

OEM pressure sensor For industrial applications Models O-10 (T), O-10 (5)

WIKA data sheet PE 81.65



for further approvals see
page 11

Applications

- Hydraulics and pneumatics
- Pumps and compressors
- Machine building
- Building services

Special features

- Measuring ranges from 0 ... 6 to 0 ... 600 bar
- Non-linearity 0.5 %
- Standard industrial signals
- Electrical connection: Angular connector form A and C, circular connector M12 x 1, Metri-Pack series 150, cable outlet 2 m unshielded or shielded
- Many internationally customary process connections



Pressure sensor model O-10 (T)

Description

The model O-10 pressure sensor has been developed for a wide variety of industrial applications. The large range of process and electrical connections as well as all commonly used pressure ranges and output signals set the model O-10 apart.

For applications in which water is used as a medium we recommend a 5-fold overload safety in combination with a condensation-tight case.

Due to its specifications, its features and its price, the pressure sensor is ideally suited to OEM applications, with an annual quantity requirement of more than 1,000 units of each article number. Accordingly, the minimum order quantity is 50 units per article number.

The model O-10 has been designed specifically for the demands of the global market. The pressure sensor offers international units and the corresponding approvals for the North American and Russian markets.

It goes without saying that the model O-10 can be delivered with customer-specific labelling (e.g. company logo and instrument designation).

Versions

Model O-10 (T)

Standard version

Model O-10 (5)

With 5-fold overload safety and condensation-tight case

For applications with water as a medium a 5-fold overpressure safety for protection against water hammer effects and a condensation-tight case is recommended.

Measuring ranges, model O-10 (T)

Gauge pressure							
bar	0 ... 6 ^{1) 2)}	0 ... 10 ^{1) 2)}	0 ... 16	0 ... 25	0 ... 40	0 ... 60	0 ... 100
	0 ... 160	0 ... 250	0 ... 400	0 ... 600			
psi	0 ... 100 ^{1) 2)}	0 ... 160	0 ... 200	0 ... 250	0 ... 300	0 ... 400	0 ... 500
	0 ... 600	0 ... 750	0 ... 800	0 ... 1,000	0 ... 1,500	0 ... 2,000	0 ... 3,000
	0 ... 4,000	0 ... 5,000	0 ... 6,000	0 ... 7,500	0 ... 8,000		

Vacuum and +/- measuring range						
bar	-1 ... +5 ²⁾	-1 ... +9 ²⁾	-1 ... +15	-1 ... +24	-1 ... +39	-1 ... +59
psi	-30 inHg ... +100 ²⁾	-30 inHg ... +160	-30 inHg ... +200	-30 inHg ... +300	-30 inHg ... +500	

1) Measuring deviation of the zero signal $\leq \pm 0.7$ % of span

2) Non-linearity $\leq \pm 0.6$ % of span BFSL

The given measuring ranges are also available in kg/cm², kPa and MPa.
Other measuring ranges on request.

Overload safety

2 times (3 times on request)

Vacuum tightness

Yes

Measuring ranges, model O-10 (5)

Gauge pressure					
bar	0 ... 6	0 ... 10	0 ... 16	0 ... 25	0 ... 40
psi	0 ... 100	0 ... 200	0 ... 500		

Vacuum and +/- measuring range	
bar	-1 ... +5
psi	-30 inHg ... +100

Other measuring ranges on request

Overload safety

5 times

Vacuum tightness

Yes

Output signals, model O-10 (T)

Signal type	Signal
Current (2-wire)	4 ... 20 mA
Voltage (3-wire)	DC 0.5 ... 4.5 V
	DC 0 ... 5 V
	DC 1 ... 5 V
	DC 0 ... 10 V
Ratiometric (3-wire)	DC 0.5 ... 4.5 V

Other output signals on request

Load in Ω

Current output (2-wire):	$\leq (\text{power supply} - 8 \text{ V}) / 0.02 \text{ A}$
Voltage output (3-wire):	$> \text{maximum output signal} / 1 \text{ mA}$
Ratiometric output signal (3-wire):	$> 4.5 \text{ k}\Omega$

Output signals, model O-10 (5)

Signal type	Signal
Current (2-wire)	4 ... 20 mA
Voltage (3-wire)	DC 0.5 ... 4.5 V
	DC 1 ... 5 V
Ratiometric (3-wire)	DC 0.5 ... 4.5 V

Other output signals on request

Load in Ω

Current output (2-wire):	$\leq (\text{power supply} - 8 \text{ V}) / 0.02 \text{ A}$
Voltage output (3-wire):	$> \text{maximum output signal} / 1 \text{ mA}$
Ratiometric output signal (3-wire):	$> 4.5 \text{ k}\Omega$

Voltage supply

Power supply

The power supply depends on the selected output signal.

4 ... 20 mA:	DC 8 ... 30 V
DC 0.5 ... 4.5 V:	DC 8 ... 30 V
DC 0 ... 5 V:	DC 8 ... 30 V
DC 1 ... 5 V:	DC 8 ... 30 V
DC 0 ... 10 V:	DC 14 ... 30 V
DC 0.5 ... 4.5 V (ratiometric):	DC 4.5 ... 5 V

The power supply for the pressure sensor must be made via an energy-limited electric circuit in accordance with section 9.4 of UL/EN/IEC 61010-1 or an LPS to UL/EN/IEC 60950-1 or class 2 in accordance with UL1310/UL1585 (NEC or CEC). The power supply must be suitable for operation above 2,000 m should the pressure sensor be used at this altitude.

Total current consumption

Current output: Corresponds to the value of the output signal current (4 ... 20 mA), maximum 25 mA

Voltage output: 5 mA

Reference conditions (per IEC 61298-1)

Temperature

15 ... 25 °C (59 ... 77 °F)

Atmospheric pressure

860 ... 1,060 mbar (12.5 ... 15.4 psi)

Humidity

45 ... 75 % gauge

Power supply

Current output:	DC 14 V
Voltage output:	DC 24 V
Ratiometric output signal:	DC 5 V

Nominal position

Calibrated in vertical mounting position with process connection facing downwards.

Time response

Settling time

< 2 ms

Accuracy specifications, model O-10 (T)

Non-linearity (per IEC 61298-2)

$\leq \pm 0.5$ % of span BFSL

A different non-linearity applies to some measuring ranges, see "Measuring ranges O-10 (T)".

Measuring deviation of the zero signal

$\leq \pm 0.5$ % of span

A different measuring deviation applies to some measuring ranges, see "Measuring ranges model O-10 (T)".

Accuracy at reference conditions

$\leq \pm 1.2$ % of span

Temperature error at 0 ... 80 °C (32 ... 176 °F)

$\leq \pm 1.5$ % of span

Long-term stability

$\leq \pm 0.3$ % of span/year

Accuracy specifications, model O-10 (5)

Non-linearity (per IEC 61298-2)

$\leq \pm 0.5$ % of span BFSL

Measuring deviation of the zero signal

$\leq \pm 1$ % of span

Accuracy at reference conditions

$\leq \pm 2.0$ % of span

Temperature error at 0 ... 80 °C (32 ... 176 °F)

Mean temperature coefficient of zero point

Typical: 0.3 % of span/10 K

Maximum: 0.6 % of span/10 K

Mean temperature coefficient of span

$\leq \pm 0.1$ % of span/10 K

Long-term drift

$\leq \pm 0.2$ % of span/year

Operating conditions, model O-10 (T)

Ingress protection (per IEC 60529)

For ingress protection see "Electrical connections, model O-10 (T)"

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Vibration resistance (per IEC 60068-2-6)

20 g (20 ... 2,000 Hz, 120 min.)

Shock resistance (per IEC 60068-2-27)

40 g (6 ms), mechanical shock

Service life

10 million load cycles

Free-fall test

Resistant to an impact onto concrete from 1 m

Permissible temperatures

Medium: -30 ... +100 °C (-22 ... 212 °F)

Ambient: -30 ... +100 °C (-22 ... 212 °F)

Storage: -30 ... +100 °C (-22 ... 212 °F)

Operating conditions, model O-10 (5)

Ingress protection (per IEC 60529)

For ingress protection see "Electrical connections, model O-10 (5)"

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Vibration resistance (per IEC 60068-2-6)

20 g (20 ... 2,000 Hz, 120 min)

Shock resistance (per IEC 60068-2-27)

40 g (6 ms), mechanical shock

Service life

10 million load cycles

Free-fall test

Resistant to an impact onto concrete from 1 m

Permissible temperatures

Medium: -40 ... +100 °C (-40 ... 212 °F)

Ambient: -25 ... +80 °C (-13 ... 176 °F)

Storage: -25 ... +80 °C (-13 ... 176 °F)

Other temperature ranges on request

Process connections

Standard	Thread size
EN 837	G 1/8 B ²⁾
	G 1/4 B
	G 1/4 female
	G 3/8 B
DIN 3852-E	G 1/4 A ^{1) 3) 4)}
	M14 x 1.5 ³⁾
ANSI/ASME B1.20.1	1/8 NPT ²⁾
	1/4 NPT ¹⁾
	1/4 NPT female
SAE J514 E	7/16-20 UNF-2A O-ring BOSS ^{1) 3)}
	9/16-18 UNF-2A O-ring BOSS ³⁾

1) Optional: Pressure port with a diameter of 6 mm / 0.6 mm / 0.3 mm on request.

2) Maximum measuring range from 0 ... 400 bar.

3) Minimum permissible medium temperature -30 °C (-22 °F), also for model O-10 (5)

4) Maximum overload safety 600 bar

All process connections are available, as standard, with a pressure port of diameter 3.5 mm.

Sealings

Process connection per	Standard	Option
DIN 3852-E	NBR ¹⁾	FPM/FKM ²⁾
SAE J514 E	FPM/FKM ²⁾	-

1) Minimum permissible medium and ambient temperature -30 °C (-22 °F)

2) Minimum permissible medium and ambient temperature -15 °C (5 °F)

The sealings listed under "Standard" are included in the delivery.

Materials

Non-wetted parts

- Stainless steel 316L
- PBT GF 30
- Cable material (cable outlet) PVC

Wetted parts

- Stainless steel 316L
 - 13-8 PH
 - For sealing materials see "Process connections"
- Oil and grease free versions are available on request.

Electrical connections, model O-10 (T)

Electrical connection	Ingress protection	Wire cross-section	Cable diameter	Cable lengths
Angular connector DIN 175301-803 A	IP65	-	-	-
Angular connector DIN 175301-803 C	IP65	-	-	-
Circular connector M12 x 1 (4-pin)	IP67	-	-	-
Delphi connector Metri-Pack series 150 (3-pin) ¹⁾	IP67	-	-	-
Cable outlet, unshielded ²⁾	IP67	0.14 mm ²	3.4 mm	2 m, 5 m
Cable outlet, shielded	IP67	0.14 mm ²	4.3 mm	2 m, 5 m

¹⁾ for model O-10 (T) only possible from measuring range 0 ... 60 bar

²⁾ to max. 80 °C (176 °F) permissible

The stated ingress protection (per IEC 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

Mating connectors are not included in the delivery, but they are available as accessories.

Other connections on request.

Short-circuit resistance

S+ vs. 0V

Reverse polarity protection

UB vs. 0V

Overvoltage protection

DC 36 V

Insulation voltage

DC 750 V

Electrical connections, model O-10 (5)

Electrical connection	Ingress protection	Wire cross-section	Cable diameter	Cable lengths
Circular connector M12 x 1 (4-pin)	IP65	-	-	-
Delphi connector Metri-Pack series 150 (3-pin) ¹⁾	IP67	-	-	-
Cable outlet, unshielded ¹⁾	IP67	0.14 mm ²	3.4 mm	2 m, 5 m

¹⁾ to max. 80 °C (176 °F) permissible

The stated ingress protection (per IEC 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

Mating connectors are not included in the delivery, but they are available as accessories.

Short-circuit resistance

S+ vs. 0V

Reverse polarity protection

UB vs. 0V

Overvoltage protection

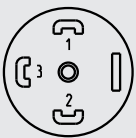
DC 36 V

Insulation voltage

DC 750 V

Connection diagrams

Angular connector DIN 175301-803 A ^{1) 3)}

		2-wire	3-wire
	UB	1	1
	0V	2	2
	S+	-	3

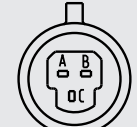
Angular connector DIN 175301-803 C ^{1) 3)}

		2-wire	3-wire
	UB	1	1
	0V	2	2
	S+	-	3

Circular connector M12 x 1 ^{1) 2) 3)}

		2-wire	3-wire
	UB	1	1
	0V	3	3
	S+	-	4

Delphi connector Metri-Pack series 150 (3-pin) ^{1) 2) 3)}

		2-wire	3-wire
	UB	B	B
	0V	A	A
	S+	-	C

Cable outlet, unshielded ^{1) 2) 3)}

		2-wire	3-wire
	UB	brown (BN)	brown (BN)
	0V	green (GN)	green (GN)
	S+	-	white (WH)

Cable outlet, shielded ^{1) 3)}

		2-wire	3-wire
	UB	brown (BN)	brown (BN)
	0V	blue (BU)	blue (BU)
	S+	-	black (BK)

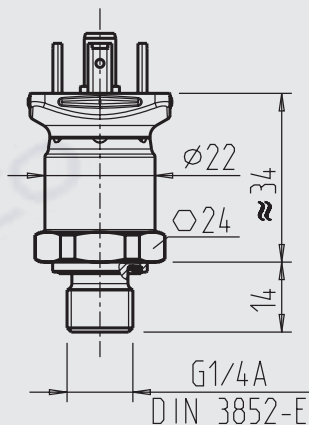
- 1) Applies to model O-10 (T)
2) Applies to model O-10 (S)
3) Version with connected shield on request

Legend

- UB Positive power supply terminal
0V Negative power supply terminal
S+ Positive output terminal

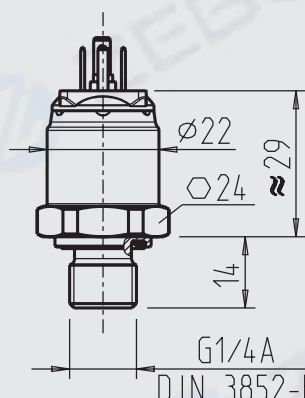
Dimensions in mm

Angular connector DIN 175301-803 A



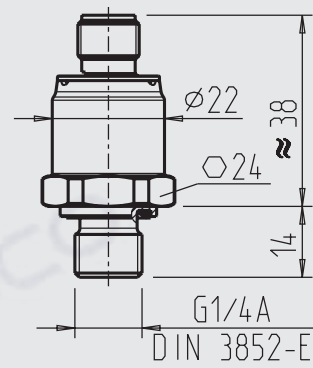
Weight: approx. 80 g

Angular connector DIN 175301-803 C



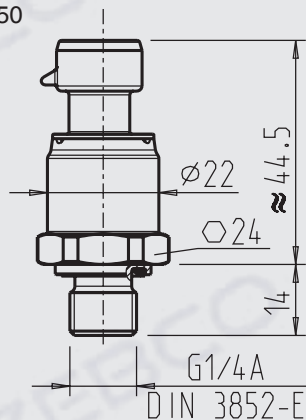
Weight: approx. 80 g

Circular connector M12 x 1



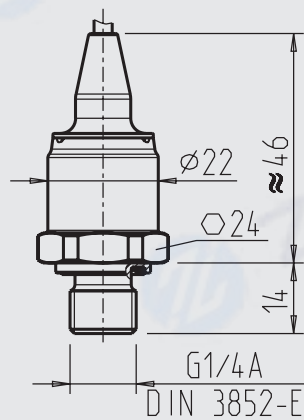
Weight: approx. 80 g

Delphi connector Metri-Pack series
150

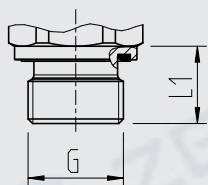


Weight: approx. 80 g

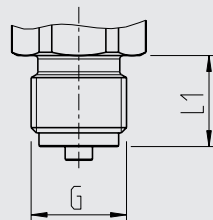
with cable outlet



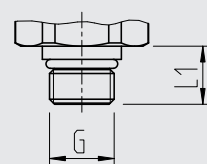
Weight: approx. 80 g



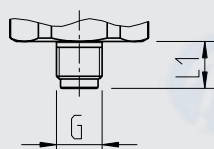
G	L1
G ¼ A DIN 3852-E	14
M14 x 1.5 DIN 3852-E	14



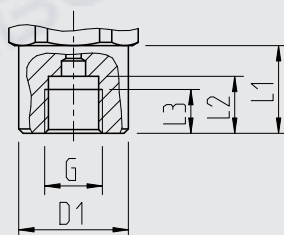
G	L1
G ¼ B EN 837	13
G ⅝ B EN 837	16



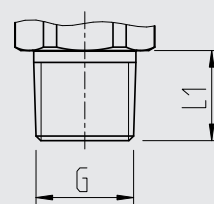
G	L1
9/16-18 UNF BOSS	13
7/16-20 UNF BOSS	12



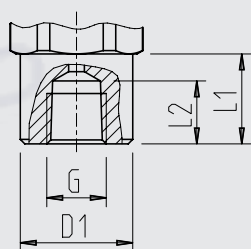
G	L1
G ⅝ B EN 837	10



G	L1	L2	L3	D1
G ¼	17	13	10	Ø 19



G	L1
⅝ NPT	10
¼ NPT	13



G	L1	L2	D1
¼ NPT	17	14	Ø 19

For information on tapped holes and welding sockets, see Technical information IN 00.14 at www.wika.com.

Approvals

Logo	Description	Country
	EU declaration of conformity ■ EMC directive ■ Pressure equipment directive ■ RoHS directive	European Union
	UL (option) Safety (e.g. electr. safety, overpressure, ...)	USA and Canada
	EAC EMC directive	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
	UkrSEPRO Metrology, measurement technology	Ukraine
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Manufacturer's information and certificates

Logo	Description
-	China RoHS directive
-	MTTF: > 100 years

Approvals and certificates, see website

Accessories and spare parts

Mating connector	Order number		
	without cable	with 2 m cable	with 5 m cable
Angular connector DIN 175301-803 A			
■ with cable gland, metric	11427567	11225793	11250186
■ with cable gland, conduit	11022485	-	-
Angular connector DIN 175301-803 C	1439081	11225823	11250194
Circular connector M12 x 1 (4-pin)			
■ straight	2421262	11250780	11250259
■ angled	2421270	11250798	11250232

Sealings for mating connectors	Order number
Angular connector DIN 175301-803 A	1576240
Angular connector DIN 175301-803 C	11169479

Only use the accessories and spare parts listed above, otherwise it could lead to the loss of the approval.

Ordering information

Model / Measuring range / Output signal / Process connection / Electrical connection

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WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de