

Operating Instructions

External indicating and adjustment unit



Document ID:
31550

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**Supplementary documentation****Information:**

Supplementary documents appropriate to the ordered version come with the delivery. You can find them listed in chapter "*Product description*".

1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This operating instructions manual is directed to trained qualified personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbolism used



Information, tip, note

This symbol indicates helpful additional information.



Caution: If this warning is ignored, faults or malfunctions can result.

Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.



Ex applications

This symbol indicates special instructions for Ex applications.



List

The dot set in front indicates a list with no implied sequence.



Action

This arrow indicates a single action.



Sequence

Numbers set in front indicate successive steps in a procedure.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

During work on and with the device the required personal protective equipment must always be worn.

2.2 Appropriate use

The external indicating and adjustment unit is used for remote measured value indication and parameter adjustment for IPT-1* pressure transmitters.

You can find detailed information on the application range in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

2.3 Warning about misuse

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

This is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

2.5 Safety label on the instrument

The safety approval markings and safety tips on the device must be observed.

2.6 CE conformity

This device fulfills the legal requirements of the applicable EC guidelines. By attaching the CE mark, we provide confirmation of successful testing.

2.7 Compatibility according to NAMUR NE 53

With respect to compatibility, NAMUR recommendation NE 53 is met.

The parameter adjustment of the basic sensor functions is independent of the software version. The range of available functions depends on the respective software version of the individual components.

2.8 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 manual and come with the Ex-approved instruments.

3 Product description

3.1 Structure

Scope of delivery

The scope of delivery encompasses:

- External indicating and adjustment unit
- Cable entry M20x1 for the sensor
- Documentation
 - this operating instructions manual
 - Operating instructions manual "*Indicating and adjustment module*"
 - Ex-specific "*Safety instructions*" (with Ex versions)
 - if necessary, further certificates

Constituent parts

The external indicating and adjustment unit consists of the following components:

- Housing cover with integrated indicating and adjustment module
- Housing with electronics
- Mounting element, depending on the order specification: mounting plate for wall mounting, clip for carrier rail mounting or strap for tube mounting

The components are available in different versions.

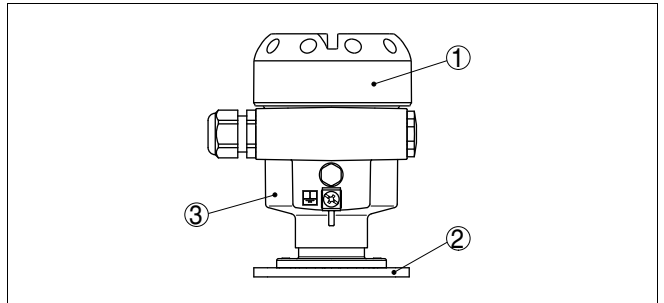


Fig. 1: External indicating and adjustment unit with Alu housing and mounting plate for wall mounting

- 1 *Housing cover with integrated indicating and adjustment module*
- 2 *Housing with electronics*
- 3 *Mounting plate*

Type label

The type label contains the most important data for identification and use of the instrument:

- Article number
- Serial number
- Technical data
- Article numbers, documentation

3.2 Principle of operation

Application area

The external indicating and adjustment module is used for remote measured value indication and parameter adjustment for IPT-1* pressure transmitters

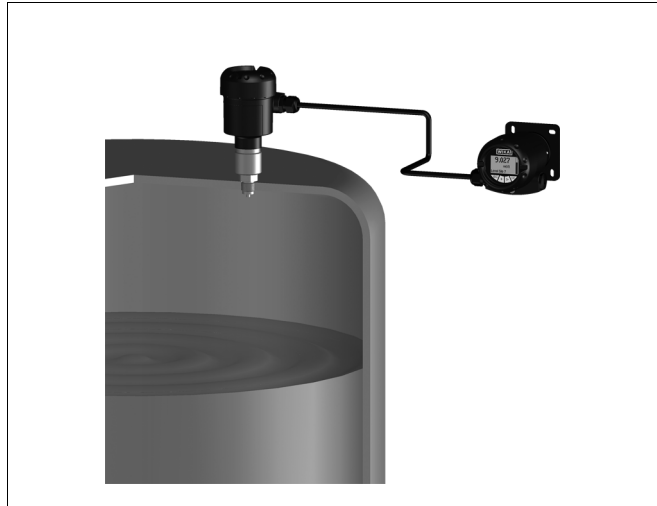


Fig. 2: Connection of the external indicating and adjustment module to the sensor

Connection to 4 ... 20 mA/ HART sensors

The external indicating and adjustment unit is connected to the sensor with a screened four-wire **standard cable** up to 25 m long. Communication is carried out via this cable and the indicating and adjustment unit is also powered by the sensor. An additional power supply is not necessary.

Connection to PA/FF sensors

The external indicating and adjustment unit is connected to the sensor with a screened four-wire **standard cable** (up to 25 m long) with connection socket M12 x 1. Communication is carried out via this cable and the indicating and adjustment unit is also powered by the sensor. An additional power supply is not necessary.

Note:

This cable is absolutely necessary for the reliable function of the indicating and adjustment unit as well as the sensor.

3.3 Operation

The external indicating and adjustment unit includes an indicating and adjustment module with which the respective sensor can be adjusted.

The entered parameters are generally stored in the respective sensor.

3.4 Packaging, transport and storage

Packaging	<p>Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test according to DIN EN 24180.</p> <p>The packaging of standard instruments consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.</p>
Transport	<p>Transport must be carried out under consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.</p>
Transport inspection	<p>The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.</p>
Storage	<p>Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.</p> <p>Unless otherwise indicated, the packages must be stored only under the following conditions:</p> <ul style="list-style-type: none">● Not in the open● Dry and dust free● Not exposed to corrosive media● Protected against solar radiation● Avoiding mechanical shock and vibration
Storage and transport temperature	<ul style="list-style-type: none">● Storage and transport temperature see chapter "<i>Supplement - Technical data - Ambient conditions</i>"● Relative humidity 20 ... 85 %

4 Mounting

4.1 General instructions

Mounting position

The external indicating and adjustment unit functions in any installation position. The housing can be rotated by 330° without the use of any tools.

Moisture

Use the recommended cables (see chapter "Connecting to power supply") and tighten the cable gland.

You can give your instrument additional protection against moisture penetration by leading the connection cable downward in front of the cable entry. Rain and condensation water can thus drain off. This applies mainly to outdoor mounting as well as installation in areas where high humidity is expected (e.g. through cleaning processes) or on cooled or heated vessels.

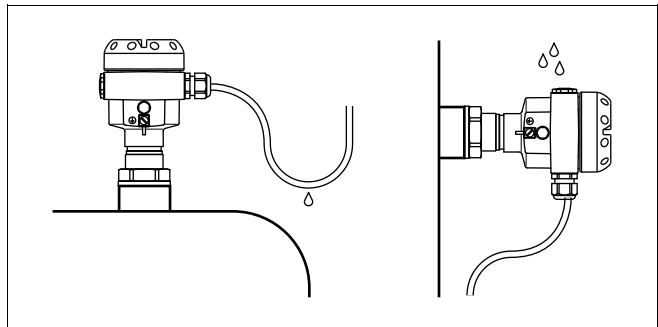


Fig. 3: Measures against moisture penetration

4.2 Mounting instructions

Wall mounting

The external indicating and adjustment module for wall mounting is supplied with a mounting socket.

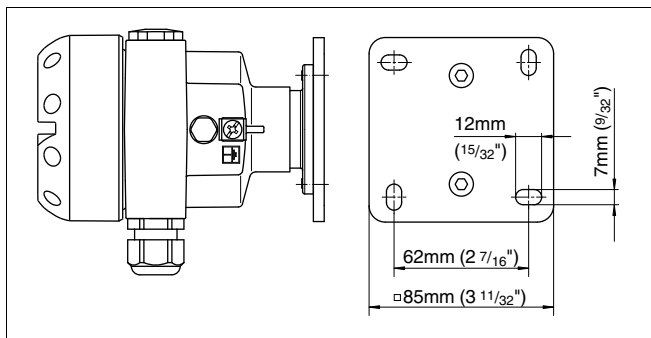


Fig. 4: External indication and adjustment unit for wall mounting. Bottom view of the mounting plate.

1 Drilling dimensions

Carrier rail mounting

The external indicating and adjustment module for mounting on carrier rail is supplied with a mounting adapter.

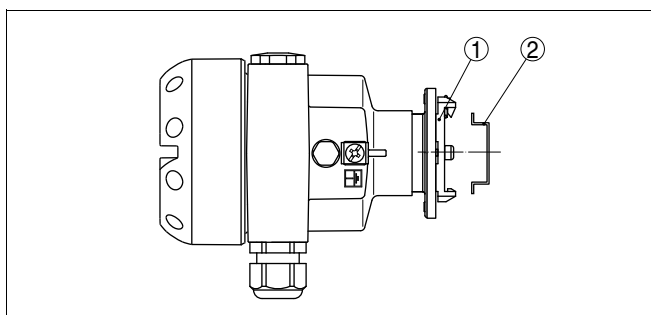


Fig. 5: External indicating and adjustment unit for carrier rail mounting

1 Adapter plate with screw M4 x 6

2 Carrier rail

Tube mounting

The external indicating and adjustment module for pipe mounting is supplied with an measuring instrument holder as unassembled mounting accessory.

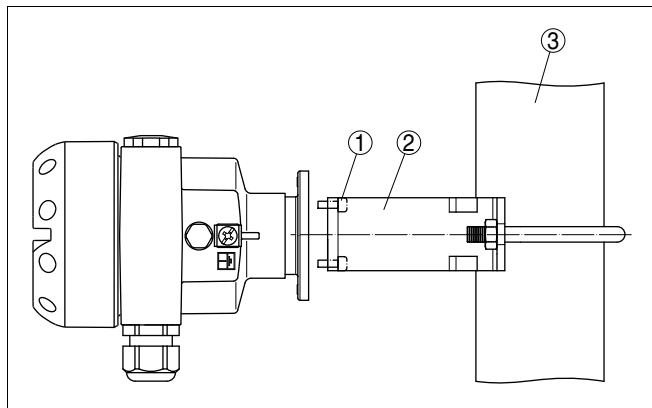


Fig. 6: External indicating and adjustment unit for pipe mounting

- 1 4 screws M5 x 12
- 2 Measuring instrument holder
- 3 Tube

5 Connecting to power supply

5.1 Preparing the connection

Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

Take note of safety instructions for Ex applications



In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units.

Select connection cable 4 ... 20 mA/HART sensors

The external indicating and adjustment unit is connected to the sensor with standard four-wire cable with screen.

Use cable with round cross-section. A cable outer diameter of 5 ... 9 mm (0.2 ... 0.35 in) ensures the seal effect of the cable gland. If you are using cable with a different diameter or cross-section, exchange the seal or use a suitable cable gland.

Sensors with double chamber housing can be equipped with a plug M12 x 1 (optional) for connection of the external indicating and adjustment unit.

Select connection cable PA/FF sensors

The external indicating and adjustment unit is connected to the sensor with a screened four-wire **special cable** (up to 25 m length) with connection socket M12 x 1.

PA/FF sensors with single or double chamber housing can be equipped optionally with a 5-pole plug M12 x 1 (optional) for connecting the external indicating and adjustment unit.



Information:

The special cable is part of the scope of delivery with PA/FF sensors with connection plug M12 x 1 for the external indicating and adjustment unit.

Select connection cable for Ex applications



Take note of the corresponding installation regulations for Ex applications.

Cable screening and grounding

Connect the cable screen on both ends to ground potential. In the external indicating and adjustment module and in the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the potential equalisation (low impedance).

Cable screening and grounding for Ex applications

In Ex applications, one-sided grounding on the sensor is recommended, see EN 60079-14.

5.2 Connection procedure

Proceed as follows:

- 1 Unscrew the housing cover
- 2 If an indicating and adjustment module is installed, remove it by turning it slightly to the left.
- 3 Loosen compression nut of the cable entry
- 4 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
- 5 Insert the cable into the sensor through the cable entry
- 6 Lift the opening levers of the terminals with a screwdriver (see following illustration)
- 7 Insert the wire ends into the open terminals according to the wiring plan



Fig. 7: Connection steps 6 and 7

- 8 Press down the opening levers of the terminals, you will hear the terminal spring closing
- 9 Check the hold of the wires in the terminals by lightly pulling on them
- 10 Connect the screen to the internal ground terminal, connect the outer ground terminal to potential equalisation
- 11 Tighten the compression nut of the cable entry. The seal ring must completely encircle the cable

- 12 Screw the housing cover on
The electrical connection is finished.

5.3 Wiring plan

Electronics and connection compartment

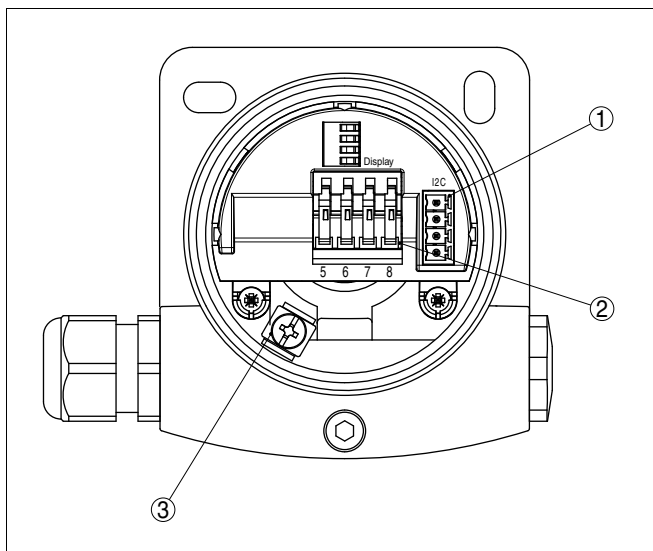


Fig. 8: Electronics and connection compartment

- 1 Spring-loaded terminals for connection to the sensor
- 2 Plug connector for service interface
- 3 Ground terminal for connection of the cable screen¹⁾

¹⁾ Connect screen here. Connect ground terminal on the outside of the housing as prescribed. The two terminals are galvanically connected.

Wiring plan (4 ... 20 mA/ HART sensors)

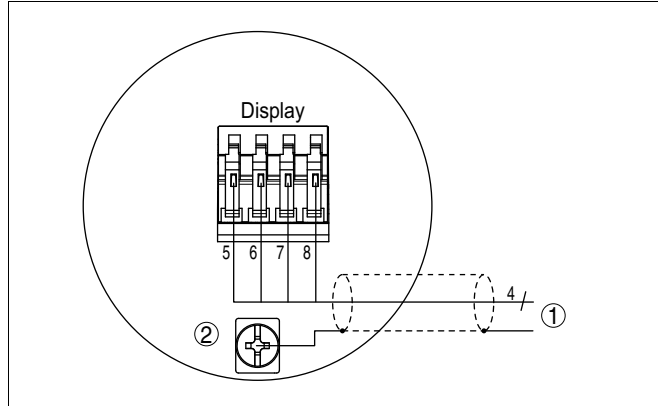


Fig. 9: Wiring plan external indicating and adjustment unit for 4 ... 20 mA/HART sensors

- 1 To the sensor
- 2 Grounding on both ends with non-Ex. With Ex, one-sided grounding at the sensor is recommended, see EN 60079-14.

Connection via cable gland on the sensor

The connection between indicating and adjustment unit and the sensor is carried out according to the chart:

External indicating and adjustment unit	Sensor
Terminal 5	Terminal 5
Terminal 6	Terminal 6
Terminal 7	Terminal 7
Terminal 8	Terminal 8

Connection via plug M12 x 1 on the sensor

The connection between indicating and adjustment unit and the sensor with plug M12 x 1 is carried out according to the chart.²⁾

Wire number	External indicating and adjustment unit	Sensor
1	Terminal 5	PIN 2
2	Terminal 6	PIN 1
3	Terminal 7	PIN 4
4	Terminal 8	PIN 3

²⁾ Plug M12 x 1, optionally with double chamber housing.

Wiring plan (PA/FF sensors)

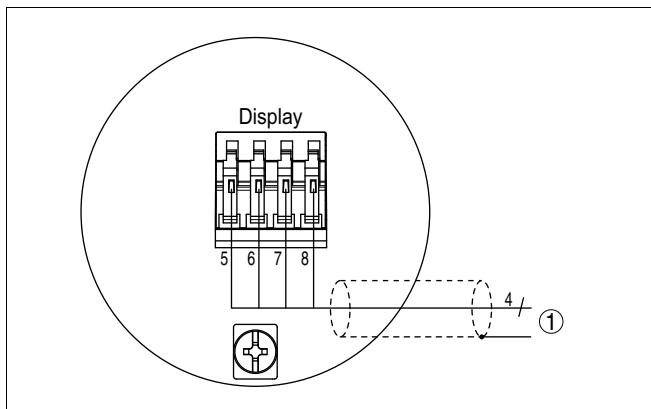


Fig. 10: Wiring plan external indicating and adjustment unit for PA/FF sensors
1 To the sensor

Connection via confectioned cable with 5-pole socket M12 x 1

The connection between the external indicating and adjustment unit and sensor with 5-pole plug M12 x 1 is carried out according to the following chart. The specification of the wire colours refers to the confectioned special cable supplied with this sensor version.³⁾

Wire colour	External indicating and adjustment unit
Black	Terminal 5
White	Terminal 6
Blue	Terminal 7
Brown	Terminal 8

³⁾ Plug M12 x 1, optional with single and double chamber housing.

6 Set up with the indicating and adjustment module

6.1 Short description

Function/Configuration

The indicating and adjustment module is used for measured value display, adjustment and diagnosis. It can be mounted in the following housing versions and instruments:

- All sensors of the IPT-1* instrument family, in the single as well as double chamber housing (optionally in the electronics or connection compartment)
- External indicating and adjustment unit



Note:

You can find detailed information on the adjustment in the operating instructions manual "*Indicating and adjustment module*".

6.2 Insert indicating and adjustment module

Mount/Dismount indicating and adjustment module

The indicating and adjustment module can be inserted and removed at any time. It is not necessary to interrupt the voltage supply.

For installation, proceed as follows:

- 1 Unscrew the housing cover
- 2 Place the indicating and adjustment module in the desired position on the electronics (you can choose any one of four different positions - each displaced by 90°)
- 3 Press the indicating and adjustment module onto the electronics and turn it to the right until it snaps in.
- 4 Screw housing cover with inspection window tightly back on

Removal is carried out in reverse order.

The indicating and adjustment module is powered by the sensor, an additional connection is not necessary.



Fig. 11: Insert indicating and adjustment module



Note:

If you intend to retrofit the instrument with an indicating and adjustment module for continuous measured value indication, a higher cover with an inspection glass is required.

6.3 Adjustment system

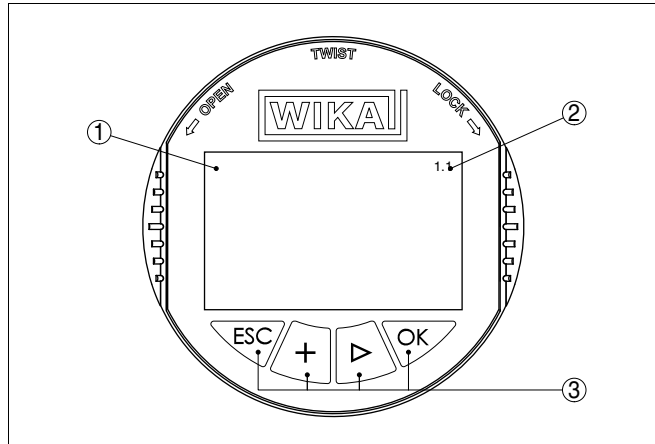


Fig. 12: Indicating and adjustment elements

- 1 LC display
- 2 Indication of the menu item number
- 3 Adjustment keys

Key functions

- **[OK]** key:
 - Move to the menu overview
 - Confirm selected menu
 - Edit parameter
 - Save value
- **[->]** key to select:
 - Menu change
 - Select list entry
 - Select editing position
- **[+]** key:
 - Change value of the parameter
- **[ESC]** key:
 - interrupt input
 - jump to the next higher menu

Adjustment system

The sensor is adjusted via the four keys of the indicating and adjustment module. The LC display indicates the individual menu items. The functions of the individual keys are shown in the above illustration. Approx. 10 minutes after the last pressing of a key, an automatic reset to measured value indication is triggered. Any values not confirmed with **[OK]** will not be saved.

6.4 Setup steps

Setup and adjustment of the respective sensor is carried out according to the operating instructions manual of the respective sensor.

7 Maintenance and fault rectification

7.1 Maintenance

If the instrument is used properly, no special maintenance is required in normal operation.

7.2 Instrument repair

You can download a return form (24 KB) in the Internet from our homepage www.wika.com under the item "Service".

If a repair is necessary, please proceed as follows:

- Print and fill out one form per instrument
- If necessary, state a contamination
- Clean the instrument and pack it damage-proof
- Attach the completed form and probably a safety data sheet to the instrument
- Please contact the agency serving you for the address of the return shipment

By doing this you help us carry out the repair quickly and without having to call back for needed information.

8 Dismounting

8.1 Dismounting steps

**Warning:**

Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The external indicating and adjustment module consists of materials which can be recycled by specialised recycling companies. We have purposely designed the electronics modules to be easily separable.

WEEE directive 2002/96/EG

This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws (in Germany e.g. ElektroG). Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects to persons and environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

9 Supplement

9.1 Technical data

General data

316L corresponds to 1.4404 or 1.4435, 316Ti corresponds to 1.4571

Materials

- Housing plastic PBT, Alu die-casting, 316L
- Inspection window in housing cover for indicating and adjustment module Polycarbonate (UL-746-C listed)
- Ground terminal 316Ti/316L

Weight 0.35 kg (0.772 lbs)

Ambient conditions

Ambient temperature -15 ... +70 °C (+5 ... +158 °F)

Storage and transport temperature -40 ... +80 °C (-40 ... +176 °F)

Electromechanical data

Cable gland 1 x cable gland M20 x 1.5 (cable: \varnothing 5 ... 9 mm), 1 x blind stopper M20 x 1.5 or 1 x closing cap ½ NPT, 1 x blind stopper ½ NPT

Spring-loaded terminals for wire cross-section up to 2.5 mm² (AWG 14)

Indicating and adjustment module

Voltage supply and data transmission through the sensor via gold-coated sliding contacts (I²C-Bus) in the external indicating and adjustment unit

Indication LC display in dot matrix

Adjustment elements 4 keys

Protection rating

- unassembled IP 20
- mounted in the external indicating and adjustment unit without cover IP 40

Materials

- Housing ABS
- Inspection window Polyester foil

Adjustment circuit

Connection to IPT-1* sensors

Data transmission digital (I²C-Bus)

Configuration connection cable 4-wire, screened

Cable length max. 25 m

Electrical protective measures

Protection rating

- Housing plastic IP 66/IP 67
- Housing Aluminium, stainless steel IP 66/IP 68 (0.2 bar)

Overvoltage category III

Protection class II

Approvals⁴⁾

ATEX ia ATEX II 1G, 2G EEx ia IIC T6

ATEX D ATEX II 1/2 D IP6X T

⁴⁾ Deviating data in Ex applications: see separate safety instructions.

9.2 Dimensions

Housing

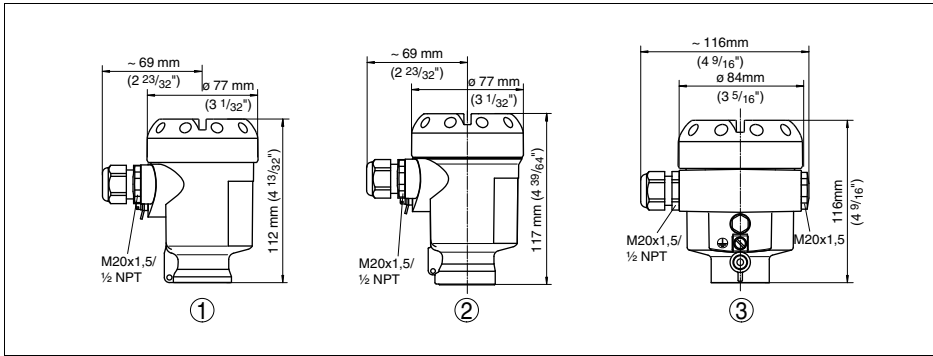


Fig. 13: Housing versions (with integrated indicating and adjustment module the housing is 9 mm/0.35 in higher)

- 1 Plastic housing
- 2 Stainless steel housing
- 3 Aluminium housing

Mounting elements, external indicating and adjustment unit

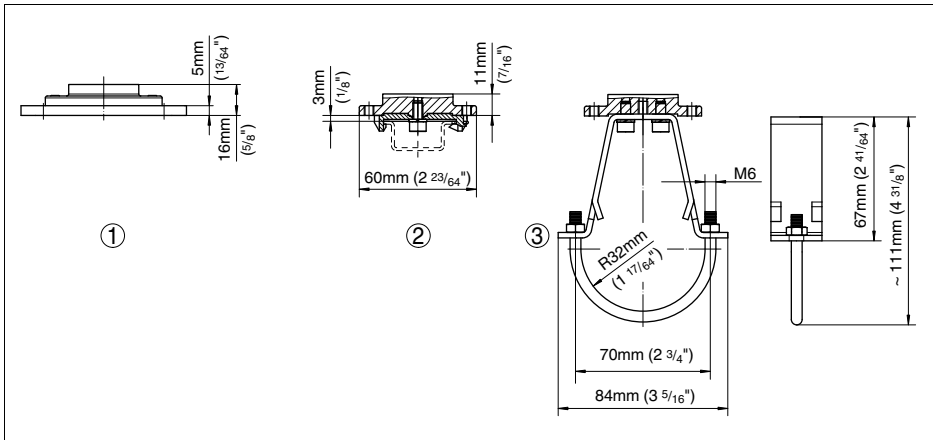


Fig. 14: Mounting elements, external indicating and adjustment unit

- 1 Mounting plate for wall mounting
- 2 Clip for carrier rail mounting
- 3 Strap for tube mounting

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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.