

Limit reed switch

Original operating manual

Series
ZE 950
ZE 951



Version BA-2017.09.20 EN
Print-No. 301 256
TR MA DE Rev001

ASV Stübbe GmbH & Co. KG
Hollwieser Straße 5
32602 Vlotho
Germany
Phone: +49 (0) 5733-799-0
Fax: +49 (0) 5733-799-5000
E-mail: contact@asv-stuebbe.de
Internet: www.asv-stuebbe.com

We reserve the right to make
technical changes.

Read carefully before use.
Save for future use.



Table of contents

1	About this document	3
1.1	Target groups	3
1.2	Other applicable documents	3
1.3	Warnings and symbols	4
2	General safety instructions	5
2.1	Intended use	5
2.2	General safety instructions	5
2.2.1	Obligations of the operating company	5
2.2.2	Obligations of personnel	5
2.3	Hazardous media	5
3	Layout and Function	6
3.1	Type plate	6
3.2	Description	6
3.3	Layout	6
4	Transport, Storage and Disposal	7
4.1	Unpacking and inspection on delivery	7
4.2	Transportation	7
4.3	Storage	7
4.4	Disposal	7
5	Installation and connection	8
5.1	Check operating conditions	8
5.2	Install device	8
5.3	Electrical connection of device	8
6	Operation	9
6.1	Commissioning	9
7	Maintenance	9
7.1	Servicing	9
7.2	Maintenance	9
7.2.1	Removing the device	9
7.2.2	Replacement parts and return	9
8	Troubleshooting	10
9	Appendix	10
9.1	Technical specifications	10
9.2	Dimensions	10
9.3	Tightening torques	10
9.4	Plug assignment	10

List of tables

Tab. 1	Other application documents, purpose and where found	3
Tab. 2	Warnings and symbols	4
Tab. 3	Servicing activities	9
Tab. 4	Troubleshooting	10
Tab. 5	Tightening torques	10

List of figures

Fig. 1	Type plate (example)	6
Fig. 2	Layout	6
Fig. 3	Connector plug	10

1 About this document

This manual

- is part of the equipment
- applies to all series referred to
- describes safe and proper operation during all operating phases

1.1 Target groups





Operating company

- Responsibilities:
 - Always keep this manual accessible where the device is used on the system.
 - Ensure that employees read and observe this document, particularly the safety instructions and warnings, and the documents which also apply.
 - Observe any additional country-specific rules and regulations that relate to the system.

Qualified personnel, fitter






- Mechanics qualification:
 - Qualified employees with additional training for fitting the respective pipework.
- Electrical qualification:
 - Qualified electrician
- Transport qualification:
 - Qualified transport specialist
- Responsibility:
 - Read, observe and follow this manual and the other applicable documents, especially all safety instructions and warnings.

1.2 Other applicable documents

<p>To download: Resistance lists Resistance of materials used to chemicals</p>	 www.asv-stuebbe.de/pdf_resistance/300051.pdf
	<p>To download: Data sheet Technical specifications, conditions of operation</p> <p>www.asv-stuebbe.de/pdf_datasheets/301250.pdf</p>
<p>To download: CE declaration of conformity Conformity with standards</p>	 www.asv-stuebbe.de/pdf_DOC/300756.pdf
	<p>To download: Original operating manual DFM</p> <p>www.asv-stuebbe.de/pdf_manuels/300458.pdf</p>


Tab. 1 Other application documents, purpose and where found

1.3 Warnings and symbols

Symbol	Meaning
 DANGER	<ul style="list-style-type: none"> • Immediate acute risk • Death, serious bodily harm
 WARNING	<ul style="list-style-type: none"> • Potentially acute risk • Death, serious bodily harm
 CAUTION	<ul style="list-style-type: none"> • Potentially hazardous situation • Minor injury
NOTE	<ul style="list-style-type: none"> • Potentially hazardous situation • Material damage
	Safety warning sign ► Take note of all information highlighted by the safety warning sign and follow the instructions to avoid injury or death.
►	Instruction
1., 2., ...	Multiple-step instructions
✓	Precondition
→	Cross reference
	Information, notes

Tab. 2 Warnings and symbols

2 General safety instructions


 The manufacturer accepts no liability for damages caused by disregarding any of the documentation.

2.1 Intended use

The device is used as a flow data sensor on the series DFM 165-350 ASV flowmeter.

- Use the device exclusively for determining the flow rates on the DFM flowmeter.
- Connect the device exclusively to the measurement tube of the DFM flowmeter.
- Adhere to the operating limits (→ Data sheet).
- Comply with the original DFM flowmeter operating manual (→ [1.2 Other applicable documents, Page 3](#)).

2.2 General safety instructions

 Observe the following regulations before carrying out any work.

2.2.1 Obligations of the operating company

Safety-conscious operation

- Only operate the device if it is in perfect technical condition and only use it as intended, staying aware of safety and risks, and in adherence to the instructions in this manual.
- Ensure that the following safety aspects are observed and monitored:
 - Intended use
 - Statutory or other safety and accident-prevention regulations
 - Safety regulations governing the handling of hazardous substances
 - Applicable standards and guidelines in the country where the pump is operated
- Make personal protective equipment available.

Qualified personnel

- Make sure all personnel tasked with work on the device have read and understood this manual and all other applicable documents, especially the safety, maintenance and repair information, before they start any work.
- Organize responsibilities, areas of competence and the supervision of personnel.
- The following work should be carried out by specialist technicians only:
 - Installation, repair and maintenance work
 - Work on the electrical system
- Make sure that trainee personnel only work on the device under supervision of specialist technicians.

2.2.2 Obligations of personnel

Only complete work on the device if the following requirements are met:

- System is empty
- System has been flushed
- System is depressurized
- System has cooled down
- System is secured against being switched back on again
- Do not make any modifications to the device.

2.3 Hazardous media

- When handling hazardous media, observe the safety regulations for the handling of hazardous substances.
- Use personal protective equipment when carrying out any work on the device.
- Collect leaking pumped liquid and residues in a safe manner and dispose of in accordance with environmental regulations.

3 Layout and Function

3.1 Type plate

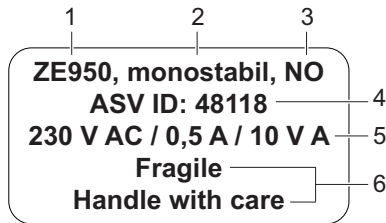


Fig. 1 Type plate (example)

- 1 Device type (ZE 950 / ZE 951)
- 2 Switching function (monostable / bistable)
- 3 Control function (NO / NC)
- 4 ID number
- 5 Operating voltage / switching current / switching power
- 6 User instructions

Device types

- ZE 950
- ZE 951

3.2 Description

The device is a flow data sensor. The device is mounted on a DFM flowmeter.

ZE 950 - monostable (normally open contact)

The contact closes when the magnetic float is at the same height as the flow data sensor. The contact opens as soon as the magnetic float deviates upwards or downwards from the height of the flow data sensor.

ZE 951 - bistable (normally open contact/normally closed contact)

The contact closes (normally open contact) or opens (normally closed contact), as soon as the magnetic float moves up from below and approaches the flow data sensor or is at the same height as the flow data sensor. If the float goes above the flow data sensor, the switching state remains unaffected. If the float goes below the flow data sensor, the switching state is cancelled.

Switching

- Reed switch

Installation:

- Installation on a DFM flowmeter, on the outside of the measurement tube

Electrical connection:

- DIN EN 175301-803 plug socket

3.3 Layout

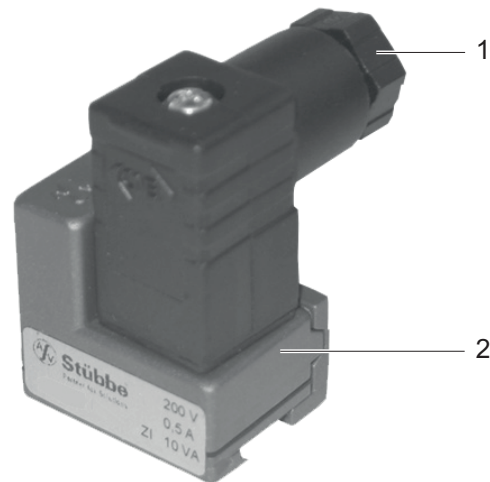


Fig. 2 Layout

- 1 Connector
- 2 Sensor housing

4 Transport, Storage and Disposal

4.1 Unpacking and inspection on delivery

1. Unpack the device when received and inspect it for transport damage and completeness.
2. Check that the information on the type plate agrees with the order/design data.
3. Report any transport damage to the manufacturer immediately.
4. If fitted immediately: Dispose of packaging material according to local regulations.
 - If fitted at a later point: leave device in its original packaging.

4.2 Transportation

- ▶ Device should preferably be transported in the original packaging.

4.3 Storage

NOTE

Material damage due to inappropriate storage!

- ▶ Store the device properly.
-
1. Make sure the storage room meets the following conditions:
 - Dry
 - Frost-free
 - Vibration-free
 - Not in direct sunlight
 - Storage temperature +10 °C to +55 °C
 2. Device should preferably be stored in the original packaging.

4.4 Disposal

1. Remove electronic parts and dispose of in accordance with local regulations.
2. Dispose of plastic parts in accordance with local regulations.

5 Installation and connection

5.1 Check operating conditions

- Ensure the required operating conditions are met:
 - The device is suitable for the DFM flowmeter (→ 2.1 Intended use, Page 5).
 - The DFM flowmeter must incorporate a magnetic float.
- Consult with the manufacturer regarding any other use of the device.

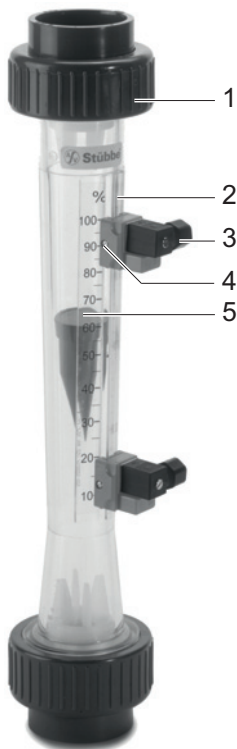
5.2 Install device

- ✓ The operating conditions must have been checked.
- ✓ The DFM flowmeter must be correctly installed.
- ✓ The DFM flowmeter must be in operation.

NOTE

Damage to the flow data sensor through bangs and knocks!

- ▶ Do not subject the flow data sensor to any bangs or knocks.
 - ▶ Take care when transporting and installing the flow data sensor.
 - ▶ Protect the flow data sensor against being dropped.
-



- Undo the fixing screw (4) on the device (3).

- Fit the device (3) to the swallow-tail channel (2) of the DFM flowmeter (1).
- For type ZE 951, ensure that the device (3) slowly passes the magnetic float (5) at least three times, so as to prevent potential monostable behavior.
- Slide the device (3) along the swallow-tail channel (2) until it is at the desired measuring point. Whilst doing so, ascertain the switch-on and switch-off points of the device (→ Data sheet).
- Tighten the fixing screw (4) on the device (3). (→ 9.3 Tightening torques, Page 10).

5.3 Electrical connection of device

- ✓ Power supply is switched off and secured against being switched back on again.
- ✓ Device mounted on the DFM flowmeter

 **DANGER**

Risk of electrocution!

- ▶ All electrical work must be carried out by qualified electricians only.
 - ▶ Switch off system power supply and secure it against being switched back on again.
-

NOTE

Material damage due to overloading.

- ▶ Comply with the values for current and switching power (→ Data sheet).
-

- Remove the fixing screw from the connector.
- Remove the connector from the device.
- Connect the cable to the connector:
 - Cables (→ Data sheet).
 - Plug assignment (→ 9.4 Plug assignment, Page 10).
- Insert the connector into the connector socket.
- Tighten the fixing screw on the connector.

6 Operation

6.1 Commissioning

- ✓ The device must be correctly mounted on the DFM flowmeter
- ✓ The device must be correctly connected to the power supply and be ready for operation.
- ✓ The DFM flowmeter must be correctly fitted to the process pipeline.
- ✓ The DFM flowmeter must be in operation

NOTE

Damage to the flow data sensor through bangs and knocks!

- ▶ Do not subject the flow data sensor to any bangs or knocks.
- ▶ Protect the flow data sensor against accidental impacts.

- ▶ Connect the power supply to the device.

The device will signal a flow value when the magnetic float in the DFM flowmeter reaches the position of the device (ZE 950) or passes it (ZE 951).

7 Maintenance

⚠ DANGER

Risk of electrocution!

- ▶ All electrical work must be carried out by qualified electricians only.

7.1 Servicing

Interval	Action
As necessary	<ul style="list-style-type: none"> • Clean the device housing with a damp cloth.
Six-monthly	Visual and function check: <ul style="list-style-type: none"> • Normal operating conditions unchanged

Tab. 3 Servicing activities

- ▶ Perform maintenance tasks according to the table.

7.2 Maintenance

7.2.1 Removing the device

- ✓ System is secured against being switched back on again.
 1. Disconnect the power supply.
 2. Unplug connection cable.
 3. Remove the device from the DFM flowmeter.

7.2.2 Replacement parts and return

1. Have the following information ready to hand when ordering spare parts (→ 3.1 Type plate , Page 6).
 - Device type
 - ID number
2. Please complete and enclose the document of compliance for returns (→ www.asv-stuebbe.com/service/downloads).



3. Only use spare parts from ASV Stübbe.


8 Troubleshooting

Error	Possible cause	Corrective action
no signal	no magnetic float in the DFM flowmeter	<ul style="list-style-type: none"> ▶ Check the DFM flowmeter (→ 5.1 Check operating conditions, Page 8). ▶ Fit the device exclusively to a DFM flowmeter with a magnetic float.
	DFM flowmeter defective	<ul style="list-style-type: none"> ▶ Check the flowmeter for defects (→ 1.2 Other applicable documents, Page 3).
Monostable behavior by device with bistable contacts	Material damage to the flow data sensor due to bangs and knocks!	<ul style="list-style-type: none"> ▶ Replace the device (→ 5.2 Install device, Page 8).


Tab. 4 Troubleshooting

9 Appendix

9.1 Technical specifications

 Technical data (→ Data sheet).

9.2 Dimensions


 Dimensions (→ Data sheet).

9.3 Tightening torques

Description	Torque [Nm]
Fixing screw	0.3

Tab. 5 Tightening torques

9.4 Plug assignment

 DIN EN 175301-803 plug socket. The polarity of the connections (1,3) has no effect on operation.

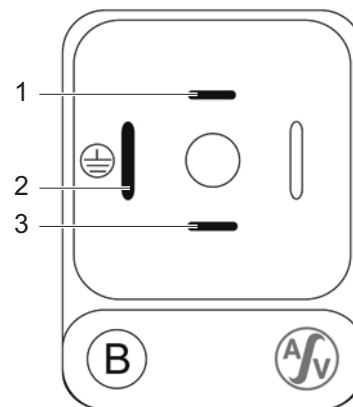


Fig. 3 Connector plug

- 1 control voltage
- 2 earth
- 3 control voltage