PRECISION PULSE EARTH TESTER/ANALYZER
(A.C./D.C./PULSE)
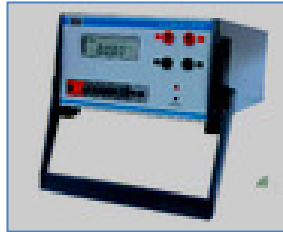
Introduction:

Precision pulse resistivity analyzer are   available in 8 different regular models apart from tailor madels (two/three point/four points) solutions virtually covering all industrial and research applications meeting all electrical, thermal, mechanical, and environmental specifications. These pulse resistivity analyzer has in-built variable frequency excitation power source to measure high resistivity sample impedence measurement elimination polarization effect of samples with target electrode. These meters are first choice for online measurement of sample resistance (A.C./D.C.). These finds applications in generation, transmission/distribution, defense, electrical/mechanical m/c testing instrument, industrial electronics, railway, and avionics and solid state physical application like dielectrics characterization, switch gears, lectrochemical,thermodynamical application,MEMS and many research and development activities. These precision instruments are compatible to any standard external current/voltage sensor and power source of specification as specified under.
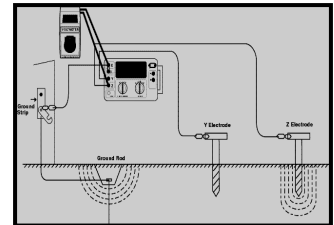
Operating Principle: Resistivity   includes namely 1.Target conductor 2. Connection between the target & conductor and the target electrode. To measure this resistance for variety of application. Following technique is used…

MPET-0009991 **(Three point conductivity measurement)**   MPET- 0099991**(four-point conductivity measurement profile)**   **three point potential method**

Four point conductivity measurement system:

The 4-point method requires the insertion of four equally spaced and in-line electrodes into the test area. A known current from a constant current generator is passed between the outer electrodes. The potential drop (a function of the resistance) is then measured across the two inner electrodes. The Model **MPET-9999990101** are calibrated to read directly in ohms.

R = (n x p) /(4 x pie x a), when b>>a where…   a= distance between holes, b = depth of hole: n = b/a, p = sample resistivity

R = (n x p) /(2 x pie x a), when b<<a where… a= distance between holes, b = depth of hole: n = b/a   D1=0.63D2/D2=5 x D3

**2.Three-point sample measurement system/ fall of Potential Method:** A measured current is passed between the electrode under test 'X', and the remote current electrode 'C'. The voltage drop between 'X', and the remote potential electrode 'P' is measured. The resistance of the electrode under test is then the voltage between 'X' and 'P', divided by the current flowing between 'X' and 'C', provided there is no overlap of the resistance areas of the electrodes. The resistance area is where the incremental resistance is still significant, owing to localized current flows. A known current is generated by the model   MPETSS-025032 between the current electrode and the sample electrode, while the drop in voltage potential is measured between the inner sample stake and the sample . Using Ohm's Law (V = IR), the tester automatically calculates the resistance of the sample electrode. To obtain a reliable measurement. In general, reliable results may be expected if the distance between the current spike and the Electrode under test is at least ten times the maximum dimension of the electrode system, e.g. 30 m for a 3 m electrode system. The optimum position is the point on the curve where reading variation is minimal. Provided there is reasonable homogeneity of the sample, the distance apart is adequate, and the straight line of the electrodes is maintained, the Theoretical value of sample resistivity is as under……….
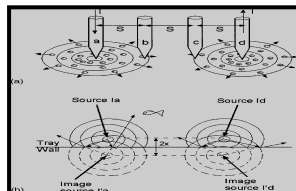
R$_{meas}$ = p/2 x pie [1/r – 1/C-r – 1/P +1/C-P}

p= Sample resistivity, pie = 3.14(nepier constant)
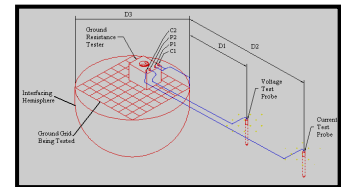**r = radius of hemispherical electrical   C = distance between sample electrode and current electrode,**
P = distance between sample electrode and potential electrode
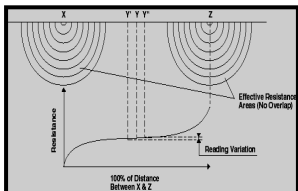
Three point conductivity measurement   **three point Conductivity resistance profile**   **four-point conductivity measurement profile**
electrode arrangement in

Benefits:

- High input impedence/Low input biased current /higher accuracy/.
- 5-1/2 & 6-1/2 digit display /analogue..consistent performance over large temperature/humidity range (70°C and 80 % RH)
- Scaled directly in micro ohm - ohm to giga micro-ohm range instrument repeatable accuracy.
- Auto/manual zero offset without drift. /Auto drift tracking
- RS-32 interface/high sample rate – 10,000 sample/second. / Feed back current measurement technique.
- Safety compliance-IE-1956 or as communicated/ inbuilt variable frequency excitation to get noise free reading in high resistivity area.
- Inbuilt climatically temperature/pressure compensated.

MOTORON SEMICONDUCTORS CORPORATION

33, Shri Nagar Colony, Shakti Nagar Extension, Delhi-110052 .Tel: 011-23644180/23655454
motoron@hotmail.com

PRECISION PULSE EARTH TESTER/ANALYZER
(A.C./D.C./PULSE)

PULSE RESISTIVITY   D.C./A.C.   Range<999999x10^{+12} ohm.m

Model	Range Volt	Range resistance	Pulse Frequency	Burdon Micro-volt	Accuracy limted to Resolution	Resolution quantified	Voltage/current source	interface
MPRA-9999990101	10.0/5.0 -999999Nv 1.0 mV-10.0Volts	05.0/02.0 -999999 mili -mho 0009999-0999999 -mho(in-multi-step)	0-50K.Hz	< 100	99.999999%	1/2/5 counts	0050 V/001.0 A	RS-232USB
MPRA-9999990401	10.0/5.0 -999999Nv 1.0 mV-20.0Volts	05.0/01.0 -999999 mili -mho 0999.99-0999999 -mho(in-multi-step)	0-50 k. Hz	< 100	99.999999%	1/2/5 counts	0100 V/001.0 A	RS-232/USB
MPRA-9999990102	05.0/1.0 -999999Nv 1.0 mV-10.0Volts	10.0/05.0 -999999mu -mho 0.999999-0999999 -mho (in-multi-step)	0-50K.Hz	< 100	99.999999%	1/2/5 counts	0200 V/001.0 A	RS-232/USB
MPRA-9999990402	05.0/1.0 -999999Nv 1.0 mV-20.0Volts	10.0/01.0 -999999mu -mho 0.999999-0999999 · mho (in-multi-step)	0-50 k. Hz	< 100	99.999999%	1/2/5 counts	0500 V/001.0 A	RS-232/USB
MPRA-9999991002	05.0/1.0 -999999Nv 1.0 mV-99.9Volts	10.0/01.0 –999999 Nano -mho 0.999999-0999999 · mho (in-multi-step)	0-50k.Hz	< 100	99.999999%	1/2/5 counts	1000 V/001.0 A	RS-232/USB
MPRA-9999992002	05.0/1.0 -999999Nv 1.0 mV-199Volts	10.0/01.0 –999999 pico-mho 0.999999-0999999 · mho (in-multi-step)	0-50 k. Hz	< 100	99.999999%	1/2/5 counts	3000 V/001.0 A	RS-232/USB
MPRA-9999992003	05.0/1.0 -999999Nv 1.0 mV-199Volts	10.0/01.0 –999999 pico-mho 0.999999-0999999 · mho (in-multi-step)	0-50 k. Hz	< 100	99.999999%	1/2/5 counts	5000 V/010.0m A	RS-232/USB

Six digits after product code indicate count; next, two digits indicate voltage and last digit indicate. 01- nano amp/02-pico amp/03-femto amp.

General specification of table top earth tester

MODEL: MPRA-9999990101a

Operating voltage: 220 volt A.C..

Measurement range (full scale): as above in different model.

Voltage(ac/dc) :10^{-06}-10^{-1} ···· 10^{-4}-10^{2} volts x10 in four step least count- 1.0 mcro volt

Current(ac/dc) : 10^{-06}-10^{-1} ·· 10^{-4}-10^{2} ·Amps· x 10 in four step least count- 1.0 mcro amp

Resistance: 10^{+9}-10^{+03} ··ohm/10^{+3}-10^{-3} ohm least count- 50.0 mili-ohm

Temperature: -50 to 300 deg cel

Input capacitance: 10 nF

Response time: 1000 sample/sec

Burden: less than 100 micro volt/full scales current or better

Accuracy error :   1.0 % reading

Repeatability: 100 of reading

Resolution: 10.0 micro-V & 1/5 micro amps or optional

Linearity adjustment: upto 100 micro volt

Input impedance: ultra high (<1000 nano volt burdon),

Filtering: low pass(adjustable)

Offset: variable upto 10,000 count (manual/auto)

Display: 5 digit/analogue

CMMR: >80 db at 50-60 Hz

Isolation: > 100 giga ohm

Connector: BNC-9 pinx2 and BNC-25 pinx2

Size: 8X8X12 inches/rack mounted or portable

Interface: usb

MOTORON SEMICONDUCTORS CORPORATION

33, Shri Nagar Colony, Shakti Nagar Extension, Delhi-110052 .Tel: 011-23644180/23655454

motoron@hotmail.com