

80K-15 Electronic Air Cleaner Probe

Instruction Sheet

Introduction

The 80K-15 Electronic Air Cleaner Probe (hereafter referred to as “the probe”) is a low energy probe that extends the voltage measuring capability of an ac/dc voltmeter or multimeter.

Properly connected, the probe is rated to 15 kV Overvoltage Category I. The use of the probe is restricted to low energy applications, which are energy limited circuits like electrostatic air cleaners. **Do not use this probe to measure high voltages on power distribution systems.**

The probe is a precision 1000 : 1 voltage divider formed by two matched resistors. The unusually high input impedance offered by these resistors minimizes circuit loading and thereby optimizes measurement accuracy.

Read First: Safety Information

Warning

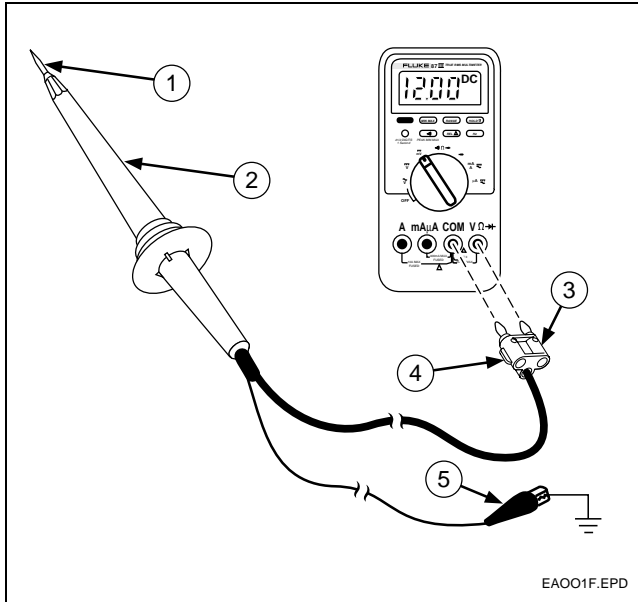
To avoid possible personal injury or electrical shock:

- Use the probe within its voltage ratings and in dry conditions (no condensation is present).
- Be familiar with and exercise all possible high voltage safety practices.
- **DO NOT** use this probe to measure high voltage on power distribution systems.
- Always hold the probe by its gray handle. Never allow the probe tip or the yellow part of the probe to make body contact.
- Before making a measurement, make sure that the side of the probe plug with the GND tab is plugged into the low (COM) terminal of the meter.
- Attach the grounding lead to earth ground.
- Use a meter with an impedance of 10 M Ω (\pm 1%). Using a meter with an input impedance less than 10 M Ω reduces the accuracy of the reading by causing it to be lower than the voltage present.
- **DO NOT** use the probe with a Fluke multimeter that is in the $\text{\textcircled{V}}$ Chek™ or Automatic Selection mode (i.e. Fluke 16, Fluke 12B etc.). The input impedance in these modes is very low.
- Make sure the probe tip is firmly attached to the body of the probe.
- **DO NOT** use the 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.

Symbols

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|--|---|
| | Double insulated. |
| | Refer to explanation in this instruction sheet. |
| | Lethal voltages may be present. |
| | Complies with relevant Canadian Standards Association directives. |
| | Earth ground |

Using the Probe



| | |
|---|-------------------------|
| ① | Probe tip |
| ② | Probe body |
| ③ | Plug |
| ④ | GND tab |
| ⑤ | Grounding lead clip |
| ⑥ | Multimeter or voltmeter |

Figure 1. 80K-15 Electronic Air Cleaner Probe

The 80K-15 (Figure 1) is designed to work with a meter that has an input impedance of 10 MΩ (± 1%). A meter with an input impedance less than 10 MΩ can produce readings lower than the voltage present. This can pose a serious hazard when a dangerous voltage is present.

The 80K-15 represents a 1000 MΩ load to the circuit being measured, or 1 μA per 1 kV. Table 1 shows the circuit loading and input/output characteristics of the probe over its measurement range.

Taking care to follow the safety practices under “⚠️Read First: Safety Information,” use the probe as follows:

1. Turn on a compatible voltmeter or multimeter and select the voltage measurement function.
2. Select an appropriate voltage range (i.e., 1 volt reading per 1000 volt input. See Table 1).
3. Connect the probe’s output leads to the voltmeter or multimeter input terminals.

4. Connect the alligator clip of the probe’s grounding lead to earth ground.
5. Touch the probe tip to the circuit being measured and read the measurement on the meter display. If necessary, apply a correction factor to the reading. (See “Note” in the “Specifications,” below.)

Table 1. 80K-15 Circuit Loading and Input/Output Characteristics

| Input Voltage | Loading Current | Output Voltage |
|---------------|-----------------|----------------|
| 10 V | 10 nA | 10 mV |
| 100 V | 100 nA | 100 mV |
| 1 kV | 1 μA | 1 V |
| 10 kV | 10 μA | 10 V |
| 15 kV | 15 μA | 15 V |

Specifications

The 80K-15 Electronic Air Cleaner Probe achieves its rated accuracy when it is used with a voltmeter or multimeter (ac or dc) with an input impedance of 10 MΩ ± 1%.

The accuracy of the probe does not include the accuracy of the meter. To get the accuracy of the system, the accuracy of the meter must be added to the accuracy of the probe.

Note

The input impedance of the Autoranging mode on Fluke handheld digital multimeters varies by range.

The input impedance in almost all ranges of Fluke multimeters is ~10 MΩ. The exceptions are: the 3 V range on the Fluke Models 21, 23, 25, 27, 70, 73, 75, 7; and the 4 V range on the Models 10, 11, 12, 16, 79, 83, 85, 86, 87, 88. In the ranges on these multimeters, the impedance is 11.11 MΩ.

To improve the measurement accuracy of the probe when using these ranges on the models indicated, apply a correction factor of 0.99 i.e., multiply the display reading by 0.99.

- Voltage Range:** 1 kV to 15 kV dc or peak ac, 10 kV rms ac
- Maximum Current:** 20 μA
- Input Resistance:** 1000 MΩ
- Division Ratio:** 1000 : 1 (1000 x attenuation)
- Accuracy DC:** ± 2 % in 10 °C to 45 °C
- Accuracy AC:** ± 5 % @ 60 Hz, in 20 °C to 30 °C
- Safety:** Complies with IEC 1010-2-31:1993, Type B, 15 kV dc or peak ac, 10 kV rms ac, Overvoltage Category I (voltages derived from limited energy transformer).
- Altitude:** 2000 meters

Performance Test

Verify the accuracy of the probe by measuring a 15 kV dc ($\pm 0.25\%$) voltage source. When used with a compatible dc voltmeter, the probe should measure the source with $\pm 1\%$ accuracy. No calibration adjustments are needed.

Warranty

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