

PTOG Series

Operating Manual





01 Product Introduction

The melt temperature sensor (transmitter) is an instrument to measure the melt pressure in the high temperature area (referred to as the sensor and transmitter). The digital-analog integrated circuit design, please follow the following instructions for storage and operation to ensure the maximum service life of the product.

The products comply with the national JJG860-2015 "Pressure sensor (static) verification Regulations" and JJG882-2019 "Pressure transmitter Verification Regulations".

02 Product Model and Specifications

Product Model: PTOG1 (straight rod type), PTOG2 (hose type), PTOG3 (temperature and pressure double measurement type), PTOG4 (cavity type)

2.1 High temperature melt pressure sensor

Definition: Output signal 3.33m V/V or other m V/V products

Measuring range: (0-10) MPa, (0-20) MPa, (0-35) MPa, (0-50) MPa, (0-70) MPa, (0-100) MPa, (0-140) MPa, (0-200) MPa

2.2 High temperature melt pressure transmitter

Definition: The output signal is (4-20) mA, 0-10Vdc, 0-5Vdc

Measuring range: (0-3.5) MPa, (0-5) MPa, (0-7) MPa, (0-10) MPa, (0-20) MPa, (0-35) MPa, (0-50) MPa, (0-70) MPa, (0-100) MPa, (0-140) MPa, (0-200) MPa

Performance Parameter	High temperature melt pressure sensor	High temperature melt pressure transmitter	
Output Signal	3.33mV/V	(4-20) mA two-wire system	Three-wire system (0-10)Vdc, Three-wire system (0-5)Vdc
Supply Voltage	(6-12)Vdc(10Vdc voltage recommended)	(10-36) Vdc	(12-36) Vdc
Load resistance (Ω)		< (Supply voltage -10)/0.02	> 10k
Calibration signal: 80%F.S			
Basic Error (%)	$\pm 0.5\%$ (level 0.5), $\pm 0.25\%$ (level 0.25) (expressed as a percentage of full scale output value)		
Repeatability shall not be greater than the absolute value of the basic error, and the return difference shall not be greater than the absolute value of the basic error.			

03 Transportation and Storage

3.1 The product is usually packaged separately, and when stored, please be careful to repack it in the packaging it originally came with.

3.2 At the front thread of the rigid rod, the induction diaphragm is protected by a protective cap, which should be tightened at any time during storage and only opened when using the installation. It is strictly prohibited to press the diaphragm with sharp materials.

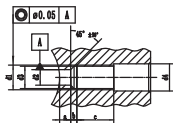
3.3 Long-term storage must meet the following conditions:

- ① Ambient temperature: $-20\sim 85\text{ }^{\circ}\text{C}$, relative humidity: $0\%\sim 100\%\text{RH}$
- ② Not exposed to rain or affected by water seepage/leakage.
- ③ Vibration and shock are kept to a minimum

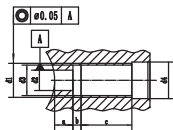
04 Product Installation Hole

Before installing the product, ensure that the product is processed according to the correct size of the installation hole and that there are no burrs in the hole.

PTOG1/PTOG2/PTOG3 Open hole size

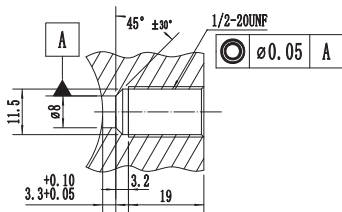


d1	d2	d3	d4	a	b	c
1/2-20UNF	Φ8	Φ11.5	Φ14	5.7	3.2	19
M18×1.5	Φ10	Φ16.5	Φ20	6	4	25
M10×1	Φ6.2	Φ9.1	Φ14	6.7	3.2	19
M14×1.5	Φ8	Φ12.5	Φ15	5.7	3.2	19
G1/4	Φ6	Φ11.7	Φ14	5.7	3.2	19
M12×1.5	Φ6	Φ10.5	Φ14	5.7	3.2	19

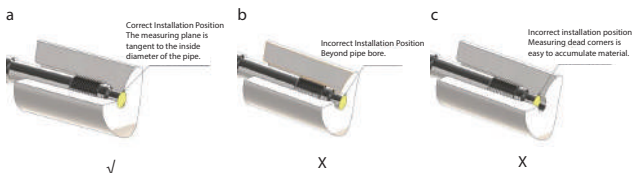


d1	d2	d3	d4	a	b	c
G3/8	Φ10	Φ15	Φ18	9	4	25
G3/4	Φ18.1	Φ24.5	Φ28	12	5	35
M22×1.5	Φ16	Φ20.5	Φ24	10	5	40
M20×1.5	Φ14	Φ18.5	Φ22	5.7	3	35

PTOG4 Open hole size



Correct Installation Mode



05 Product Installation

5.1 Before installation the product, please check whether the technical parameters on the product nameplate are correct, mainly including installation thread, pressure range, output signal, power supply requirements.

5.2 Ensure that the installation hole drilling size is correct, if the product is installed in the previously used installation hole, professional cleaning tools should be used to ensure that the installation hole is completely clean, without any plastic residue.

5.3 Remove the front protective cap of the product.

5.4 Apply high temperature anti-sticking grease on the surface of the product thread to prevent thread bite. If a gasket needs to be installed for plane sealing, apply high-temperature anti-sticking grease to the gasket and glue the gasket to the product.

5.5 Put the product into the mounting hole smoothly, first manually, and then use the wrench to tighten on the hexagonal. If the product is installed in the mounting hole previously used, it is recommended to complete the installation under the condition of heating to the plastic melting point.

The recommended maximum mounting torque is 40 Nm.

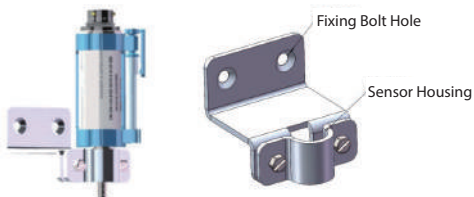
06 Product disassembly

6.1 Disassembly must be done under heated conditions (plastic melting point). When removing the sensor, note that the diaphragm is not in contact with pressure. The force to unload the sensor must be applied only to the shaft (hexagon) and not to any force on the sensor head. If the mounting holes need to be plugged, seal them with plugs of the same mechanical size.

6.2 After removing the product, use a soft cloth to quickly wipe the material on the diaphragm, sealing surface, and thread.

07 Housing Fixation

Use our professional installation bracket to fix the product, the fixed position should avoid vibration and installation in a strong magnetic environment, shall not be exposed to rain or affected by water seepage/leakage, temperature shall not exceed 85 °C.



Please strictly follow the operation instructions to install and disassemble the product, caused by misoperation damage, we does not assume the quality responsibility.

08 Wiring and Cabling

8.1 The cable should be shielded cable, heat resistance temperature is not less than 105 °C, each core wire connection terminal should be heat shrink tube isolation protection, shielded wire and plug-in metal connection, cable welding should be particularly careful, otherwise it may lead to signal transmission errors or damage to the product. For the connection definition, see "Electrical Connection".

8.2 If you use our welded cable, you only need to connect the cable according to the definition of "Electrical Connection".

8.3 Signal cables must be routed separately through the cabling trough, and the strong and weak currents must be routed separately. When routing cables, avoid high temperature areas, and it is recommended that the ambient temperature be lower than 85 °C.

8.4 It is strictly prohibited to insert the plug of the cable into the electrical connection of the high-temperature melt pressure sensor/high-temperature melt pressure transmitter, and pull the cable for wiring.

8.5 After the cable is laid out, it shall be connected to the terminal post of the signal receiving end according to our electrical connection definition. If there is excess cable core, wrap each cable core separately with insulation tape.

09 Product Calibration

After the product is installed and connected to the measuring instrument and powered on, and in the absence of any pressure, the system temperature has reached the operating temperature 30min to 60min, the product is calibrated.

Calibration method:

High temperature melt pressure sensor (mV/V signal output) : Please clear and calibrate the instrument on the display instrument, refer to the zeroing method and calibration method of the display instrument.

High temperature melt pressure transmitter:

This series has two zeroing methods: external magnetic zeroing and remote short-circuit zeroing, which can be used at any time to adjust the maximum proportion of 30% of the full-scale output signal

1. Short-circuit clearing adjustment mode: refer to "electrical connection" to define the cable core of short-circuit clearing, short-circuit after 3 to 5 seconds to disconnect, you can clear. After zeroing, ensure that the insulation of the two wires shorting the zeroing is separated from each other to avoid short-wiring when the wires are not insulated or when there is pressure, resulting in inaccurate pressure measurement.

2, if the shell has "M" this mark, you can use our special magnetic pen, the magnet is aligned with this mark and close to 3~5 seconds later in the removal, you can clear. If there is no magnet, it can also be operated by the short-circuit clearing method in the above "1".



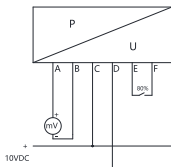
Rezero with Magnetic pen

10 Electrical Connection

Pressure output signal wiring definition:

Electrical cable configuration 4-wire sensor Connector type: PT02A-10-6P.

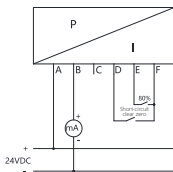
0...20/33.33mV/V



Binding post	definition	Cable color
A	signal+	red
B	signal-	black
C	Power+	white
D	Power-	green
E	80%+	blue
F	80%-	orange

Electrical cable configuration 2-wire transmitter (short reset)

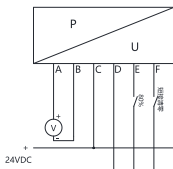
4...20mA



Binding post	definition	Cable color
A	signal+	red
B	signal-	black
C	Power+	white
D	Short-circuit clear zero+	green
E	80%+	blue
F	Short-circuit clear zero-/80%	orange

Electrical cable configuration 4-wire transmitter (short reset)

0...5V/10V



Connector type: PT02A-10-6P.



Binding post	definition	Cable color
A	signal+	red
B	signal-	black
C	Power+	white
D	Power-/SD-/Short-circuit clear zero-	green
E	80%+	blue
F	Short-circuit clear zero+	orange

* Pins 3 and 4 are connected internally

Connector Type: Direct outlet

Thermocouple type	Thermocouple temperature signal	Cable color
K type thermocouple	+	Red
	-	Blue
E type thermocouple	+	Red
	-	Brown
J type thermocouple	+	Red
	-	Yellow

Temperature signal output





Three-wire PT100	Cable color
+	Red
G	Red
-	White

M16-7PIN (Binder)

Terminal		Two wire thermocouple/thermal resistor	Three-wire PT100	Four-wire PT100	Double branch and two wire system PT100	Double branch and three wire system PT100
		Signal definition				
1		+	+	+	+	+
2				+		
3		-	-	-	-	-
4			-	-		-

11 Fault Analysis

Common faults and troubleshooting methods:

Fault	Reason	Troubleshooting Methods
	1. The hole size problem: the size is small, the concentricity is not enough, and the hole has rough edges. 2. The temperature is more than 400 °C.	1. Check the hole size. 2. Check whether the normal operating temperature exceeds 400 °C or whether the temperature exceeds 400 °C during the heating process.
	1. The installation hole caused by burrs. 2. Cold machine installation, solidification caused by materials. 3. External use of hard objects to press the diaphragm.	1. Clear the burrs in the hole. 2. Use special cleaning tools to clear the hard material in the hole and install with the heating machine. 3. Only use fingers to press.
	1. The hole size problem: the diaphragm has extended out of the inner wall of the cylinder. 2. Brush the diaphragm with a hard object.	1. Re-open the hole or add the gasket according to the size. 2. It is strictly prohibited to use hard objects to brush the diaphragm.
	Excessive mounting torque.	Install according to the recommended torque, and try to make the installation force 90° with the screw.

	Reason
Pressure did not change	1. Check whether the power supply and cable connections are correct.
	2. Check whether the diaphragm is intact.
	3. Check whether the output signal is consistent with the input signal of the receiving module.
	4. Check whether the sensor housing is at a temperature below 80 ° C.
Pressure fluctuation	1. Need to use a shielded cable.
	2. The equipment should be reliably grounded.
	3. The shielded wire is connected to the electric control PE wire.
Pressure measurement is not accurate	1. Check whether the power supply and cable connections are correct.
	2. Check whether the diaphragm is intact.
	3. Check whether the output signal is consistent with the input signal of the receiving module.





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