

Fluke DP120 Differential Voltage Probe for Oscilloscopes

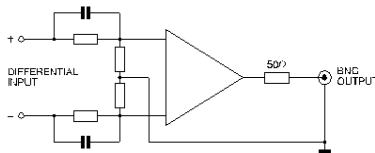


The DP120 differential voltage probe is designed for floating measurements in electrical and industrial power systems with voltages of up to 600 Vrms. It permits floating measurements to be performed with grounded (bench type) oscilloscopes or handheld, battery operated ScopeMeter® test tools.

The DP120 is designed for use with the following instruments:

- Fluke 123 Industrial ScopeMeter®,
- Fluke ScopeMeter® B series,
- Fluke CombiScope® Fluke Analog Scopes.

Each channel used with a DP120 can be connected to a different ground potential.



Differential probe principle diagram

When used with battery operated equipment such as Fluke ScopeMeter test tools, only one DP120 is needed to provide dual channel measurement capabilities on systems with two different ground potentials.

Technical Data



Double insulation and insulated BNC allow for use in 600V CAT III or 1000V CAT II overvoltage conditions.

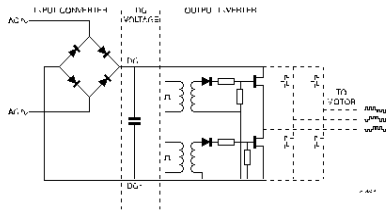
Features

- 20 MHz bandwidth
- Suitable for use with floating instruments
- Designed for measurements on 600 Vrms CAT III and 1000 Vrms CAT II installations
- Shielded probes for high noise immunity
- 4 mm Banana probe tips for ease of connecting standard accessories
- Selectable 20x or 200x attenuation
- Battery life 8 hours typical in continuous use
- Automatic standby after 30 minutes
- Pin grabbers and large jaw alligator clips included
- Line Voltage Adapter PM8907 optional

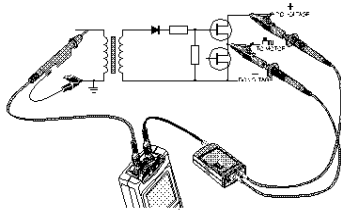
Applications

The DP120 is ideal for measurements on motor control circuits, uninterruptable power supplies (UPSs), process controllers and other systems with multiple ground systems or other systems that require floating measurements. In many industrial installations, the control electronics are connected to computers or PLCs and must be referenced to earth ground. Usually the power devices (Power FETs or IGBTs) used in single-phase or three-phase power circuits are floating.

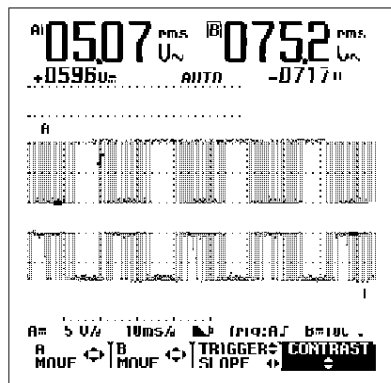
The following simplified illustration of an Adjustable Speed Motor Drive (ASD) shows how the DP120 can be used to measure both the control circuits and output FETs of such a drive - one is grounded, the other is floating.



Simplified ASD diagram



Connecting the probe to the ASD



Screen capture of the ASD measurement

Characteristics

Input Characteristics

Input Probe Tip Style:

Shrouded 4 mm banana probe tip

Probe Cable Length:

1.5 meter (5 ft)

Maximum RMS Input Voltage to Ground:

600 Vrms CAT III
 1000 Vrms CAT II
IEC 1010 Installation Category III refers to distribution level and fixed installation circuits inside a building. Installation Category II refers to local level, appliances, and portable equipment.

Maximum Differential Input Voltage:

1000 V DC or 1000 Vrms or 1200 V (DC + AC peak)
Note: (DC + AC peak) limit is determined by the point at which the differential probe starts clipping.

Output Characteristics

Output Cable:

Safety designed BNC connector

Cable Length:

0.5 meter (1.6 ft)

Max. Output Voltage Range:

±6.5V into 1 MΩ

Max. Voltage Shielding to Ground:

600 Vrms CAT III

Electrical Characteristics

Attenuation:

200x and 20x

Bandwidth: (into 1MΩ, 50 pF)

DC to 20 MHz (-3 dB)

Accuracy:

±2.5 %

Rise time:

17.5 ns

CMRR:

200x: @ 60 Hz ≥ 80 dB,
 @ 1MHz ≥ 50 dB
 20x: @ 60 Hz ≥ 70 dB,
 @ 1MHz ≥ 40 dB

Input Impedance:

Between each input to shielding
 BNC: 5 MΩ, 6 pF
 Between the inputs: 10 MΩ, 5 pF

Output Impedance:

50 Ω

Noise:

200x: <2 mVrms
 20x: <3 mVrms

Offset:

≤ 10 mV into 1 MΩ

Switch positions:

OFF, 200x, 20x

Power

Internal:

Battery Power: Alkaline 9V,
 IEC6LR61
 Battery Life: 8 hours operation.
 400 hours in auto standby

Auto Stand By:

After 30 minutes, only when battery operated.

External:

Via optional power adapter PM8907

Power indicators:

Green LED: ON under normal operation, blinks in standby mode.

To change from standby to normal operation turn switch from OFF to 20x or 200x.
 Red LED: ON when battery needs to be replaced.

Environmental

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MIL-T-28800E, Type III, Class 3.

Electro-Magnetic Compatibility

Meets requirements of:

EN 50081-1, Electromagnetic Compatibility Generic Emission.
 EN 50082-2, Electromagnetic Compatibility Generic Immunity.
 This product is in conformity with Electromagnetic Compatibility Directive 89/336/EEC and Low Voltage Directive 73/23/EEC. This conformity is indicated by the symbol **CE**

Temperature:

Operating:
 0 °C to +50 °C (32 °F to +122 °F)
 Non-operating:
 -40 °C to +70 °C (-40 °F to +158 °F)

Safety Specifications

Compliant with:
 ANSI/ISA S82.01-1994
 EN61010-1:1993
 UL3111-1,
 CSA C22.2 No.1010.1-92
 UL listing: (pending).
 CSA approval: (pending)
 Meets requirements of IEC 1010-1 and IEC 1010-2-31.

Compatibility

Fluke 123 Industrial ScopeMeter®,
 Fluke ScopeMeter® B series,
 Fluke CombiScope® and
 Fluke Analog Scopes.

Ordering Information

DP120
 Includes: Differential Voltage Probe,
 AC83 set of two Pin-Grabber Test Clips,
 AC85A set of two Large Jaw Alligator
 Clips, 9V battery and instruction sheet.

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