

6 Electrical connection

6.1 Connecting the measuring unit

6.1.1 Terminal assignment

⚠ WARNING

Risk of injury from the uncontrolled activation of processes!

- ▶ Switch off the supply voltage before connecting the device.
- ▶ Make sure that downstream processes are not started unintentionally.

⚠ WARNING

Supply voltage might be connected!

Explosion Hazard!

- ▶ Make sure that no supply voltage is applied when connecting.
- ▶ Switch off the supply voltage before connecting the device.

⚠ WARNING

Limitation of electrical safety due to incorrect connection!

- ▶ In accordance with IEC/EN61010 a suitable circuit breaker must be provided for the device.
- ▶ **Non-hazardous area:** To meet device safety specifications according to the IEC/EN61010 standard, the installation must ensure that the maximum current is limited to 500 mA.
- ▶ **Hazardous area:** The maximum current is restricted to $I_i = 100 \text{ mA}$ by the transmitter power supply unit when the device is used in an intrinsically safe circuit (Ex ia).
- ▶ The device must be operated with a 500 mA fine-wire fuse (slow-blow).
- ▶ When using the measuring device in hazardous areas, installation must also comply with the corresponding national standards and regulations and the Safety Instructions or Installation or Control Drawings.
- ▶ All explosion protection data are given in separate documentation which is available upon request. The Ex documentation is supplied as standard with all devices approved for use in explosion hazardous areas.
- ▶ Protective circuits against reverse polarity are integrated.

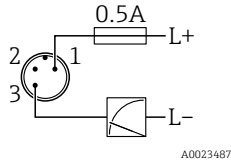
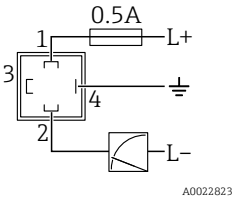
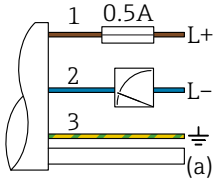
Connect the device in the following order:

1. Check that the supply voltage corresponds to the supply voltage indicated on the nameplate.
2. Connect the device in accordance with the following diagram.

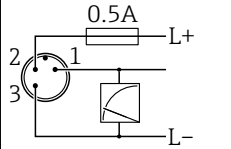
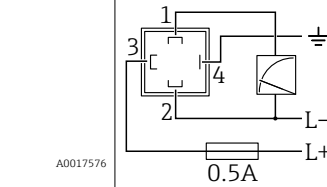
Switch on the supply voltage.

For devices with a cable connection: do not close reference air hose (see (a) in the following drawings)! Protect reference air hose against penetration by water/condensate.

4 to 20 mA output

Device	M12 plug	Valve plug	Cable
PMC11 PMP11 PMC21 PMP21 PMP23			 1 brown = L+ 2 blue = L- 3 green/yellow = ground connection (a) reference air hose

0 to 10 V output

Device	M12 plug	Valve plug	Cable
PMC11 PMP11			-

6.1.2 Supply voltage



Supply voltage might be connected!

Risk of explosion!

- ▶ When using the measuring device in hazardous areas, installation must comply with the corresponding national standards and regulations as well as the Safety Instructions.
- ▶ All explosion protection data are given in separate documentation which is available upon request. The Ex documentation is supplied as standard with all devices approved for use in explosion hazardous areas.

Electronic version	Device	Supply voltage
4 to 20 mA output	PMC11 PMP11 PMC21 PMP21 PMP23	10 to 30 V DC
0 to 10 V output	PMC11 PMP11	12 to 30 V DC

6.1.3 Current consumption and alarm signal

Electronic version	Device	Current consumption	Alarm signal ¹⁾
4 to 20 mA output	PMC11 PMP11 PMC21 PMP21 PMP23	≤ 26 mA	> 21 mA
0 to 10 V output	PMC11 PMP11	< 12 mA	11 V

1) For MAX alarm (factory setting)

6.2 Switching capacity

- Switch cycles: >10,000,000
- Voltage drop PNP: ≤ 2 V
- Overload protection: Automatic load testing of switching current;
 - Max. capacitive load: 14 μ F at max. supply voltage (without resistive load)
 - Max. cycle duration: 0.5 s; min. t_{on} : 4 ms
 - Periodic disconnection from protective circuit in the event of overcurrent ($f = 2$ Hz) and "F804" displayed

6.3 Connection conditions

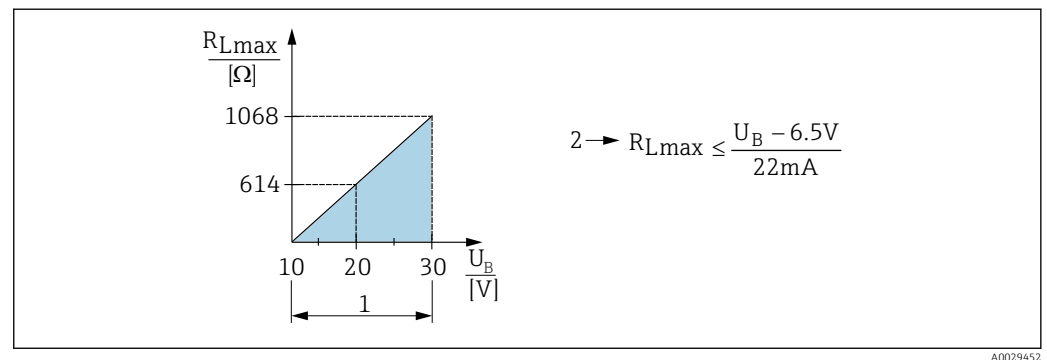
6.3.1 Cable specification

For valve plug: $< 1.5 \text{ mm}^2$ (16 AWG) and $\varnothing 4.5$ to 10 mm (0.18 to 0.39 in)

6.4 Connection data

6.4.1 Load (for 4 to 20 mA devices)

In order to guarantee sufficient terminal voltage in two-wire devices, a maximum load resistance R_L (including line resistance) must not be exceeded depending on the supply voltage U_B of the supply unit.



- 1 Power supply 10 to 30 V DC
 2 R_{Lmax} Maximum load resistance
 U_B Supply voltage

6.4.2 Load resistance (for 0 to 10 V devices)

The load resistance must be ≥ 5 [kΩ].

6.5 Post-connection check

☐	Are the device or cables free from damage (visual check)?
☐	Do the cables comply with the requirements?
☐	Do the mounted cables have adequate strain relief?
☐	Are all the cable glands installed, firmly tightened and leak-tight?
☐	Does the supply voltage match the specifications on the nameplate?
☐	Is the terminal assignment correct ?
☐	If required: has protective ground connection been established?

7 Operation options

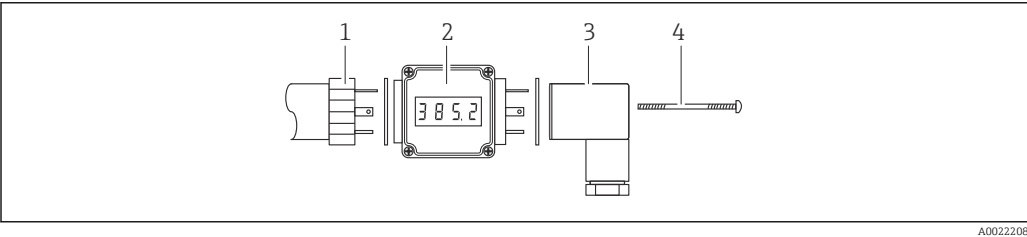
7.1 Plug-on display PHX20 (optional)

Devices with valve plug can be fitted with the optional local display PHX20. A 1-line liquid crystal display (LCD) is used. The local display shows measured values, fault messages and information messages. The device display can be turned in 90° steps. Depending on the orientation of the device, it is therefore easy to read the measured values.

7.1.1 Storage conditions

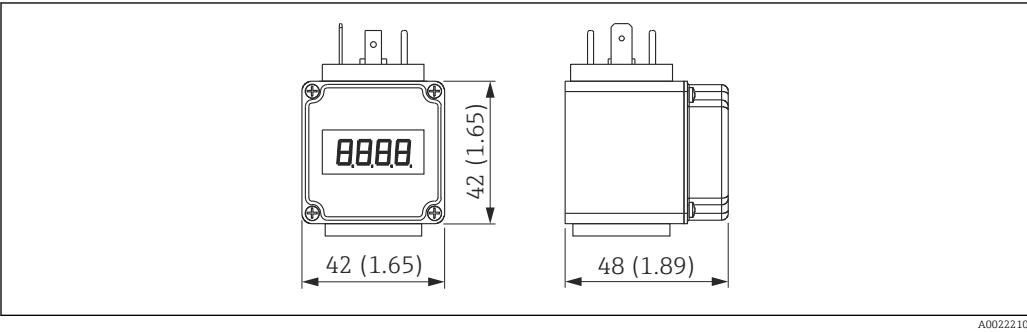
- Use original packaging.
- Storage temperature range: -30 to +80 °C (-22 to +176 °F)

7.1.2 Installation



1. Place seals between the sensor and plug-on display and between the plug-on display and plug.
2. Insert plug-on display (2) between plug (3) and plug socket (1) of sensor.
3. Replace securing screw (4) with the extended screw that is included in the scope of delivery.
4. An adhesive label specifying the technical unit, which is included in the scope of delivery, can be applied below the LED display.

Mounting dimensions



7.1.3 Technical data

Display:	4-digit, red LED display
Digit height:	7.62 mm; programmable decimal point setting
Display range:	-1999...9999
Accuracy:	0.2% of span ±1 digit