Pressure transmitter, model A-10

EN

Pressure transmitter model A-10

WIKA

Part of your business

Prior to starting any work, read the operating instructions!
Keep for later use!

Vor Beginn aller Arbeiten Betriebsanleitung lesen!
Zum späteren Gebrauch aufbewahren!

Lire le mode d'emploi avant de commencer toute opération !
A conserver pour une utilisation ultérieure !

¡Leer el manual de instrucciones antes de comenzar cualquier trabajo!
¡Guardar el manual para una eventual consulta!

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Contents

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Declarations of conformity can be found online at www.wika.com

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1. General information

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- The instrument described in the operating instructions has been designed and manufactured using state-of-the-art technology. All components are subject to stringent quality and environmental criteria during production. Our management systems are certified to ISO 9001 and ISO 14001.
- These operating instructions contain important information on handling the instrument. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the instrument's range of use.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time. Pass the operating instructions on to the next operator or owner of the instrument.
- Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.
- The general terms and conditions contained in the sales documentation shall apply.
- Subject to technical modifications.

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2. Design and function

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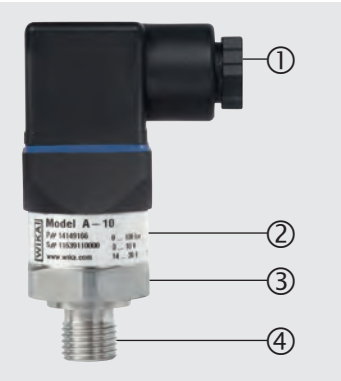
2.1 Overview



① Electrical connection (depending on version)
② Case; product label
③ Process connection, spanner flats
④ Process connection, thread

2.2 Scope of delivery

- Pressure transmitter
- Operating instructions

Cross-check scope of delivery with delivery note.

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3. Safety

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3.1 Explanation of symbols

WARNING!
... indicates a potentially dangerous situation that can result in serious injury or death, if not avoided.

CAUTION!
... indicates a potentially dangerous situation that can result in light injuries or damage to property or the environment, if not avoided.

Information
... points out useful tips, recommendations and information for efficient and trouble-free operation.

3.2 Intended use

The pressure transmitter is used for measuring pressure. The measured pressure is output as an electrical signal.

This is a class B instrument for emissions and is intended for use in industrial environments. In other environments, e.g. residential or commercial installations, it can interfere with other equipment under certain conditions. In such circumstances the operator is expected to take the appropriate measures.

Only use the pressure transmitter in applications that lie within its technical performance limits (e.g. max. ambient temperature, material compatibility, ...).

→ For performance limits see chapter 9 “Specifications”.

The instrument has been designed and built solely for the intended use described here, and may only be used accordingly.

The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

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3. Safety

3.3 Personnel qualification

Skilled personnel
Skilled personnel, authorised by the operator, are understood to be personnel who, based on their technical training, knowledge of measurement and control technology and on their experience and knowledge of country-specific regulations, current standards and directives, are capable of carrying out the work described and independently recognising potential hazards.

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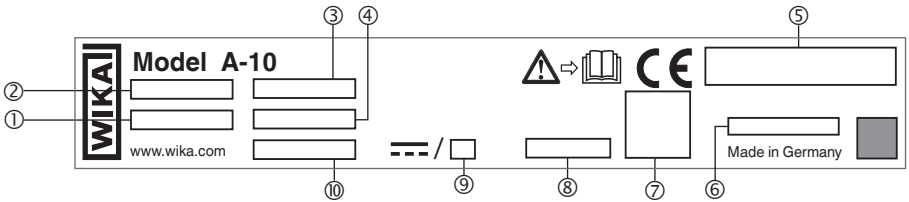
3.4 Labelling, safety marks

Product label



① S# Serial no.
② P# Product no.
③ Measuring range
④ Output signal
⑤ Approvals
⑥ Coded manufacture date
⑦ Pin assignment
⑧ Non-linearity
⑨ Total current consumption
⑩ Power supply

Before mounting and commissioning the instrument, ensure you read the operating instructions!

DC voltage

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4. Transport, packaging and storage

EN

4.1 Transport

Check the pressure transmitter for any damage that may have been caused during transportation.
Obvious damage must be reported immediately.

4.2 Packaging and storage

Do not remove packaging until just before mounting.
Keep the packaging as it will provide optimum protection during transport (e.g. change in installation site, sending for repair).

Permissible conditions at the place of storage:

- Storage temperature: -40 ... +70 °C
- Humidity: 45 ... 75 % relative humidity (no condensation)

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5. Commissioning, operation

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5.1 Mounting the instrument

Only use the pressure transmitter if it is in perfect condition with respect to safety.
Prior to commissioning, the pressure transmitter must be subjected to a visual inspection.

- Leaking fluid is indicative of damage.

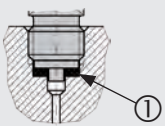
Requirements for mounting point

The mounting point must meet the following conditions:

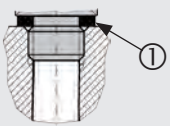
- Sealing faces are clean and undamaged.
- Sufficient space for a safe electrical installation.
- For information on tapped holes and welding sockets, see Technical information IN 00.14 at www.wika.com.
- Permissible ambient and medium temperatures remain within the performance limits. Consider possible restrictions on the ambient temperature range caused by mating connector used.
  → For performance limits see chapter 9 “Specifications”

Sealing variants

Parallel threads
Seal the sealing face ① with flat gasket, lens-type sealing ring or WIKA profile sealing.

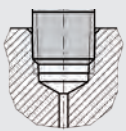


per EN 837



per DIN 3852-E

Tapered threads
Wrap threads with sealing material (e.g. PTFE tape).


NPT, R and PT

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5. Commissioning, operation

Mounting the instrument

The max. torque depends on the mounting point (e.g. material and shape). If you have any questions, please contact our application consultant.
→ For contact details see chapter 1 “General information” or the back page of the operating instructions.

1. Seal the sealing face (→ see “Sealing variants”).
2. At the mounting point, screw the pressure transmitter in hand-tight.
3. Tighten with a torque spanner using the spanner flats.

5.2 Connecting the instrument to the electric system

Requirements for voltage supply
→ For power supply see product label

The power supply for the pressure transmitter must be made via an energy-limited electrical circuit in accordance with section 9.3 of UL/EN/IEC 61010-1, or an LPS per UL/EN/IEC 60950-1, or class 2 in accordance with UL1310/UL1585 (NEC or CEC). The voltage supply must be suitable for operation above 2,000 m should the pressure transmitter be used at this altitude.

Requirements for electrical connection
- Cable diameter matches the cable bushing of the mating connector.
- Cable gland and seals of the mating connector are correctly seated.
- With cable outlets, no humidity can ingress at the cable end.

Requirement for shielding and grounding
The instrument must be connected to the equipotential bonding of the plant. The connection is made via the process connection of the instrument.

Connecting the instrument

1. Assemble the mating connector or cable outlet.
   → For pin assignments see product label
2. Establish the plug connection.

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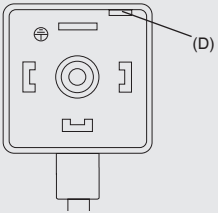
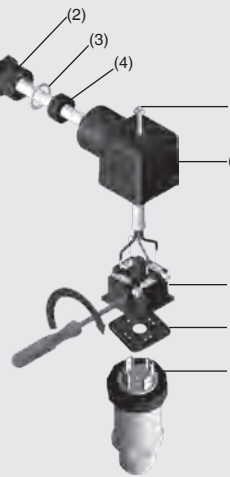
5.3 Fitting a DIN 175301-803 angular connector



1. Loosen the screw (1).
2. Loosen the cable gland (2).
3. Pull the angular connector (5) + (6) away from the instrument.
4. **CAUTION!**
   Improper mounting
   The seal of the angle housing will be damaged.
   ► Do not try to push the terminal block (6) out using the screw hole (1) or the cable gland (2).

   Via the mounting hole (D), lever the terminal block (6) out of the angle housing (5).



5. Slide the cable through the cable gland (2), the ring (3), the sealing (4) and the angle housing (5).
6. Connect the cable ends to the terminal blocks (6) in accordance with the connection diagram.
7. Press the angle housing (5) onto the terminal block (6).
8. Make sure that the seals are not damaged and that the cable gland and seals are correctly seated in order to ensure ingress protection.
9. Tighten the cable gland (2) around the cable.
10. Place the flat gasket (7) over the instrument's connection pins.
11. Push the angular connector (5) + (6) onto the instrument.
12. Tighten the screw (1).

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6. Faults

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CAUTION!

Physical injuries and damage to property and the environment

If faults cannot be eliminated by means of the listed measures, the pressure transmitter must be taken out of operation immediately.

- ► Ensure that pressure or signal is no longer present and protect against accidental commissioning.
- ► Contact the manufacturer.
- ► If a return is needed, please follow the instructions given in chapter 8.2 “Return”.

WARNING!

Physical injuries and damage to property and the environment caused by hazardous media

Upon contact with hazardous media (e.g. oxygen, acetylene, flammable or toxic substances), harmful media (e.g. corrosive, toxic, carcinogenic, radioactive), and also with refrigeration plants and compressors, there is a danger of physical injuries and damage to property and the environment.

- ► Should a failure occur, aggressive media with extremely high temperature and under high pressure or vacuum may be present at the instrument.
- ► For these media, in addition to all standard regulations, the appropriate existing codes or regulations must also be followed.
- ► Wear the requisite protective equipment (see chapter 3.4 “Personal protective equipment”).

For contact details see chapter 1 “General information” or the back page of the operating instructions.

In the event of any faults, first check whether the pressure transmitter is mounted correctly, mechanically and electrically. If complaint is unjustified, the handling costs will be charged.

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6. Faults

Faults	Causes	Measures
No output signal	Cable break	Check the continuity
Deviating zero point signal	Overload safety exceeded	Observe the permissible overload safety
Deviating zero point signal	Too high/low working temperature	Observe the permissible temperatures
Constant output signal upon change in pressure	Mechanical overload caused by overpressure	Replace instrument; if it fails repeatedly, contact the manufacturer
Signal span varies	EMC interference sources in the environment; for example, frequency converter	Shield instrument; cable shield; remove source of interference
Signal span varies/inaccurate	Too high/low working temperature	Observe the permissible temperatures
Signal span drops/too small	Mechanical overload caused by overpressure	Replace instrument; if it fails repeatedly, contact the manufacturer

If complaint is unjustified, we will charge you the complaint processing fees.

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7. Maintenance and cleaning

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7.3.1 Maintenance

This pressure transmitter is maintenance-free.
Repairs must only be carried out by the manufacturer.

7.3.2 Cleaning

CAUTION!
Unsuitable cleaning agents
Cleaning with unsuitable cleaning agents may damage the instrument and the product label.

- ▶ Do not use any aggressive cleaning agents.
- ▶ Do not use any hard or pointed objects.
- ▶ Do not use any abrasive cloths or sponges.

Suitable cleaning agents

- Water
- Conventional dishwashing detergent

Cleaning the instrument

1. Depressurise and de-energise the pressure transmitter.
2. Wipe the instrument surface using a soft, damp cloth.

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8. Dismounting, return and disposal

8.1 Dismounting

WARNING!

Physical injuries and damage to property and the environment caused by hazardous media

Upon contact with hazardous media (e.g. oxygen, acetylene, flammable or toxic substances), harmful media (e.g. corrosive, toxic, carcinogenic, radioactive), and also with refrigeration plants and compressors, there is a danger of physical injuries and damage to property and the environment.

- ► Should a failure occur, aggressive media with extremely high temperature and under high pressure or vacuum may be present at the instrument.
- ► Wear the requisite protective equipment.

Dismounting the instrument

1. Depressurise and de-energise the pressure transmitter.
2. Disconnect the electrical connection.
3. Unscrew the pressure transmitter with a spanner using the spanner flats.

8.2 Return

Strictly observe the following when shipping the instrument:

All instruments delivered to WIKA must be free from any kind of hazardous substances (acids, bases, solutions, etc.) and must therefore be cleaned before being returned.

WARNING!

Physical injuries and damage to property and the environment through residual media

Residual media in the dismounted instrument can result in a risk to persons, the environment and equipment.

- ► With hazardous substances, include the material safety data sheet for the corresponding medium.
- ► Clean the instrument, see chapter 7.2 “Cleaning”.

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8. Dismounting, return

When returning the instrument, use the original packaging or a suitable transport packaging.

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Information on returns can be found under the heading “Service” on our local website.

8.3 Disposal

Incorrect disposal can put the environment at risk.
Dispose of instrument components and packaging materials in an environmentally compatible way and in accordance with the country-specific waste disposal regulations.

Do not dispose of with household waste. Ensure a proper disposal in accordance with national regulations.

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9. Specifications

Measuring ranges and overload safetys (gauge pressure)							
bar	Measuring range	0 ... 0.05	0 ... 0.1	0 ... 0.16	0 ... 0.25	0 ... 0.4	0 ... 0.6
	Overload safety	0.2	0.2	1	1	1	3
	Measuring range	0 ... 1	0 ... 1.6	0 ... 2.5	0 ... 4	0 ... 6	0 ... 10
	Overload safety	3	3.2	5	8	12	20
	Measuring range	0 ... 16	0 ... 25	0 ... 40	0 ... 60	0 ... 100	0 ... 160
	Overload safety	32	50	80	120	200	320
	Measuring range	0 ... 250	0 ... 400	0 ... 600	0 ... 1,000		
	Overload safety	500	800	1,200	1,500		
inWC	Measuring range	0 ... 20	0 ... 40	0 ... 60	0 ... 80	0 ... 100	0 ... 120
	Overload safety	84	84	400	400	400	400
	Measuring range	0 ... 150	0 ... 200	0 ... 250	0 ... 400		
	Overload safety	400	400	1,200	1,200		
psi	Measuring range	0 ... 1	0 ... 5	0 ... 15	0 ... 25	0 ... 30	0 ... 50
	Overload safety	3	14.5	45	60	60	100
	Measuring range	0 ... 100	0 ... 160	0 ... 200	0 ... 300	0 ... 500	0 ... 1,000
	Overload safety	200	290	400	600	1,000	1,740
	Measuring range	0 ... 1,500	0 ... 2,000	0 ... 3,000	0 ... 5,000	0 ... 10,000	
	Overload safety	2,900	4,000	6,000	10,000	17,400	

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9. Specifications

Measuring ranges and overload safetys (absolute pressure)								
bar	Measuring range	0 ... 0.1	0 ... 0.16	0 ... 0.25	0 ... 0.4	0 ... 0.6	0 ... 1	0 ... 1.6
	Overload safety	1	1	1	1	3	3	3.2
	Measuring range	0 ... 2.5	0 ... 4	0 ... 6	0 ... 10	0 ... 16	0 ... 25	
	Overload safety	5	8	12	20	32	50	
inWC	Measuring range	0 ... 40	0 ... 60	0 ... 80	0 ... 100	0 ... 120	0 ... 150	0 ... 200
	Overload safety	400	400	400	400	400	400	400
	Measuring range	0 ... 250	0 ... 400					
	Overload safety	1,200	1,200					
psi	Measuring range	0 ... 5	0 ... 15	0 ... 25	0 ... 30	0 ... 50	0 ... 100	0 ... 150
	Overload safety	14.5	45	60	60	100	200	290
	Measuring range	0 ... 200	0 ... 300					
	Overload safety	400	600					

Measuring ranges and overload safetys (vacuum and +/- measuring ranges)						
bar	Measuring range	-0.025 ... +0.025	-0.05 ... 0	-0.05 ... +0.05	-0.05 ... +0.15	-0.05 ... +0.2
	Overload safety	±0.2	±0.2	±0.2	1	1
	Measuring range	-0.05 ... +0.25	-0.1 ... 0	-0.1 ... +0.1	-0.15 ... +0.15	-0.16 ... 0
	Overload safety	1	±0.2	1	1	1
	Measuring range	-0.2 ... +0.2	-0.25 ... 0	-0.25 ... +0.25	-0.3 ... +0.3	-0.4 ... 0
	Overload safety	1	1	1	3	1
	Measuring range	-0.5 ... +0.5	-0.6 ... 0	-1 ... 0	-1 ... +0.6	-1 ... +1.5
	Overload safety	3	3	3	3.2	5
	Measuring range	-1 ... +3	-1 ... +5	-1 ... +9	-1 ... +15	-1 ... +24
	Overload safety	8	12	20	32	50

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9. Specifications

Measuring ranges and overload safetys (vacuum and +/- measuring ranges)

inWC	Measuring range	-10 ... +10	-20 ... 0	-20 ... +20	-40 ... 0	-40 ... +40
	Overload safety	±80	±80	±80	±80	±80
	Measuring range	-50 ... +50	-60 ... 0	-75 ... +75	-80 ... 0	-100 ... 0
	Overload safety	400	400	400	400	400
	Measuring range	-100 ... +100	-120 ... 0	-125 ... +125	-150 ... 0	-200 ... +200
	Overload safety	400	400	1,200	400	1,200
	Measuring range	-250 ... 0				
	Overload safety	1,200				
psi	Measuring range	-1 ... 0	-30 inHg ... 0	-30 inHg ... +15	-30 inHg ... +30	-30 inHg ... +60
	Overload safety	3	45	60	60	150
	Measuring range	-30 inHg ... +100	-30 inHg ... +160	-30 inHg ... +200	-30 inHg ... +300	
	Overload safety	250	350	450	600	

Specifications

Vacuum tightness	Yes (for restrictions see overload safety)	
Output signal	see product label	
Load	Current (2-wire)	≤ (power supply - 8 V) / 0.02 A
	Voltage (3-wire)	> maximum output signal / 1 mA
	Ratiometric (3-wire)	> 10k
Power supply	see product label	
Total current consumption	Current (2-wire)	Signal current, max. 25 mA
	Voltage (3-wire)	8 mA
	Ratiometric (3-wire)	8 mA

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9. Specifications

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Specifications		
Non-repeatability	Measuring range ≤ 0.1 bar: ≤ ±0.2 % of span Measuring range > 0.1 bar: ≤ ±0.1 % of span	
Signal noise	≤ ±0.3 % of span	
Temperature error at 0 ... 80 °C	Typical: ≤ ±1 % of span Maximum: ≤ ±2.5 % of span	
Reference conditions	Ambient temperature	15 ... 25 °C
	Atmospheric pressure	860 ... 1,060 mbar
	Humidity	45 ... 75 % r. h.
	Power supply	DC 24 V
	Mounting position	as required
Settling time	Measuring range ≥ 0.4 bar: < 4 ms Measuring range ≥ 0.05 bar: < 1 min	
Switch-on time	Measuring range ≥ 0.4 bar: < 15 ms Measuring range ≥ 0.05 bar: < 1 min	
Ingress protection	The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.	
	Angular connector DIN 175301-803 A	IP65
	Angular connector DIN 175301-803 C	IP65
	Circular connector M12 x 1	IP67
	Cable outlet	IP67
Shock resistance	500 g (IEC 60068-2-27, mechanical) 100 g at -40 °C	
Service life	Measuring range > 0.1 bar: 100 million load cycles Measuring range ≤ 0.1 bar: 10 million load cycles	
Short-circuit resistance	S+ vs. 0V	
Reverse polarity protection	U_B vs. 0V no reverse polarity protection with ratiometric output signal	

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9. Specifications

Specifications		
Insulation voltage	DC 500 V	
Wetted parts	Measuring range < 10 bar	Stainless steel 316L
	Measuring range ≥ 10 bar	Stainless steel 316L and PH grade steel
	Measuring range ≤ 0 ... 25 bar abs.	Stainless steel 316L
Non-wetted parts	Stainless steel 316L, HNBR, PA, cable from PUR	
Pressure transmission medium	Measuring range < 0 ... 10 bar gauge	Synthetic oil
	Measuring range ≤ 0 ... 25 bar absolute	Synthetic oil
	Measuring range ≥ 0 ... 10 bar gauge	Dry measuring cell

For further specifications see WIKA data sheet PE 81.60 and the order documentation.

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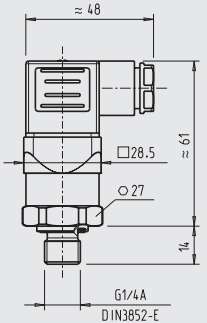
9. Specifications

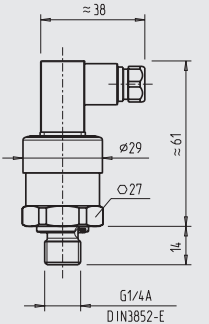
Dimensions in mm

Angular connector form A



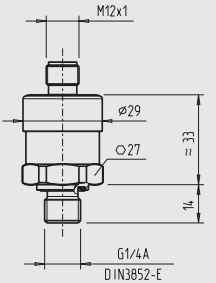
Weight: approx. 80 g

Angular connector form C



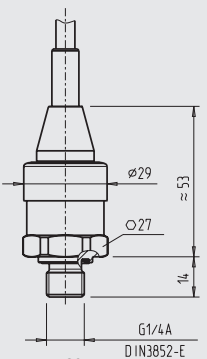
Weight: approx. 80 g

Circular connector M12 x 1



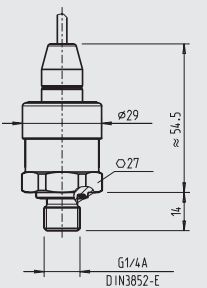
Weight: approx. 80 g

Standard cable outlet, unshielded



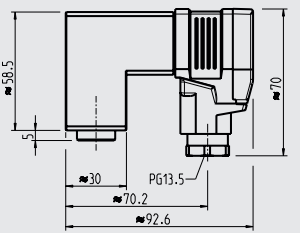
Weight: approx. 80 g

Cable outlet OEM version, unshielded



Weight: approx. 80 g

Angular connector form A, flange connection



Weight: approx. 350 g

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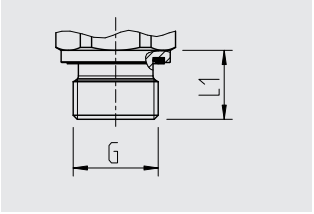
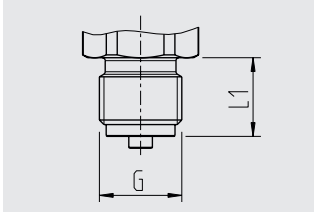
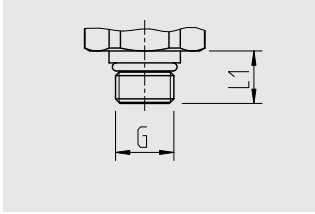
9. Specifications



G	L1
G ¼ A DIN 3852-E	14
G ½ A DIN 3852-E	17
M14 x 1.5	14

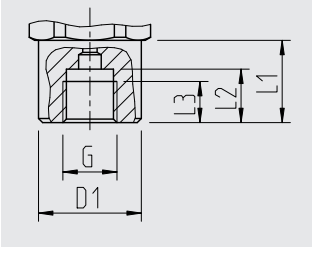


G	L1
G ¼ B EN 837	13
G ⅜ B EN 837	16
G ½ B EN 837	20
M20 x 1.5	20



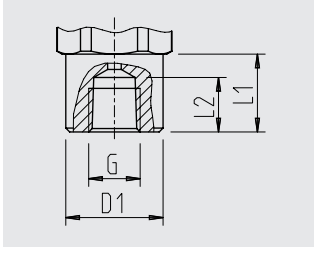
G	L1
7/16-20 UNF BOSS	12.85

Female thread

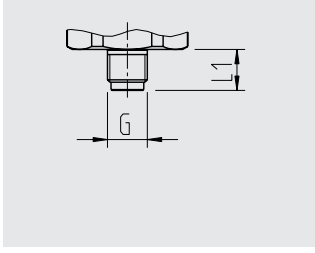


G	L1	L2	L3	D1
G ¼ EN 837	20	13	10	Ø 25

Female thread



G	L1	L2	D1
¼ NPT	20	14	Ø 25



G	L1
G ⅛ B EN 837	10

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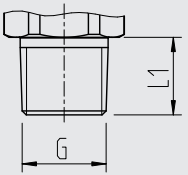
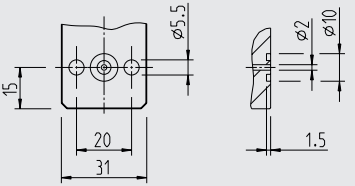
9. Specifications

EN





G	L1
⅛ NPT	10
¼ NPT	13
½ NPT	19
R ¼	13
R ⅜	15
R ½	19
PT ¼	13
PT ⅜	15
PT ½	19

G ¼ female, with flange connection	For dimensions see drawing

For special models A-10000 or special version A-10, other technical specifications apply. Please note the specifications stated on the order confirmation and the delivery note.
For further specifications see WIKA data sheet PE 81.60 and the order documentation.

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