25

5 Resolution	Code
55 contacts	01
100 contacts	03

6 CONEXO	Code
Without	
Integrated RFID chip for electronic identification and traceability	C

Order example

Ordering option	Code	Description
1 Type	1270	Instrument sensor for variable area flowmeter
2 Fieldbus	000	Without
3 Accessory	Z	Accessory
4 Series	25	Series 800, DN 20 - DN 65
5 Resolution	01	55 contacts
6 CONEXO		Without

7 Order data GEMÜ 1271, 1273

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Type	Code	4 Continuation of Series	Code
Instrument sensor for variable area flowmeter	1271	Series 850, DN 25	25
Instrument sensor for variable area flowmeter	1273		
2 Fieldbus	Code	5 Resolution	Code
without	000	35 contacts, GEMÜ 865, 867, 880, 885 DN 10 - DN 20 43 contacts, GEMÜ 865, 867, 880, 885 DN 25	01
		100 contacts	03
3 Accessory	Code	6 CONEXO	Code
Accessory	Z	Without	
		Integrated RFID chip for electronic identification and traceability	C
4 Series	Code		
Series 850, DN 10 - DN 20	10		

Order codes

Ordering option	Code	Description
1 Type	1271	Instrument sensor for variable area flowmeter
2 Fieldbus	000	without
3 Accessory	Z	Accessory
4 Series	10	Series 850, DN 10 - DN 20
5 Resolution	01	35 contacts, GEMÜ 865, 867, 880, 885 DN 10 - DN 20 43 contacts, GEMÜ 865, 867, 880, 885 DN 25
6 CONEXO		Without Integrated RFID chip for electronic identification and traceability

8 Technical data

8.1 Mechanical data

Protection class: IP 65

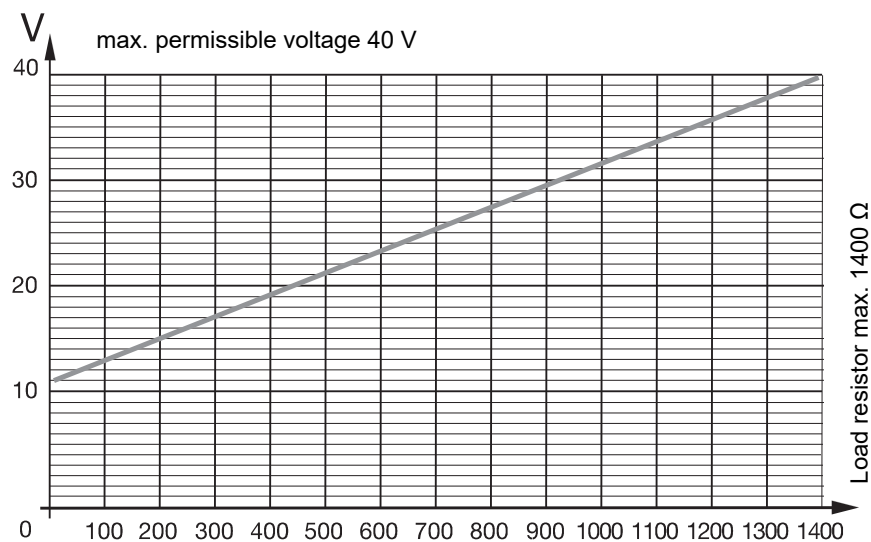
Measured data:

Device type	Number of switch points	Metering length	Distance of reed contacts
GEMÜ 1270000Z2501	55	230 mm	4,25 mm
GEMÜ 1270000Z2503	100	230 mm	2,30 mm
GEMÜ 1271000Z1001	35	118 mm	3,50 mm
GEMÜ 1271000Z2501	43	147 mm	2,30 mm
GEMÜ 1272000Z2501	55	210 mm	4,25 mm
GEMÜ 1272000Z2503	100	210 mm	2,30 mm
GEMÜ 1273000Z1001	35	118 mm	3,50 mm
GEMÜ 1273000Z2501	43	125 mm	3,50 mm

8.2 Electrical data

Supply voltage:

GEMÜ 1270, 1271: max. 24 V DC
 GEMÜ 1272, 1273: U_{\min} 11 V DC + 0.02 A x load resistor (Ω)
 U_{\max} 40 V DC
 For values see diagram



Max. power consumption: $V \times 20 \text{ mA}$

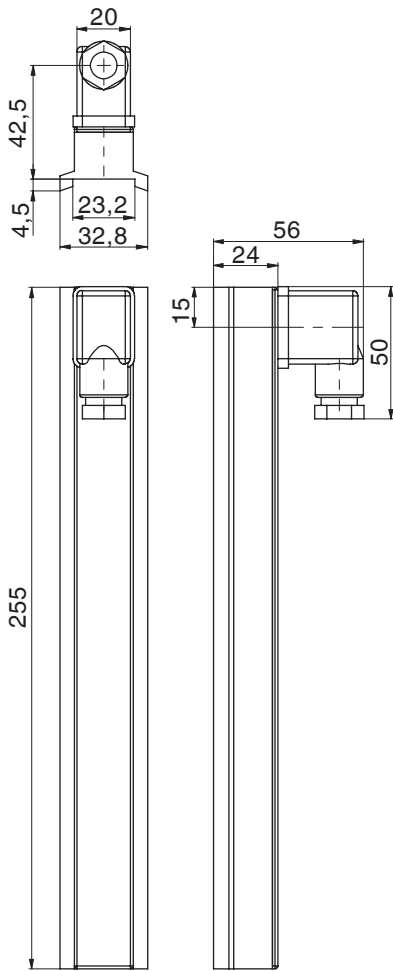
Output current: 4 - 20 mA

Detection of measured values: Series of reed contacts connected to a chain of resistors 0 – 10 k Ω

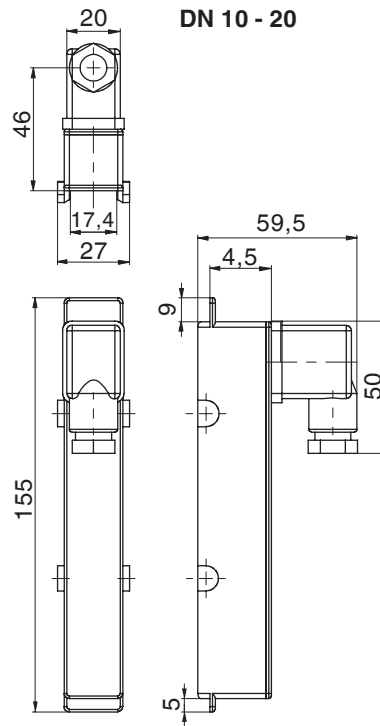
Electrical connection type: Plug, design B

9 Dimensions

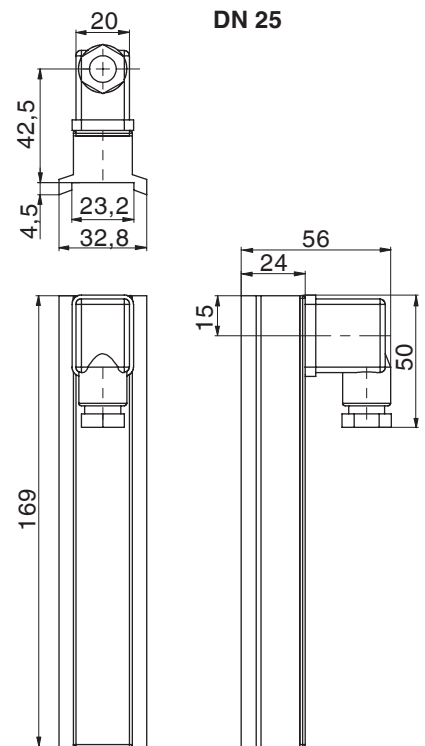
GEMÜ 1270, 1272



GEMÜ 1271, 1273



DN 25



Dimensions in mm

10 Assembly

NOTICE

► If several flowmeters with instrument sensors are installed next to each other, the minimum distance between the instrument sensors **2** must be at least 150 mm.

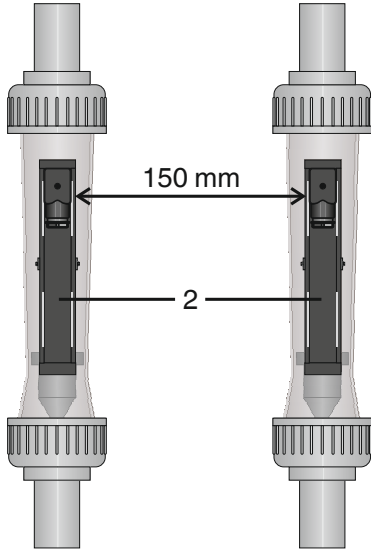


Fig. 2: Minimum distance between instrument sensors

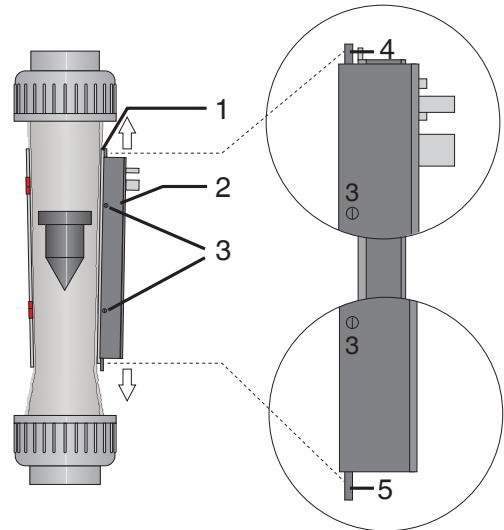
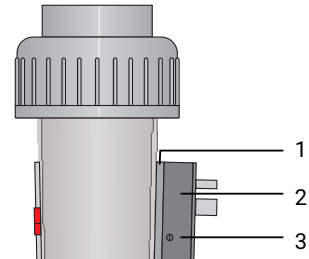


Fig. 3: Assembling the instrument sensor


1. For DN 10 and DN 15: Break off plates **4** and **5** before mounting the instrument sensor **2**.
For DN 20: Do not break off plates **4** and **5**.
For DN \geq 25: Plates are non-existent.
2. Clamp the instrument sensor **2** onto the dovetail **1** on the metering tube.
3. Adjust the position by moving it up/down the metering tube: the upper edge of the instrument sensor **2** must be aligned with the upper edge of the dovetail **1**.



4. Fix the position with the locking screws **3**.
- ⇒ The instrument sensor is assembled.

11 Electrical connection

⚠ **DANGER**



Risk of electric shock

- ▶ Risk of injury or death (if operating voltage is higher than safe extra low voltage).
- ▶ Electric shock can cause severe burns and fatal injury.
- Work on electrical connections only by qualified trained personnel.
- Disconnect the cable from the power supply before making the electrical connection.
- Connect the protective earth conductor.

11.1 Inserting the cable

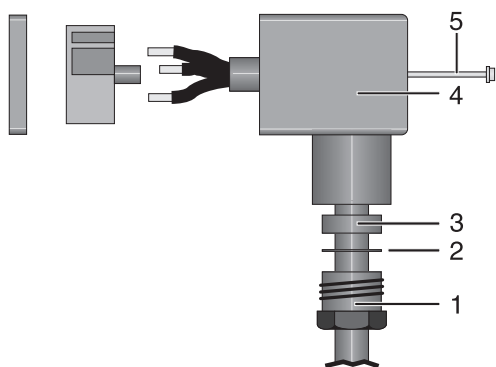


Fig. 4: Inserting the cable

1. Undo the cable gland **1** and screw **5**.
2. Guide the cable through the cable gland **1**, washer **2** and rubber sleeve **3** and then through the plug housing **4**.
3. Connect the cable depending on the type of limit switch.
4. Push the rubber sleeve **3** and washer **2** into the plug housing **4**.
5. Tighten the cable gland.

11.2 GEMÜ 1270 / 1271 electrical connection

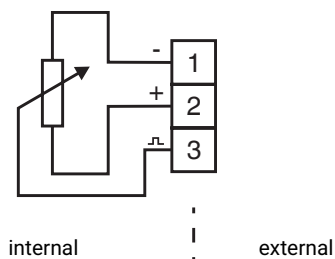


Fig. 5: GEMÜ 1270 / 1271 electrical connection

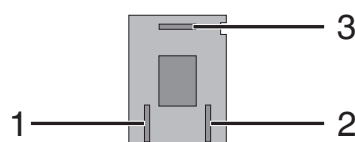


Fig. 6: Connection to terminal block

Item	Connection
1	Uv-, supply voltage (-) Us-, signal voltage (-)
2	Uv+, supply voltage (+)
3	Us+, signal voltage (+)

11.3 GEMÜ 1272 / 1273 electrical connection

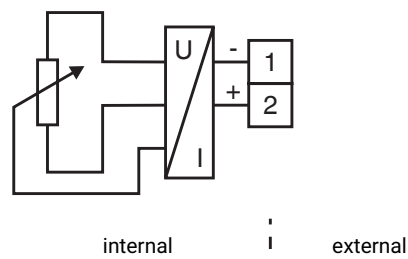


Fig. 7: GEMÜ 1272 / 1273 electrical connection

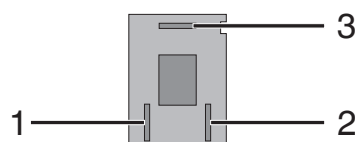


Fig. 8: Connection to the terminal block

Item	Connection
1	Signal (-)
2	Signal (+)
3	n. c.

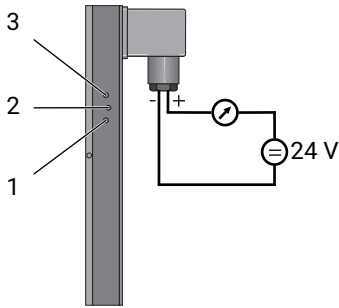
11.4 Mounting the plug

1. Push the plug onto the mount.
 2. Fix the plug with the screw.
- ⇒ The plug is mounted.

12 Commissioning

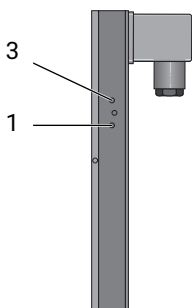
12.1 Initialization of 1272, 1273

The instrument sensors must be calibrated prior to commissioning with the adjustment potentiometers. The adjustment must be carried out with the signal receiver at 20% (= 7.2 mA) and 80% (= 16.8 mA) volumetric flow, in order to compensate for the difference between the linear output signal and the non-linear scaling of the flowmeters.



1. Connect mA-measurement device as specified on the instrument sensor.
 2. Allow 20% volumetric flow to run through the flowmeter.
 3. Press "min" key **1**.
 - ⇒ LED display **2** flashes green, the value has been accepted.
 - ⇒ LED display **2** goes off.
 4. Allow 80% volumetric flow to run through the flowmeter.
 5. Press "max" key **3**.
 - ⇒ LED display **2** flashes green, the value has been accepted.
- ⇒ LED display **2** lights up green, the product is initialized and ready for operation.

12.1.1 Resetting the product



To carry out a reset of the product, press the **1** "min" and **3** "max" keys simultaneously.

The reset is completed when the status LED lights up red.

A reset must be performed in the following scenarios and then the product must be reinitialized:

- If a user error has occurred when initializing the product.
- If the initialization result is not satisfactory.
- If another float/variable area flowmeter is used.

12.2 Commissioning the flowmeter

- Commission the flowmeter (see installation, operating and maintenance instructions for the flowmeter).

13 Operation

The position of the float during operation is communicated to the evaluating unit via the relevant electrical output of the instrument sensor.

14 Maintenance

CAUTION

Use of incorrect spare parts!

- ▶ Damage to the product.
- ▶ Manufacturer liability and guarantee will be void.
- Only the spare parts specified below must be replaced.
- The device must only be repaired by GEMÜ.

Preventive maintenance/cleaning is recommended depending on the operating conditions.

14.1 Inspection

1. The operator must carry out regular visual examinations of the product, depending on the operating conditions and the potentially hazardous situations, in order to prevent damage.
2. At regular intervals, depending on the operating and ambient conditions, the product and the electrical wiring must be checked for deposits of dirt, damage and cracks and, if required, they must be cleaned.
3. Replace the product and/or electrical wiring in the case of damage.
4. The operator is responsible for determining appropriate inspection intervals.

14.2 Spare parts

Spare part	Order number
Plug	On request
Instrument sensor	On request

When ordering spare parts, please provide the following information:



- Complete order code
- Name of spare part

15 Troubleshooting

15.1 Troubleshooting

Error	Possible cause	Troubleshooting
The product does not output any signal	Connector interrupted	Check connector and if necessary exchange plug
	Float is not equipped with a permanent magnet	Replace with a float with a permanent magnet
	Cable interrupted	Check cable, if necessary replace
	Faulty product	Replace product
The product does not output any continuous signal	Faulty product	Replace product
	Variable flow	Dampen pulsation of flow
The product outputs an irregular signal, which does not correspond to the float position	Faulty product	Replace product
When several flowmeters are installed next to each other, the instrument sensors may interfere with each other and send false signals	Minimum distance between instrument sensors too low	Ensure 150 mm minimum distance between the instrument sensors

15.2 LED error message

LED	Status	Error cause	Troubleshooting
red		Magnet not recognized	Check float/variable area flowmeter and replace if necessary Ensure that the float is within the range of the instrument sensor
red		Product not ready for operation and not initialized	Initialize product Output 21 mA (standard range: 4–20 mA)

LED conditions			
	lit (on)		flashes

16 Disposal

1. Dispose of the profile packing as domestic-waste-type commercial waste.
2. Dispose of the plug and the limit switch as electronics scrap.

17 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.



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Subject to alteration

08.2021 | 88659290

