



PendoTECH® Single Use Temperature Sensors™

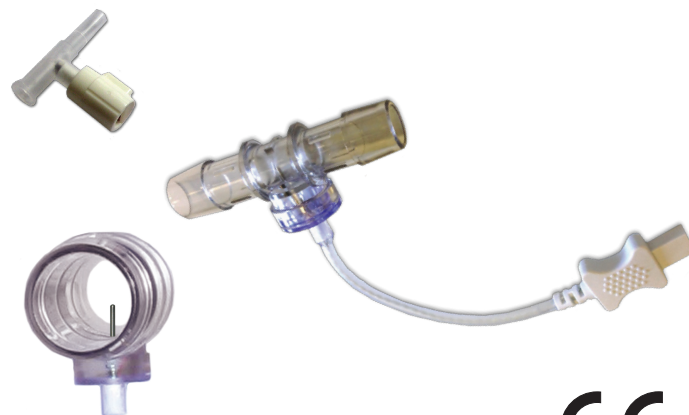
PendoTECH Single Use Temperature Sensors measure temperature in your processes accurately and cost effectively. They are low cost for single use applications and may be repeatedly cleaned and re-used. They are perfect for bioreactor, filtration and chromatography processes, filling operations, and general process monitoring. These sensors connect to monitors via a reusable cable. Suitable monitors include the handheld unit TEMP340, a PendoTECH Process Control System, or other pre-qualified third party monitors. Also, a 4-20mA stand-alone transmitter is available. They are the alternative solution for use with tubing to the existing temperature measurements devices on the market.

Sensor Features

To optimally adapt to tubing the sensors are available with either a hose barb fitting or a luer fitting. Tubing can be secured directly to the hose barb fitting and the hose barb design imparts no obstruction on the fluid path that can cause a pressure drop and there is no dead-leg at the point where the temperature is measured. The luer fitting can be connected to a variety of fittings that can securely adapt to tubing or other devices. The temperature sensing element is a thermistor. No calibration is required because the temperature versus resistance for the thermistor element is well-defined within the specified accuracy range. Within the instrument, the measured resistance is converted to the temperature. A disposable dip probe is also available to measure temperature within a vessel.

Connection to Monitors

The hose barb sensors and dip probe connect to the monitor via a 10-foot (3.0m) long cable. One end has a molded connector to connect to the sensor connector and the other end has a 1/4 inch headphone plug commonly used by many commercially available monitors. The luer sensor has a custom molded connector on the 7-foot (2.1m) long re-usable monitor cable that is quickly secured to the temperature sensor. There is an alignment guide on the sensor that prevents it from being connected improperly. Disconnection of the cable connector from the sensors is quick and easy and the monitor indicates the sensor has been disconnected.



- Available in a variety of sizes to adapt to different processes - from a luer fitting to 3/4 inch hosebarb
- Compatible with gamma irradiation
- High sensitivity to temperature change
- Better than +/- 0.2°C accuracy (typ. better than 0.1) in the specified range of 0-70°C
- Polycarbonate (luer) or polysulfone (hosebarb sensors) material of construction
- NO calibration required, each is tested during manufacturing to be within specification
- All fluid path materials meet USP Class VI requirements*
- Certificate of quality included
- Manufactured in a FDA Registered, ISO 13485 certified facility



Luer sensor shown connected to different size fittings for adaptation to different processes. The center picture shows the connection to the monitor cable.



Sensor in tip

Also available temperature probe

Part #: TEMP-S-DP

* Luer sensors for research purposes only and not designed for use in manufacturing processes. Polycarbonate connector for luer sensors that may contact a fluid path is not tested for USP Class VI. Dip probe not tested for USP Class VI; stainless steel not applicable.

TEMP340 - Handheld Monitor



It has a rugged design with a large backlit display, a built-in stand, and optional AC adapter. They feature a sealed control panel, Min/Max /hold function, °C/°F and low battery indicator. The TEMP340 can manually store or automatically log up to 2000 sets of readings that are time-stamped. The data can be downloaded to a PC via USB.

Thermistor Resistance Data for PendoTECH Single Use Temperature Sensors*

| Temp °C | Resistance Ω | Temp °C | Resistance Ω | Temp °C | Resistance Ω | Temp °C | Resistance Ω |
|---------|--------------|---------|--------------|---------|--------------|---------|--------------|
| 0 | 7355 | 18 | 3081 | 36 | 1412 | 54 | 697.9 |
| 1 | 6989 | 19 | 2944 | 37 | 1355 | 55 | 672.5 |
| 2 | 6644 | 20 | 2814 | 38 | 1301 | 56 | 648.1 |
| 3 | 6319 | 21 | 2690 | 39 | 1249 | 57 | 624.8 |
| 4 | 6011 | 22 | 2572 | 40 | 1200 | 58 | 602.4 |
| 5 | 5719 | 23 | 2460 | 41 | 1152 | 59 | 580.9 |
| 6 | 5444 | 24 | 2354 | 42 | 1107 | 60 | 560.3 |
| 7 | 5183 | 25 | 2252 | 43 | 1064 | 61 | 540.5 |
| 8 | 4937 | 26 | 2156 | 44 | 1023 | 62 | 521.5 |
| 9 | 4703 | 27 | 2064 | 45 | 983.8 | 63 | 503.3 |
| 10 | 4482 | 28 | 1977 | 46 | 946.2 | 64 | 485.8 |
| 11 | 4273 | 29 | 1894 | 47 | 910.2 | 65 | 469.0 |
| 12 | 4074 | 30 | 1815 | 48 | 875.8 | 66 | 452.9 |
| 13 | 3886 | 31 | 1739 | 49 | 842.8 | 67 | 437.4 |
| 14 | 3708 | 32 | 1667 | 50 | 811.3 | 68 | 422.5 |
| 15 | 3539 | 33 | 1599 | 51 | 781.1 | 69 | 408.2 |
| 16 | 3378 | 34 | 1533 | 52 | 752.2 | 70 | 394.5 |
| 17 | 3226 | 35 | 1471 | 53 | 724.5 | 71 | 381.2 |

*PendoTECH Transmitter available to convert temperature to a linear 4-20mA signal

| Detail | Specifications |
|---------------------------|---|
| Accuracy | Hosebarb: Better than +/- 0.2°C (typical better than 0.1°C) Luer: Better than +/- 0.4°C (typical better than 0.2°C) |
| Temperature range | 0 to 70 °C |
| Biocompatibility | Hose barb sensors: all polymeric materials in contact with product fluid path meet USP Class VI requirements* |
| Manufacturing environment | FDA Registered, ISO 13485 certified facility |
| Gamma irradiation | Up to 50 kiloGrays |
| Resistance@25°C | 2252 ohm |
| Connector | Custom molded 2 contact connector (different versions for luer and hose barb versions) |
| Pressure range | Up to 75 psi (5.2 bar) |
| Monitor Cable | Hosebarb: 10 feet (3.0m) with 1/4 inch headphone plug to connect to monitor receptacle Luer: 7 feet (2.1m) with 1/4 inch headphone plug to connect to the monitor receptacle |

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PendoTECH Temperature Sensor Transmitter

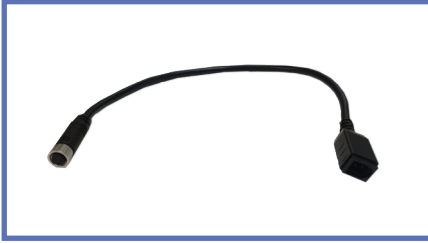


PendoTECH Temperature Transmitter



Monitor cable for hose barb sensor and dip probe

Ordering Information



PDKT-TEMPB-PNL

Temperature Sensor Panel Mount Connector

As customized systems with single use sensors become more common, PendoTECH has developed an ideal solution to connect a PendoTECH Single Use Temperature Sensor to a control panel. The sensor has an overmolded connector on it that helps minimize the sensor cost and the new panel mount cable has the receptacle for the sensor on one end and an industry standard panel mount connector on the other end. This enables it to connect to the panel and the panel receptacle can be wired directly to the PendoTECH Temperature Sensor Transmitter inside the panel.

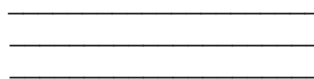
WIRING DIAGRAM

M8

3

1 (BROWN)

4 (BLACK)



PINS

NC

PIN 1

PIN 2



PIN 1

| Ordering Information** | Description |
|---------------------------------|--|
| TEMPS-N-012 | Single use temperature sensor, non-sterile, polysulfone, stainless steel sensor, 1/8inch hose barb |
| TEMPS-N-025 | Single use temperature sensor, non-sterile, polysulfone, stainless steel sensor, 1/4inch hose barb |
| TEMPS-N-038 | Single use temperature sensor, non-sterile, polysulfone, stainless steel sensor, 3/8inch hose barb |
| TEMPS-N-050 | Single use temperature sensor, non-sterile, polysulfone, stainless steel sensor, 1/2inch hose barb |
| TEMPS-N-075 | Single use temperature sensor, non-sterile, polysulfone, stainless steel sensor, 3/4inch hose barb |
| TEMPC-N-999 | Single use temperature sensor with luer fitting |
| TEMP-S-DP | Single Use Temperature Sensor in dip probe tip, sterile, 3 feet in length |
| Accessories for sensors: | |
| PDKT-103-03 | 1/4inch x 1/4inch (0.64 x 0.64cm) polycarbonate straight connector with luer port |
| PDKT-104-03 | 3/8inch x 3/8 (0.95 x 0.95 cm)inch polycarbonate straight connector with luer port |
| PDKT-105-03 | 1/2inch x 1/2 (1.27 x 1.27cm)inch polycarbonate straight connector with luer port |
| PDKT-000-03 | Male x female x female luer tee, polycarbonate |
| PDKT-000-04 | Male x female x female luer tee, polypropylene |
| TT1 | PendoTECH Temperature Sensor Transmitter |
| TT1-DR | PendoTECH Temperature Sensor Transmitter DIN Rail Mounting Kit |
| PDKT-TT1 | PendoTECH Temperature Transmitter (benchtop transmitter) |
| PDKT-TT2 | PendoTECH Temperature Sensor Benchtop Transmitter with 4-20mA output in ABS plastic box with 24VDC wall supply (for 2 sensors) |
| PDKT-TT4 | PendoTECH Temperature Sensor Benchtop Transmitter with 4-20mA output in ABS plastic box with 24VDC wall supply (for 4 sensors) |
| PMAT-DAQ | Analog display with 4 inputs with alarm inputs and serial port for data collection |
| PDKT-650-TEMPB | 10 foot reusable temperature sensor cable with 1/4 phone jack term. for barb sensors |
| PDKT-650-TEMPL | 7 foot reusable temperature sensor cable with 1/4 phone jack term. for luer sensors |
| PDKT-TEMPB-PNL | PendoTECH 12 inch reusable temperature sensor cable with M8 termination for hose barb sensors |
| TM-TEMP-340 | PendoTECH Temperature sensor monitor for 1 sensor with built-in data logger and RS232 data output |



TEMPC-N-999

**Other sizes available soon, contact PendoTECH for latest details.

NOTICE: NOT FOR USE ABOVE 75 PSIG (5.2 BAR). Each prospective user must test the sensor for its proposed application to determine its suitability for the purpose intended prior to incorporating the sensor into any process or application. The sensor is not designed, intended or authorized for use as components in life support or medical devices. Product is not designed for any application in which the failure of the product could result in personal injury, death or property damage. For warranty see www.pendotech.com/warranty. ADCF Status: Hosebarb sensors compliant with EMA 410 Rev 3 Guidelines

For warranty information see our website at <http://www.pendotech.com/warranty>

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