

# Model 670F High Gauge Pressure Sensors

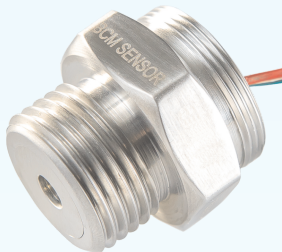
## Description

Model 670F pressure sensor (PS) is developed for high pressure applications. For high pressure application purpose ( $\geq 250\text{bar}$ ), this PS is designed of mono-block structure, i.e., its pressure diaphragm and sensor body are made from one piece of stainless steel. As a result, there is no O-ring integrated inside the sensor body to seal the pressure medium. Therefore, thanks to its mono-block structure, the model 670F PS offers excellent reliability in application with high pressures.

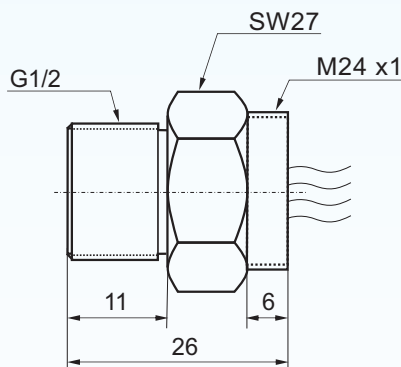
As one of the 600F-series PS, the model 670F makes use of the metal foil strain gauges from BCM SENSOR in order to form its Wheatstone bridge circuit. One of the advantages of using metal foil strain gauges is that all the 600F-series PS possesses the lowest temperature effect compared to all the other PS from BCM SENSOR.

The 670F PS is mostly used to build high pressure transmitters by integrating both a housing at its backside containing an SSC (sensor signal conditioner) and a connector for power supply and signal output.

For a specific application of high volume demand, on request this PS can have its mechanical interfaces. i.e., the threads of process connection and/or its threads for the SSC housing, customized to application needs.



## Dimensions



Note: all dimensions are in mm

## Features

- rugged mono-block structure
- measuring ranges: 400bar, ..., 5000bar
- reliable metal foil strain gauge technology
- accuracy up to 0.25%fs
- compensated temperature range: -20 ~ +85°C
- excited by either constant voltage or current source

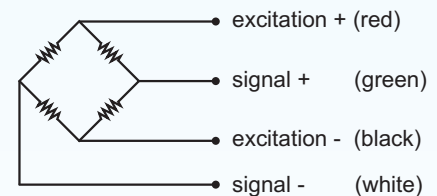
## Applications

- industrial automation
- hydraulic systems
- water jet cutting machines
- compressors
- process control systems

## Environmental Specifications

- position effect: < 0.1% of zero offset shift in any direction
- vibration effect: no change at 10 g (RMS), 20~2000 Hz
- shock: 100 g, for 10 millisecond

## Electrical Interface



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### Technical Data

Parameters	Units	Specifications	Notes
pressure medium		dilute fluids	1
measuring ranges	bar	0~400, ~600, ~1000, ~1600, ~2500, ~4000, ~5000	2
pressure references		gauge	
overload pressure	%fs	150	3
output sensitivity	mV/V	2 (option: 10%~90%Vs ratiometric, I2C, SPI, ZACwire)	
excitation	Vdc	5, ..., 12	
zero offset	mV	≤ ±1	4
accuracy	%fs	±0.25, ±0.5 (standard)	5
long-term stability	%fs/year	≤ ±0.2	
bridge resistance	Ω	350, 700 (standard), 1000, 2000	
insulation resistance	MΩ	500 @100Vdc	
compensated temperature range	°C	-20 ~ +85	
operating temperature range	°C	-40 ~ +125	
storage temperature range	°C	-40 ~ +125	
temperature coefficient of zero offset	%fso/°C	≤ ±0.01	6
temperature coefficient of span	%fso/°C	≤ ±0.01	6
life time	cycles	10 <sup>8</sup>	
response time	ms	≤ 1	7
mechanical interface		G1/2 male	
housing connection		M24x1 male	
electrical interface		3 or 4 colored PVC flexible wires, length = 100mm	8
pressure diaphragm		17-4PH stainless steel	
wetted parts material		17-4PH stainless steel	
net weight	gram	~40	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C, humidity = 50%RH ±10%RH,  
barometric pressure: 86~106 kPa, vibration = 0.1 g (1m/s/s) max.

- 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. Measured at 10 Vdc excitation.
  5. Accuracy = sqrt (non-linearity<sup>2</sup> + hysteresis<sup>2</sup> + repeatability<sup>2</sup>).
  6. Calculated as a rate of output change between -20°C and +85°C, and normalized by the output at 25°C, when the sensor is not temperature compensated.
  7. Response time for a 0 bar to fs step change, 10% to 90% rise time.
  8. 4 wires for millivolt output and for I2C and SPI output; 3 wires for ratiometric and ZACwire output.

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### Ordering Information

<b>position (pos.) 1: model</b>							
670F							
<b>pos. 2: pressure ranges and references</b>							
400bar G		2500bar G		G: gauge pressure			
600bar G		4000bar G					
1000bar G		5000bar G					
1600bar G							
Note: In case of the conditioned output signal, indicate both min. and max. measuring pressure, e.g., 0/400bar.							
<b>pos. 3: output signal</b>							
2mV/V (standard)							
10%/90%Vs = 10%/90%Vs ratiometric, e.g., if power supply Vs is 5Vdc, o/p is 0.5~4.5V.							
I <sup>2</sup> C							
SPI							
ZACwire							
<b>pos. 4: accuracy</b>							
0.25%fs				0.5%fs (standard)			
<b>pos. 5: bridge resistance</b>							
350Ω		700Ω (standard)		1000Ω		2000Ω	
Note: In case of the conditioned output signal, this option is neglectable.							
<b>pos. 6: mechanical interface</b>							
G1/2: G1/2 male threads							
<b>pos. 7: electrical interface</b>							
FW: 3 or 4 (#) colored PVC flying wires, length = 100mm							
#: The specific number of wires refers to note 8 of Technical Data.							
##: Wire length can be customized on request.							
<b>pos. 8: customized specifications</b>							
“(*)” is necessary only if any customized parameter is required, otherwise it is neglectable.							
<b>pos.1</b>	<b>pos. 2</b>	<b>pos. 3</b>	<b>pos. 4</b>	<b>pos. 5</b>	<b>pos. 6</b>	<b>pos. 7</b>	<b>pos. 8</b>

### Examples of Ordering Code

- standard sensor:  
670F-1000barG-2mV/V-0.5%fs-700Ω-G1/2-FW
  - customized sensor:  
670F-200/1000barG-10%/90%Vs-0.5%fs-G1/2-FW(200mm)-(\*)
- (\*): Customized range = 200~800barG;  
Customized wire length = 200mm.

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

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