GEMÜ 125x

Limit switches

EN **Operating instructions**

further information
webcode: GW-125x

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
4.2 Function 6
4.2.1 GEMÜ 1250 function 6
4.2.2 GEMÜ 1251/1256 function 6
4.2.3 GEMÜ 1252/1257 function 6
4.3 GEMÜ CONEXO 7
4.4 Product label 7
5 Intended use 7
6 Product line 8
7 Availability 8
8 Order data 9
9 Technical data 10
9.1 Temperatures 10
9.3 Mechanical data 10
9.4 Electrical data 10
10 Dimensions 11
11 Installation 12
12 Electrical connection 12
12.1 Inserting the cable 12
12.2 Electrical connection in the potentially explosive areas 13
12.3 GEMÜ 1250 electrical connection 13
12.4 GEMÜ 1251/1252 electrical connection 13
12.5 GEMÜ 1256/1257 electrical connection 14
12.6 Switch positions 14
12.7 Mounting the plug 14
13 Commissioning the flowmeter 14
14 Operation 14
15 Maintenance 14
15.1 Inspection 14
15.2 Spare parts 14
16 Troubleshooting 15
17 Disposal 16
18 Returns 16
19 Declaration of conformity according to 2014/35/EU (Low Voltage Directive) 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 packed 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

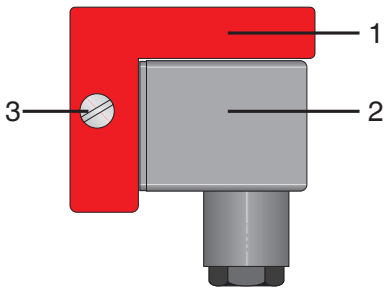


Fig. 1: Main components of limit switch

Item	Name
1	Limit switch
2	Plug
3	Locking screw

4.2 Function

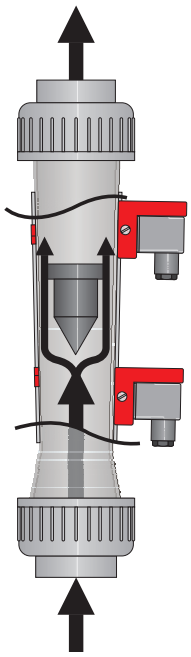


Fig. 2: Limit switch operating principle

The float, which is equipped with a permanent magnet, in the flowmeter is pushed past the limit switch by the flow. This magnetically trips the reed contact in the limit switch.

4.2.1 GEMÜ 1250 function

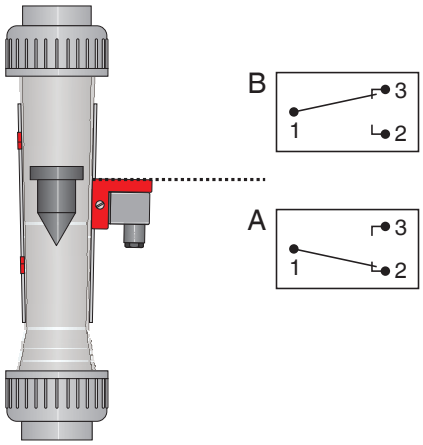


Fig. 3: GEMÜ 1250 operating principle

The GEMÜ 1250 limit switch is equipped with a built-in bistable change-over contact with two switch positions. The limit switch changes to the "Maximum" switch position (position B) when the float, which is equipped with a permanent magnet, passes upwards past the limit switch. The limit switch changes to the "Minimum" switch position (position A) when the float, which is equipped with a permanent magnet, passes downwards past the limit switch.

4.2.2 GEMÜ 1251/1256 function

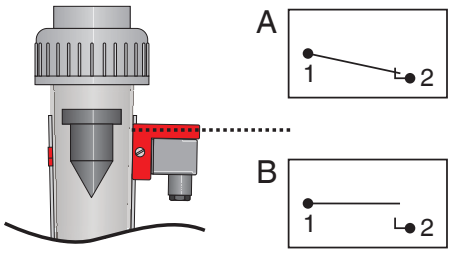


Fig. 4: GEMÜ 1251/1256 operating principle

The GEMÜ 1251/1256 limit switches are both equipped with a bistable reed contact and are signal generators for the maximum value. The contact is closed when the float, which is equipped with a permanent magnet, passes upwards past the limit switch **(position A)**. The contact is opened when the float, which is equipped with a permanent magnet, passes downwards past the limit switch **(position B)**. The status of the limit switch is retained until the float passes by again.

4.2.3 GEMÜ 1252/1257 function

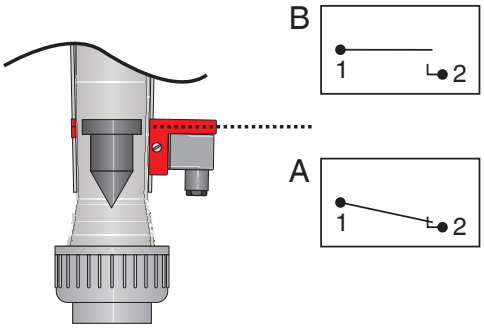


Fig. 5: GEMÜ 1252/1257 operating principle

The GEMÜ 1252/1257 limit switches are both equipped with a bistable reed contact and are signal generators for the minimum value. The contact is opened when the float, which is equipped with a permanent magnet, passes upwards past the limit switch **(position B)**. The contact is closed when the float, which is equipped with a permanent magnet, passes downwards past the limit switch **(position A)**. The status of the limit switch is retained until the float passes by again.

4.3 GEMÜ CONEXO

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

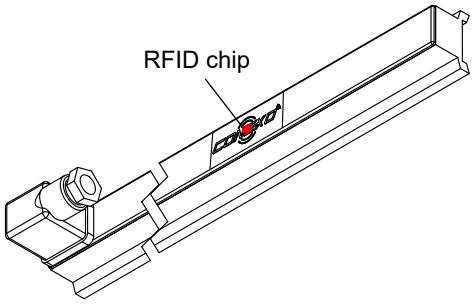
Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves 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:

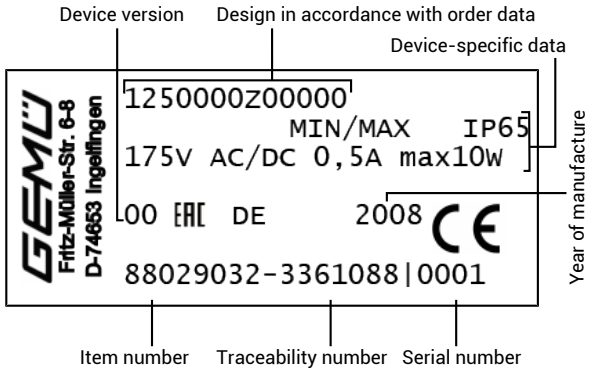
www.gemu-group.com/conexo

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



4.4 Product label



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

5 Intended 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 this document.

The product with ordering option ATEX zone AT1 is intended for use in potentially explosive areas of zones 1 and 2 with gases, mists or vapours and zones 21 and 22 with combustible dusts in accordance with EU Directive 2014/34/EU (ATEX).

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 (see “Electrical data“, page 10).
- Not be modified from a constructional point of view.

The GEMÜ 1250 limit switches are equipped with a changeover contact and can be used as minimum or maximum signal generators.

The GEMÜ 1251 and GEMÜ 1256 limit switches must only be used as maximum-value signal generators.

The GEMÜ 1252 and GEMÜ 1257 limit switches must only be used as minimum-value signal generators.

6 Product line

	GEMÜ 1250	GEMÜ 1251	GEMÜ 1252	GEMÜ 1256	GEMÜ 1257
Switch type	Change-over contact	Make contact, maximum contact	Make contact, minimum contact	Make contact, maximum contact	Make contact, minimum contact
Voltage (DC or peak AC)	max. 175 V	max. 250 V	max. 250 V	max. 250 V	max. 250 V

7 Availability

Flowmeter	GEMÜ 1250	GEMÜ 1251	GEMÜ 1252	GEMÜ 1256	GEMÜ 1257
Type	For nominal sizes				
811	20–65	20–65	20–65	-	-
815	20–65	20–65	20–65	-	-
816	20–65	20–65	20–65	-	-
817	20–65	20–65	20–65	-	-
830	20–65	20–65	20–65	-	-
831	20–65	20–65	20–65	-	-
832	20–65	20–65	20–65	-	-
833	20–65	20–65	20–65	-	-
835	20–65	20–65	20–65	-	-
841	-	-	-	10–20	10–20
846	-	-	-	10–20	10–20
861	25	25	25	10–20	10–20
865	25	25	25	10–20	10–20
867	25	25	25	10–20	10–20
880	25	25	25	10–20	10–20
883	25	25	25	10–20	10–20
885	25	25	25	10–20	10–20

8 Order data

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
Change-over contact limit switch for variable area flowmeter	1250
Maximum limit switch for variable area flowmeter	1251
Minimum limit switch for variable area flowmeter	1252
Maximum limit switch for variable area flowmeter	1256
Minimum limit switch for variable area flowmeter	1257

2 Fieldbus	Code
Without	000

3 Accessory	Code
Accessory	Z

4 Option	Code
Without	00

5 ATEX zone	Code
No ATEX evaluation	000
ATEX(2014/34/EU) zone1/21	AT1

Order example

Order option	Code	Description
1 Type	1250	Change-over contact limit switch for variable area flowmeter
2 Fieldbus	000	Without
3 Accessory	Z	Accessory
4 Option	00	Without
5 ATEX zone	AT1	ATEX(2014/34/EU) zone1/21

9 Technical data

9.1 Temperatures

Ambient temperature: -20 to 60 °C

9.2 Product compliance

Explosion protection: ATEX (2014/34/EU)
Simple electrical equipment

9.3 Mechanical data

Protection class: IP 65

Position of the float in relation to the contact:

	Above contact	Below contact
Maximum contact (GEMÜ 1251/1256)	closed	open
Minimum contact (GEMÜ 1252/1257)	open	closed

9.4 Electrical data

Switching voltage: GEMÜ 1250: max. 175 V (DC or peak AC)
GEMÜ 1251 – 1257: max. 250 V (DC or peak AC)

Switching current: GEMÜ 1250: 0.5 A (DC or peak AC)
GEMÜ 1251 – 1257: 1.0 A (DC or peak AC)

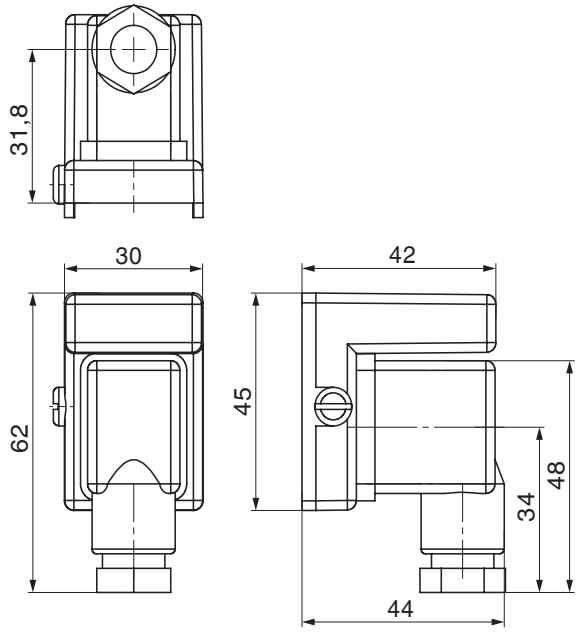
Switch rating: GEMÜ 1250: 10 W
GEMÜ 1251 – 1257: 100 W

Type of contact: Bistable reed contact

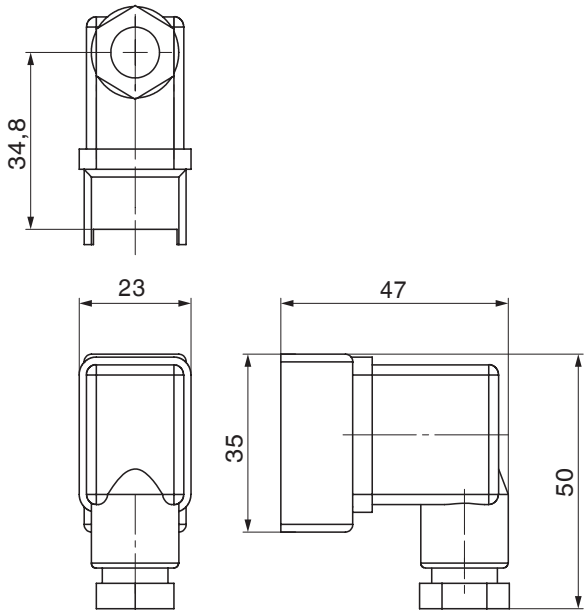
Electrical connection type: Plug, design B

10 Dimensions

GEMÜ 1250, 1251, 1252



GEMÜ 1256, 1257



Dimensions in mm

11 Installation

Type	Application as	DN
GEMÜ 1250	Signal generator with change-over contact	25
GEMÜ 1251	Signal generator for maximum	25
GEMÜ 1256	Signal generator for maximum	10, 15, 20
GEMÜ 1252	Signal generator for minimum	25
GEMÜ 1257	Signal generator for minimum	10, 15, 20

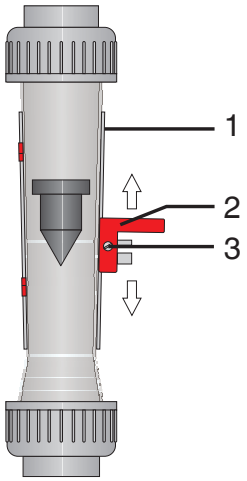


Fig. 6: Assembling the limit switch

1. During assembly of the GEMÜ 1250–1257 limit switches observe the correct position and nominal sizes.
2. Clamp the limit switch **2** onto the dovetail **1** on the metering tube.
3. Adjust the position by moving it up/down the metering tube.
4. Fix the position with the locking screw **3**.

⇨ The limit switch is assembled.

12 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.

12.1 Inserting the cable

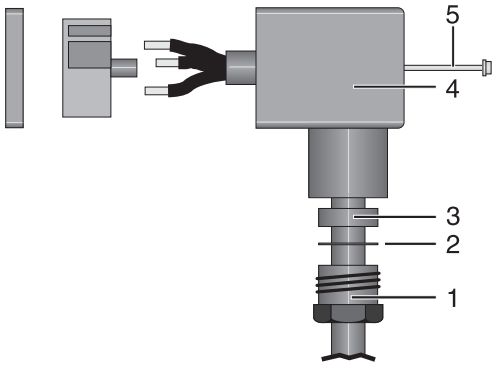


Fig. 7: Inserting the cable

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.

12.2 Electrical connection in the potentially explosive areas

In the potentially explosive area, the limit switches must be connected to ATEX-certified buffer stages or switching amplifiers (one or two channels) in ignition protection type [Ex ia/ib] IIC.

The limit switches are "simple" electrical equipment that comply with DIN EN 60079-11:2012-06 Section 5.7, that do not have their own power sources or energy stores and for which explicit knowledge of the limit data and the heating behaviour is available.

The electrical components consist of reed contacts and connectors.

The construction of the limit switches complies with the construction regulations in accordance with:

- DIN EN 60079-0:2014-06 (Equipment – General requirements)
- DIN EN 60079-11:2012-06 (Equipment protection by intrinsic safety "i")
- This simple, electrical equipment may be used in accordance with DIN EN 60079-14:2014-10 (Explosive atmospheres – Electrical installations design, selection and erection) without certification, operated with intrinsically safe electric circuits of ignition protection type "Ex i", in systems for equipment group II, category 2/D (for zone 1/21).

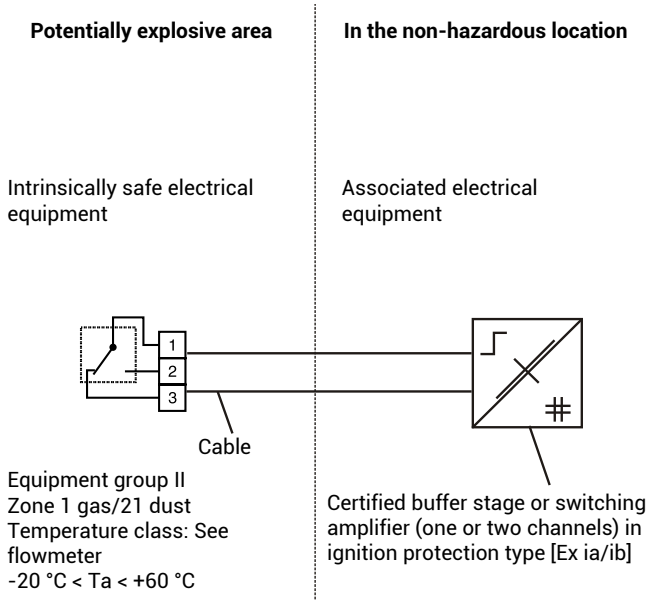


Fig. 8: Electrical connection in the potentially explosive areas

12.3 GEMÜ 1250 electrical connection

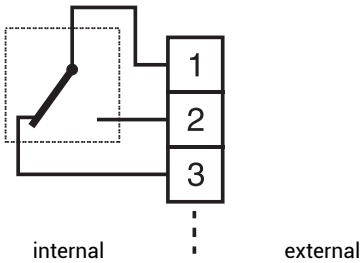


Fig. 9: GEMÜ 1250 electrical connection

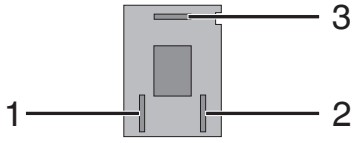


Fig. 10: Connection to the terminal block

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

12.4 GEMÜ 1251/1252 electrical connection

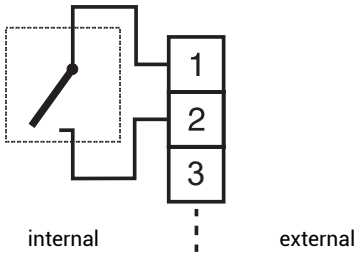


Fig. 11: GEMÜ 1251/1252 electrical connection

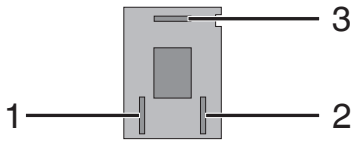


Fig. 12: Connection to the terminal block

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

12.5 GEMÜ 1256/1257 electrical connection

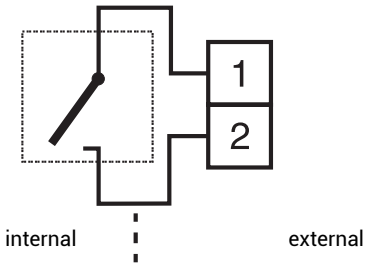


Fig. 13: GEMÜ 1256/1257 electrical connection

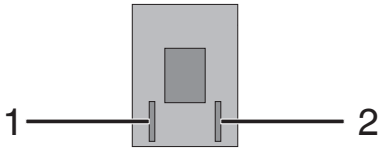


Fig. 14: Connection to the terminal block

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

12.6 Switch positions

	Position of the float	
Type	Above	Below
GEMÜ 1251	Closed	Open
GEMÜ 1256	Closed	Open
GEMÜ 1252	Open	Closed
GEMÜ 1257	Open	Closed

12.7 Mounting the plug

1. Push the plug onto the mount.
2. Fix the plug with the screw.

⇨ The plug is mounted.

13 Commissioning the flowmeter

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

14 Operation

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

15 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.

15.1 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.

15.2 Spare parts

Spare part	Order number
Plug	On request
Limit switch	On request

When ordering spare parts, please provide the following information:

- Complete order code
- Name of spare part

16 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

17 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.

18 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.

19 Declaration of conformity according to 2014/35/EU (Low Voltage Directive)

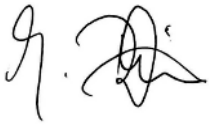
EU Declaration of Conformity

in accordance with 2014/35/EU (Low Voltage Directive)

We, GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen-Criesbach, Germany

declare that the product listed below complies with the safety requirements of the Low Voltage Directive 2014/35/EU.

Description of the product: GEMÜ limit switch 125x



Joachim Brien
Head of Technical Department
Ingelfingen 2018-10-25

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Subject to alteration

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