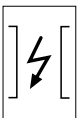
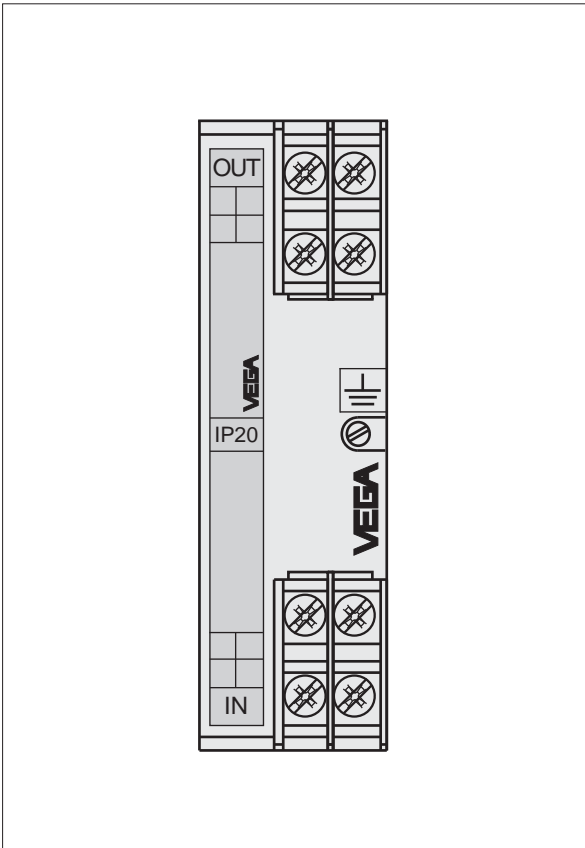


Operating Instructions

Overvoltage arresters



Safety information

Please read this manual carefully, and also take note of country-specific installation standards (e.g. the VDE regulations in Germany) as well as all prevailing safety regulations and accident prevention rules.

For safety and warranty reasons, any internal work on the instruments, apart from that involved in normal installation and electrical connection, must be carried out only by qualified VEGA personnel.



Note Ex area

Please note the attached safety instructions containing important information on installation and operation in Ex areas.

These safety instructions are part of the operating instruction and come with the Ex approved instruments.

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1 Product description

1.1 Function and configuration

Overvoltage is often the cause of system failure. It results from indirect atmospheric discharges (lightning strokes) or from voltage peaks in the supply circuit. An overvoltage arrester is especially recommended if voltage peaks (transients) are expected in long supply and signal cables. VEGA overvoltage arresters reduce the voltages occurring in the cables to an acceptable level. The overvoltage arresters can be mounted to carrier rails acc. to EN 50 022/ EN 50 035 in the switching cabinet or close to the transmitter, in a metal or plastic housing.

Overvoltage arresters for supply cables:

An overvoltage arrester (gas arrester) filled with noble gas is used as a voltage-reducing protective element. As soon as the supply voltage of the gas arrester increases, the separator becomes conductive and the energy occurring with the overvoltage is drained off to ground. After reduction of the overvoltage, the gas arrester returns to high-voltage status.

Overvoltage arresters for transmitters and signal cables:

These instruments include a two-step overvoltage protection. As soon as an overvoltage occurs on the transmission cable, a suppressor diode (Transorb) assigned to the circuit will reduce the voltage. The current is reduced by a connected throttle. With high-energy surges, the voltage on the input side continues to increase. As soon as the voltage has reached approx. 800 V the connected gas arrester strikes. This reduces the overvoltage on the cable to an acceptable level.

The following instrument types are available for various applications:

Overvoltage arrester for Profibus PA systems:

- B62-30 W: 9 ... 36 V DC

Overvoltage arresters for the supply and signal cable:

- B61-300: 110 ... 300 V AC/DC
- B61-300 FI: 110 ... 300 V AC/DC (for circuits with fault current switch)
- B61-75: 16 ... 53 V AC/16 ... 75 V DC
- B62-36 G: 12 ... 36 V DC

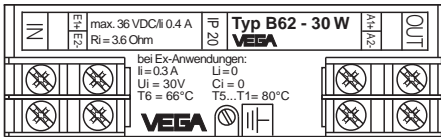
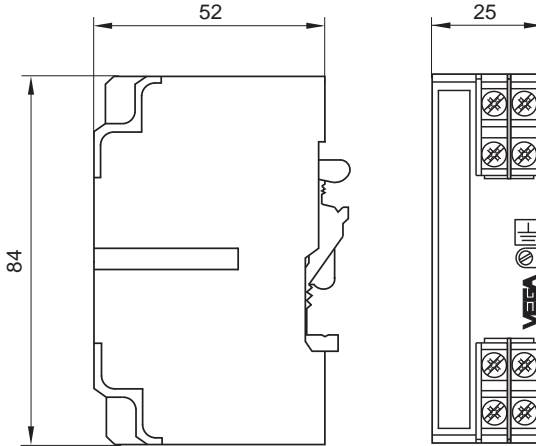
Overvoltage arrester for the signal cable:

- B53-19: 19 V AC/27 V DC

Overvoltage arresters for Ex systems:

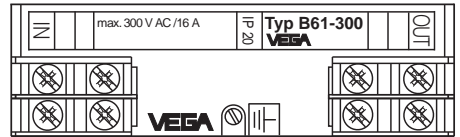
- B62-36G.CX: 12 ... 36 V DC
- B62-30W.CX: 9 ... 36 V DC

2 Instrument types – Dimensions

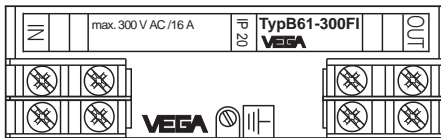


B62-30 W: 9 ... 36 V DC

Suitable for intrinsically safe (ia) circuits in Profibus PA networks.

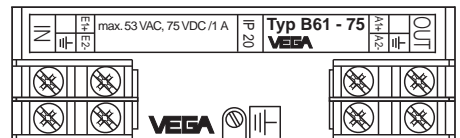


B61-300: 110 ... 300 V AC/DC

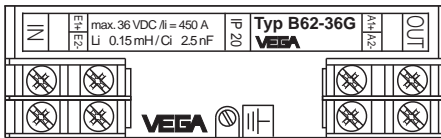


B61-300 FI: 110 ... 300 V AC/DC

For circuits with fault current switch.

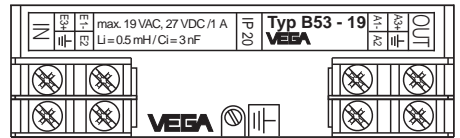


B61-75: 16 ... 53 V AC/16 ... 75 V DC



B62-36 G: 12 ... 36 V DC

Suitable for intrinsically safe (ia) circuits.



B53-19: 19 V AC/27 V DC

3 Technical data

General data

Housing material	Noryl (modified PPO)
Protection	IP 20, IP 65 in plastic or Aluminium housing
Ambient temperature	-20 °C ... +60 °C
Storage and transport temperature	-40 °C ... +70 °C
Electrical connection	screw terminals, max. wire cross-section 2.5 mm ²

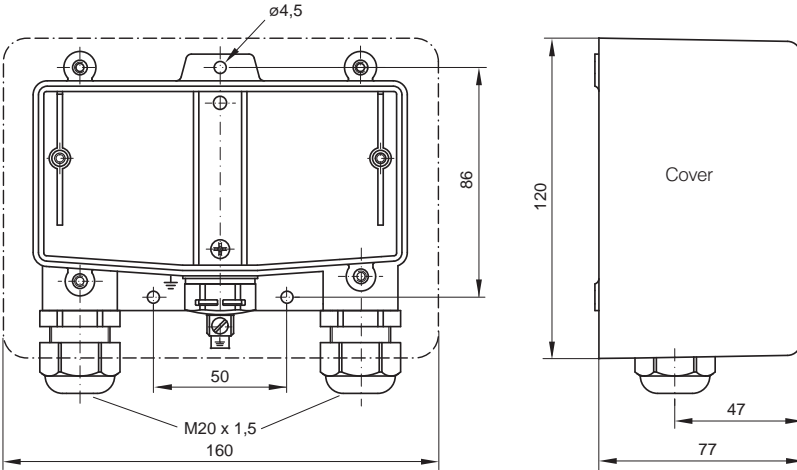
Instrument type	Application area		Nominal voltage
Overvoltage protection for Profibus PA systems			
B62-30 W	Overvoltage protection for Profibus PA circuits.	Suitable for connection between segment coupler, VEGALOG 571 EP and transmitter. Suitable for intrinsically safe (ia) circuits in Profibus PA networks (no own approval required for overvoltage protection).	9 ... 36 V DC
Overvoltage protection for the supply or signal cable			
B61-300	Supply or signal cable protection.	For all instruments with 110 ... 300 V AC/DC.	110 ... 300 V AC/DC
B61-300 FI	Supply or signal cable protection for supply circuits, protected with a fault current switch.	For all instruments with 110 ... 300 V AC/DC. For circuits with fault current switch.	110 ... 300 V AC/DC
B61-75	Supply or signal cable protection	For all instruments with 16 ... 53 V AC, 16 ... 75 V DC.	16 ... 53 V AC 16 ... 75 V DC
B62-36 G	Supply/signal cable protection in two-wire technology for 0/4 ... 20 mA and VBUS circuits of compact sensors and indicating instruments.	For all instruments with 12 ... 36 V DC. Suitable for intrinsically safe (ia) circuits, zone 0 (no own approval required for overvoltage protection).	12 ... 36 V DC
Overvoltage protection for the signal cable			
B53-19	Overvoltage protection for the signal cable.	For the signal cable between conductive electrodes and appropriate signal conditioning instruments. Suitable for intrinsically safe (ia) circuits (no own approval required for overvoltage protection).	19 V AC 27 V DC

Circuits	Max. current per circuit	Ri. Li. Ci per circuit	Response voltage	Response time	Fault current
1	0.6 A (0.3 A in Ex application)	Ri = 3.6 Ω Li = 0 Ci = 0	41 V	< 10 ⁻¹¹ s	10 kA
1	16 A	Ri < 0.01 Ω	500 V	< 10 ⁻⁶ s	10 kA
1	16 A	Ri < 0.01 Ω	500 V	< 10 ⁻⁶ s	10 kA
1	2.5 A	Ri < 0.25 Ω	90 V	< 10 ⁻⁶ s	10 kA
1	1 A	Ri < 0.25 Ω Li ≤ 0.15 mH Ci ≤ 2.5 nF	41 V	< 10 ⁻¹¹ s	10 kA
2	1 A	Ri < 0.25 Ω	22 V AC 31 V DC	< 10 ⁻¹¹ s	10 kA

4 Field housing

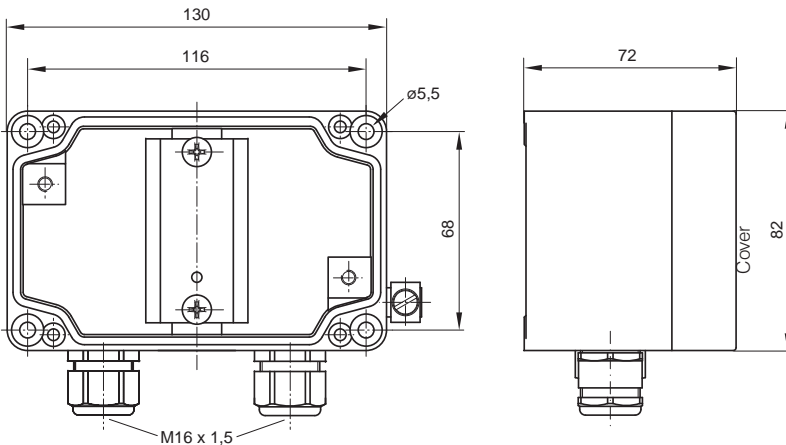
Note:

If, for sensors with Ex Zone 0 approval, an overvoltage protection in Zone 1 or 2 is required, the overvoltage arrester must be mounted into an approved, pressure-tight encapsulated field housing. For sensors with integrated overvoltage protection, an overvoltage arrester is only necessary for the signal conditioning instrument.



Plastic housing (IP 65) for overvoltage arresters

For max. 2 overvoltage arresters incl. carrier rail and breather facility.



Aluminium housing (IP 65) for overvoltage arresters

For max. 2 overvoltage arresters incl. carrier rail and breather facility.

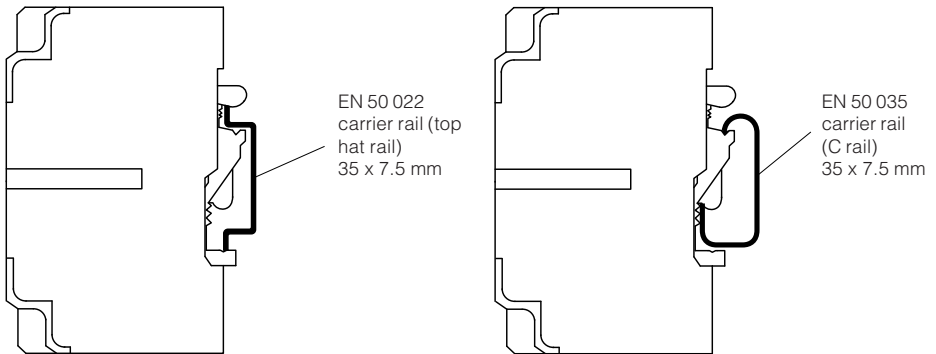
5 Mounting

5.1 Mounting in switching cabinet

In a switching cabinet, VEGA overvoltage arresters can be easily mounted on carrier rails acc. to EN 50 022/EN 50 035. The carrier rail fastening is galvanically connected to the ground terminal.

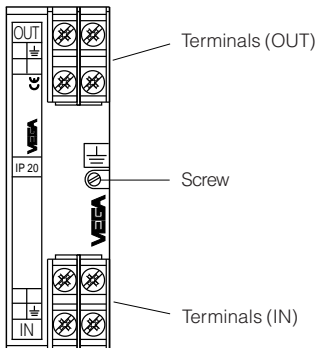
Note:

- The potential equalisation cable (PE) should be wired with a max. wire cross-section of 2.5 mm².
- The connections must be as short as possible.



Fastening

1. Loosen the screw: turn to the left.
2. Plug the overvoltage arrester onto the carrier rail.
3. Tighten the screw: turn to the right.

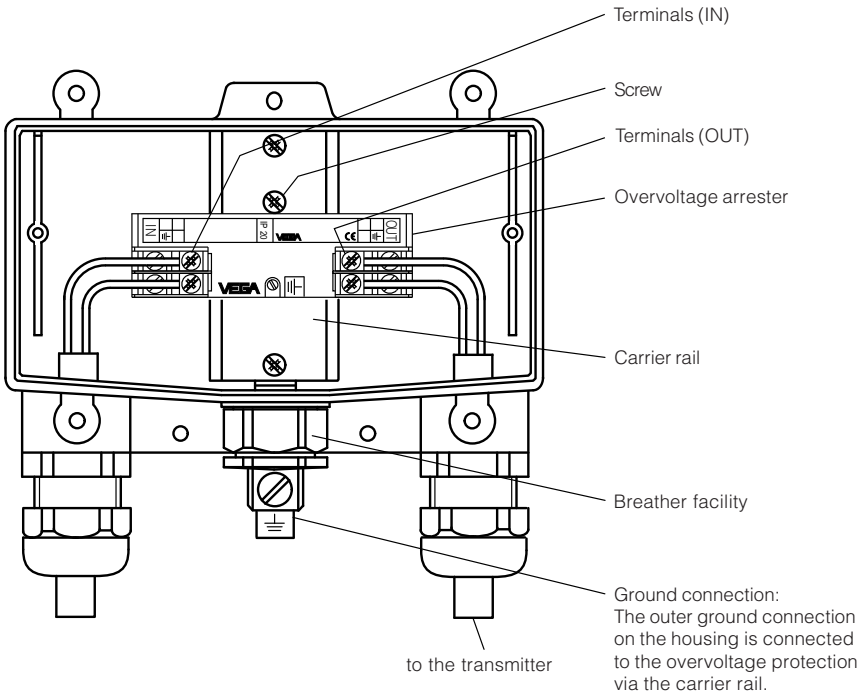


5.2 Mounting near the transmitter

The overvoltage protection can be mounted in a position safe against flooding, near the transmitter, in a plastic or Aluminium housing (IP 65). To avoid ingress of water, make sure when mounting that the cable entries are directed downward. The cable of the transmitter should be as short as possible.

Example:

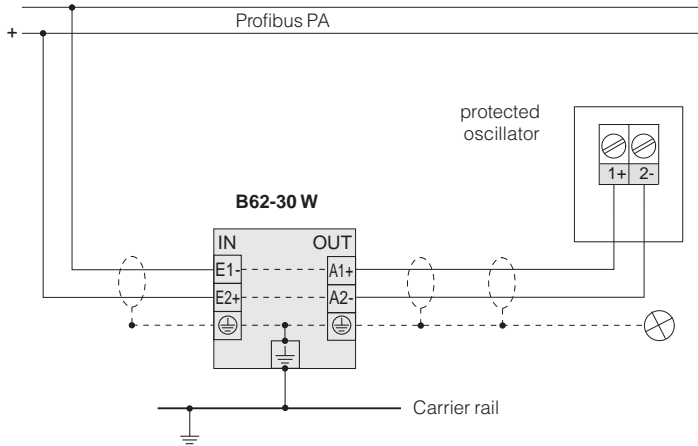
Mounting in plastic housing (IP 65).



6 Connection examples

6.1 Connection to Profibus PA systems

B62-30 W: 9 ... 36 V DC, max. 0.6 A

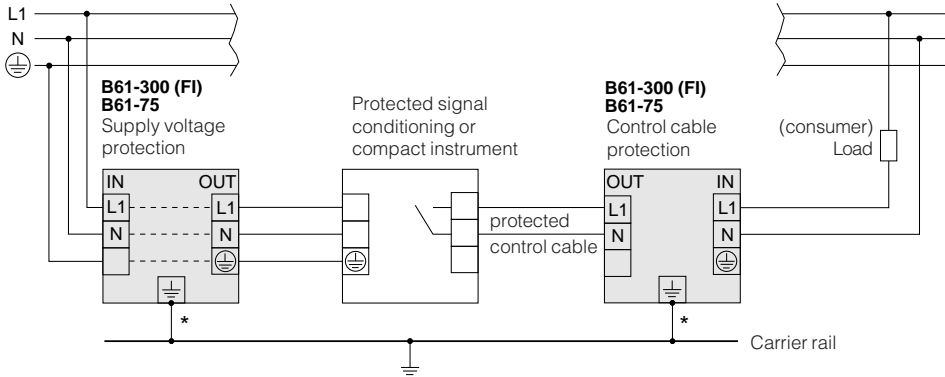


- Terminal row (IN)
generally **unprotected** side of the overvoltage arrester.
- Terminal row (OUT)
generally **protected** side of the overvoltage arrester.

6.2 Connection to the supply or signal cable

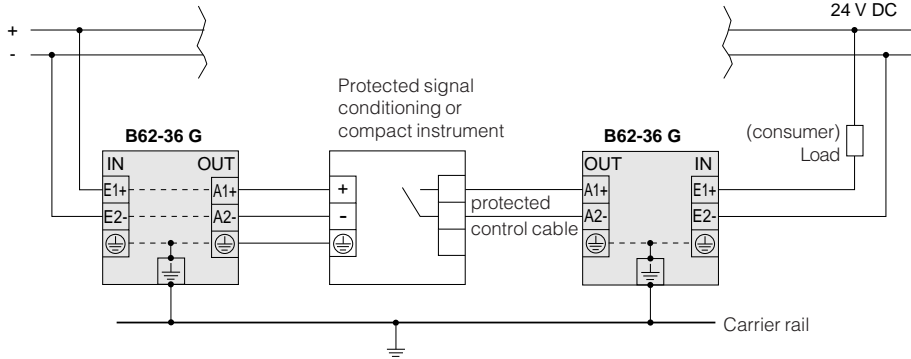
B61-300 (FI): 110 ... 300 V AC/DC, max. 16 A

B61-75: 16 ... 53 V AC, 16 ... 75 V DC, max. 2.5 A



* The ground connected is deleted with overvoltage arrester **B61-300 FI**.

B62-36 G: 12 ... 36 V DC, max. 1 A

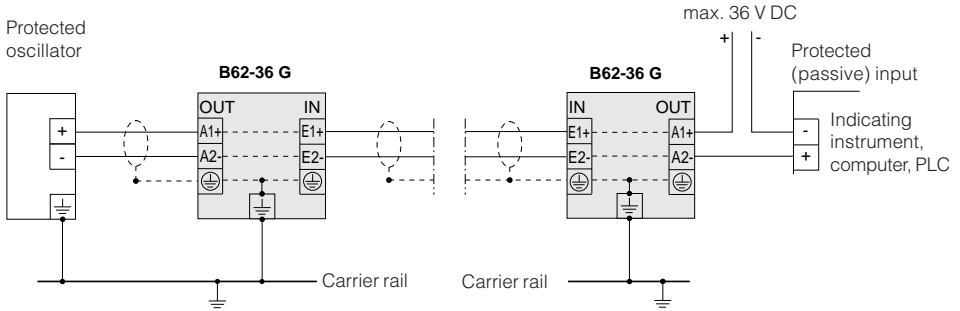


- Terminal row (IN)
generally **unprotected** side of the overvoltage arrester.
- Terminal row (OUT)
generally **protected** side of the overvoltage arrester.

B62-36 G: Protection for passive input

12 ... 36 V DC, max. 1 A

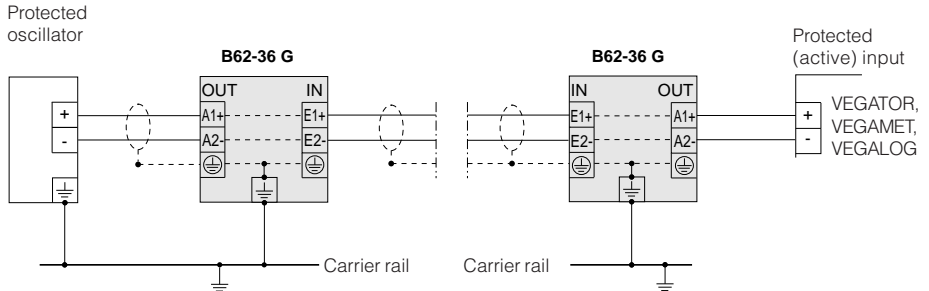
For 4 ... 20 mA and VBUS two-wire sensors, max. 12 ... 36 V DC.



B62-36 G: Protection for active (power-feeding) input

12 ... 36 V DC, max. 1 A

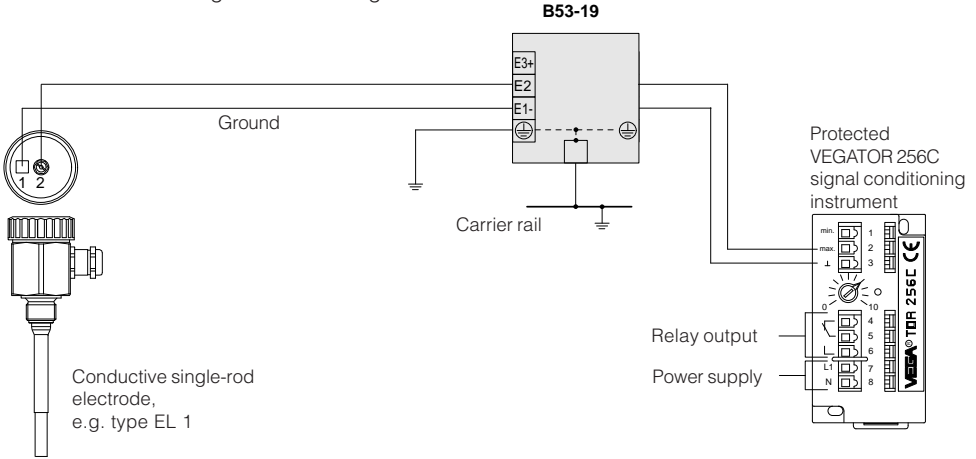
For 4 ... 20 mA and VBUS two-wire sensors, max. 12 ... 36 V DC.



6.3 Connection to the signal cable

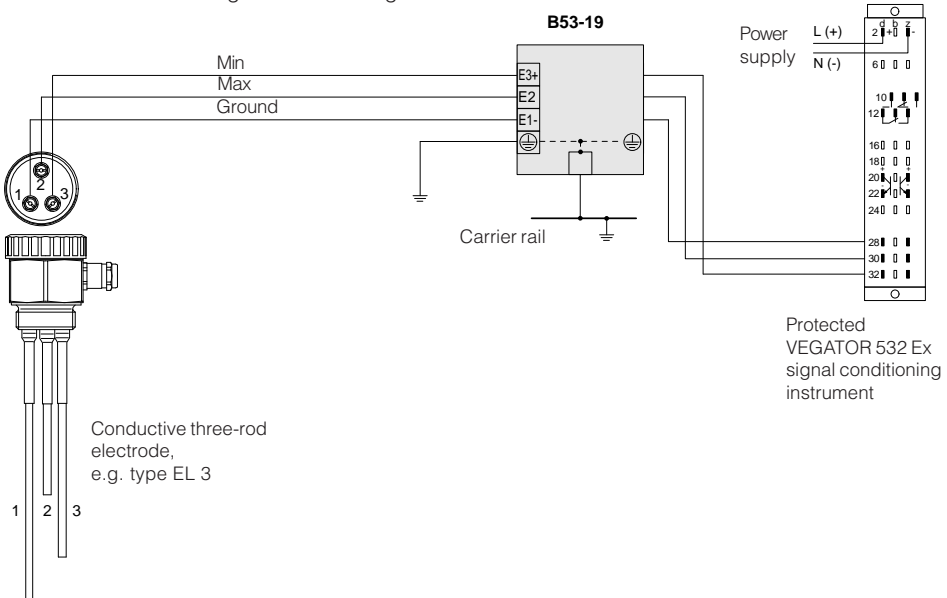
B53-19: 19 V AC/27 V DC, max. 1 A in conductive measuring systems with

- conductive single-rod electrode
- VEGATOR 256C signal conditioning instrument



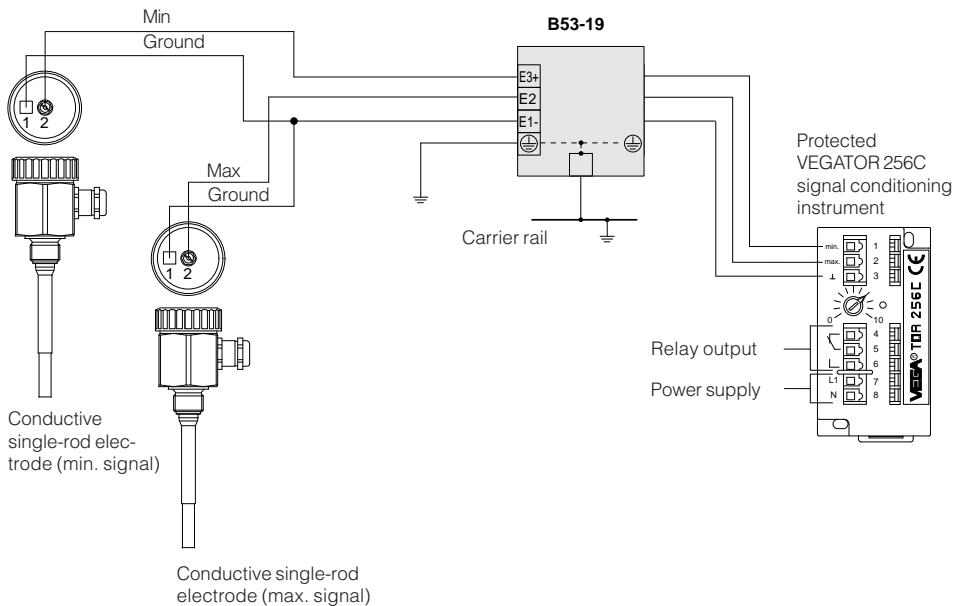
B53-19: 19 V AC/27 V DC, max. 1 A with

- conductive three-rod electrode
- VEGATOR 532 Ex signal conditioning instrument



B53-19: 19 V AC/27 V DC, max. 1 A with

- 1 conductive single-rod electrode (min. signal)
- 1 conductive single-rod electrode (max. signal)
- VEGATOR 256C signal conditioning instrument



7 Overvoltage arresters for Ex systems

B62-36 G or B62-30 W can be used as overvoltage arresters in Ex areas. In e.g. EN 50079-14 (ATEX) Ex area, the overvoltage arresters must only be mounted in Zone 1 or Zone 2 (not in Zone 0). A difference must be made between overvoltage protection of intrinsically safe and non-intrinsically safe circuits.

For Ex systems, carefully read the installation regulations as well as the special conditions of the respective conformity certificates.

7.1 Overvoltage protection for intrinsically safe instruments in Ex area

The overvoltage arresters B62-36G type ÜSB62-36G.C_* and B62-30W type ÜSB62-30W.C_* are approved according to ATEX for use Ex area zone 1 (zone 2) for protection of intrinsically safe sensors of category 1G, 1/2G, 2G. The supplied safety instructions must be observed.

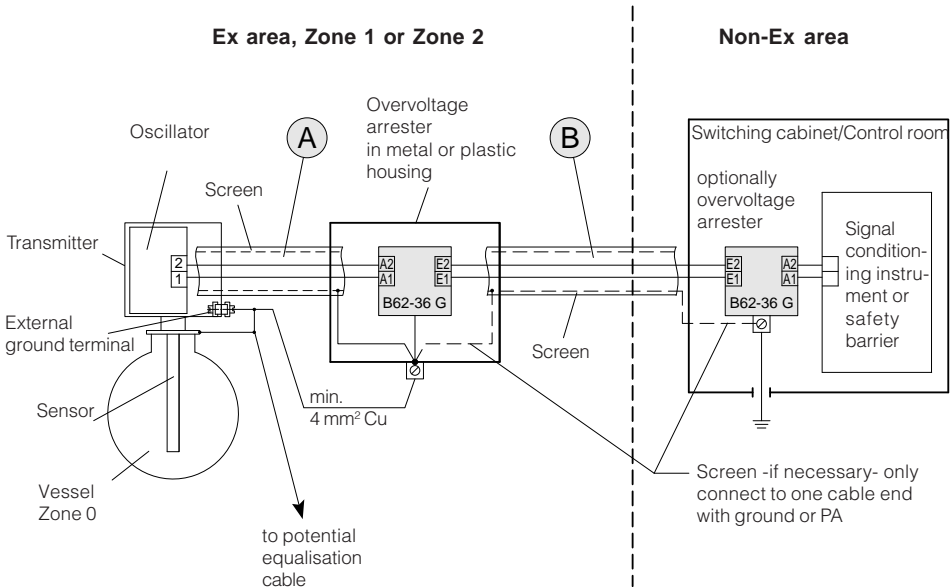
7.2 Overvoltage protection for non-intrinsically safe instruments in Ex area

If overvoltage arresters are used for protection of non-intrinsically safe instruments in Ex areas, these must be mounted in an approved, pressure-tight encapsulated housing.

7.3 Connection example for mounting of an Ex system on vessels without cathodic corrosion protection

The following overvoltage arresters can be used:

- **B62-36 G**: 12 ... 36 V DC, max. 0.45 A
- **B62-30 W**: 9 ... 36 V DC, max. 0.3 A



- (A)** A cable with metal cover, screening or a cable acc. to VDE with metal protective tube must be used between overvoltage arrester and transmitter (metal cover, screening or protective tube must be connected to the potential equalisation).
 Test voltage of the cable „A“ ≥ 1500 V AC.
- (B)** A cable acc. to VDE, if necessary with metal cover or screen must be used between control room and overvoltage arrester (metal cover or screen -if necessary- connect only on one cable end to ground or PA).
 Test voltage of the cable „B“ ≥ 500 V AC.



VEGA Grieshaber KG
Am Hohenstein 113
D-77761 Schiltach
Phone (07836) 50-0
Fax (07836) 50-201
E-Mail info@de.vega.com
www.vega.com



All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the latest information at the time of printing.

Technical data to subject to alterations