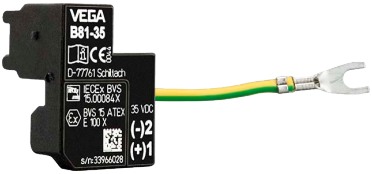
Supplementary instructions

Overvoltage protection

B81-35

For supply and signal cables



Document ID: 50708

Contents

Safety instructions for Ex areas

Please note the Ex-specific safety information for installation and operation in Ex areas. These safety instructions are part of the operating instructions and come with the Ex-approved instruments.

Editing status: 2022-05-10

50708-EN-220516

1 For your safety

1.1 Appropriate use

The overvoltage arrester B81-35 is an accessory part for existing plics® sensors.

1.2 General safety instructions

The safety information in the operating instructions manual of the respective sensor must be noted.

50708-EN-220516

2 Product description

2.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Overvoltage arrester B81-35
- Screwdriver 2 mm
- Documentation
  - This supplementary instructions manual

Configuration

The overvoltage arrester B81-35 consists of a terminal block for the supply and signal cable, a plug connector for the terminals of the sensor electronics and a connection cable for connection to the ground terminal.

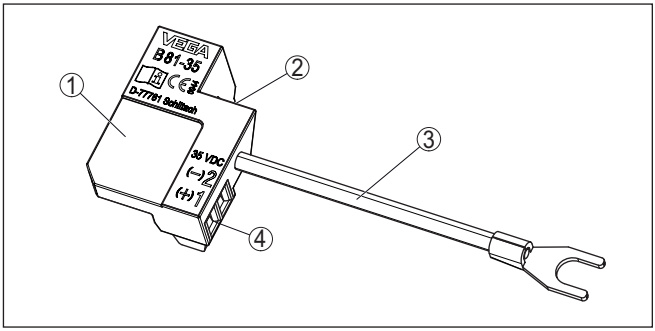


Fig. 1: Configuration, overvoltage arrester B81-35

1 Housing
2 Plug connector for terminals of the sensor electronics (bottom side)
3 Connection cable for connection to the ground terminal
4 Terminal block for supply and signal cable (bottom side)

2.2 Principle of operation

Application area

The overvoltage arrester B81-35 is an accessory part for the following instruments in two-wire technology:

- VEGAPULS series 60 from hardware ≥ 2.0.0, software ≥ 4.0.0
- VEGAPULS 64, 69
- VEGAFLEX 80 series
- VEGABAR series 80
- VEGADIS 82

It is suitable for the following signal outputs:

- 4 … 20 mA
- 4 … 20 mA/HART, 4 … 20 mA/HART SIL
- Profibus PA, Foundation Fieldbus

The overvoltage arrester is used instead of the terminals in the single or double chamber housing.

Functional principle

The overvoltage arrester B81-35 limits voltages on signal cables to a level that is harmless for sensors. As a voltage-limiting component, it

50708-EN-220516

contains a gas discharge tube for discharging pulses of up to 10 kA to ground.

3 Connecting and mounting

3.1 Preparing the connection

Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

Before starting setup make sure that the power supply corresponds to the specifications on the type label.

For effective overvoltage protection, the cables between overvoltage arrester and instrument should be as short as possible.

Cable screening and grounding

If shielded cable is required, we recommend connecting the cable screening on both ends to ground potential. In the sensor, the cable screening must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

In Ex systems, grounding is carried out in accordance with the installation regulations. For example, according to DIN EN IEC 60079-14, the cable shielding may only be connected to ground potential on one side.

3.2 Connecting

Connection technology

The connection to voltage supply and the signal output is carried out via screw terminals, the connection to the sensor electronics through contact pins in the housing. The connection to the ground terminal is carried out via a connection cable with cable lug.

Connection procedure

Proceed as follows:

1. Unscrew the housing lid
2. If a display and adjustment module is installed, remove it by turning it to the left
3. Lift the terminal block for the sensor supply from the sensor electronics with a screwdriver and pull it off
4. Loosen compression nut of the cable entry gland
5. Remove approx. 10 cm (4 in) of the cable mantle, strip approx. 1 cm (0.4 in) of insulation from the ends of the individual wires
6. Insert the cable into the sensor through the cable entry
7. Connect the wire ends according to the wiring diagram to the screw termins. You can find the max. wire cross-section under "*Technical data*"
8. Check the hold of the wires in the terminals by lightly pulling on them
9. Connect the connection cable of the overvoltage arrester to the internal ground terminal, connect the external ground terminal to potential equalisation
10. Plug the overvoltage arrester onto the sensor electronics

50708-EN-220516

Fig. 2: Plug the overvoltage arrester onto the sensor electronics - single chamber housing

Fig. 3: Plug the overvoltage arrester onto the sensor electronics - Aluminium single chamber housing

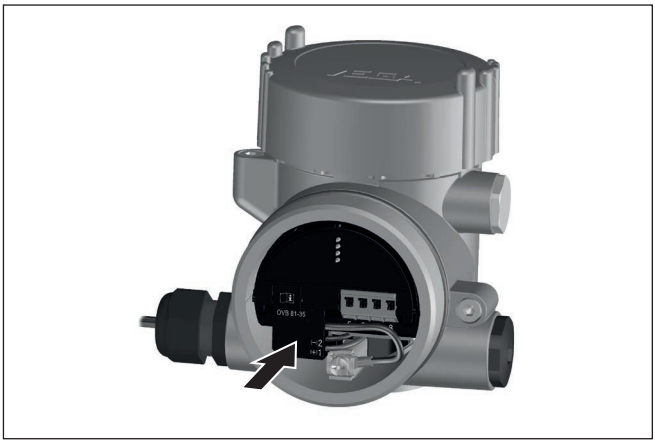


Fig. 4: Plug the overvoltage arrester onto the sensor electronics - double chamber housing

11. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
12. Reinsert the display and adjustment module, if one was installed
13. Screw the housing lid back on

The electrical connection is finished.

Disassembly is carried out in reverse order.

3.3 Wiring plan

Circuit diagram

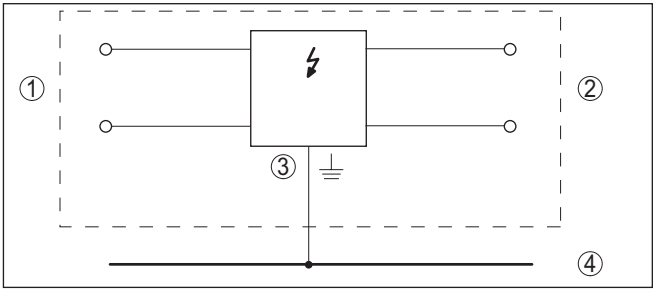


Fig. 5: Circuit diagram B81-35

1 Unprotected side (terminals)
2 Protected side (plug connector)
3 Connection to the inner ground terminal on the sensor
4 Potential equalisation

Electronics and connection compartment

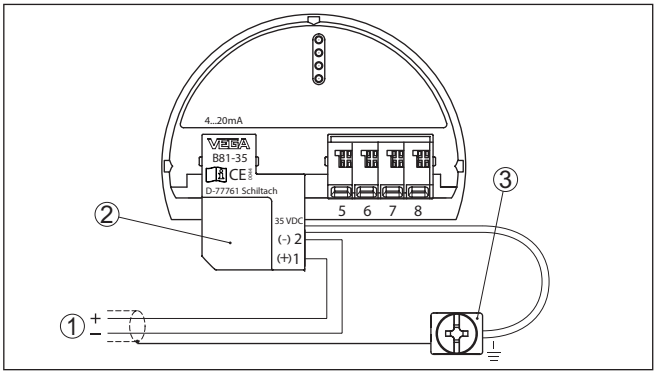


Fig. 6: Electronics and connection compartment, single chamber housing, connection compartment, double chamber housing

1 *Voltage supply/Signal output*
2 *Overvoltage protection*
3 *Ground terminal for connection of the cable screenand the connection cable of the overvoltage arrester*

4 Supplement

4.1 Technical data

Note for approved instruments

The technical data in the respective safety instructions which are included in delivery are valid for approved instruments (e.g. with Ex approval). These data can differ from the data listed herein, for example regarding the process conditions or the voltage supply.

All approval documents can be downloaded from our homepage.

General data	
Version	Module for inserting into the sensor electronics
Housing material	PA

Electrical characteristics	
Highest continuous operating voltage	35 V DC
Max. permissible input current	500 mA
DC response voltage	600 V -20 %/+35 %
Impulse response voltage	
– 100 V/µs	850 V
– 1000 V/µs	1100 V
Discharge current	< 10 kA (8/20 µs)
Category according to DIN EN 61643-21	C1 (2 kV/1 kA)
Overload failure mode	1
signal transmission	4 … 20 mA, 4 … 20 mA/HART, fieldbus
Functional safety	SIL non-reactive

Electromechanical data	
Wire cross-section, screw terminals	
– Massive wire	1.5 mm^2
– Stranded wire with end sleeve	0.5 mm^2

Ambient conditions	
Ambient, storage and transport temperature	-40 … +80 °C (-40 … +176 °F)

Electrical protective measures	
Protection rating	
– unassembled	IP20
– Mounted into the sensor housing	according to housing protection

50708-EN-220516

4.2 Dimensions

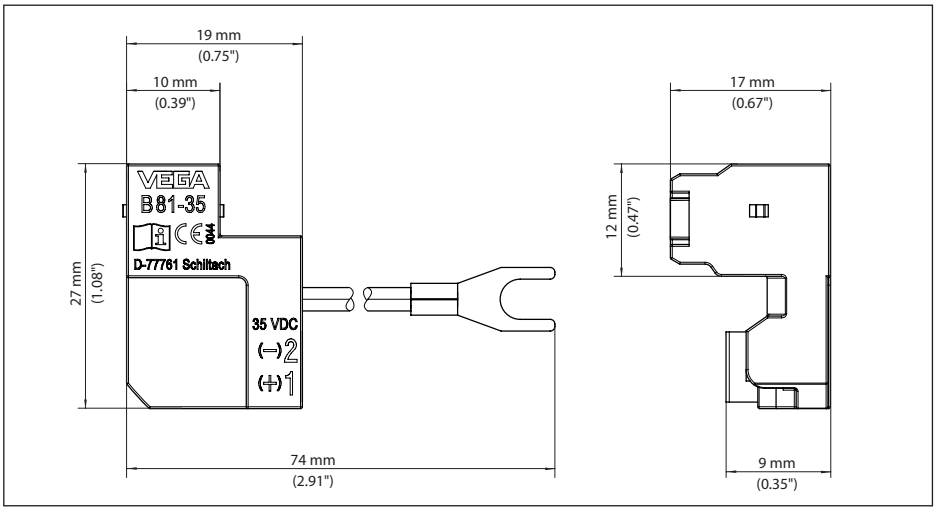


Fig. 7: Dimensions, overvoltage protection

Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

50708-EN-220516

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
E-mail: info.de@vega.com
www.vega.com