

# High-quality pressure transmitter for general industrial applications

## Model S-10

WIKA data sheet PE 81.01



for further approvals see page 4

### Applications

- Machine building
- Hydraulics and pneumatics
- Pumps
- Chemical industry

### Special features

- Measuring ranges from 0 ... 5 to 0 ... 15,000 psi (0 ... 0.1 to 0 ... 1,000 bar)
- Non-linearity 0.2 % of span (BFSL)
- Output signals: 4 ... 20 mA, DC 0 ... 10 V, DC 0 ... 5 V and others
- Electrical connections: Angular connector form A, circular connector M12 x 1, various cable outlets and others
- Zero point and span adjustable via internal potentiometer



Pressure transmitter model S-10

### Description

The model S-10 pressure transmitter for general industrial applications is the ideal solution for customers with demanding measuring requirements. It features a very good accuracy, a robust design and an exceptional number of variants, meaning it can be suited to the widest range of applications.

#### Versatile

The model S-10 offers continuous measuring ranges between 0 ... 5 and 0 ... 15,000 psi (0 ... 0.1 and 0 ... 1,000 bar) in all the major units. These measuring ranges can be combined in almost any way with all the standard industry output signals, the most common international process connections and a wide number of electrical connections.

Furthermore, it offers numerous options, such as different accuracy classes, extended temperature ranges and customer-specific pin assignments.

#### High quality

The robust design turns the model S-10 into a very high quality product, which even the most adverse environmental conditions cannot affect. Whether with the lowest temperatures when used outdoors, with extreme shock and vibration in machine building or with aggressive media in the chemical industry, this transmitter can meet all requirements.

#### Availability

All variants described in this data sheet are available on very short lead times. For particularly urgent demands, there is a sizeable stock available.

## Measuring ranges

Relative pressure								
<b>bar</b>	<b>Measuring range</b>	<b>0 ... 0.1</b>	<b>0 ... 0.16</b>	<b>0 ... 0.25</b>	<b>0 ... 0.4</b>	<b>0 ... 0.6</b>	<b>0 ... 1</b>	<b>0 ... 1.6</b>
	Overpressure limit	1	1.5	2	2	4	5	10
	<b>Measuring range</b>	<b>0 ... 2.5</b>	<b>0 ... 4</b>	<b>0 ... 6</b>	<b>0 ... 10</b>	<b>0 ... 16</b>	<b>0 ... 25</b>	<b>0 ... 40</b>
	Overpressure limit	10	17	35	35	80	50	80
	<b>Measuring range</b>	<b>0 ... 60</b>	<b>0 ... 100</b>	<b>0 ... 160</b>	<b>0 ... 250</b>	<b>0 ... 400</b>	<b>0 ... 600</b>	<b>0 ... 1,000</b>
	Overpressure limit	120	200	320	500	800	1,200	1,500
<b>psi</b>	<b>Measuring range</b>	<b>0 ... 5</b>	<b>0 ... 10</b>	<b>0 ... 15</b>	<b>0 ... 20</b>	<b>0 ... 25</b>	<b>0 ... 30</b>	<b>0 ... 50</b>
	Overpressure limit	29	29	72.5	145	145	145	240
	<b>Measuring range</b>	<b>0 ... 60</b>	<b>0 ... 100</b>	<b>0 ... 150</b>	<b>0 ... 160</b>	<b>0 ... 170</b>	<b>0 ... 200</b>	<b>0 ... 250</b>
	Overpressure limit	240	500	500	1,160	1,160	1,160	1,160
	<b>Measuring range</b>	<b>0 ... 300</b>	<b>0 ... 400</b>	<b>0 ... 500</b>	<b>0 ... 600</b>	<b>0 ... 750</b>	<b>0 ... 800</b>	<b>0 ... 1,000</b>
	Overpressure limit	1,160	1,160	1,160	1,160	1,740	1,740	1,740
	<b>Measuring range</b>	<b>0 ... 1,500</b>	<b>0 ... 1,600</b>	<b>0 ... 2,000</b>	<b>0 ... 3,000</b>	<b>0 ... 4,000</b>	<b>0 ... 5,000</b>	<b>0 ... 6,000</b>
	Overpressure limit	2,900	4,600	4,600	7,200	7,200	11,600	11,600
	<b>Measuring range</b>	<b>0 ... 7,500</b>	<b>0 ... 8,000</b>	<b>0 ... 10,000</b>	<b>0 ... 15,000</b>			
	Overpressure limit	17,400	17,400	17,400	21,700			

Absolute pressure								
<b>bar</b>	<b>Measuring range</b>	<b>0 ... 0.25</b>	<b>0 ... 0.4</b>	<b>0 ... 0.6</b>	<b>0 ... 1</b>	<b>0 ... 1.6</b>	<b>0 ... 2.5</b>	<b>0 ... 4</b>
	Overpressure limit	2	2	4	5	10	10	17
	<b>Measuring range</b>	<b>0 ... 6</b>	<b>0 ... 10</b>	<b>0 ... 16</b>	<b>0 ... 25</b>	<b>0.8 ... 1.2</b>		
	Overpressure limit	35	35	80	80	5		
<b>psi</b>	<b>Measuring range</b>	<b>0 ... 15</b>	<b>0 ... 25</b>	<b>0 ... 50</b>	<b>0 ... 100</b>	<b>0 ... 250</b>		
	Overpressure limit	72.5	145	240	500	1,160		

Vacuum and +/- measuring range						
<b>bar</b>	<b>Measuring range</b>	<b>-0.6 ... 0</b>	<b>-0.4 ... 0</b>	<b>-0.25 ... 0</b>	<b>-0.16 ... 0</b>	<b>-0.1 ... 0</b>
	Overpressure limit	4	2	2	1.5	1
	<b>Measuring range</b>	<b>-1 ... 0</b>	<b>-1 ... +0.6</b>	<b>-1 ... +1.5</b>	<b>-1 ... +3</b>	<b>-1 ... +5</b>
	Overpressure limit	5	10	10	17	35
	<b>Measuring range</b>	<b>-1 ... +9</b>	<b>-1 ... +15</b>	<b>-1 ... +24</b>		
	Overpressure limit	35	80	50		
<b>psi</b>	<b>Measuring range</b>	<b>- 15 inHg ... 0</b>	<b>-30 inHg ... 0</b>	<b>-30 inHg ... +15</b>	<b>-30 inHg ... +30</b>	<b>-30 inHg ... +60</b>
	Overpressure limit	72.5	72.5	145	240	240
	<b>Measuring range</b>	<b>-30 inHg ... +100</b>	<b>-30 inHg ... +160</b>	<b>-30 inHg ... +200</b>	<b>-30 inHg ... +300</b>	
	Overpressure limit	500	1,160	1,160	1,160	

The given measuring ranges are also available in kg/cm<sup>2</sup> and MPa.  
Burst pressures on request

### Vacuum tightness

Yes

## Output signals

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

Other output signals on request.

### Load in $\Omega$

- Current output (2-wire):  
 $\leq (\text{power supply} - 10 \text{ V}) / 0.02 \text{ A}$
- Current output (3-wire):  
 $\leq (\text{power supply} - 3 \text{ V}) / 0.02 \text{ A}$
- Voltage output (3-wire):  
> maximum output signal / 1 mA

## Voltage supply

### Power supply

The power supply depends on the selected output signal

- 4 ... 20 mA: DC 10 ... 30 V
- 20 ... 4 mA: DC 10 ... 30 V
- 0 ... 20 mA: DC 10 ... 30 V
- DC 0 ... 5 V: DC 10 ... 30 V
- DC 1 ... 5 V: DC 10 ... 30 V
- DC 0 ... 10 V: DC 14 ... 30 V
- DC 0.5 ... 4.5 V ratiometric: DC 4.5 ... 5.5 V

## Reference conditions (per IEC 61298-1)

### Temperature

59 ... 77 °F (15 ... 25 °C)

### Atmospheric pressure

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

### Humidity

45 ... 75 % relative

### Power supply

DC 24 V

### Mounting position

Calibrated in vertical mounting position with pressure connection facing downwards.

## Accuracy specifications

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

$\leq \pm 0.2 \%$  of span BFSL

### Non-repeatability

$\leq \pm 0.1 \%$  of span

### Accuracy at reference conditions

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

### Accuracy

Standard	$\leq \pm 0.50 \%$ of span
Option	$\leq \pm 0.25 \%$ of span <sup>1)</sup>

1) Only for measuring ranges  $\geq 0.25$  bar

### Adjustability of zero point and span

Adjustment is made using potentiometers inside the instrument.

- Zero point:  $\pm 5 \%$
- Span:  $\pm 5 \%$

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

- Mean temperature coefficient of zero point:
  - Measuring ranges  $\leq 0.25$  bar:  $\leq 0.4 \%$  of span/10 K
  - Measuring ranges  $> 0.25$  bar:  $\leq 0.2 \%$  of span/10 K
- Mean temperature coefficient of span:  
 $\leq 0.2 \%$  of span/10 K

### Long-term stability at reference conditions

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

## Time response

### Settling time

- $\leq 1$  ms
- $\leq 2$  ms for output signal DC 0.5...4.5 V ratiometric and measuring ranges  $< 400$  mbar, 10 psi

## Operating conditions

### Ingress protection (per IEC 60529)

For ingress protections see "Electrical connections"  
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

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

1,000 g (mechanical)

### Temperatures

Permissible temperature ranges		
	Standard	Option
Medium	-22 ... 212 °F(-30 ... +100 °C)	-40 ... 257 °F(-40 ... +125 °C)
Ambient	-4 ... 176 °F(-20 ... +80 °C)	-4 ... 176 °F(-20 ... +80 °C)
Storage	-40 ... 212 °F(-40 ... +100 °C)	-40 ... 212 °F(-40 ... +100 °C)

## Materials

### Wetted parts

Stainless steel

### Non-wetted parts

- Case: Stainless steel
- Internal pressure transmission medium: Synthetic oil
- Clamping nut: PA
- Angular connector: PA
- O-rings at the clamping nut: NBR
- Flat gasket: VMQ

Instruments with a measuring range of > 25 bar relative do not contain any pressure transmission medium (dry measuring cell).

## Process connections

Standard	Thread size
EN 837	G ¼ B G ½ B
DIN 3852-E	G ¼ A 1) G ¼ female
-	1/4 NPT 1/2 NPT
ANSI/ASME B1.20.1	7/16-20 UNF with 74° taper
SAE J514 E	M20 x 1.5
-	G ½ male / G ¼ female
ISO 7	R ¼

1) Maximum overpressure limit 600 bar

Other process connections on request

## Approvals, directives and certificates

### Approvals

- CSA
- GOST

For further approvals see [www.wika.com](http://www.wika.com)

### CE conformity

- EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)
- Pressure equipment directive 97/23/EC

# Electrical connections

## Available connections

Electrical connection	Ingress protection	Wire cross-section	Cable diameter	Cable lengths
Angular connector DIN 175301-803 A	IP 65	max. 1.5 mm <sup>2</sup>	6 ... 8 mm	-
Angular connector DIN 175301-803 with ½ NPT	IP 65	max. 1.5 mm <sup>2</sup>	-	-
Circular connector M12 x 1 (4-pin)	IP 67	-	-	-
Bayonet connector (6-pin)	IP 67	-	-	-
½ NPT conduit male, with cable outlet	IP 67	3 x 0.5 mm <sup>2</sup>	6.8 mm	1.5 m, 3 m, 5 m, 10 m, 5 ft, 10 ft, 20 ft, 30 ft, others on request
<b>Cable outlet</b>				
■ Standard	IP 67	3 x 0.5 mm <sup>2</sup>	6.8 mm	1.5 m, 3 m, 5 m, 10 m, 5 ft, 10 ft, 20 ft, 30 ft, others on request
■ not adjustable	IP 68	3 x 0.5 mm <sup>2</sup>	6.8 mm	1.5 m, 3 m, 5 m, 10 m, 5 ft, 10 ft, 20 ft, 30 ft, others on request
■ adjustable	IP 68	3 x 0.5 mm <sup>2</sup>	6.8 mm	1.5 m, 3 m, 5 m, 10 m, 5 ft, 10 ft, 20 ft, 30 ft, others on request

## Short-circuit resistance

S<sub>+</sub> vs. U<sub>-</sub>

## Reverse polarity protection

U<sub>+</sub> vs. U<sub>-</sub>

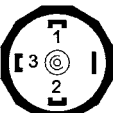
## Overvoltage protection

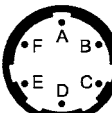
DC 36 V

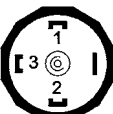
## Insulation voltage

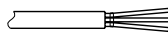
DC 500 V


## Connection diagrams

Angular connector DIN 175301-803 A		2-wire	3-wire
	U <sub>+</sub>	1	1
	U <sub>-</sub>	2	2
	S <sub>+</sub>	-	3

Bayonet connector (6-pin)		2-wire	3-wire
	U <sub>+</sub>	A	A
	U <sub>-</sub>	B	B
	S <sub>+</sub>	-	C

Angular connector DIN 175301-803 with ½ NPT		2-wire	3-wire
	U <sub>+</sub>	1	1
	U <sub>-</sub>	2	2
	S <sub>+</sub>	-	3

½ NPT conduit male, with cable outlet		2-wire	3-wire
	U <sub>+</sub>	red	red
	U <sub>-</sub>	black	black
	S <sub>+</sub>	-	brown

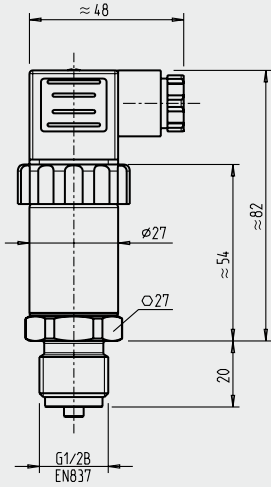
Circular connector M12 x 1 (4-pin)		2-wire	3-wire
	U <sub>+</sub>	1	1
	U <sub>-</sub>	3	3
	S <sub>+</sub>	-	4

Cable outlets		2-wire	3-wire
	U <sub>+</sub>	brown	brown
	U <sub>-</sub>	green	green
	S <sub>+</sub>	-	white
	Shield	grey	grey

# Dimensions in mm

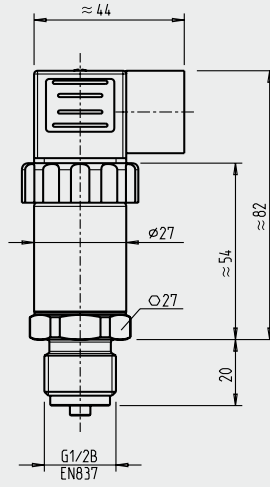
## Pressure transmitter model S-10

with angular connector DIN 175301-803 A



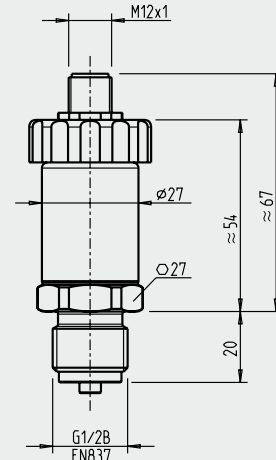
Weight: approx. 0.2 kg

with angular connector DIN 175301-803 with 1/2 NPT



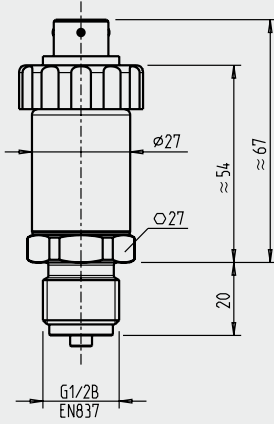
Weight: approx. 0.2 kg

with circular connector M12 x 1 (4-pin)



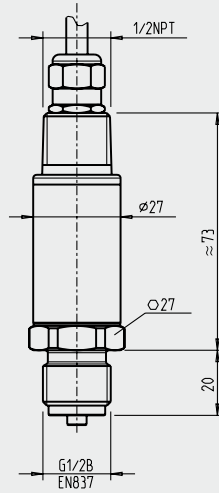
Weight: approx. 0.2 kg

with bayonet connector (6-pin)



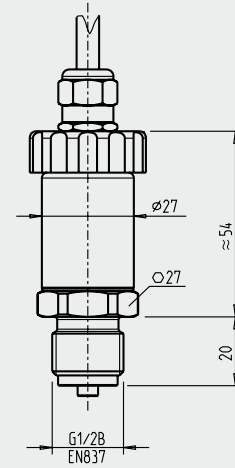
Weight: approx. 0.2 kg

with 1/2 NPT conduit male, with cable outlet



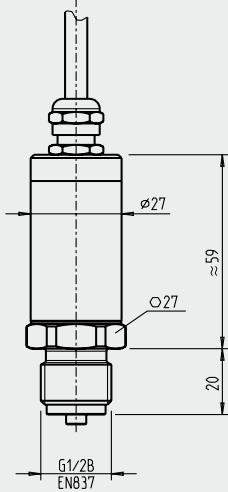
Weight: approx. 0.2 kg

with cable outlet, standard



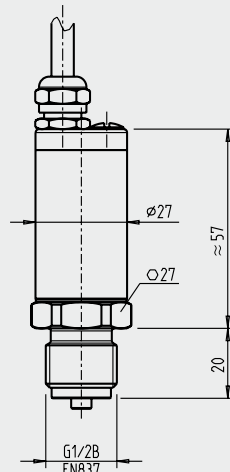
Weight: approx. 0.2 kg

with cable outlet, not adjustable



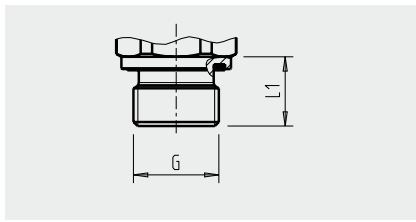
Weight: approx. 0.2 kg

with cable outlet, adjustable

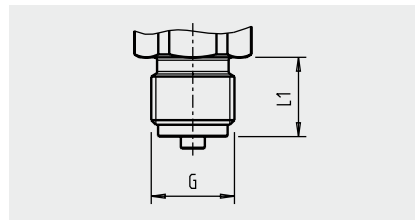


Weight: approx. 0.2 kg

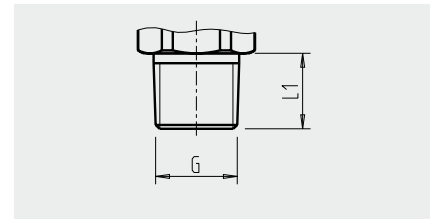
## Process connections



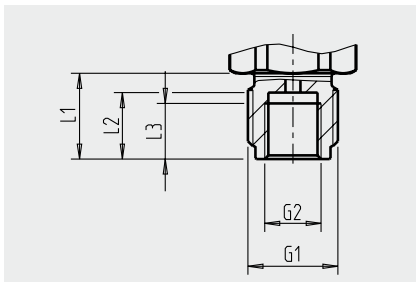
G	L1
G 1/4 A	12



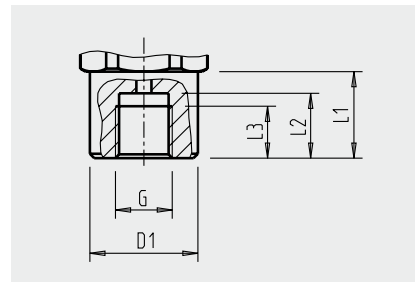
G	L1
G 1/4 B	13
G 1/2 B	20
M20 x 1.5	20



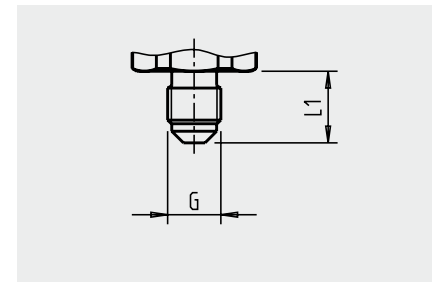
G	L1
1/4 NPT	13
1/2 NPT	19
R 1/4	13



G1	G2	L1	L2	L3
G 1/2 B	G 1/4	20	15.5	13



G	D1	L1	L2	L3
G 1/4 female	25	20	15	12



G	L1
7/16-20 UNF with 74° taper	15

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

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

### Sealings for mating connectors

Mating connector	Order number
Angular connector DIN 175301-803 A	1576240

### Sealings for process connection

Thread size	Order number			
	Cu	Stainless steel	NBR	FKM
G 1/4 B EN 837	11250810	11250844	-	-
G 1/2 B EN 837	11250861	11251042	-	-
G 1/4 A DIN 3852-E	-	-	1537857	1576534
M20 x 1.5	11250861	11251042	-	-

## Ordering information

Model / Measuring range / Output signal / Accuracy / Electrical connection / Medium temperature / Process connection

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