DIFFERENTIAL PROBE

USER'S MANUAL

This probe is in compliance with IEC-1010.1, IEC -1010.2-031
CAT. III, Pollution Degree 2.

1. Safety Terms and Symbols

Terms appear in this manual:

WARNING. Warning statements identify conditions or practices that could result in injury or loss life.

CAUTION. Caution statements identify conditions or practices that could result in damage to this product or other property.

Symbols appear on the product:

Danger
High Voltage

Protective
(Earth) Terminal

Attention
Refer to Manual

2. General Safety Summary

To Review the following safety precautions to avoid injury and prevent damage to this probe or any products which connected to it.

RS 224-1219
RS 224-1225

Observe Maximum Working Voltage

To avoid any injury, do not use the probe above 1000Vrms between each input lead and earth or between the two inputs. This voltage rating applies to both 1/10 and 1/100, or 1/20 and 1/200 settings.

Must be Grounded

This probe is grounded with the BNC shell and an auxiliary grounding terminal, through the grounding conductor of the power cord of the measurement instrument.
Before making connections to the input terminals of the product, ensure that the output connector is attached to the BNC of the measurement instrument and the auxiliary grounding terminal is connected to a proper ground, while the measurement instrument is properly grounded.

Use Fused Test Prods if Necessary

If this probe is intended to use for measurements in circuits of INSTALLATION CATEGORY Ⅲ, it should incorporate with fused test prods.

Do Not Operate Without Covers

To avoid electric shock or fire hazard, do not operate this probe with covers removed.

Do Not Operate in Wet/Damp Conditions

To avoid electric shock, do not operate this probe in wet or damp conditions.

Do Not Operate in Explosive Atmosphere

To avoid injury or fire hazard, do not operate this probe in an explosive atmosphere.

Avoid Exposed Circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Use Proper Power Source

To use four AA cells or 6VDC/60mA mains adaptor. Do not operate this probe from a power source that applies more than the voltage specified.

Do Not Operated With Suspected Failures

If You Suspect there is damage to this probe, have it inspected by qaulified service personnel.

3. Description

By enabling conventional oscilloscopes to display and measure in-circuit waveforms which are referenced to high common mode voltages. The differential probe extend the measurement capability of oscilloscopes in electronic power converters, inverters, motor speed controls, switch mode power supplies, and many applications.

4. Installation

a. Simply plug-in the BNC output connector to the vertical input of a general purpose oscilloscope or other measurement instrument, and connect the auxiliary grounding terminal to a proper ground. The measurement instrument must have a ground referenced.

b. Install four AA cells or connect AC adaptor to the correct line voltage.

c. Adjust the vertical offset (or position) of the measurement instrument input.

d. Select the proper range setting. For higher resolution and less noise when measuring signals below 70V or 140V, switch the attenuation to 1/10 or 1/20. Otherwise, setting the attenuation to 1/100 or 1/200 when measuring signals above 70V or 140V.

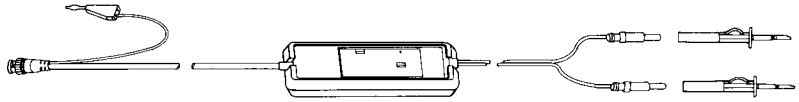
WARNING. To protect against electric shock must be grounded. Use only the accessories supplied with this differential probe.

e. Using the appropriate probe accessories, connect the input to the circuits under measurement.

CAUTION. This probe is to carry out differential measurement between two points on the circuit under measurement. This probe is not for electrically insulating the circuit under measurement and the measuring instrument.

5. Appearance

The differential probe looks as follows.



Note.	The accessories are provided with the differential probe.
Input Leads.	The input leads of the differential probe connect to sprung hooks that come with the probe.
Sprung Hooks.	The hooks connect safely to test points which in circuits
Output Lead.	The BNC output connector and an auxiliary grounding terminal connect to the oscilloscope.

6. Specifications

Attenuator: 1:10/1:100

Bandwidth	DC to 25 MHz (-3dB)
Accuracy	± 2%
Rise Time	14ns
Input Impedance	4MΩ/5.5pF each side to ground
Input Voltage	
Max. Differential	± 70V (DC +Peak AC) or 50Vrms for 1/10 ratio ± 700V (DC +Peak AC) or 500Vrms for 1/100 ratio
Max. Common Mode	± 700V (DC +Peak AC) or 500Vrms for 1/10 or 1/100 ratio
Absolute Max.Voltage (Differential or Common Mode)	± 1400V (DC +Peak AC) or1000Vrms for 1/10 or 1/100 ratio
Output Voltage	
Max. Amplitude	± 7V (into 2KΩ load)
Offset (Typical)	<±5mV, -10°C to 40°C
Noise (Typical)	0.6mVrms
Source Impedance (Typical)	1Ω at 1KHz, 8Ω at 1MHz
CMRR (Typical)	50Hz: -86dB; 20KHz: -66dB; 200KHz: -56dB;
Ambient Operating Temperature	-10 to 40°C
Ambient Storage Temperature	-30 to 70°C
Ambient Operating Humidity	25 to 85% RH, +25 to +35°C
Ambient Storage Humidity	25 to 85% RH, +25 to +60°C
Power Requirements	4 x AA cells or 6VDC/60mA mains adaptor (Not supplied)
Length of Input Lines	45cm
Length of BNC Cable	95cm (RG58/U)
Weight	285gms (0.5831bs)
Dimension (L x W x H)	168mm x 62mm x 20mm (6.6" x 2.4" x 0.8")

Attenuator: 1:20/1:200

Bandwidth	DC to 25MHz (-3dB)
Accuracy	±2%
Rise time	14ns
Input Impedance	4MΩ/5.5pF each side to ground
Input Voltage	
Max. Differential	±140V (DC +Peak AC) or 100Vrms for 1/20 ratio ±1400V (DC +Peak AC) or 1000Vrms for 1/200 ratio
Max. Common Mode	±1400V (DC +Peak AC) or 1000Vrms for 1/20 or 1/200 ratio
Absolute Max. Voltage (Differential or Common Mode)	±1400V (DC +Peak AC) or 1000Vrms for 1/20 or 1/200 ratio
Output Voltage	
Max. Amplitude	±7V (into 2KΩload)
Offset (Typical)	<±5mV, -10°C to 40°C
Noise (Typical)	0.6mVrms
Source Impedance (Typical)	1Ωat 1KHz, 8Ω at 1MHz
CMRR (Typical)	50Hz: -86dB; 20KHz: -66dB; 200KHz: -56dB;
Ambient Operating Temperature	-10 to 40°C
Ambient Storage Temperature	-30 to 70°C
Ambient Operating Humidity	25 to 85% RH, +25 to +35°C
Ambient Storage Humidity	25 to 85% RH, +25 to +60°C
Power Requirements	4 x AA cells or 6VDC/60mA mains adaptor (Not supplied)
Length of Input Lines	45cm
Length of BNC Cable	95cm (RG58/U)
Weight	285gms (0.5831bs)
Dimension (L x W x H)	168mm x 62mm x 20mm (6.6" x 2.4" x 0.8")

7. Inspection Procedure

a. Connect the BNC output connector to the vertical input of a general purpose oscilloscope.

b. To install four AA cells or connect AC adapter to the correct line voltage.

c. Set the oscilloscope input coupling to DC and the 1V/div. Center the trace on the display.

d. Connect the input wires of probe to power lines.

e. Set the range of the probe to 1/100 or 1/200.

f. Then, a 50Hz/60Hz sine-wave of proper amplitude will be displayed on the screen of the oscilloscope and this means the probe is working properly.

8. Cleaning

Use a soft cloth to clean the dirt. Prevent damage to probe.

a. avoid immersing the probe.

b. avoid using abrasive cleaners.

c. avoid using chemicals contains benzene or similar solvents.