FLUKE®

80PK-27
SureGrip™ Industrial Surface Temperature Probe

Instruction Sheet

⚠⚠Warning

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

⚠⚠ Attention

Pour éviter les risques d'électrocution, ne pas utiliser cette sonde quand la tension est sepérieure 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-27 SureGrip™ Industrial Surface Temperature Probe is designed for reliably measuring temperatures to 600 °C (1112 °F) on flat or slightly convex surfaces, while retaining a long service life.

Specifications

Type: K (Chromel vs Alumel)

Measurement Range: -127 °C to 600 °C
(-196.6 °F to 1112 °F)

Junction Accuracy: -127 °C to 0 °C ±4.4 °C
(-196.6 °F to 32 °F ± 7.92 °F)
0 °C to 183 °C ±2.2 °C
(32 °F to 361 °F ±4.86 °F)
183 °C to 600 °C ±1.2 % of reading in °C
(361 °F to
1112 °F ± <1.2 % of reading
in °F)

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

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

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Measurement Time (Time Constant): 1 time constant equals 330 ms; 5 time constants equal final reading. See “Application Information” below.

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

Probe Tip: Maximum Temperature: 600 °C (1112 °F)
Material: 303 stainless steel

Sheath Material: 303 stainless steel

Cable Length: 40 inches (1 meter)

Cable Isulation: Material: PVC
Maximum Temperature: 105 °C (220 °F)
Minimum Temperature: -20 °F

Conductors: Type: K
Size: AWG #24 stranded (7 strands of #32)
Length: 1.2 meters nominal (4 ft)

Handle: Material: Hytrel
Maximum Temperature: 65.6 °C (150 °F)
Minimum Temperature: -40 °C (-40 °F)

Connector:
Type: yellow mini-thermocouple connector with 0.792 mm (0.312 in) pin spacing
Material: Hytrel
Maximum Temperature: 125 °C (275 °F)

Dimensions:
Diameter: 22.9 mm (0.9 in)
Length: 322.6 mm (12.75 in)

Measurement Considerations

Instrument Compatibility

The 80PK-27 is designed to be compatible with any temperature measuring instrument that accepts Type K thermocouples, has a miniature thermocouple connector, and has cold reference junction compensation. Accuracy of the temperature measuring instrument must be considered along with the 80PK-27 accuracy specifications in order to determine the overall accuracy of the combination.

Temperature Limitations

The probe tip has continuous temperature rating of 600 °C. However the rest of the assembly is rated for a lower temperature. See the specifications for further information.

Media Limitations

Media must be compatible with Chromel, Alumel, and 303 stainless steel.

Application Information

At high temperatures, a surface temperature probe removes a small amount of heat from the measured surface. At 600 °C on a polished metal surface, the temperature at a contact point will be lowered, typically not more than 2 °C. A lowering of the temperature at the contact point is less likely (and contact response time is quicker) on clean, polished, thermally conductive surfaces than on materials with low thermal conductivity, such as plastic or rough, contaminated surfaces. To obtain the best thermal contact and performance, the stainless steel ring must make full and firm contact with the measurement surface.

Operation

Use the 80PK-27 as follows:

1. Using the miniature thermocouple connector, connect the 80PK-27 to a compatible Type K temperature measuring instrument.
2. Turn on the measuring instrument and select the appropriate range and scale.
3. Read the temperature on the measuring instrument. When no heat or cold is applied to the sensing ribbon, the measuring instrument should display the ambient (room) temperature. If the instrument does not readout properly, refer to “Troubleshooting”.

Measuring Technique

To improve the accuracy of your temperature measurements:

- When measuring higher than ambient temperatures, adjust the connection between the probe and the surface until you get the highest temperature reading.
- When measuring lower than ambient temperatures, adjust the connection between the probe and the surface until you get the lowest temperature reading.
- When measuring near ambient temperatures, make the reading when the thermometer readout is most stable.

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 for Type K thermocouples. It should have a yellow input connector and/or be marked “K”.
2. Check for an open circuit indicator on the measuring instrument. Some temperature measuring instruments have a built-in circuit to indicate if the connected probe is open. (All Fluke instruments have this feature.) Refer to instrument's owner’s 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 should read 10 ohms or less if there is continuity.
3. Short the two input pins of the measuring instrument with a piece of wire. If the instrument is functioning it should indicate the ambient temperature.

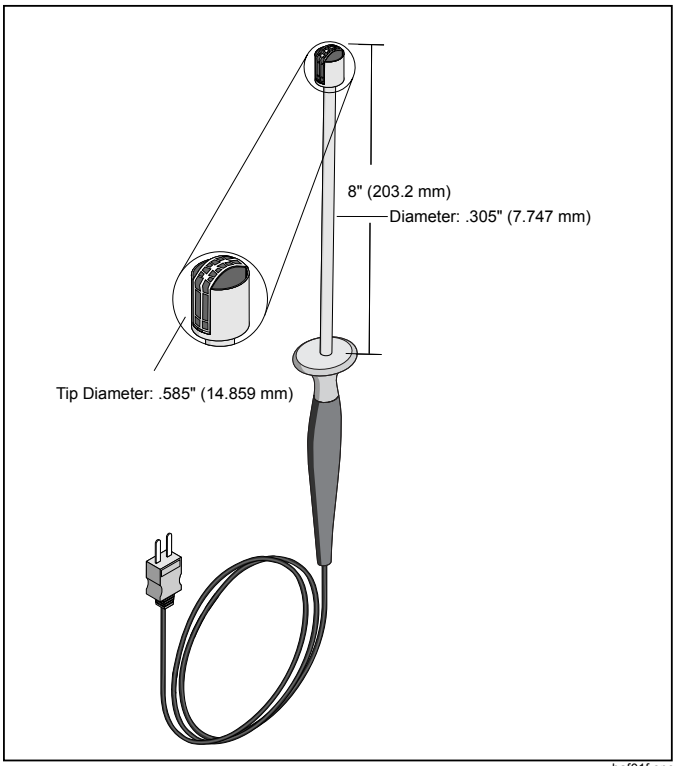


Figure 1. 80PK-27

Cleaning

Dip ¼" of the probe tip in the water. Do not dip the entire probe tip! Brush *lightly* with a toothbrush. Excessive or abrasive brushing can damage the probe and void the warranty. If necessary you can dip the brush, but not the probe, into rubbing alcohol. To dry the probe, bake it for a minimum of two hours at 150-200 °F (66-93 °C). Baking at temperatures above 200 °F (93 °C) can damage the cord and void the warranty.

Contacting Fluke

For application or operation assistance, or information on Fluke products, call:
USA: 1-888-44-FLUKE (1-888-443-5853)
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Or, visit Fluke's Web site at www.fluke.com.

To register your product, visit register.fluke.com

ONE YEAR LIMITED WARRANTY

This Fluke product will be free from defects in material and workmanship for one year from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on Fluke's behalf. To obtain service during the warranty period, 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 problem.

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