MD 200A HIGH VOLTAGE DIFFERENTIAL PROBE

USER MANUAL

601-265B

TESEQ

Advanced Test Solutions for EMC

MD 200A HIGH VOLTAGE DIFFERENTIAL PROBE

USER MANUAL

CONTENTS

1 SAFETY TERMS AND SYMBOLS

Please take note of the following explanations of the symbols used in order to achieve the optimum benefit from this manual and to ensure safety during operation of the equipment.

The following symbol draws your attention to a circumstance where non-observation of the warning could lead to inconvenience or impairment in the performance.

Example:

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

The following symbol draws your attention to a circumstance where non-observation of the warning could lead to component damage or danger to the operating personnel.

Example:

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

Symbols used on the product:

Danger high voltage

Protective earth terminal

Danger refer to manual

2 SAFETY

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

Observe the maximum working voltage: To avoid any injury, do not use the probe above 5000 Vrms CAT I between each input lead and earth or above 5000 V rms CAT I between two inputs. This voltage rating applies to both the 1:100 and 1:1000 settings.

Must be earthed: The probe is earthed via the shell of the BNC connector together with an auxiliary earth connection and finally through the earth conductor of the power cable connected to the measuring instrument.

Before making any connections via the input leads of the probe, ensure that the output BNC connector is attached to the BNC input connector of the measuring instrument and the auxiliary earth wire is connected to a solid earth point.

Use fused test prods if necessary: If the probe is intended for use in measurements on circuits of INSTALLATION CATEGORY III, it should be used in combination with fused test prods.

Do not operate without covers: To avoid electric shock or fire hazard, do not operate the probe with the covers removed.

Do not operate in wet/damp conditions: To avoid the risk of electric shock, do not operate the probe in wet or damp conditions.

Do not operate in an explosive atmosphere: To avoid injury or fire hazard, do not operate the 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 a proper power source: Use four AA cells or a 6 VDC/200 mA mains adapter. Do not operate this probe from a power source that applies more than the specified voltage.

Do not operated with a suspected fault: If you suspect there is damage to the probe, have it inspected by a qualified service engineer or return it to a Teseq service centre without delay.

3 DESCRIPTION

By enabling a conventional oscilloscope to display and measure in-circuit waveforms that are referenced to high common mode voltages, the differential probe extends the measurement capability of that oscilloscope into the field of surge pulse measurements, in electronic power converters, inverters, motor speed controls, switch mode power supplies and many other applications.

4 INSTALLATION

Simply plug the BNC output connector of the probe into the input of a general purpose oscilloscope or other measuring instrument, and connect the auxiliary earthing terminal to a proper earth point. The measuring instrument must have an earth reference. Install four AA cells or connect an appropriate mains adapter to the probe.

a) Adjust the vertical offset (or position) on the measuring instrument input.

b) Select the appropriate attenuation ratio. With signals below 700 V, switch the attenuation ratio to 1:100 in order to get higher resolution and less noise. Otherwise, set the attenuation ratio to 1:1000 with signals of up to 7000 V.

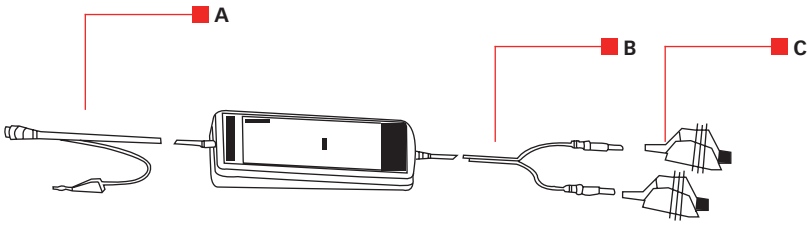
→ **To protect against electric shock, use only the accessories supplied with the probe.**

c) Connect the input to the circuit under measurement using the appropriate probe accessories.

! **The probe is designed to carry out differential measurements between two points on the circuit under in-vestigation. The probe is not intended for electrical isolation of the circuit under measurement or the measuring instrument.**

5 APPEARANCE

The differential probe is configured as shown below:



A Output lead: BNC connector and auxiliary earth lead for connection to an oscilloscope.

B Input leads: The input leads of the differential probe must be plugged into the spring clips in order to ensure safe connection to the EUT.

C HV alligator clips: For safe test point connection.

6 TECHNICAL SPECIFICATIONS

Attenuation ratios	1:100 and 1:1000
Bandwidth	DC to 10 MHz (-3 dB)
Accuracy	+/- 2%
Input impedance	10 MΩ/7 pF each side to ground
Max. input voltage	
– Differential range*	±700 V (DC + peak AC) or 500 Vrms for 1:100 ±7000 V (DC + peak AC) or 5000 Vrms for 1:1000
– Common mode range*	±7000 V (DC + peak AC) or 5000 Vrms for both 1:100 and 1:1000 ratios
Output voltage	
– Max amplitude	±7 V (into 50 kΩ load or more)
– Offset (typical)	<±5 mV
– Noise (typical)	0.9 mVrms
– Source impedance (typ)	50 Ω
CMRR (typical)	-80 db at 50 Hz, -60 db at 20 kHz
Operating temperature	-10 to +40°C
Storage temperature	-30 to +70°C
Operating humidity	25 to 85% rh
Storage humidity	25 to 85% rh
Power requirements	4 x AA cells or 6 VDC/200 mA**
Length of BNC lead	90 cm
Length of input lead	60 cm
Weight	500 g
Dimensions (L x W x H)	207 x 83 x 38 mm

* Voltage limit is the lower of the DC + peak AC and rms values

** a) The supplied voltage must be less than 12 V but more than 4.4 V otherwise the probe could be damaged or will not operate properly.

b) Polarity is + inside and – outside. In the event of reversed polarity, a built-in circuit protects the probe so no danger or damage will occur.

c) The power indicator on the panel will start to blink if the supply voltage falls too low.

7 INSPECTION PROCEDURE

a) Connect the BNC output connector to the input of a general purposed oscilloscope.

b) Install four AA cells or connect an appropriate mains adapter to this probe.

c) Set the oscilloscope input selector to DC and 1 V/div. Centre the trace on the display.

d) Connect the probe's input clips to a pair of suitable mains power lines.

e) Set the ratios range on the probe to 1:1000.

f) 50 Hz/60 Hz sinewave of proper amplitude should be displayed on the screen of the oscilloscope which shows that the probe is working properly.

8 CLEANING

- Use a soft cloth to clean off any dirt. Take care not to damage the probe.
- Do not immerse the probe in water
- Avoid using abrasive cleansers
- Avoid using chemicals containing benzene or similar solvents

9 CE CONFORMITY

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Declaration of conformity

CE

Manufacturer:	Teseq AG
Address:	Nordstrasse 11F, 4542 Luterbach, Switzerland
	Declares that the following product
Product:	MD 200 and MD 200A: High Voltage Differential probe
Options:	all
	Conforms to the following Directives and Regulations
	EMC Directive 2004/108/EEC LVD Directive 2006/95/EEC
Generic standards:	EN61326-1, 2005 EN61326-2-1, 2005 EN61010-1, 2001
	The relevant technical file is available for inspection:
Technical file:	N° EMC_AE 500178550001 / LVD_AN500175280001 Teseq AG CH - 4542 Luterbach
Place and Date:	Luterbach, December 15th, 2006

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