

# 80PK-8

## 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-8 Type K Thermocouple Pipe Clamp Temperature Probe (Figure 1) is designed to reliably measure the temperature of pipes ¼-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.

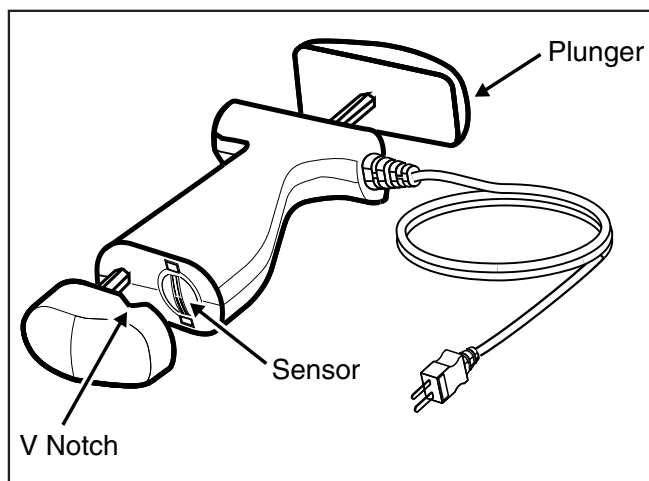


Figure 1. 80PK-8 Pipe Clamp Temperature Probe

### 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-8 to Measure Pipe Temperature**

1. Using the miniature thermocouple connector, connect the 80PK-8 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 $\Omega$  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.

### **⚠ 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.

## 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, contaminated, 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 only 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 to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB Destination). 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 failure was caused by neglect, misuse, contamination, alteration, accident, or abnormal condition of operation or handling, including overvoltage failures caused by use outside the product's specified rating, or normal wear and tear of mechanical components, 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, ARISING FROM ANY CAUSE OR 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 or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

Fluke Corporation	Fluke Europe B.V.
P.O. Box 9090	P.O. Box 1186
Everett, WA 98206-9090	5602 BD Eindhoven
U.S.A.	The Netherlands

11/99