

FLUKE®

80PK-8

*Type K Thermocouple Pipe Clamp
Temperature Probe*

Instruction Sheet

WARNING

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

ATTENTION

Pour éviter les risques d'électrocution, ne pas utiliser cette sonde quand la tension est supérieure à 24 V efficaces en courant alternatif ou 60 V en courant continu. La pointe de la sonde est reliée électriquement aux bornes de sorties.

WARNUNG

Um Elektroschock zu vermeiden, dürfen Sie den Meßstift nicht in der Anwesenheit von Spannungen über 24V Wechselstrom oder 60V Gleichstrom verwenden. Die Spitze des Meßstifts ist mit den Ausgangsanschlüssen elektrisch verbunden.

ADVERTENCIA

Para evitar descargas eléctricas, no use esta sonda cuando se apliquen voltajes que sobrepasen 24 V ca rcm o 60 V cc. La punta de la sonda está conectada eléctricamente a las terminales de salida.

Introduction

The 80PK-8 Type K Thermocouple Pipe Clamp Temperature Probe (Figure 1) is designed to reliably measure the temperature of pipes 1/4-inch (6 mm) to 1 3/8-inch (35 mm) in diameter, at temperatures between -29°C and 149°C (-20°F and 300°F), while retaining a long service life.

PN 106796

February 1995

©1995, Fluke Corporation. All Rights Reserved. Printed in U.S.A.

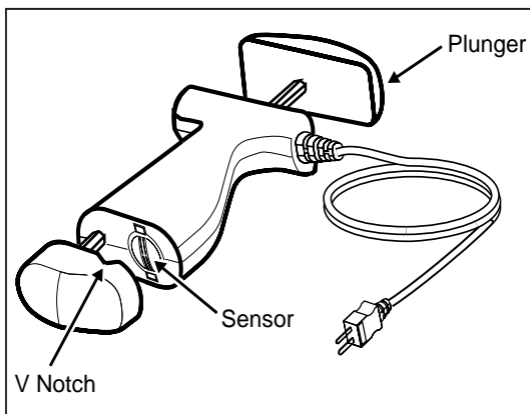


Figure 1. 80PK-8 Pipe Clamp Temperature Probe

Specifications

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

Accuracy: $\pm 1.9^{\circ}\text{C}$ ($\pm 3.4^{\circ}\text{F}$). Surface measurement accuracy of $\pm 1.9^{\circ}\text{C}$ includes $\pm 1.1^{\circ}\text{C}$ variation in alloy plus probe contact and shunting uncertainty of $\pm 0.8^{\circ}\text{C}$.

Repeatability: $\pm 0.6^{\circ}\text{C}$ ($\pm 1^{\circ}\text{F}$)

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

Seebeck Coefficient:

@ 25°C (77°F) = 40.50 $\mu\text{V} / ^{\circ}\text{C}$

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

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

Sensor Material: Chromel-Alumel

Cable Length: 1.2 meters (4 ft)

Cable Isulation: 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 0.729 mm (0.312 in) pin spacing

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

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

Using the 80PK-8 to Measure Pipe Temperature

1. Using the miniature thermocouple connector, connect the 80PK-8 to a compatible Type K temperature measuring instrument.
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 $V\Omega$ and COM inputs of the meter and select the mV dc function.
3. 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.
4. 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”.

Measurement Considerations

The 80PK-8 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-8.

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.

When measuring the temperature of a rough surface, do not rotate the clamp. You might damage the sensor.

Troubleshooting

When no heat or cold 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

The handle and plug of the probe are made of materials that may deteriorate if exposed to some solvents on a long term basis.

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

LIMITED WARRANTY & LIMITATION OF LIABILITY

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is one year and begins on the date of shipment. Parts, product repairs and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in Fluke's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

Fluke authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke. Warranty support is available if product is purchased through a Fluke authorized sales outlet or Buyer has paid the applicable international price. Fluke reserves the right to invoice Buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

Fluke's warranty obligation is limited, at Fluke's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke authorized service center or send the product, with a description of the difficulty, postage and insurance prepaid (FOB Destination), to the nearest Fluke authorized service center. Fluke assumes no risk for damage in transit.

Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke determines that the failure was caused by misuse, alteration, accident or abnormal condition of operation or handling, Fluke will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES. EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FLUKE SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, WHETHER ARISING FROM BREACH OF WARRANTY OR BASED ON CONTRACT, TORT, RELIANCE OR ANY OTHER THEORY.

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court of competent jurisdiction, such holding will not effect the validity or enforceability of any other provision.

For application or operation assistance, or information on Fluke products, call:

USA: 1-888-99-FLUKE (1-888-993-5853)

Canada: 1-800-36-FLUKE (1-800-363-5853)

Europe: +31 402-678-200

Japan: +81-3-3434-0181

Singapore: +65-738-5655

Anywhere in the world: +1-425-446-5500

Or, visit Fluke's Web site at www.fluke.com.

Address correspondence to:

Fluke Corporation

P.O. Box 9090

Everett, WA 98206-9090

USA

Fluke Europe B.V.

P.O. Box 1186

5602 BD Eindhoven,

The Netherlands