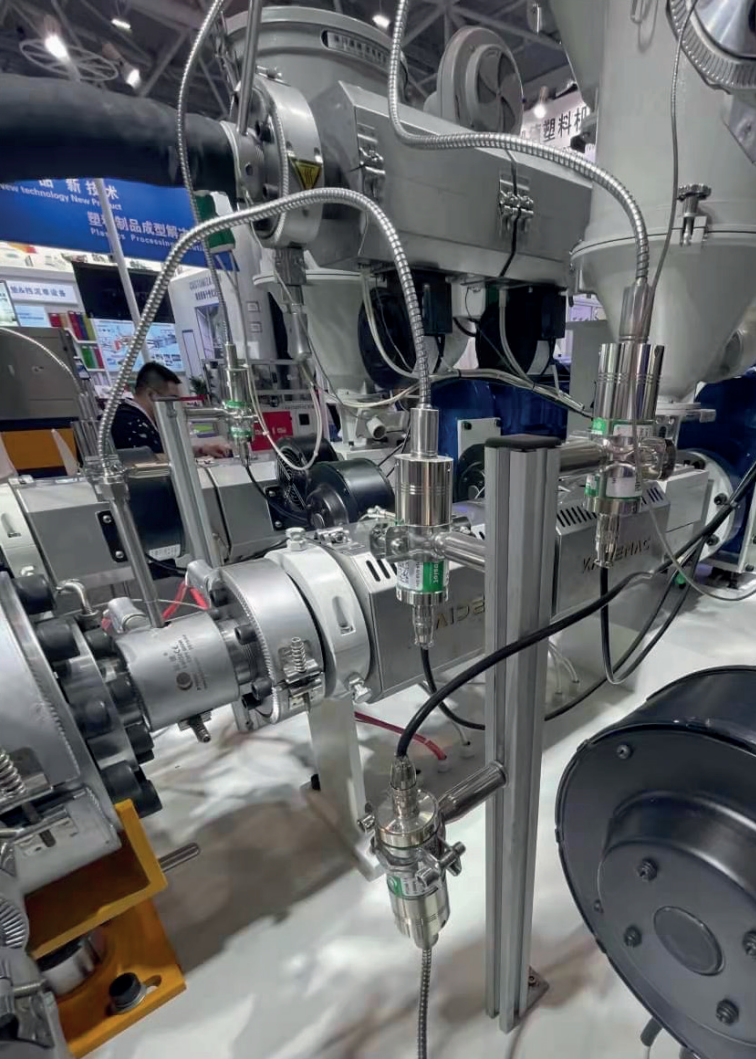




Operating Manual

PT111(B)/PT124(B)/PT131(B)/PT112(B)/PT123(B)/PT133(B)
Series





塑料机

新技术
New Technology New Product
塑料制品成型
Plastics Processing

塑料机

KNITENAC

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01 General Information

This manual refers to the following products:

PT111(B), PT124(B), PT131(B), PT112(B), PT123(B), and PT133(B). It should be kept close to the equipment for easy reference.

To avoid accidents and/or malfunctions, the manual must be read, understood, and followed precisely.

Ziasiot is not responsible for any personal injury or property damage resulting from failure to adhere to this manual.

Melt Sensors

Ziasiot Melt sensors are pressure and temperature transducers and transmitters designed for high-temperature environments. They measure melt polymer pressure at temperatures up to 400°C, withstanding such conditions due to their special mechanical construction that isolates the measurement element from the melt.

These sensors are ideal for polymer production and processing applications. Their design is based on hydraulic pressure transmission, where mechanical strain is conveyed through a non-compressible transmission liquid, which can be mercury or FDA-approved oil. Strain gauge technology converts the physical pressure into an electrical signal.

There are four different designs available:

- Rigid Stem
- Rigid Stem with Flexible Capillary
- Rigid Stem with Flexible Capillary and Thermocouple
- Exposed Capillary

Ziasiot Melt sensors meet all installation and field requirements.

02 Technical Data

Main Features:

- Pressure range: from 0-35 to 0-2000 bar / from 0-500 to 0-30000 psi
- Accuracy: $< \pm 1.0\%$ FS; $< \pm 0.5\%$ FS
- Mercury-filled system for temperature stability
- 1/2-20UNF, M14x1.5 standard threads, other types available on request
- Standard diaphragm is 17-4PH stainless steel with TiAlN coating
- Calibration signal 80% FS internally generated
- Completely interchangeable with all existing products
- Standard melt pressure sensors outputs are as follows:

PT111/PT124/PT131: 2mV/V, 3.33mV/V (non-amplified)

PT111B/PT124B/PT131B: 4-20mA, 0-10VDC, 0-5VDC (amplified)

PT112/PT123/PT133: 2mV/V, 3.33mV/V (non-amplified)

PT112B/PT123B/PT133B: 4-20mA, 0-10VDC, 0-5VDC (amplified)

Melt Sensor Type	Melt Pressure Transmitter	Melt Pressure Transducer
Output	4-20mA, 0-10VDC, 0-5VDC	2mV/V, 3.33mV/V
Accuracy	$< \pm 1.0\%$ FS, $< \pm 0.5\%$ FS (Optional)	
Power Supply	9-36VDC (24Vdc Typical)	6-12VDC (10Vdc Typical)
Calibration Signal	80%FS	
Diaphragm Maximum Temperature	400°C / 750°F	
Rigid Stem Length	152mm, 229mm, 318mm, 381mm, 460mm	
Material in Contact with Process Medium	Rigid Stem: 17-4PH Diaphragm: 17-4PH (Standard), INCONEL718, Hastelloy C276	
Thermocouple	J, K, E	
Electrical Connections	PT111(B)/PT124(B)/PT131(B): 5-pin Connector PT112(B)/PT123(B)/PT133(B): 6-pin Connector	

* FS= Full Scale Output

03 Transportation and Storage

3.1 The melt pressure sensor is usually packaged individually. When stored, please carefully repackage it in its original packaging.

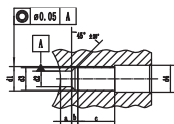
3.2 The measuring diaphragm at the front thread of the rigid stem is protected by a cap, which should remain tightened at all times during storage and should only be removed during installation. It is strictly forbidden to press the diaphragm with sharp objects.

3.3 Long-term storage must meet the following conditions:

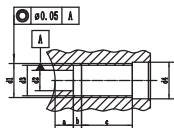
- ① Ambient temperature: -20 to 85°C, relative humidity: 0% to 100% R.H.
- ② Protection from rain or water seepage/leakage.
- ③ Minimal exposure to vibration and shock.

04 Mounting Hole Preparation

Before installing the product, make sure that the mounting holes are machined to the correct size and that the holes are free of burrs.



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	Φ8	Φ11.7	Φ14	5.7	3.2	19
M12×1.5	Φ8	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

05 Product Installation

5.1 Ensure that the mounting holes are drilled to the correct size. If the product is installed in a previously used hole, make sure the mounting hole is completely clean and free of any plastic residue.

5.2 Sensor must be removed from the process while the machine is hot and be cleaned immediately.

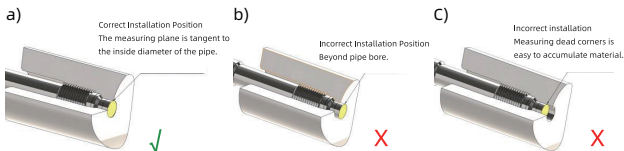
5.3 Apply high-temperature anti-seize grease to the thread surface of the product to prevent the threads from seizing. If it is necessary to install a sealing gasket for plane sealing, please apply high-temperature anti-seize grease to the sealing gasket and adhere the gasket to the product.

5.4 Insert the sensor securely into the hole, first manually, then use a wrench to tighten the hexagon. Recommended torque wrench setting: 30 N·m.

5.5 Don't overpressure the transducer: overpressure can occur whether the cold material slows the flow or not using the correct model designed for your range of extrusion operation pressures.

5.6 The seat must be prepared perfectly and with appropriate tools to ensure the correct depth and axial alignment of the holes and tapping. Pay attention to the coaxial alignment of the holes to the thread, because misalignments greater than 0.2 mm will damage the transducer during assembly. It is essential that the hole depth guarantees the absence of chambers or air pockets where extrusion material may be trapped.

To prevent contact with the extrusion screw or with tools used to clean the extrusion chamber, the front diaphragm must not extend from the inner wall of the extruder. The correct installation is as follows:



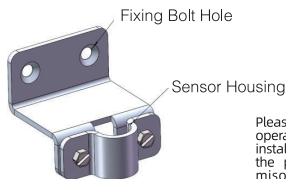
06 Product disassembly

6.1 The transducer should be removed only with the machine empty (without pressure) but still hot. When disassembling the sensor, make sure that the diaphragm has no contact pressure. The force to dismounting the sensor must be applied only to the shaft (hexagon), not to the sensor head.

6.2 After the product is disassembled, the diaphragm, sealing surface and threads need to be quickly wiped clean of material using a soft cloth. Avoid using sharp objects such as screwdrivers and wire brushes to remove polymer residue from the sensor. A cotton rag is recommended.

07 Housing Fixation

Models with flexible capillary need careful securing of the protective housing at the measurement point. We recommend using the bracket for fastening. Ensure that the fastening point is free from vibrations, as they can affect measurements, and that the temperature does 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-resistant temperature of not less than 105 °C, each core line connected to the terminal should be heat-shrinkable tube isolation protection, shielded wire should be connected to the plug-in metal, cable welding should be especially careful, otherwise it may lead to signal transmission errors or damage to the product.

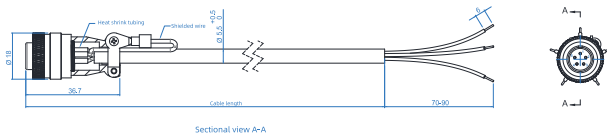
8.2 If you use our shielded cable, you only need to connect the cable according to the definition of "Electrical Connection Configuration".

8.3 The transducer must be gronde (normally through the machine body or equipment it is installed on).

8.4 Use a shielded cable only. The braiding must be connected to the connector case. The braiding on instrument / PLC side must be left floating.

8.5 To prevent interference, separate the power cables from the signal cables.

8.6 After the cable is laid, connect it to the terminal of the signal receiving end according to the electrical connection definition of our company. If there is any extra cable core, please wrap each cable core individually with insulating tape.



09 Product Calibration

The product is calibrated after installation, connection to the measuring instrument, and powering on. This should be done without any pressure, after the system temperature has reached the operating temperature for 30 to 60 minutes.

Calibration Method:

- Melt pressure transducer (mV/V signal output):

Zero and calibrate the sensor on the display instrument. Refer to the zeroing and calibration methods outlined in the display instrument's manual.

- Melt pressure transmitter (current & voltage signal output):

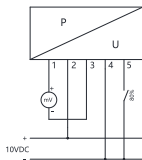
Remove the screw marked with "Z" on the top of the housing. There is a button in the hole; use an insulating material to press the button to activate the automatic zero function. Automatic zeroing can be achieved by pressing the button with insulating material.

* The 80% internal calibration must be done by a display instrument.

10 Electrical Connection Configuration

PT111(B)/PT124(B)/PT131(B)

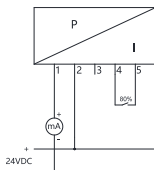
3.33mV/V & 2mV/V: 4-wire Transducer



Connector type: XS12J5Y-5PIN

PIN	Function	Wire Color
1	Signal+	Blue
2	Power+	Red
3	Signal-	White
4	Power+80%	Yellow
5	80%+	Black

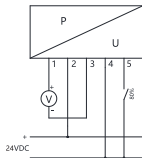
4-20mA: 2-wire Transmitter



Connector type: XS12J5Y-5PIN

PIN	Function	Wire Color
1	Signal+	Blue
2	Power+	Red
3	Signal-	White
4	80%+	Yellow
5	80%+	Black

0-10VDC: 4-wire Transmitter



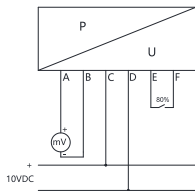
Connector type: XS12J5Y-5PIN

PIN	Function	Wire Color
1	Signal+	Blue
2	Power+	Red
3	Signal-	White
4	Power+80%	Yellow
5	80%+	Black

*Pin 3 and 4 Connected internally

PT112(B)/PT123(B)/PT133(B)

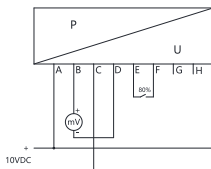
3.33mV/V: 4-wire Transducer (6-pin)



Connector type: PT02A-10-6P

PIN	Function	Wire Color
A	Signal+	Red
B	Signal-	Black
C	Power+	White
D	Power-	Green
E	80%+	Blue
F	80%-	Orange

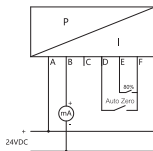
3.33mV/V: 4-wire Transducer (8-pin)



Connector type: PT02A-10-8P

PIN	Function	Wire Color
A	Power+	Red
B	Signal+	Black
C	Power-	White
D	Signal-	Green
E	80%+	Blue
F	80%-	Yellow
G		Grey
H		Brown

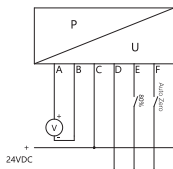
4-20mA: 2-wire Transmitter



Connector type: PT02A-10-6P

PIN	Function	Wire Color
A	Power+	Red
B	Signal+	Black
C		White
D		Green
E	80%+	Blue
F	80%-	Orange

0-10VDC: 4-wire Transmitter



Connector type:PT02A-10-6P

Pin	Function	Wire Color
A	Signal+	Red
B	Signal-	Black
C	Power+	White
D	Power-	Green
E	80%+	Blue
F	short-circuit clearing-	Orange

*Pin B and D Connected internally

Temperature Wiring Configuration

Thermocouple:

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





PT100:

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	6	+	+	+	+	+
2	5	-	-	-	-	-
3	0	-	-	-	-	-
4	01	-	-	-	-	-

11 Fault Analysis

Fault	Reason	Troubleshooting Methods
	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.
	<ol style="list-style-type: none"> 1. The installation hole caused by burrs. 2. Cold machine installation, the solidification caused by materials. 3. External use of hard objects to press the diaphragm. 	<ol style="list-style-type: none"> 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.
	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.	

12 Related Products

Pressure Indicator

- Different Sizes Available
- Diverse Inputs & Outputs
- Built-in Power Supply
- Melt Sensor Calibration Function



Pressure Controller

- Multiple Inputs
- Current/Voltage PID outputs
- Built-in Power Supply
- RS485/232 & Modbus Communications



Rupture Disk

- Burst pressure ratings from 150 to 1000 bar
- Burst tolerance: $\pm 5\%$
- Material: INCONEL[®] 718
- Burst temp. ranges to 400°C



Cleaning Toolkit

Available for:

- 1/2" -20UNF
- M14 x 1.5
- M22 x 1.5



Mounting Bracket





齐亚斯 Ziasiot
MODEL PT1248-5M-M1248
RANGE 0-35MPa
SER NO 04-15-202048934
INPUT 24Vdc
OUTPUT 4-20mA
400-821-0137

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MODEL PT1248-5M-M1248
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