SI-9002PW6
25MHz DIFFERENTIAL PROBE
USER'S MANUAL

This probe is in compliance with IEC-61010-031 CAT III, Pollution Degree 2.

1. Safety Terms and Symbols

Terms appear in this manual:

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

CAUTION. Caution statements identify conditions or practice 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

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

Observe maximum working voltage

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

Supporting your great ideas www.pewatron.com PEWATRON a member of the Angst + Pfister Group

Must be grounded

This probe is grounded with the shell of BNC connector and an auxiliary grounding terminal, through the grounding conductor of the power cord of the measurement instrument.

Before making connections to the input leads of this probe, ensure that the output BNC connector is attached to the BNC connector 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 of 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 circuit

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 ensure this probe function well, use four AA cells or 6VDC/60mA or regulated 9VDC/40mA mains adaptor or power lead.

Do not operate with suspected failures

If you suspect there is damage to this probe, have it inspected by qualified service personnel.

3. Description

By enabling conventional oscilloscopes to display and measure in-circuit waveforms that are referenced to high common mode voltages. The differential probe extends 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 purposed oscilloscope or other measurement instrument, and connects the auxiliary grounding terminal to a proper ground. The measurement instrument must have a ground referenced.

b. Install four AA cells or connect an appropriate power source to this probe.

c. Select the proper attenuation ratio. When measuring signals below 140V, switch the attenuation ratio to 1/20 in order to get higher resolution and less noise ratio. Otherwise, set the attenuation ratio to 1/200.

⚠ WARNING. To protect against electric shock, use only the accessories supplied with this probe.

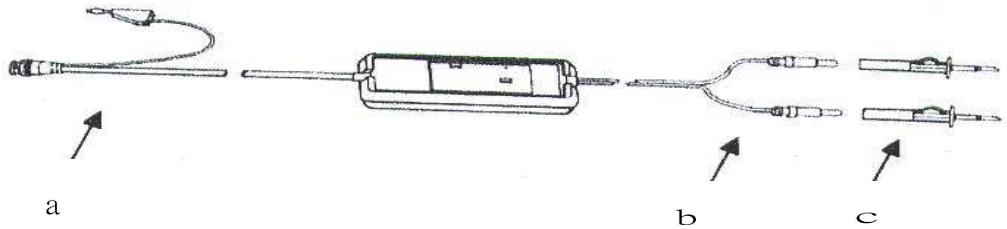
d. Using the appropriate probe accessories, connect the inputs to the circuits under measurement.

⚠ 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.

Supporting your great ideas www.pewatron.com PEWATRON a member of the Angst + Pfister Group

5. Appearance

The differential probe looks as follows.



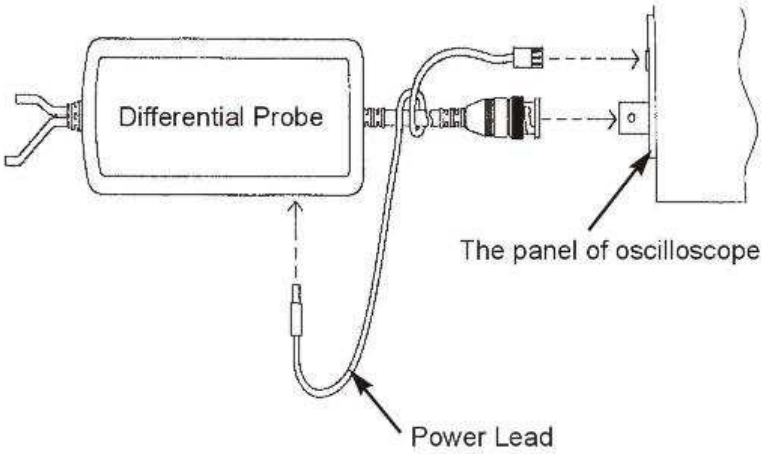
a. Output Cable	The BNC output connector and an auxiliary grounding terminal are connected to the oscilloscope.
b. Input Leads	The input leads of the differential probe connect to sprung hooks that come with the probe.
c. Sprung Hooks	The sprung hooks are connected safely to test points in circuits. under measurement.

6. Power Leads

We offer two types power leads;

a. Lead®: For the oscilloscope whose power connector is Lemo® connector.

b. Probus® Lead: For the oscilloscope whose power connector is Probus® connector.



Supporting your great ideas
www.pewatron.com
PEWATRON
a member of the Angst + Pfister Group

7. Specifications

Bandwidth	DC to 25MHz (-3dB)
Attenuation Ratio	1:20/200
Accuracy	±2%
Rise Time	14ns
Input Impedance	4MΩ//5.5pF each side to ground
Input Voltage	
- Differential Range*	±140V(DC+Peak AC) or 140Vrms @1/20
	±1400V(DC+Peak AC) or 1000Vrms @1/200
- Common Mode Range*	±1400V(DC+Peak AC) or 1000Vrms @1/20 & 1/200
- Absolute Max. Voltage* (Differential or Common Mode)	±1400V(DC+Peak AC) or 1000Vrms CAT III @1/20 & 1/200
Output	
- Swing (into 50kΩ load)	±7V
- Offset (typical)	<±5mV
- Noise (typical)	0.7mVrms
- Source Impedance (typical)	50Ω (for using 1MΩ input system oscilloscope)
CMRR (typical)	-80dB @50Hz, -60dB @20kHz
Ambient Operating Temperature	-10 to 40℃
Ambient Storage Temperature	-30 to 70℃
Ambient Operating Humidity	25 to 85% RH
Ambient Storage Humidity	25 to 85% RH
Power Requirements	
- Standard	4xAA cells or 6VDC/60mA mains adaptor**
	or regulated 9VDC/40mA mains adaptor**
- Options	Power leads
Length of BNC Cable	95cm
Length of Input Leads	45cm
Weight	400gms (probe and PVC jacket)
Dimensions (LxWxH)	170mm x 63mm x 21mm

* Voltage limit is the lesser of the DC+Peak AC and RMS values..

** a. The supplied voltage must be less than 12V and greater than 4.4V, otherwise the probe could be damaged or can't be operated properly.

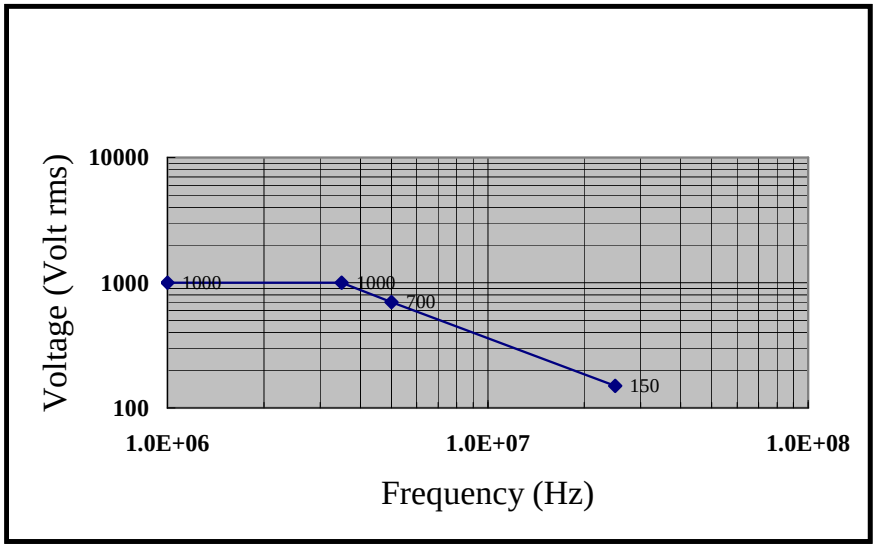
b. polarity is "+" inside and "–" outside. For wrong polarity, built-in circuit protects the probe, no danger or damage will occur.

c. When the voltage of the cells become too low, the power indicator on the panel will flicker.

Supporting your great ideas www.pewatron.com PEWATRON a member of the Angst + Pfister Group

8. Derating Curve

The derating curve of the absolute maximum input voltage in common mode is shown as follows;



9. Inspection Procedure

a. Connect the BNC output connector to the vertical input of a general purposed oscilloscope.
b. To install four AA cells or connect an appropriate mains adaptor or power lead 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 inputs of the probe to power lines.
e. Set the range of the probe to 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.

10. 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.

Lemo® and Probus® are the registered trademarks

Date: Mar. 14,2003

PEWATRON
a member of the Angst + Pfister Group

We are here for you. Addresses and Contacts

Sales Switzerland

Postcode 3000 – 9999
Liechtenstein

Matthias Rüegg
Ruhbergstrasse 32
CH-9230 Flawil

Phone + 41 44 877 35 18
Mobile + 41 76 491 66 66
Fax + 41 44 877 35 19

matthias.rueegg@pewatron.com

Postcode 1000 – 2999

Raffael Favaretto
Route d'Oron 124
CH-1673 Promasens

Phone + 41 44 877 35 22
Mobile + 41 76 444 63 14
Fax + 41 44 877 35 23

raffael.favaretto@pewatron.com

Sales Germany

Postcode 60000 – 79999

Dieter Hirthe
Mühlweg 23
D-71554 Weissach i.T.

Phone + 49 719 149 60 58
Mobile + 49 163 762 74 30
Fax + 49 719 193 31 88

dieter.hirthe@pewatron.com

Postcode 10000 – 59999
Postcode 80000 – 99999

Kurt Stritzelberger
Neumarkter Str. 86a
D-81673 Munich

Phone + 49 89 260 38 47
Mobile + 49 171 803 41 35
Fax + 49 89 43 10 91 91

kurt.stritzelberger@pewatron.com

Key Accounts
Aerospace and Defence

Claus Wübbena
Vogelkamp 26
D-26655 Westerstede

Phone + 49 4488 5204 614
Mobile + 49 173 9700 691
Fax + 49 4488 5204 616

claus.wuebbena@pewatron.com

Sales Austria

Kurt Stritzelberger
Neumarkter Str. 86a
D-81673 Munich

Phone + 49 89 260 38 47
Mobile + 49 17 18 03 41 35
Fax + 49 89 43 10 91 91

kurt.stritzelberger@pewatron.com

Sales Other Countries / Product Management

Sensors

Physical Sensors
Data Acquisition

Peter Felder
Phone + 41 44 877 35 05
peter.felder@pewatron.com

Geometrical Sensors

Eric Letsch
Phone + 41 44 877 35 14
eric.letsch@pewatron.com

Power Supplies

DC-DC Converters
Switching Power Supplies
DC-AC Inverters

Sebastiano Leggio
Phone + 41 44 877 35 06
sebastiano.leggio@pewatron.com

E-Components

Current Sensors
Man Machine Interface
Measurement Probes

Sebastiano Leggio
Phone + 41 44 877 35 06
sebastiano.leggio@pewatron.com

PEWATRON AG
Thurgauerstrasse 66
CH-8052 Zurich

Phone + 41 44 877 35 00
Fax + 41 44 877 35 25

www.pewatron.com
info@pewatron.com