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80PK-10

Type K Thermocouple Pipe Clamp Temperature Probe

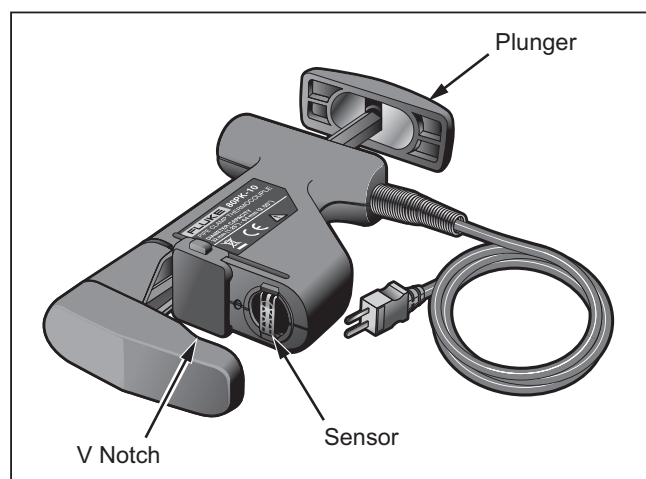
Instruction Sheet

Introduction

⚠️⚠️ Warning

To avoid electric shock, do not use this probe when voltages exceeding 24 V ac or 60 V dc are present. The probe is electrically connected to the output terminals.

The 80PK-10 Type K Thermocouple Pipe Clamp Temperature Probe (Figure 1) is designed to reliably measure the temperature of pipes 1.25-inch (32 mm) to 2.5-inch (64 mm) in diameter, at temperatures between -29 °C and 149 °C (-20 °F and 300 °F), while retaining a long service life.



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Figure 1. 80PK-10 Pipe Clamp Temperature Probe

Specifications

Measurement Range: -29 °C to 149 °C (-20 °F to 300 °F)

Accuracy: ±1.9 °C (±3.4 °F). Surface measurement accuracy of ±1.9 °C includes ±1.1°C variation in alloy plus probe contact and shunting uncertainty of ±0.8 °C.

Repeatability: ±0.56 °C (±1 °F)

Output: @ 25 °C (77 °F) = 1.00 mV (Reference junction at 0 °C)

Seebeck Coefficient:
@ 25 °C (77 °F) = 40.50 µV / °C

Measurement Time (Time Constant):
0.5 seconds (5 time constants = 1 complete step change, i.e. 2.5 seconds)

Maximum Voltage Rating: 24 V ac rms, or 60 V dc

Sensor Material: Chromel-Alumel

Cable Length: 40 inches (1 meter)

Cable Insulation: Material: PVC

Maximum Temperature: 105 °C (220 °F)

Minimum Temperature: -29 °C (20 °F)

Conductor: K Type AWG #24 stranded

Probe Body: PBT

Maximum Temperature: 149 °C (300 °F)

Minimum Temperature: -29 °C (20 °F)

Connector: Mini-thermocouple connector with 7.925 mm (0.312 in) pin spacing

Media Limitations: Must be compatible with chromel, alumel, and PBT

Using the 80PK-10 to Measure Pipe Temperature

1. Using the miniature thermocouple connector, connect the 80PK-10 to a compatible Type K temperature measuring device.
2. Turn on the measuring instrument and select the appropriate range and scale.

If you are using a temperature conversion module (the 80TK, for example), insert the module into the V Ω and COM inputs of the meter and select the mV dc function.
3. Slide the protective cover towards the inside of the jaw to reveal the thermocouple.
4. Using your thumb or the palm of your hand, press down on the plunger to open the jaws of the probe wide enough to easily encompass the pipe.

Center the pipe on the “V” notch (see Figure 1) on the jaw of the probe and relax pressure on the plunger.
5. Read the temperature on the measuring instrument. When no heat or cold is applied to the sensor the measuring instrument should display the ambient temperature. If the instrument does not readout properly, refer to “Troubleshooting”.
6. When measurement is complete, remove the 80PK-10 from the pipe and slide the protective cover back over the thermocouple. This cover protects the thermocouple when not in use.

Measurement Considerations

The 80PK-10 is designed to be compatible with any temperature-measuring instrument that accepts miniature Type K thermocouples with cold reference junction compensation. The accuracy of the temperature-measurement is a factor of the combined accuracy of the temperature measuring instrument and the 80PK-10.

A lowering of the temperature at the sensor contact point is less likely (and response time is faster) on clean, polished, thermally conductive surfaces, then on surfaces with low thermal conductivity, such as plastic or rough, greasy surfaces. To obtain the best thermal contact and performance, the pipe must be centered in the “V” notch of the probe jaw.

To get the most accurate temperature measurement, adjust the connection between the sensor and the pipe until you get the maximum or minimum temperature reading.

⚠ Caution

To prevent damage to the probe, do not rotate the clamp when measuring the temperature of a rough surface.

Troubleshooting

When no heat or cold is applied to the probe, the measuring instrument should display the ambient temperature. If the measuring instrument does not do so, try the following:

1. Verify that the temperature measuring instrument is designed to be used with Type K thermocouples. The instrument should have a yellow input connector and/or be marked with a “K”.
2. Check for an open circuit indicator on the measuring instrument. Some thermometers have a built in circuit to indicate if the connected probe is open. (All Fluke instruments have this feature.) Refer to instruments owners’ manual to see if this feature is available.

If you suspect a broken connection, use an ohmmeter to check probe continuity from pin to pin. If the ohmmeter reads $\leq 10 \Omega$, the probe is good.
3. Short the two input connectors to the instrument with a piece of wire. If the instrument is functioning properly it should display the ambient temperature.

Cleaning

⚠ Caution

To prevent damage to the probe, do not use solvents that may deteriorate the handle and plunger of the probe.

Using warm-soapy water, brush the sensor lightly with a toothbrush. Excessive or abrasive brushing can damage the sensor and void the warranty. If necessary dip the brush (but not the sensor) in rubbing alcohol.

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