

# Flush pressure transmitter

## For viscous and solids-containing media

### Model S-11

WIKA data sheet PE 81.02



#### Applications

- Machine building
- Hydraulic aggregates
- General industrial applications
- Food and beverage industry

#### Special features

- High-quality product
- Many configurations possible
- Flush process connection
- Large stocks for short delivery times
- Vacuum-tight



Fig. left: Pressure transmitter model S-11

Fig. right: Pressure transmitter model S-11 with cooling element

#### Description

##### Specialist for viscous and solids-containing media

The model S-11 pressure transmitter with flush diaphragm has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallising, particulates-containing and contaminated media, which would clog the pressure channel of conventional process connections.

Through its optimised design, the flush process connection enables the cleanability of the wetted diaphragm to be integrated within the process. Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.

High accuracy, a robust design, high-quality workmanship and the high flexibility of configuration are key features of the model S-11.

##### Flush process connection

All process connections of the flush pressure transmitter are made of stainless steel, fully welded and isolate the process medium from the pressure measuring instrument via a positive seal. A reliable, dead-space free sealing between the process connection and the measuring medium is thus assured.

For high medium temperatures of up to 150 °C, the pressure transmitter is also available with an integrated cooling element.

Specifically for the food and beverage industry, a version with internal system fill fluid in accordance with FDA 21 CFR 178.3750 can be chosen.

## 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
	Burst pressure	2	2	2.4	2.4	4.8	6	12
	<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
	Burst pressure	12	20.5	42	42	96	96	400
	<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>	
	Overpressure limit	120	200	320	500	800	1,200	
	Burst pressure	550	600	600	600	1,600	1,600	

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
	Burst pressure	2.4	2.4	4.8	6	12	12	20.5
	<b>Measuring range</b>	<b>0 ... 6</b>	<b>0 ... 10</b>	<b>0 ... 16</b>				
	Overpressure limit	35	35	80				
	Burst pressure	42	42	96				

Vacuum and +/- measuring range								
<b>bar</b>	<b>Measuring range</b>	<b>-0.1 ... 0</b>	<b>-0.16 ... 0</b>	<b>-0.25 ... 0</b>	<b>-0.4 ... 0</b>	<b>-0.6 ... 0</b>	<b>-1 ... 0</b>	<b>-1 ... +0.6</b>
	Overpressure limit	1	1.5	2	2	4	5	10
	Burst pressure	2	2	2.4	2.4	4.8	6	12
	<b>Measuring range</b>	<b>-1 ... +1.5</b>	<b>-1 ... +3</b>	<b>-1 ... +5</b>	<b>-1 ... +9</b>	<b>-1 ... +15</b>	<b>-1 ... +24</b>	
	Overpressure limit	10	17	35	35	80	50	
	Burst pressure	12	20.5	42	42	96	96	

The given measuring ranges are also available in mbar, psi, MPa and further units.

### Vacuum tightness

Yes

## Output signals

Signal type	Signal
<b>Current (2-wire)</b>	4 ... 20 mA
<b>Current (3-wire)</b>	0 ... 20 mA
<b>Voltage (3-wire)</b>	DC 0 ... 10 V DC 0 ... 5 V

Depending on the signal type the following loads apply:

Signal type	Load in $\Omega$
<b>Current (2-wire)</b>	$\leq (\text{power supply} - 10 \text{ V}) / 0.02 \text{ A}$
<b>Current (3-wire)</b>	$\leq (\text{power supply} - 3 \text{ V}) / 0.02 \text{ A}$
<b>Voltage (3-wire)</b>	$> \text{maximum output signal} / 1 \text{ mA}$

Other output signals available on request

## Voltage supply

### Power supply

The permissible power supply depends on the corresponding output signal.

Output signal	Power supply
<b>4 ... 20 mA (2-wire)</b>	DC 10 ... 30 V
<b>0 ... 20 mA (3-wire)</b>	DC 10 ... 30 V
<b>DC 0 ... 10 V</b>	DC 14 ... 30 V
<b>DC 0 ... 5 V</b>	DC 10 ... 30 V

## Accuracy

### Accuracy at room temperature

- Standard:  $\leq \pm 0.5$  % of span
- Option:  $\leq \pm 0.25$  % of span <sup>1)</sup>

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

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position with process connection facing downwards.

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

$\leq \pm 0.2$  % of span BFSL

### Non-repeatability

$\leq \pm 0.1$  % of span

### Temperature error in rated temperature range

Nominal temperatur: 0 ... 80 °C

Mean temperature coefficient of zero point

- $\leq 0.2$  % of span/10 K
- $< 0.4$  % of span/10 K <sup>1)</sup>

1) Applies to measuring ranges  $\leq 0.25$  bar

Mean temperature coefficient of span

- $\leq 0.2$  % of span/10 K

### Settling time

$\leq 10$  ms

### Long-term drift

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

### Adjustability of zero point and span <sup>1)</sup>

Adjustment is made using potentiometers inside the instrument.

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

1) Adjustment not possible for cable outlet with ingress protection IP 68

## Operating conditions

### Ingress protection (per IEC 60529)

The ingress protection depends on the type of electrical connection.

Electrical connection	Ingress protection
Angular connector DIN 175301-803 A	IP 65
Circular connector M12 x 1 (4-pin)	IP 67
<b>Cable outlet</b>	
■ Standard	IP 67
■ Option	IP 68 <sup>1)</sup>

1) Adjustability of zero point and span not possible

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

### Vibration resistance

- Process connections without cooling element  
20 g (IEC 60068-2-6, under resonance)

- Process connections with cooling element  
10 g (IEC 60068-2-6, under resonance)

### Shock resistance

- Process connections without cooling element  
1,000 g (IEC 60068-2-27, mechanical)
- Process connections with cooling element  
400 g (IEC 60068-2-27, mechanical)

### Permissible temperature ranges

Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3

Process connections without cooling element	
Ambient	-20 ... +80 °C
Storage	-40 ... +100 °C
<b>Medium <sup>1)</sup></b>	
■ Standard	-30 ... +100 °C
■ Option	-30 ... +125 °C

1) For measuring ranges 0 ... 400 and 0 ... 600 bar, the medium temperature is limited to -30 ... +70 °C.

Process connections with cooling element	
Ambient	-20 ... +80 °C
Storage	-20 ... +100 °C
<b>Medium <sup>1)</sup></b>	
	-20 ... +150 °C

1) For measuring ranges 0 ... 400 and 0 ... 600 bar, the medium temperature is limited to -30 ... +70 °C.

## Electrical connections

### Short-circuit resistance

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

### Reverse polarity protection

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


### Overvoltage protection

DC 36 V

### Insulation voltage


DC 500 V with NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions).

### 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

Wire cross-section max. 1.5 mm<sup>2</sup>

Cable diameter 6 ... 8 mm

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 outlet, unshielded			
		2-wire	3-wire
	U <sub>+</sub>	brown	brown
	U <sub>-</sub>	green	green
	S <sub>+</sub>	-	white

Wire cross-section 3 x 0.5 mm<sup>2</sup>

Cable diameter 6.8 mm

Cable lengths 1.5 m, 3 m, 5 m, 10 m, 15 m

Other connections on request

## Process connections

Process connection	Available measuring ranges
G ½ B flush <sup>1)</sup>	0 ... 2.5 to 0 ... 600 bar
G 1 B flush <sup>1)</sup>	0 ... 0.1 to 0 ... 1.6 bar
Hygienic G 1 B flush	0 ... 0.1 to 0 ... 25 bar

1) Process connection also available with cooling element

### Cooling elements

For higher medium temperatures (see "Operating conditions") process connections with cooling element are available.

### Sealing

Process connection	Standard	Option
without cooling element	NBR	■ FPM/FKM ■ EPDM
with cooling element	FPM/FKM	EPDM
Hygienic	EPDM	-

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

## Materials

### Wetted parts

- Stainless steel
- For sealing materials see "Process connections"

### Non-wetted parts

Internal system fill fluid

- Standard: Synthetic oil
- Option: Food-compatible system fill fluid per FDA 21 CFR 178.3750

## Approvals, directives and certificates

### Approval

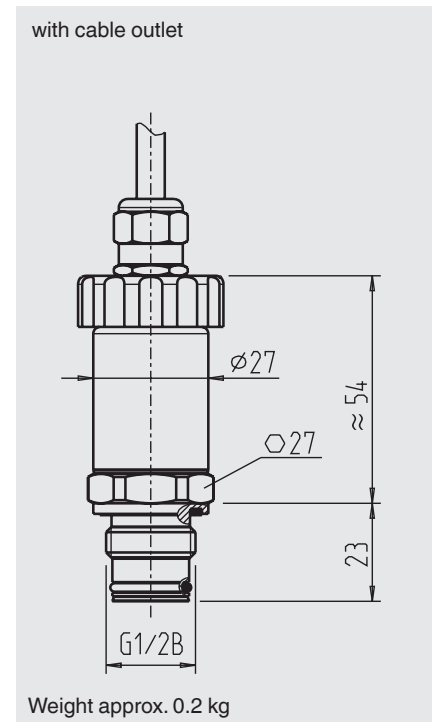
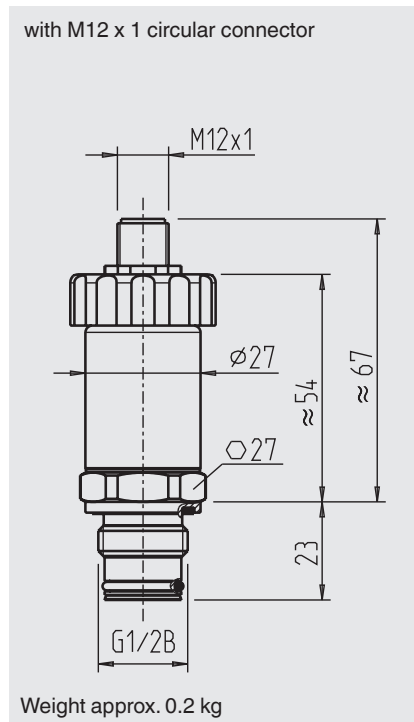
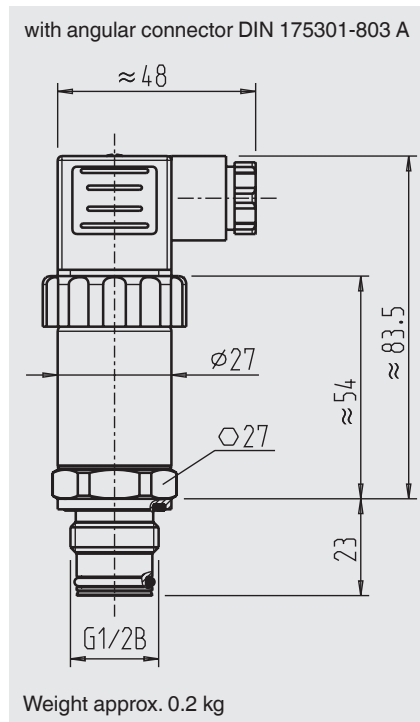
- CSA
- GOST

### CE conformity

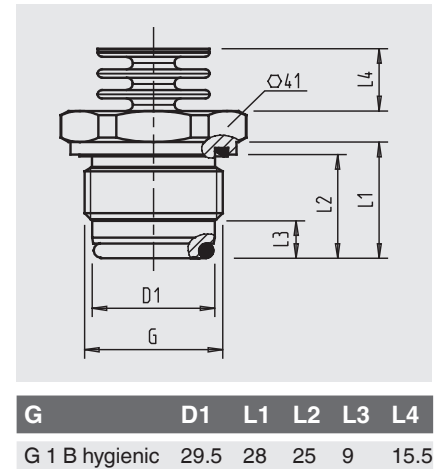
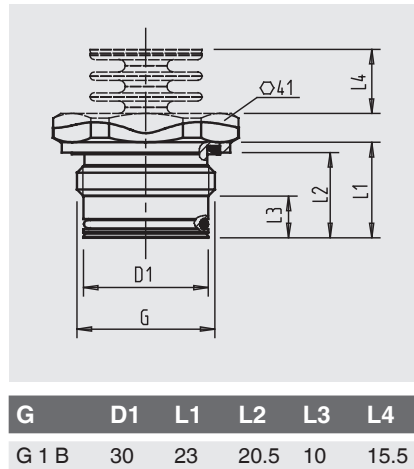
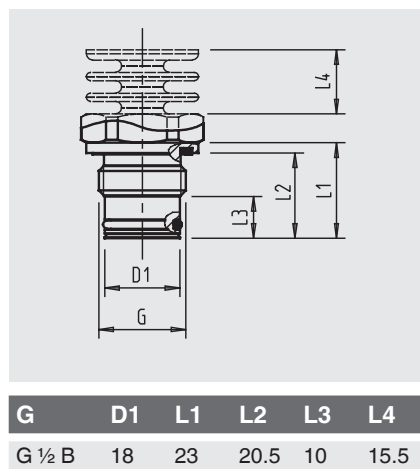
- EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and immunity (industrial application)
- Pressure equipment directive 97/23/EC

## Dimensions in mm

### Pressure transmitters




### Process connections



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

### Accessories

	Designation	Order no.
	Welding socket for G ½ B flush	1192299
	Welding socket for G 1 B flush	1192264
	Welding socket for G 1 B hygienic flush	2166011

## Ordering information

Model / Measuring range / Output signal / Accuracy / Electrical connection / Medium temperature / Process connection / Sealing / System fill fluid

© 2012 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.  
The specifications given in this document represent the state of engineering at the time of publishing.  
We reserve the right to make modifications to the specifications and materials.



**WIKAL Alexander Wiegand SE & Co. KG**  
Alexander-Wiegand-Straße 30  
63911 Klingenberg/Germany  
Tel. (+49) 9372/132-0  
Fax (+49) 9372/132-406  
E-mail [info@wika.de](mailto:info@wika.de)  
[www.wika.de](http://www.wika.de)