

Model MPT261

Melt Pressure and Temperature Transducers & Transmitters



Description

Model MPT261 melt pressure transducer or transmitter (MPT) is developed from the MPT160 sensor to measure both pressures and temperatures of melt medium of high temperatures (up to 400 °C). Employing metal foil strain gauge (MfSG) from BCM SENSOR as its sensing element, the MPT261 sensor has its wetted parts and housing made from stainless steel (SS) in order to comply with the requirements of pressure medium of high temperatures and harsh working environment. As a result, the MPT-series sensors find their applications on injection moulding machines and extruders to monitor or measure both the pressures and temperatures of working medium in melt state.

Compared to MPT260, the MPT261 has additionally integrated with a thermocouple or Pt100 as a temperature sensor, the electrical interface of which is located next to the electrical interface of pressure measurement, in order to measure the temperatures of melt medium.

An SS isolation diaphragm is located at the front end of the rigid stem and will be directly approached by melt pressure medium in applications. To avoid mechanical scratches, a specially designed alloy-coating is applied on the isolation diaphragm. Inside the rigid stem, there is a capillary filled with nontoxic liquid-metal alloy which is not mercury and is able to truly transfer the medium pressure from the isolation diaphragm to an SS pressure diaphragm. The SS pressure diaphragm is located at the rear end of its rigid stem. On the backside of this pressure diaphragm there is a full bridge MfSG to convert deformation of the pressure diaphragm, which is induced by the measured pressure, into an electrical signal in millivolt.

To meet different requirements in applications, the MPT261 sensors can offer various types of output signal for pressure measurement. The standard output signal of pressure measurement can be either 3.33mV/V (i.e., the MPT261 without sensor signal conditioner (SSC)), or 4~20mA, 0~5V or 0~10V (i.e., the MPT261 integrated with SSC). By integrated with other kind of SSC, different output signals can be available, such as 4~20 mA with HART protocol, CAN-bus or modbus protocol. The output signal of temperature measurement depends on the selected type of temperature sensors which can be J-, K- or E-type thermocouple, or Pt100 thermal resistor.

To facilitate the calibration on site, the MPT261 sensors are provided with internal 80%fs shunt calibration function. By means of this function the sensors can be calibrated any time without calibrating pressures. On request the MPT261 can be integrated with a replay for control purpose.



Features

- measuring ranges: 0~17bar, ..., ~2000bar
- maximum medium temperature up to 400°C
- accuracy up to 0.25%fs
- various options of standard output signal:
 - without SSC: 3.33mV/V,
 - with SSC: 4~20mA, 0~5V, or 0~10V.
- nontoxic liquid-metal alloy without mercury
- internal 80%fs shunt calibration
- integrated with a temperature sensor
- robust design
- excellent stability and reliability

Applications

- injection molding machines
- extruders
- pressure and temperature measurement or process control of pressure medium of high-temperature

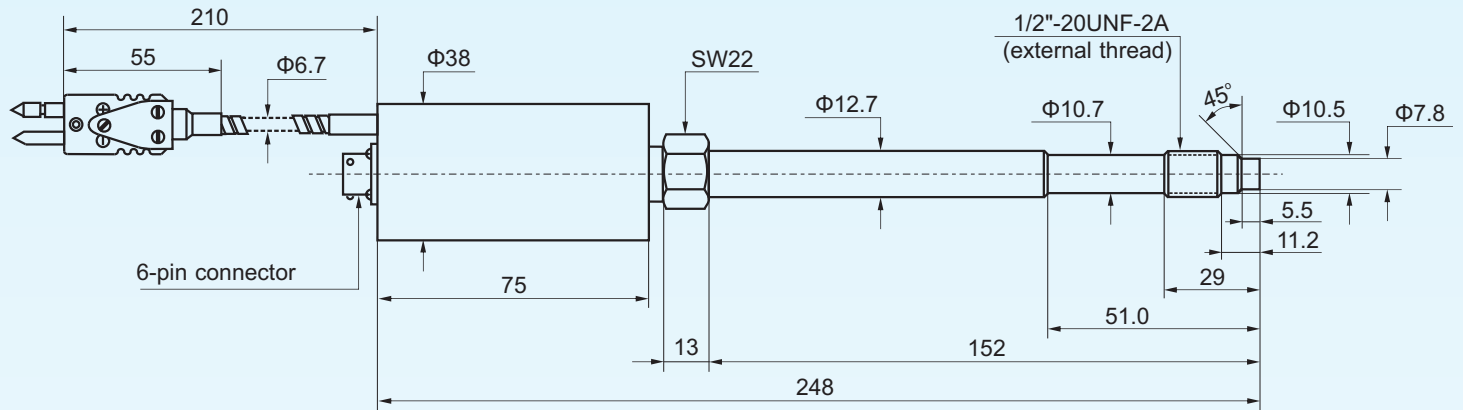
BCM SENSOR TECHNOLOGIES BVBA

Model MPT261

Melt Pressure and Temperature Transducers & Transmitters



Dimensions



Note: All dimensions are in mm.

BCM SENSOR TECHNOLOGIES BVBA

Technical Data

Parameters		Units	Specifications	Notes
pressure medium			compatible with material of wetted parts	
pressure ranges		bar	0~17, ~35, ~50, ~100, ~200, ~350, ~500, ~700, ~1000, ~1400, ~2000	1
pressure references			gauge	
proof pressure		%fs	150	2
burst pressure		%fs	200	
output signal	without SSC	mV/V	3.33	3
	with SSC		4~20mA, 0~5V, 0~10	
accuracy		%fs	±0.25, ±0.5 (standard), ±1	4
long-term stability		%fs/year	≤ ±0.15	
power supply (Vs)	without SSC	Vdc	10 (12Vdc max.)	
	with SSC	Vdc	12 < Vs ≤ 36	
load resistance for voltage output		kΩ	> 5	
load resistance for current loop		Ω	≤ (Vs - 12V) / 0.024A	
insulation resistance		MΩ	500 @100Vdc	
maximum medium temperature		°C	400	
ambient temperature range		°C	-40 ~ +85	
storage temperature range		°C	-40 ~ +85	
compensated temperature range		°C	0 ~ 80	
temperature coefficient of zero		%fso/°C	≤ ±0.05	5
temperature coefficient of span		%fso/°C	≤ ±0.05	5
life time		cycles	10 ⁶	
temperature sensor			J-type (standard), K-type or E-type thermocouple, or Pt100	
process connection			1/2"-20 UNF-2A male thread (standard), M14x1.5, M18x1.5	
electrical interface	pressure		6- or 8-pin connector with detachable cable of matting connector	6
	temperature		2-pin connector with detachable cable of matting connector	
diaphragm material			15-5ph SS (standard), 17-4ph SS, Inconel 718	
rigid stem material			304 SS	
electronics housing material			304 SS	
filling fluid			nontoxic liquid-metal alloy without mercury	
environment protection			IP65	
maximum mounting torque		Nm	40	
net weight (without cable)		kg	~0.5	

General conditions for tests: 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. For customized pressure ranges, consult BCM.

2. "fs" refers to full scale pressure.

3. Measured at fs.

4. Accuracy = ±sqrt (non-linearity² + hysteresis² + repeatability²).

5. Calculated as a rate of output change between 0°C and 80°C, and normalized by the output at 25°C, for the sensor which is temperature compensated.

6. 8-pin connector is used in case of required output signal and functions as follows:

a. 3.33mV/V with shunt calibration and relay;

b. 0~5V or 0~10V with shunt calibration and relay;

c. 4~20mA with shunt calibration, relay and zero adjustment by short circuit.

Ordering Information

position (pos.) 1: model												
MPT261												
pos. 2: pressure ranges and pressure reference												
17bar G 100bar G 500bar G 1400bar G G: gauge pressure 35bar G 200bar G 700bar G 2000bar G 50bar G 350bar G 1000bar G												
Note: In case of the sensor integrated with SSC, indicate both min. and max. measuring pressure, e.g., 0/100bar.												
pos. 3: output signal												
without SSC: 3.33mV/V with SSC: 4/20mA 0/5V 0/10V												
pos. 4: accuracy												
0.25%fs 0.5%fs (standard) 1%fs												
pos. 5: relay function												
NR (standard) = no relay RE = with relay												
pos. 6: zero adjustment by short circuit												
NZ (standard) = Zero adjustment only can be tuned with a potential meter. ZA = Zero can be adjusted by short-circuiting the specific terminals.												
pos. 7: temperature sensor												
J = J-type thermocouple (standard) E = K-type thermocouple K = K-type thermocouple Pt = Pt100 thermal resistor												
pos. 8: diaphragm material												
15-7ph (standard) 17-4ph Inconel718												
pos. 9: mechanical interface												
1/2"-20UNF (standard) = 1/2"-20 UNF-2A male thread M14 = M14 x 1.5 male thread M18 = M18 x 1.5 male thread Other types of thread are available on request.												
pos. 10: length of rigid stem												
a = 76mm d = 228mm b = 102mm e = 305mm c = 152mm (standard) f = other length												
pos. 11: electrical interface												
PVC/1m = shielded PVC cable, with matting connector, cable length = 1m (##) ##: Cable length can be customized on request. "cable length = 0m" refers to only matting connector will be provided. If not specified, this cable length is applied to cables of both pressure and temperature output.												
pos. 12: environment protection												
IP65												
pos. 13: customized spec's												
"(*)" 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	pos. 11	pos. 12	pos. 13

Examples of Ordering Code

- standard:
MPT261-100barG-3.33mV/V-0.5%fs-NR-NZ-J-(15-7ph)-(1/2-20UNF)-c-PVC/1m-IP65
- customized:
MPT261-0/60barG-4/20mA-0.5%fs-RE-ZA-J-(15-7ph)-M16x1.5-c-PVC/5m-IP65-(*)
(*): Customized pressure range = 0~60 barG;
Customized mechanical interface = M16x1.5 male thread.

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