

## 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 affect the validity or enforceability of any other provision.

Fluke Corporation  
P.O. Box 9090  
Everett, WA 98206-9090  
U.S.A.

Fluke Europe B.V.  
P.O. Box 1186  
5602 BD Eindhoven  
The Netherlands

# FLUKE®

## 80K-6 High Voltage Probe

### Instruction Sheet

#### Description

The 80K-6 is a high voltage probe designed to extend the voltage measuring capability of an ac/dc voltmeter to 6000 volts peak AC or DC Overvoltage Category I. This means the probe can only be used to make measurements on energy limited circuits within equipment. Examples include high voltage within televisions or photo copy machines. DO NOT use this probe to measure high voltages on power distribution systems. A 1000:1 voltage divider provides the probe with a high input impedance. The divider also provides high accuracy when used with a voltmeter having a 10 megohm input impedance. A molded plastic body houses the divider and protects the user from the voltage being measured.

#### Specifications

The 80K-6 will achieve rated accuracy when it is used with an ac/dc voltmeter having 0.25% accuracy, or better, and an input impedance of 10 megohms  $\pm 10\%$ . Specifications for the probe are as follows:

**Voltage Range:** 0 to 6 kV, dc or peak ac  
**Input Impedance:** 75 megohms nominal  
**Division Ratio:** 1000:1

**Accuracy:**  
DC to 500 Hz:  $\pm 1\%$   
500 Hz to 1 kHz:  $\pm 2\%$   
Above 1 kHz: Output reading falls. Typically, -30% at 10 kHz.

**Temperature:**  
Storage: -20 to 60°C  
Operating: 0 to 50°C

**Temperature Coefficient:** 100 ppm/C  
**Relative Humidity:** 20 - 80%  
**Altitude:** 2000 m

**Shock and Vibration:**  
Shock: 1 m Drop  
Vibration: 5-55 Hz swept sine 3 g max.

**Dimensions:** 24.89 cm (9.8 in) (probe body), 5.10 cm (2.0 in) max. width

**Weight:** 12.7 g (45 oz)

**Safety:** CAN/CSA C22.2 No. 1010.2.031-94 & IEC 1010-2-031:1993, Type B, 6 kVDC or peak AC, 4.24 kV rms AC, Overvoltage Cat. I (Voltage derived from limited energy transformers).

#### Measurement Considerations

Before attempting to use the 80K-6, the following paragraphs should be read and understood. Particular attention should be given to Operator Safety.

#### Operator Safety



Indicates the operator must refer to an explanation in this manual.



Indicates terminals at which lethal voltages may exist.

### ⚠ Warning

- To avoid damage or electric shock, use within ratings and under dry (no condensation) conditions.
- To avoid electrical shock, the 80K-6 user should be familiar with, and exercise, all possible high-voltage safety practices. When handling the probe the following additional cautions must be taken:
  - When making a measurement, never make body contact with the probe tip or the red portion of the probe. Always hold the probe by its black handle.
  - Before making a measurement, make sure that the ground side of the output connector is connected to the voltmeter's common terminal.
  - The clip lead must be attached to earth ground.
  - Do not use the probe if it is damaged. Before using the probe, inspect it for cracks or missing plastic. Pay close attention to the probe body, tip and insulation surrounding the connectors.
  - Make sure the tip is firmly attached to the body.
  - When servicing, use only specified replacement parts.
  - Do not operate probe around explosive gas, vapor or dust.
  - Do not use the probe if it operates abnormally. Protection may be impaired. When in doubt have the probe serviced.

### Voltmeter Compatibility

The 80K-6 is compatible with any ac or dc voltmeter that has an input impedance of 10 megohms  $\pm 10\%$ . Voltmeters with higher input impedances require the use of an external shunt to obtain an accurate measurement.

Use the following formula to determine the value of an external shunt resistor:

$$R_s = \frac{R_m \times 10}{R_m - 10}$$

Where:  $R_s$  = Shunt Resistance in Megohms  
 $R_m$  = Voltmeter Input Impedance in Megohms (> 10 megohms)

### Circuit Loading

The 80K-6 represents a load of approximately 75 megohms to the circuit being measured (13  $\mu$ A per 1 kV). See Figure 1. To more accurately determine the load resistance, measure the resistance of the 80K-6 at its voltmeter connector and multiply the measured value by 1000.

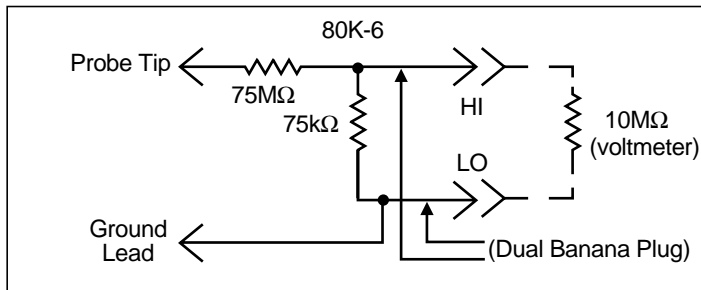


Figure 1. 80K-6 Schematic Diagram

### Operation

Use the following procedure to operate the 80K-6:

1. Inspect the probe. (Refer to the preceding Warning.)
2. Connect the probe cable to a compatible voltmeter. (Refer to the preceding Warning.) Use a shunt resistor if required.
3. Select an appropriate voltage range (1 volt reading per 1000 volt probe input).
4. Connect the ground lead of the probe to earth ground. (Refer to the preceding Warning.)
5. Hold the probe by the black handle and connect the probe tip to the circuit being measured. Observe the voltmeter reading.

### Maintenance

#### Performance Test

Verify the probe accuracy by measuring a 5 kV dc  $\pm 0.25\%$  voltage source. When used with a compatible dc voltmeter, the probe should accurately measure the source voltage to within  $\pm 1\%$ . No calibration adjustments are provided on the probe.

#### Cleaning

Use a soft cloth dampened with distilled water to clean the 80K-6. Never use solvents or abrasive cleaners.

#### Disassembly

Use the following procedure to disassemble the probe:

1. Unscrew the black handle from the probe, and slide the handle onto the cable.
2. Unscrew the metal tip one turn, and push in on the tip until the internal assembly snaps free of the housing. Remove the tip.
3. Withdraw the internal assembly from the probe by pulling the metal ring over the threads on the probe body.
4. Logically reverse this procedure to reassemble the probe.

### Caution

**To avoid probe damage after repair, measure and, if necessary, adjust the outside distance between the ring and the probe coupling on the internal assembly before reassembling the probe. The distance must be  $4.910 \pm 0.020$  inches. Make the adjustment using the solder connection at the rear of the metal probe coupling.**

### Replaceable Parts

Description	Fluke Part No.
Tip, High Voltage	536946
Body, Probe	580621
Coupling, Probe	536961
Divider, High Voltage	632091
Sleeve	580605
Bus Wire, Probe	617290
Instruction Sheet	613224
Decal	587063
Alligator Clip	306753
Boot	217703

To order replacement parts, call 1-800-526-4731. Outside U.S.A. contact your nearest service center. For application and operation assistance or information on Fluke products, visit the Fluke Website at: [www.fluke.com](http://www.fluke.com) or 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