

Model 664F(f) Pressure Sensors with Flush-Diaphragm

Description

Model 664F(f) pressure sensor (PS) features a flush diaphragm. This feature is especially useful when the PS measures the pressure either of sticky pressure medium, like viscous paste, or of pressure medium containing solid particles, like wasted water. The diaphragm is welded together with the sensor housing so as to avoid any O-ring inside the PS for a better reliability of the PS.

The same as 664F(c), the 664F(f) PS has a metal foil strain gauge (e.g., BCM KA-type diaphragm strain gauge) bonded on its diaphragm to form the Wheatstone bridge circuit. Thanks to the metal foil strain gauge, the PS of 664F-series has a lowest temperature effect among all the PS from BCM SENSOR.

A variety of output signals are available, e.g., mV/V signal directly from the Wheatstone bridge circuit, ratiometric signal of 10%~90%Vs, 0~5V, or digital signal of I2C or SPI protocols via an SSC (sensor signal conditioner) which is fixed at the PS backside.

The 664F(f) PS is mostly used to build pressure transmitters by adding both an SSC at its backside, a housing for SSC via its M24x1 threads and a connector for both power supply and signal output.



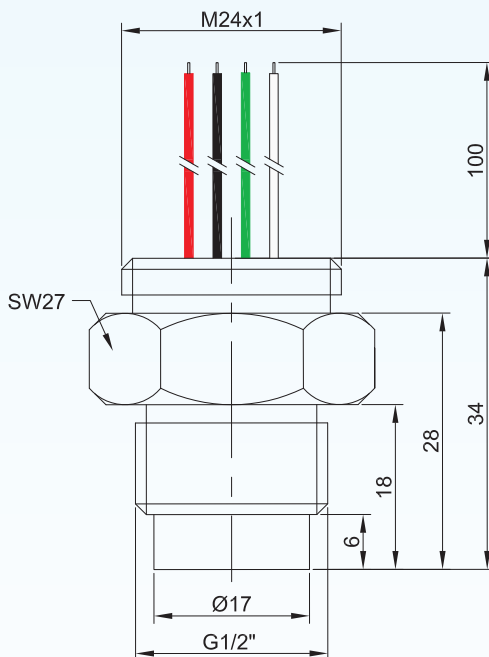
Features

- rugged and fully welded structure
- measuring ranges: 25bar, ..., 400bar
- reliable metal foil strain gauge technology
- accuracy up to 0.1%fs
- compensated temperature range: -10°C ~ +60°C
- excited by either current or voltage

Applications

- industrial controls
- hydraulic systems
- compressors
- food industry
- process control systems

Dimensions

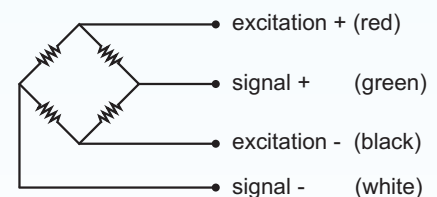


Note: all dimensions are in mm

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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Model 664F(f)

Pressure Sensors with Flush-Diaphragm



Technical Data

Parameters		Units	Specifications	Notes
pressure medium			viscous fluid or media containing solids	1
measuring ranges		bar	0~25, ~40, ~60, ~100, ~160, ~250, ~400	2
pressure references			gauge	
overload pressure		%fs	150	3
output signal	standard	mV/V	1, 1.5 (standard)	4
	option		10%~90%Vs ratiometric, 0~5V, I ² C, SPI	5
excitation		Vdc	5, ..., 12	
power supply (Vs) for option outputs		Vdc	3, ..., 5 in case of output 10%~90%Vs ratiometric, I ² C, SPI; 12, ..., 30 in case of output 0~5V	
load resistance for 10%~90%Vs or 0~5V			> 5	
zero offset		mV	≤ ±1	
accuracy		%fs	±0.1 (for ranges ≥250bar), ±0.25 (for ranges ≥60bar), ±0.5 (standard)	6
long-term stability		%fs/year	≤ ±0.2	
bridge resistance		Ω	350, 1000 (standard)	
insulation resistance		MΩ	≥500 @100Vdc	
compensated temperature range		°C	-10 ~ +60	
medium temperature range		°C	-40 ~ +125	
ambient temperature range		°C	-40 ~ +85	
storage temperature range		°C	-40 ~ +85	
temperature coefficient of zero offset		%fso/°C	≤ ±0.015	7
temperature coefficient of span		%fso/°C	≤ ±0.015	7
life time		cycles	10 ⁸	
response time		ms	≤ 1	8
mechanical interface			G1/2 male	
housing connection			M24x1 male	
electrical interface			4 colored silicone rubber flying wires, 100mm	
pressure diaphragm			17-4PH stainless steel	
material of mechanical interface			316 stainless steel	
O-ring material			fluorine rubber	
net weight		gram	~40	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C.

- 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.
 - Measured at 10Vdc excitation.
 - A PCB board will be attached to the sensor.
 - Accuracy = $\sqrt{\text{non-linearity}^2 + \text{hysteresis}^2 + \text{repeatability}^2}$.
 - Calculated as a rate of output change between -10°C and 60°C, and normalized by the output at 25°C, when the sensor is not temperature compensated.
 - Response time for a 0 bar to fs step change, 10% to 90% rise time.

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Ordering Information

position (pos.) 1: model							
664F(f)							
pos. 2: pressure ranges and references							
25bar	G	100bar	G	400bar	G	G: gauge pressure	
40bar	G	160bar	G				
60bar	G	250bar	G				
Note: In case of the conditioned output signal, indicate both min. and max. measuring pressure, e.g., 0/25bar.							
pos. 3: output signal							
standard: 1.5mV/V (standard) 1mV/V							
options: 10%/90%Vs = 10%~90%Vs ratiometric							
0/5V							
I ² C							
SPI							
pos. 4: accuracy							
0.5%fs (standard)							
0.25%fs (in case range ≥ 60bar)							
0.1%fs (in case range ≥ 250bar)							
pos. 5: bridge resistance							
1000Ω (standard)							
350Ω							
Note: This pos. 5 is only necessary if a standard output signal (e.g., 1.5mV/V or 1mV/V) is selected. If an option output signal (e.g., 10%/90%Vs), the pos. 5 should be neglected.							
pos. 6: mechanical interface							
G1/2: G1/2 male							
pos. 7: electrical interface							
FW: flying wires, silicone rubber, wire length = 100mm(#)							
#: Wire length can be customized on request.							
For instance, if 200mm is requested, indicate "FW(200mm)".							
pos. 8: 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

Examples of Ordering Code

- standard sensor:
664F(f)-60barG-1.5mV/V-0.5%fs-1000Ω-G1/2-FW
- customized sensor:
664F(f)-0/60barG-10%/90%Vs-0.5%fs-1/2NPT-FW(150mm)-(*)
(*): Customized mechanical interface = 1/2" NPT male thread.

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

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