

# Model 132S(a)/132S(b)/132S(c) Pressure Transmitter with Flush Diaphragm



## Description

The 132S-series is a silicone piezoresistive pressure transmitter developed for general purpose applications. With various options of process connection and electrical interface, the 132S can be fitted into almost all common systems.

The 132S-series features a flush diaphragm process connection. The transmitter is specially designed to measure pressures of viscous fluids or media containing solids. Three types of flush diaphragm are available, type a, b, and c. The 132S(a) has its diaphragm completely flat, while the 132S(b) has a ring on the diaphragm, so-called semi-flush diaphragm. The 132S(c) is designed with Tri-Clamp interface for mechanical connection, especially for application in either pharmaceutical or food industries.

Due to its compact and rugged design, the models are suitable for applications of processing and control operations such as hydraulics, pneumatics, test equipment, liquid level measurement, compressor and pump control, etc.

By selecting proper electrical interface, the 132S-series is able to reach the environmental protection rating up to IP67.



## Features

- measuring ranges: -1bar, ..., 1000bar
- pressure references:  
gauge, absolute, and sealed gauge
- flush diaphragm
- selectable output:  
4~20mA (standard), 0.5~4.5Vdc ratiometric and others.
- wide choice of process connection and electrical interface
- protection rating up to IP67

## Applications

- compressor and pump systems
- liquid level measurement
- hygienic applications
- test equipment
- food industry
- pharmaceutical industry

## BCM SENSOR TECHNOLOGIES BV

# Model 132S(a)/132S(b)/132S(c) Pressure Transmitter with Flush Diaphragm



## Technical Data

### 132S(a) and 132S(b):

Parameters		Units	Specifications	Notes
pressure medium			gases or dilute liquids	1
pressure references & ranges	gauge	bar	-1~0, 0~0.1, ~0.2, ~0.35, ~0.7, ~1, ~2, ~4, ~6, ~10, ~16, ~20, ~35	2
	absolute	bar	0~0.7, ~1, ~2, ~4, ~6, ~10, ~16, ~20, ~35, ~70, ~100, ~250, ~400	
	sealed gauge	bar	0~600, ~1000	
proof pressure		%fs	200, 150 in case of ranges $\geq$ 100bar	3
burst pressure		%fs	300, 200 in case of ranges $\geq$ 100bar	
output signal		mA	4~20 (standard)	
		V	10%~90%Vs ratiometric, 0~5, 1~5	
		digital	I <sup>2</sup> C, SPI	
accuracy		%fs	$\pm$ 0.5	4
long-term stability		%fs/year	$\leq$ $\pm$ 0.1 (4bar $\leq$ ranges $\leq$ 250bar), $\leq$ $\pm$ 0.2 (the other ranges)	
power supply (Vs)	current loop	Vdc	12, ..., 30	
	voltage output	Vdc	3, ..., 5	
	digital output	Vdc	5	
load resistance	current loop	$\Omega$	$\leq (Vs - 10V) / 0.02A - R_{cable}$	
	voltage output	k $\Omega$	$> 5$	
medium temperature range		$^{\circ}$ C	-40 ~ +125	
ambient temperature range		$^{\circ}$ C	-40 ~ +85	
storage temperature range		$^{\circ}$ C	-40 ~ +85	
compensated temperature range		$^{\circ}$ C	-10 ~ +70 ( $\geq$ 4bar), 0~50 $^{\circ}$ C ( $<$ 4bar)	
temperature drift of zero		%fs	$\leq$ $\pm$ 0.8 ( $\geq$ 4bar), $\leq$ $\pm$ 0.75 (0.35bar, ..., 2bar), $\leq$ $\pm$ 1.25 ( $<$ 0.35bar)	5
temperature drift of span		%fs	$\leq$ $\pm$ 0.8 ( $\geq$ 4bar), $\leq$ $\pm$ 0.75 (0.35bar, ..., 2bar), $\leq$ $\pm$ 1.25 ( $<$ 0.35bar)	5
vibration resistance (20, ..., 2000 Hz)		g	10	
life time		cycles	10 <sup>8</sup>	
response time		ms	$\leq$ 1	6
seal			O-ring (fluorine rubber)	
pressure diaphragm			316L SS	
wetted parts material			316 SS	
electronics housing material			304 SS	
filling oil			silicone oil (standard), fluorine oil	7
mechanical interface			Refer to mechanical interface specified in Dimensions.	
electrical interface			Refer to electrical interface specified in Dimensions.	
environment protection			IP65 (standard), IP66 (for detachable cable) IP67 (for fixed cable)	
net weight		gram	~180	

General conditions for measurements: media temp. = 25 $^{\circ}$ C  $\pm$ 1 $^{\circ}$ C, ambient temp. = 25 $^{\circ}$ C  $\pm$ 1 $^{\circ}$ C, humidity = 50%RH  $\pm$ 5%RH, barometric pressure: 860~1060 mbar, max. vibration = 0.1 g (i.e. 0.98m/s/s).

- Notes:
- The pressure medium should be compatible with wetted parts material and pressure diaphragm.
  - For customized pressure ranges, consult BCM.
  - "fs" refers to full scale pressure or rated pressure.
  - Accuracy =  $\sqrt{(\text{non-linearity})^2 + (\text{hysteresis})^2 + (\text{repeatability})^2}$ .
  - Calculated as the maximum change in output over the compensated temperature range, and normalized by the full scale output at 25 $^{\circ}$ C.  
E.g., for a transmitter of 6bar and 4~20mA output, its temperature drift of zero is  $\leq$   $\pm$ 0.8%fs which refers to  $\leq$   $\pm$ 0.13mA (= (20mA - 4mA) \* 0.8%).
  - Response time for a 0 bar to fs step change, 10% to 90% rise time.
  - Fluorine oil can be used for in food and oxygen industry

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# Model 132S(a)/132S(b)/132S(c) Pressure Transmitter with Flush Diaphragm



## 132S(c):

Parameters	Units	Specifications	Notes
pressure medium		gases or dilute liquids	1
pressure references & ranges	gauge bar	-1~0, 0~0.35, ~0.7, ~1, ~2, ~4, ~6, ~10, ~16, ~20, ~35, ~40, ~50, ~60	2
proof pressure	%fs	200	3
burst pressure	%fs	300	
output signal	mA	4~20 (standard)	
	V	10%~90%Vs ratiometric, 0~5, 1~5	
	digital	I <sup>2</sup> C, SPI	
accuracy	%fs	±0.5	4
long-term stability	%fs/year	≤ ±0.1 (4bar ≤ ranges), ≤ ±0.2 (the other ranges)	
power supply (Vs)	current loop	Vdc	12, ..., 30
	voltage output	Vdc	3, ..., 5
	digital output	Vdc	5
load resistance	current loop	Ω	≤ (Vs - 10V) / 0.02A - R <sub>cable</sub>
	voltage output	kΩ	> 5
medium temperature range	°C	-40 ~ +125	
ambient temperature range	°C	-40 ~ +85	
storage temperature range	°C	-40 ~ +85	
compensated temperature range	°C	-10 ~ +70 (≥ 4bar), 0~50°C (< 4bar)	
temperature drift of zero	%fs	≤ ±0.8 (≥ 4bar), ≤ ±0.75 (0.35bar, ..., 2bar), ≤ ±1.25 (< 0.35bar)	5
temperature drift of span	%fs	≤ ±0.8 (≥ 4bar), ≤ ±0.75 (0.35bar, ..., 2bar), ≤ ±1.25 (< 0.35bar)	5
vibration resistance (20, ..., 2000 Hz)	g	10	
life time	cycles	10 <sup>8</sup>	
response time	ms	≤ 1	6
seal		O-ring (fluorine rubber)	
pressure diaphragm		316L SS	
wetted parts material		316 SS	
electronics housing material		304 SS	
filling oil		silicone oil (standard), fluorine oil	7
mechanical interface		Refer to mechanical interface specified in Dimensions.	
electrical interface		Refer to electrical interface specified in Dimensions.	
environment protection		IP65 (standard), IP66 (for detachable cable) IP67 (for fixed cable)	
net weight	gram	~180	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±5%RH, barometric pressure: 860~1060 mbar, max. vibration = 0.1 g (i.e. 0.98m/s/s).

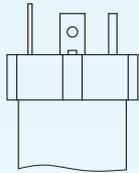
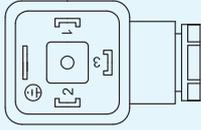
- Notes:
- The pressure medium should be compatible with wetted parts material and pressure diaphragm.
  - For customized pressure ranges, consult BCM.
  - "fs" refers to full scale pressure or rated pressure.
  - Accuracy =  $\sqrt{\text{non-linearity}^2 + \text{hysteresis}^2 + \text{repeatability}^2}$ .
  - Calculated as the maximum change in output over the compensated temperature range, and normalized by the full scale output at 25°C. E.g., for a transmitter of 6bar and 4~20mA output, its temperature drift of zero is ≤±0.8%fs which refers to ≤±0.13mA (= (20mA - 4mA) \* 0.8%).
  - Response time for a 0 bar to fs step change, 10% to 90% rise time.
  - Fluorine oil can be used for in food and oxygen industry

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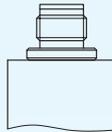
# Model 132S(a)/132S(b)/132S(c) Pressure Transmitter with Flush Diaphragm

## Dimensions

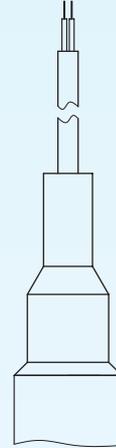
### electrical interface



DIN43650 connector  
(standard)

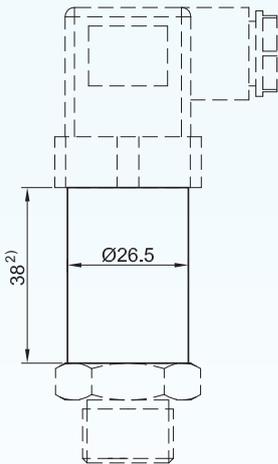


4-pin M12 connector with  
a detachable shielded PVC cable of  
a mating connector:  
for IP rating up to IP66

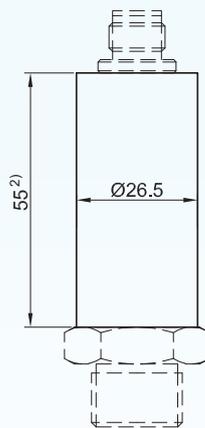


fixed shielded PVC cable:  
for IP rating up to IP67  
- 2 wires for current loop  
- 3 wires for voltage output  
- 4 wires for I<sup>2</sup>C output  
- cable length (L) should be specified  
in ordering information

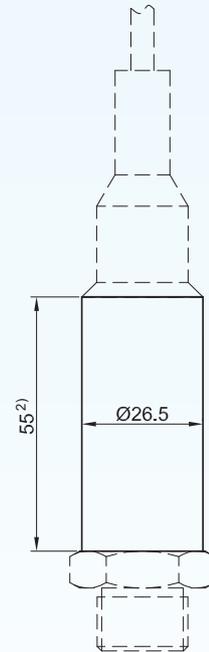
### electronics housing (casing)



with DIN43650 connector  
(standard)



with M12 connector



with fixed cable

Notes: 1) All dimensions are in mm.

2) If model 132S(c) is selected, the length of electronics housing will be 5mm longer.

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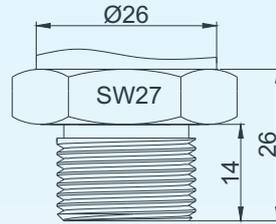
# Model 132S(a)/132S(b)/132S(c) Pressure Transmitter with Flush Diaphragm

## mechanical interface

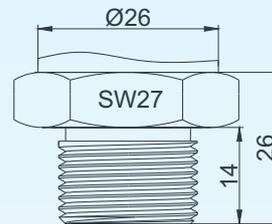
### 132S(a):



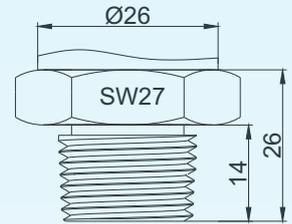
flush diaphragm



M20x1.5(M)



G1/2(M)

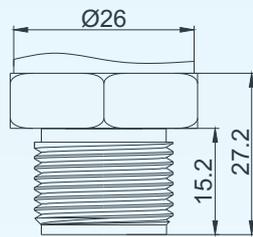


1/2 NPT(M)

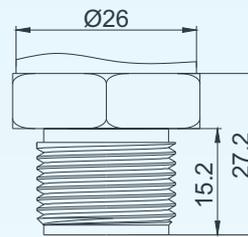
### 132S(b) (standard):



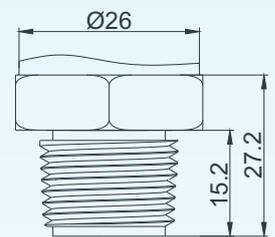
semi-flush diaphragm



M20x1.5(M)



G1/2(M)

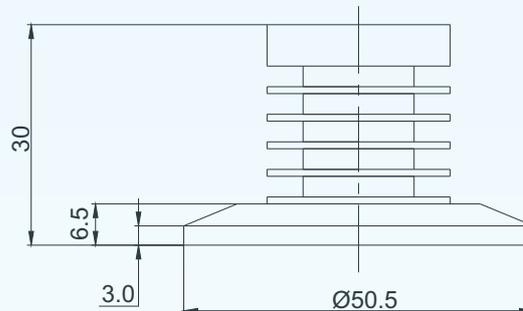


1/2 NPT(M)

### 132S(c):



Tri-Clamp connection



2" Tri-Clamp  
(Indicated as 2"TriClamp in ordering code)

Notes: - All dimensions are in mm.

- The mechanical interfaces and the electrical interfaces listed can be combined freely.
- If other types of interfaces are on request, consult BCM.

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# Model 132S(a)/132S(b)/132S(c) Pressure Transmitter with Flush Diaphragm



## Ordering Information

<b>position (pos.) 1: model</b>									
132S(a)	132S(b) (standard)	132S(c)							
<b>pos. 2: pressure ranges and references</b>									
<u>132S(a) and 132S(b):</u>									
(-1/0)bar G	0/1bar G, A	0/16bar G, A	0/250bar A	G: gauge pressure					
0/0.1bar G	0/2bar G, A	0/20bar G, A	0/400bar A	A: absolute pressure					
0/0.2bar G	0/4bar G, A	0/35bar G, A	0/600bar S	S: sealed gauge					
0/0.35bar G	0/6bar G, A	0/70bar A	0/1000bar S						
0/0.7bar G, A	0/10bar G, A	0/100bar A							
<u>132S(c):</u>									
-1/0bar G	0/1bar G	0/6bar G	0/20bar G	0/50bar G					
0/0.35bar G	0/2bar G	0/10bar G	0/35bar G	0/60bar G					
0/0.7bar G	0/4bar G	0/16bar G	0/40bar G						
<b>pos. 3: output signal</b>									
4/20mA (standard)	10%/90%Vs (ratiometric)	0/5V	1/5V	I2C	SPI				
<b>pos. 4: accuracy</b>									
0.5%fs									
<b>pos. 5: filling oil</b>									
siOil = silicone oil      fOil = fluorine oil									
<b>pos. 6: pressure diaphragm</b>									
316L stainless steel									
<b>pos. 7: mechanical interface</b>									
Refer to the drawings of mechanical interface for available options.									
<b>pos. 8: electrical interface</b>									
DIN43650 (standard, for IP65)									
M12Connector/PVCcable(1m) = M12 connector with a detachable shielded PVC cable of a matting connector, L = 1m (#), for IP66.									
Φ5/2(^)/PVC/1m = Φ5mm, 2-core(^) shielded PVC cable, L = 1m (#), for IP67.									
(#): Cable length (L) can be customized on request.									
(^): 2-core: current loop; 3-core: voltage output; 4-core: I <sup>2</sup> C digital output.									
<b>pos. 9: environment protection</b>									
IP65			IP66			IP67			
<b>pos. 10: customized specifications</b>									
“(*)” is necessary only if any customized parameter is required, otherwise it is neglectable.									
pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6	pos. 7	pos. 8	pos. 9	pos. 10

### Examples of Ordering Code

- standard transmitter: 132S(b)-0/16barG-4/20mA-0.5%fs-siOil-316L-G1/2(M)-DIN43650-IP65
- customized transmitter: 132S(c)-0/25barG-4/20mA-0.5%fs-siOil-316L-2"TriClamp-M12Connector/PVCcable(1m)-IP66-(\*)  
(\*): Customized pressure range = 0~50 barG.



The listed specifications, dimensions, and ordering information are subject to change without prior notice.

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