Model 131S
General Purpose Pressure Transmitters

Description

The 131S is a silicone piezoresistive pressure transmitter fitting most industrial pressure measurement applications. Thanks to its compact and rugged design, this model is suitable for applications of processing and control operations such as hydraulics, pneumatics, test equipment, liquid level measurement, compressor and pump control, etc. With various options of process connection and electrical interface, the 131S can be fitted into almost all common systems.

The 131S consisting of a stainless steel diaphragm, wetted part, and housing can be used for measurements involving hostile media compatible with 316 stainless steel. Featuring an inner-cavity process connection, the transmitter is specially designed to measure pressure of gases or dilute fluids with pressure reference of gauge, absolute, or sealed gauge.

By selecting proper electrical interface, the 131S is able to reach the environmental protection rating up to IP67.

Features

- measuring ranges: 0.35bar, ..., 1000bar
- pressure references:
  gauge, absolute, and sealed gauge
- accuracy up to 0.25%fs
- selectable output:
  4~20 mA (standard), 10%~90%Vs ratiometric and others.
- wide choice of process connection and electrical interface
- protection rating up to IP67

Applications

- mechanical engineering
- hydraulics and pneumatics
- compressor and pump systems
- liquid level measurement
- test equipment

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Technical Data

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 ⩾ 100bar	3
burst pressure		%fs	300, 200 in case of ranges ⩾ 100bar	
output signal		mA	4~20 (standard)	
		V	10%~90%Vs ratiometric, 0~5, 1~5	
		digital	I^2C, SPI	
accuracy		%fs	±0.25, ±0.5 (standard)	4
long-term stability		%fs/year	⩽ ±0.1 (4bar ⩽ ranges ⩽ 250bar), ⩽ ±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_{cable}	
	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	10^8	
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:
1. The pressure medium should be compatible with wetted parts material and pressure diaphragm.
2. For customized pressure ranges, consult BCM.
3. “fs” refers to full scale pressure or rated pressure.
4. Accuracy = sqrt(non-linearity^2 + hysteresis^2 + repeatability^2).
5. 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%).
6. Response time for a 0 bar to fs step change, 10% to 90% rise time.
7. Fluorine oil can be used for in food and oxygen industry

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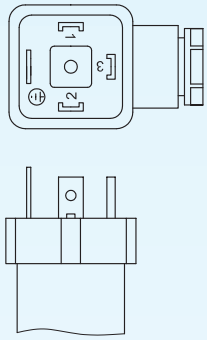
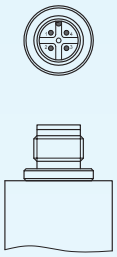
Dimensions

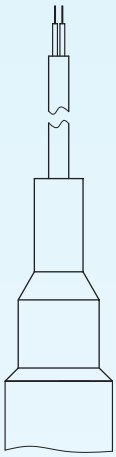
electrical interface



DIN43650 connector
(standard)

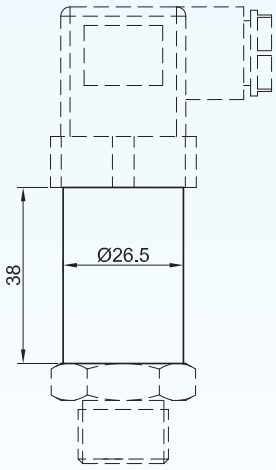


M12 connector with
a detachable shielded PVC cable of
a matting connector:
- for IP rating up to IP66,
- 4-pin or 6-pin depends on output signal,
- cable length (L) should be specified
  in ordering information.

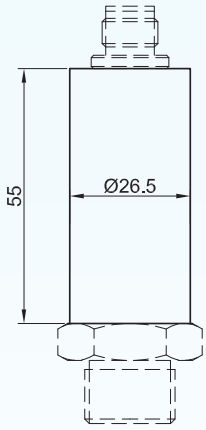


fixed shielded PVC cable:
- for IP rating up to IP67,
- number of wires in the cable varies
  according to output signal,
- cable length (L) should be specified
  in ordering information.

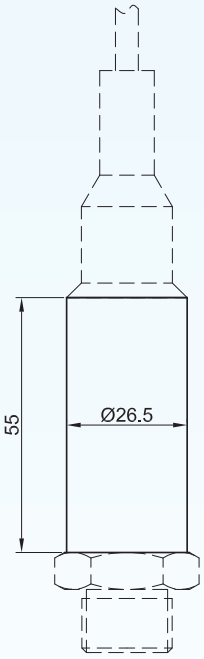
electronics housing (casing)



with DIN43650 connector
(standard)



with M12 connector



with fixed cable

Notes: All dimensions are in mm.

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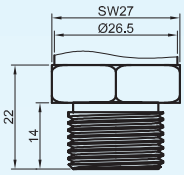
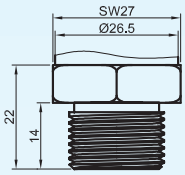
mechanical interface

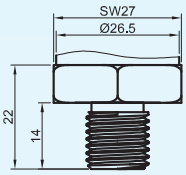
1) male threads



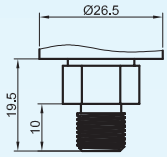
M20x1.5



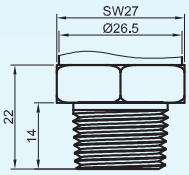
G1/2"



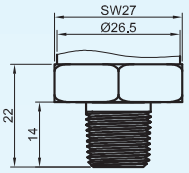
G1/4"
M12x1.5
(standard)



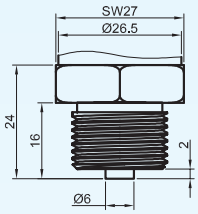
G1/8"



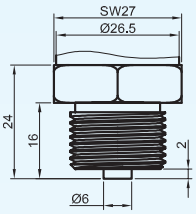
1/2" NPT



1/4" NPT

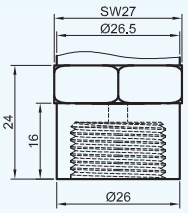


M20x1.5C

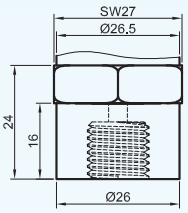


G1/2"C

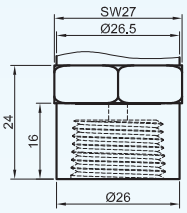
2) female threads



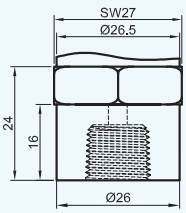
G1/2" (F)
M20x1.5 (F)



G1/4" (F)



1/2" NPT (F)



1/4" NPT (F)

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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Ordering Information

position (pos.) 1: model

131S

pos. 2: pressure ranges and references

(-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		

pos. 3: output signal

4/20mA (standard) 10%/90%Vs (ratiometric) 0/5V 1/5V I2C SPI

pos. 4: accuracy

0.25%fs 0.5%fs (standard)

pos. 5: filling oil

siOil = silicone oil (standard) fOil = fluorine oil

pos. 6: pressure diaphragm

316L stainless steel

pos. 7: mechanical interface

Refer to the drawings of mechanical interface for available options.

pos. 8: electrical interface

DIN43650 (standard, for IP65)
M12Connector/PVCcable(1m) = 4-pin(#) 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.
(#): 6-pin M12 connector will be used for SPI output.
(##): Cable length (L) can be customized on request.
"L = 0m" refers to a matting connector without a cable.
(^): 2-core: current loop;
3-core: voltage output;
4-core: I^2C output.
6-core: SPI output

pos. 9: environment protection

IP65 IP66 IP67

pos. 10: customized specifications

"(*)" 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:

  131S-0/16barG-4/20mA-0.5%fs-siOil-316L-G1/4-DIN43650-IP65

- customized transmitter:

  131S-10/50barG-1/5V-0.25%fs-siOil-316L-G1/4-M12Connector/PVCcable(5m)-IP66-**(*)**

  (*): Customized pressure range = 10~50 barG.

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

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