

# Miniaturised pressure sensor Model M-10, standard version Model M-11, version with flush diaphragm

WIKA data sheet PE 81.25



for further approvals  
see page 5

MicroTronic®

## Applications

- Machine building
- Hydraulics and pneumatics
- General industrial applications

## Special features

- Measuring ranges from 0 ... 6 to 0 ... 1,000 bar
- Current and voltage outputs
- Ingress protection IP65 or IP67
- Wetted parts and case from stainless steel
- Vacuum-tight



Fig. left: Model M-10 with angular connector  
Fig. centre: Model M-11 with circular connector M12 x 1  
Fig. right: Model M-10 with cable outlet

## Description

### Slimline

The model M-10 or M-11 pressure sensor is one of the thinnest and smallest industrial pressure sensors on the market. It therefore offers the ideal solution for applications where mounting space is limited.

### Robust

Despite their slimline and compact design, the models M-10 and M-11 are designed for high pressure ranges up to 1,000 bar.

The thin-film measuring cell, through the optimised design of its process connection, guarantees a high measurement performance, even with dynamic loads and extreme pressure spikes.

### Precise

The models M-10 and M-11 offer an accuracy of 0.5 %. In combination with an exceptional long-term stability, reliable acquisition of the measured values is ensured.

### Flush

The model M-11 pressure sensor features a flush process connection, which sets it apart from other miniaturised pressure sensors.

This process connection is especially suited to measurement in highly viscous, contaminated or crystallising media.

## Measuring ranges

Gauge pressure						
bar	<b>Measuring range</b>	0 ... 6 <sup>1)</sup>	0 ... 10 <sup>1)</sup>	0 ... 16 <sup>1)</sup>	0 ... 25	0 ... 40
	Overpressure safety	20	20	32	50	80
	<b>Measuring range</b>	0 ... 60	0 ... 100			
	Overpressure safety	120	200			
psi	<b>Measuring range</b>	0 ... 160	0 ... 250	0 ... 400	0 ... 600	0 ... 1,000 <sup>1)</sup>
	Overpressure safety	320	500	800	1,200	1,500
	<b>Measuring range</b>	0 ... 500	0 ... 1,000	0 ... 3,000	0 ... 5,000	0 ... 10,000 <sup>1)</sup>
	Overpressure safety	1,000	2,000	6,000	10,000	20,000
	<b>Measuring range</b>	0 ... 15,000 <sup>1)</sup>				
	Overpressure safety	20,000				

1) Only for model M-10

Other measuring ranges on request

### Vacuum tightness

Yes

## Output signal

Signal type	Signal
Current (2-wire)	4 ... 20 mA
Voltage (3-wire)	DC 1 ... 5 V
	DC 0.1 ... 10 V

Other output signals on request

### Load in $\Omega$

4 ... 20 mA:  $\leq (\text{power supply} - 10 \text{ V}) / 0.02 \text{ A}$

DC 1 ... 5 V:  $> 10\text{k}$

DC 0.1 ... 10 V:  $> 20\text{k}$

## Voltage supply

### Power supply

The power supply depends on the selected output signal

4 ... 20 mA: DC 10 ... 35 V

DC 1 ... 5 V: DC 8 ... 35 V

DC 0.1 ... 10 V: DC 14 ... 35 V

Models M-10 and M-11 can be used with up to DC 36 V. The CSA approval is valid up to a maximum of DC 35 V.

### Total current consumption

Current output (2-wire): Signal current, max. 25 mA

Voltage output (3-wire): 8 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 % r. h.

### Power supply

DC 24 V

### Nominal position

Calibrated in vertical mounting position with process connection facing downwards.

## Accuracy specifications

### Accuracy at room temperature

≤ ±0.5 % of span

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2).

### Non-linearity (per IEC 61298-2)

≤ ±0.2 % of span BFSL

### Non-repeatability

≤ 0.1 % of span

### Temperature error at -20 ... +80 °C (-4 ... +176 °F)

- Mean temperature coefficient of zero point  
≤ ±0.2 % of span/10 K

The following applies for model M-11 with measuring range 0 ... 25 bar:  
≤ ±0.3 % of span/10 K

- Mean temperature coefficient of span  
≤ ±0.2 % of span/10 K

### Long-term stability

≤ ±0.2 % of span/year

## Time response

### Settling time

≤ 4 ms

### Switch-on time

≤ 15 ms

## Operating conditions

### Ingress protection (per IEC 60529)

For ingress protection see "Electrical connections"  
The ingress protection stated therein only applies when plugged in using mating connectors that have the appropriate ingress protection.

### Vibration resistance (per IEC 60068-2-6)

20 g (under resonance)

### Shock resistance (per IEC 60068-2-27)

800 g (mechanical shock)

### Service life

10 million load cycles

### Permissible temperatures

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

Ambient: -40 ... +100 °C (-40 ... +212 °F) <sup>1)</sup>

Storage: -40 ... +100 °C (-40 ... +212 °F) <sup>1)</sup>

<sup>1)</sup> Instruments with cable outlet are only suitable for an ambient and storage temperature of -40 ... +80 °C (-40 ... +176 °F).

## Process connections

### ■ Model M-10

Standard	Thread size
EN 837	G ¼ B
DIN EN ISO 1179-2 (formerly DIN 3852-E)	G ¼ A <sup>1)</sup>
ANSI/ASME B1.20.1	¼ NPT

<sup>1)</sup> Maximum overpressure safety 600 bar (8,000 psi)

### ■ Model M-11

Standard	Thread size
-	G ¼ B flush <sup>1)</sup>

<sup>1)</sup> Flush process connections only possible for measuring ranges from 0 ... 25 to 0 ... 600 bar (0 ... 500 to 0 ... 5,000 psi).

### Sealings

G ¼ A: FPM/FKM

G ¼ B: without sealing

¼ NPT: without sealing

G ¼ B flush: NBR <sup>1)</sup>

<sup>1)</sup> Minimum permissible medium and ambient temperature -30 °C (-22 °F)

## Electrical connections

Designation	Ingress protection	Wire cross-section	Cable diameter	Cable material
Circular connector M12 x 1 (4-pin)	Measuring range < 100 bar (3,000 psi): IP65 <sup>1)</sup> Measuring range ≥ 100 bar (3,000 psi): IP67	-	-	-
Angular connector DIN EN 175301-803 C	IP65 <sup>2)</sup>	-	1.5 ... 6.0 mm	-
Cable outlet, 1.5 m (4.92 ft) <sup>3) 4)</sup>	Measuring range < 100 bar (3,000 psi): IP65 <sup>1)</sup> Measuring range ≥ 100 bar (3,000 psi): IP67	3 x 0.14 mm <sup>2</sup> <sup>5)</sup>	4.5 ... 5.0 mm	PUR

1) IP67 on request

2) For conductor cross-section to max. 0.75 mm<sup>2</sup>

3) Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F)

4) Other cable lengths on request

5) For wire cross-section to max. 0.3 mm<sup>2</sup>, approx. AWG 22 with end splices

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

### Short-circuit resistance

S+ vs. 0V


### Reverse polarity protection


U<sub>B</sub> vs. 0V

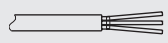
### Insulation voltage

DC 500 V

### Connection diagrams

Circular connector M12 x 1 (4-pin)			
		2-wire	3-wire
	U <sub>B</sub>	1	1
	0V	3	3
	S+	-	4

Angular connector DIN 175301-803 C			
		2-wire	3-wire
	U <sub>B</sub>	1	1
	0V	2	2
	S+	-	3

Cable outlet, 2 m			
		2-wire	3-wire
	U <sub>B</sub>	brown	brown
	0V	green	green
	S+	-	white

## Materials

### Wetted parts

316Ti, PH grade steel

For sealing materials see "Process connections"

### Non-wetted parts

Case: 316Ti








Electrical connections:

- Circular connector M12 x 1: Nickel-plated brass
- Angular connector DIN EN 175301-803 C: 303, PA, PBT
- Cable outlet: PA

### Internal system fill fluid (model M-11 only)

Synthetic oil

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive EN 61326 emission (group 1, class B) and interference immunity (industrial application)</li> <li>■ Pressure equipment directive</li> <li>■ RoHS directive</li> </ul>	European Union
	<b>CSA</b> Safety (e.g. electr. safety, overpressure, ...)	USA and Canada
	<b>EAC</b> EMC directive	Eurasian Economic Community
	<b>GOST</b> Metrology, measurement technology	Russia
	<b>KazInMetr</b> Metrology, measurement technology	Kazakhstan
	<b>BelGIM</b> Metrology, measurement technology	Belarus
	<b>Uzstandard</b> Metrology, measurement technology	Uzbekistan
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

## Manufacturer's information and certifications

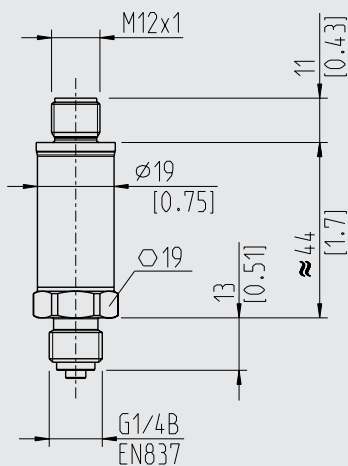
Logo	Description
-	<b>MTTF: &gt; 100 years</b>
-	<b>China RoHS directive</b>

Approvals, certificates and manufacturer's information, see website

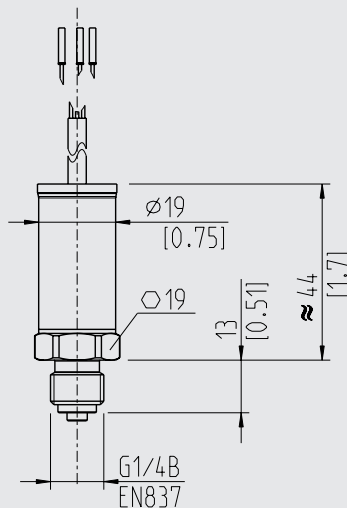
# Dimensions in mm [in]

## Pressure sensor

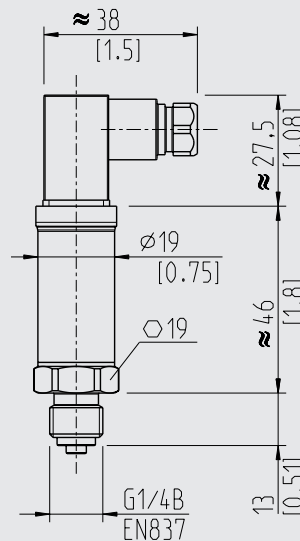
with circular connector M12 x 1



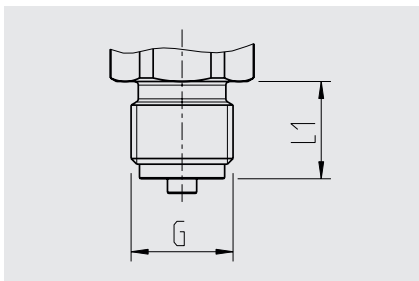
with cable outlet, cable length 2 m



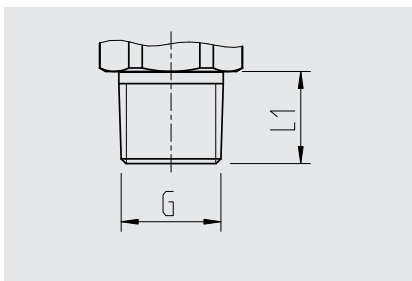
with angular connector DIN EN 175301-803 C



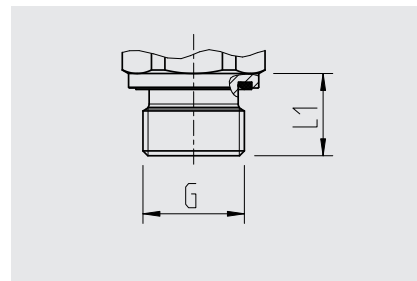
### Process connections for model M-10



G	L1
G 1/4 B EN 837	13 [0.51]

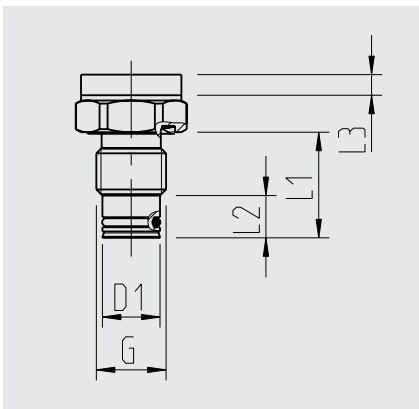


G	L1
1/4 NPT	13 [0.51]



G	L1
G 1/4 A DIN EN ISO 1179-2 (formerly DIN 3852-E)	14 [0.55]

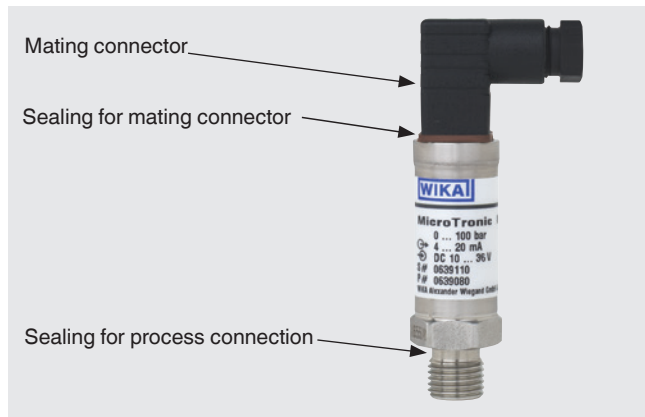
### Process connection for model M-11



G	L1	L2	L3	D1
G 1/4 B	20 [0.79]	8 [0.31]	3.9 [0.15]	10.9 [0.43]

For information on tapped holes and welding sockets, see Technical information IN 00.14 at [www.wika.com](http://www.wika.com).

## Accessories and spare parts



### Mating connector

Designation	Order number		
	without cable	with 2 m cable	with 5 m cable
Angular connector DIN 175301-803 C	1439081	11225823 <sup>2)</sup>	11250194 <sup>2)</sup>
Circular connector M12 x 1, 4-pin			
■ straight	2421262 <sup>1)</sup>	11250780 <sup>3)</sup>	11250259 <sup>3)</sup>
■ angled	2421270 <sup>1)</sup>	11250798 <sup>3)</sup>	11250232 <sup>3)</sup>

1) Max. medium temperature -40 ... +85 °C (-40 ... +185 °F)

2) Max. medium temperature -40 ... +90 °C (-40 ... +194 °F)

3) Max. medium temperature -25 ... +80 °C (-13 ... +176 °F)

### Sealings for mating connectors

Designation	Order number
Angular connector DIN 175301-803 C	11437881

### Sealings for process connection

Designation	Order number
G ¼ B flush, O-ring	0477940
G ¼ B flush, form seal	1537857 <sup>1)</sup>
G ¼ A DIN EN ISO 1179-2 (formerly DIN 3852-E)	14045531

1) -30 ... +100 °C (-22 ... +212 °F)

Accessories are not part of the approval.

### Ordering information

Measuring range / Output signal / Process connection / Electrical connection

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We reserve the right to make modifications to the specifications and materials.