

# Earth testers

## MI 3295 Step Contact Voltage Measuring System



The MI 3295 Step Contact Voltage Measuring System is a voltage measuring system intended for testing and verification of protective earthing of power stations, substation and other power systems. The system consists of Station for current generation and autonomous voltage Meter. Due to high test current (up to 55 A) and effective noise cancellation the MI 3295 ensures very accurate and stable measurements of Step and Contact Voltages with the resolution down to 10  $\mu\text{V}$ . A few voltmeters can be used simultaneously for faster analysis of voltage distribution around the tested object. All test results and parameters can be saved into the instrument's memory for further downloading, analysis and test report printing with the help of the PC SW Metrel ES Manager or HVLink PRO.

### MEASURING FUNCTIONS

- Step voltage;
- Contact voltage;
- Specific earth resistance;
- Earth resistance;
- Potential;
- Leakage current.

### KEY FEATURES

- Accurate: high accuracy of the measurements due to a high current of up to 50 A and effective suppression of noise.
- Noise immunity: excellent immunity even against changing earth currents.
- Autonomous Step Voltage meter: no need for long potential leads; a few meters can be used simultaneously.
- Safe: high safety due to low output voltage (55 V).
- Low weight: the weight of the Station is 29.5 kg only.
- Memory: up to 1000 test results can be saved into the 3-level internal memory of the system.
- PC SW Metrel ES Manager or HVLink PRO included in the standard set enables downloading and analysis of results and printing of test reports.

### APPLICATION

Measurement of protective earthing of:

- Power stations;
- Substations;
- Distribution towers;
- Other power systems.

### STANDARDS

Functionality

- ANSI/IEEE Std 81;
- EN 61557-5;
- RAT 2008;
- HD 673 N4

Electromagnetic compatibility

- EN 61326

Safety

- EN 61010-1;
- EN 61010-031

## TECHNICAL SPECIFICATION

FUNCTION	Measuring range	Resolution	Accuracy
Step voltage, Contact voltage (measuring range Um)	0.01 ... 19.99 mV	0.01 mV	±(2 % of reading + 2 digits)
	20.0 ... 199.9 mV	0.1 mV	±(2 % of reading + 2 digits)
	200 ... 1999 mV	1 mV	±(2 % of reading + 2 digits)
	2.00 ... 19.99 V	0.01 V	±(2 % of reading + 2 digits)
	20.0 V ... 59.9 V	0.1 V	±(2 % of reading + 2 digits)
Step voltage, Contact voltage (calculated measuring range U)	0.0 ... 199.9 V	0.1 V	calculated value*
	200 ... 999 V	1 V	
Test current	55 A max		
Test voltage	< 55 V		
Test frequency	55 Hz		
Current	0.00 ... 9.99 A	0.01 A	±(3 % of reading + 5 digits)
	10.0 ... 99.9 A	0.1 A	±(3 % of reading + 3 digits)
Resistance to earth	0.001 ... 1.999 Ω	0.001 Ω	±(2 % of reading + 5 digits)
	2.00 ... 19.99 Ω	0.01 Ω	±(2 % of reading + 5 digits)
	20.0 ... 99.9 Ω	0.1 Ω	±(2 % of reading + 5 digits)
	100.0 ... 199.9 Ω	0.1 Ω	±5 % of reading)
Specific earth resistance	0.00 ... 9.99 Ωm	0.01 Ωm	Calculated value, consider accuracy of Resistance to earth function.
	10.0 ... 99.9 Ωm	0.1 Ωm	
	100 ... 999 Ωm	1 Ωm	
	1.00 k ... 9.99 kΩm	10 Ωm	
	10.0 k ... 99.9 kΩm	100 Ωm	
Potential (MI 3295M)	0.01 ... 19.99 mV	0.01 mV	±(2 % of reading + 2 dig)
	20.0 ... 199.9 mV	0.1 mV	
	200 ... 1999 mV	1 mV	
	2.00 ... 19.99 V	0.01 V	
	20.0 ... 59.9 V	0.1V	
Current (MI 3295M) Iron clamp A 1018	1.0 ... 99.9 mA	0.1 mA	±(2 % of reading 3 dig)
	100 ... 999 mA	1 mA	
Current (MI 3295M) Flex clamp A 1587	1.00 ... 9.99 A	0.01 A	±(8 % of reading + 5 dig)
	10.0 ... 99.9 mA	0.1 mA	
	100 ... 999 mA	1 mA	
	1.00 ... 9.99 A	0.01 A	
	10.0 ... 30.0 A	0.1 A	
10.0 ... 50.0 A	0.1 A		
Open circuit voltage	< 50 VAC		
Test current	< 7.5 A		
Test frequency	55 Hz		
<b>STATION</b>			
Power supply	230 V / 50 or 60 Hz		
Communication port	RS232		
Memory	1000 memory locations		
Overvoltage category	CAT II / 300 V		
Measuring category	CAT IV / 50 V		
Protection degree	IP 30		
Display	LCD with backlight (128 x 64 dots)		
Dimensions	563 x 275 x 257 mm		
Weight	29.5 kg		
<b>METER</b>			
Power supply	6 x 1.2 V rechargeable batteries, type AA		
Communication ports	USB, RS232		
Memory	1500 memory locations		
Measuring category	CAT IV / 50 V		
Protection degree	IP 40		
Display	LCD with backlight (128 x 64 dots)		
Dimensions	230 x 103 x 115 mm		
Weight	1.3 kg		

\*Displayed Step / Contact voltage is obtained on base of calculation:

$$U_S = U_{meas} \cdot I_{fault} / I_{gen}; U_C = U_{meas} \cdot I_{fault} / I_{gen};$$

$I_{fault}$  (selectable): 1 A ... 200 kA

## ORDERING INFORMATION



- Instruments MI 3295M and MI 3295S
- Mains cable
- Step voltage probe (25 kg), 2 pcs: A 1353
- Current earth spike A 1529, 2 pcs
- Potential earth spike, 60 cm A 1629, 2 pcs
- Current test lead, 50 m, black, 10 mm<sup>2</sup>, with crocodile clip, on wheel, A 1325
- Current test lead, 10 m, black, 10 mm<sup>2</sup>, with crocodile clip, A 1392
- G clamp A 1530
- Test lead, black, 2 x 3 m
- Test lead, green, 10 m
- Test lead, black, 1.5 m
- Test lead, green, 4 m
- Test lead, red, 50 m
- Connection lead with crocodile clip, red, 1 m
- Crocodile clip, 2 pcs
- RS232 cable
- USB cable
- Soft carrying bag, 2 pcs
- Soft carrying neck belt
- NiMH battery cells, type AA, 6 pcs
- Power supply adapter
- CD with instruction manual and PC SW Metrel ES Manager and HVLink PRO
- Instruction manual
- Calibration certificate

Photo	Order No.	Acc. description
	MI 3295M Set	Step Contact Meter Measuring Set
	A 1530	G clamp
	A 1353	Step voltage probe (25 kg), 2 pcs
	S 2053	Step voltage plates
	A 1528	Professional current earth spike 50 cm (drill)
	A 1529	Professional current earth spike 90 cm (smooth)
	A 1629	Potential earth spike, 60 cm
	A 1018	Current clamp (low range, leakage)
	A 1587	Flexible current clamp 3000-300-30 A
	A 1081	Bag for accessories