

High voltage insulation testers

MI 3201 TeraOhm 5 kV Plus



The insulation tester MI 3201 TeraOhm 5 kV Plus is a portable instrument intended to measure insulation resistance by using high DC test voltages up to 5 kV. TeraOhm 5 kV Plus enables insulation resistance measurements up to 10 TΩ, step voltage test, withstanding voltage test, PI, DD and DAR calculation and capacitance measurement. The large LCD screen enables real-time graph R(t) to be displayed. Results can be stored and downloaded to a computer via USB connection with the help of the optional HVLink PRO software. The high quality instrument, shielded test leads and quality accessories included in the standard set enable to perform insulation testing quickly and effectively.

MEASURING FUNCTIONS

- Insulation resistance measurement;
- Step voltage insulation resistance testing;
- Withstanding voltage testing;
- Diagnostic test (PI, DD, DAR);
- R(t) graph plotting;
- Capacitance measurement;
- Voltage measurement;
- Frequency measurement.

KEY FEATURES

- **Measuring range** up to 10 TΩ.
- **Wide range of DC test voltages:** from 250 V up to 5000 V in steps of 25 V.
- **Withstanding voltage:** testing of insulation with programmable ramp test voltage from 250 V up to 5 kV and programmable threshold current.
- **Step voltage:** insulation resistance measurement with five discrete proportionately set test voltages and programmable timer per step.
- **Automated testing:** PI, DD, DAR calculations with automated resistance ranging. All data

is displayed during one single measurement.

- **Guard test terminal:** for elimination of potential surface leakage currents.
- **Fault finding:** fully programmable step voltage and withstanding voltage test functions assist in diagnosing faults in insulation.
- **Graph R(t):** real time resistance against time graph plotting facility to graphically illustrate the response of a material to an applied test voltage.
- **Built-in timer:** programmable timer from 1 s up to 100 min.
- **Automatic discharge** of tested object after test.
- **Fast testing:** 5 mA current source for quick charging of capacitive load.
- **Accurate:** selectable noise rejection filters and shielded test leads included in a standard set ensure accurate measurement.
- **Safe:** high CAT IV / 600 V voltage protection.
- **Built-in charger & rechargeable batteries:** instrument has a built-in charger and comes complete with a set of rechargeable NiMH batteries.
- **Portable:** lightweight 3 kg design with carry handle and shoulder strap.

APPLICATION

- Testing insulation resistance of rotating machinery, cables, transformers, HV generators, surge arresters;
- Production line periodic testing and maintenance;
- Troubleshooting and analysis of all kinds of insulation problems;
- Diagnostic testing.

STANDARDS

- **Functionality**
- IEC/EN 61557-2
- **Electromagnetic compatibility**
- EN 61326 class B
- **Safety**
- EN 61010-1;
- EN 61010-031;
- EN 61010-2-34

TECHNICAL SPECIFICATION

FUNCTION	Measuring range	Resolution	Accuracy
Insulation resistance	5 k Ω ... 999 k Ω	1 k Ω	$\pm(5\%$ of reading + 3 digits)
	1.00 M Ω ... 9.99 M Ω	10 k Ω	$\pm(5\%$ of reading + 3 digits)
	10.0 M Ω ... 99.9 M Ω	100 k Ω	$\pm(5\%$ of reading + 3 digits)
	100 M Ω ... 999 M Ω	1 M Ω	$\pm(5\%$ of reading + 3 digits)
	1.00 G Ω ... 9.99 G Ω	10 M Ω	$\pm(5\%$ of reading + 3 digits)
	10.0 G Ω ... 99.9 G Ω	100 M Ω	$\pm(5\%$ of reading + 3 digits)
	100 G Ω ... 999 G Ω	1 G Ω	$\pm(5\%$ of reading + 3 digits)
	1.00 T Ω ... 10.00 T Ω	10 G Ω	$\pm(15\%$ of reading + 3 digits)
	Test voltage	0 V ... 5500 V	1 V
Insulation leakage current	0.00 nA ... 9.99 nA	0.01 nA	$\pm(5\%$ of reading + 0.05 nA)
	10.0 nA ... 99.9 nA	0.1 nA	
	100 nA ... 999 nA	1 nA	
	1.00 μ A ... 9.99 μ A	10 nA	
	10.0 μ A ... 99.9 μ A	100 nA	
	100 μ A ... 999 μ A	1 μ A	
	1.00 mA ... 5.50 mA	10 μ A	
	Dielectric absorption ratio (DAR)	0.01 ... 9.99	0.01
10.0 ... 100.0		0.1	$\pm 5\%$ of reading
Polarization index (PI)	0.01 ... 9.99	0.01	$\pm(5\%$ of reading + 2 digits)
	10.0 ... 100.0	0.1	$\pm 5\%$ of reading
Dielectric discharge (DD)	0.01 ... 9.99	0.01	$\pm(5\%$ of reading + 2 digits)
	10.0 ... 100.0	0.1	$\pm 5\%$ of reading
Voltage AC / DC	0 V ... 600 V	1 V	$\pm(3\%$ of reading + 4 V)
Frequency	45.0 Hz ... 65.0 Hz	0.1 Hz	± 0.2 Hz
Capacitance	0.0 nF ... 99.9 nF	0.1 nF	$\pm(5\%$ of reading + 4 nF)
	100 nF ... 999 nF	1 nF	
	1.00 μ F ... 50.00 μ F	10 nF	
Power supply	6 \times 1.2 V NiMH rechargeable batteries, type C		
Display	Matrix LCD with backlight, 160 x 116 dots		
Overvoltage category	CAT IV / 600 V		
Protection class	Double insulation		
COM port	USB		
Dimensions	310 x 130 x 250 mm		
Weight	3 kg		

OPTIONAL ACCESSORIES






Photo	Order No.	Acc. description
	A 1822 BLK 2M5	10 kV shielded test lead with large black HV test clip
	A 1822 BLK 3M	
	A 1822 BLK 5M	
	A 1822 BLK 10M	
	A 1822 BLK 15M	
	A 1823 RED 2M5	10 kV shielded test lead with large red HV test clip
	A 1823 RED 3M	
	A 1823 RED 5M	
	A 1823 RED 10M	
	A 1823 RED 15M	

Photo	Order No.	Acc. description
	A 1807 2M	10 kV shielded red test lead, HVX
	A 1807 3M	
	A 1807 5M	
	A 1807 8M	
	A 1807 10M	
	A 1808 2M	10 kV shielded black test lead, HVX
	A 1808 3M	
	A 1808 5M	
	A 1808 8M	
	A 1808 10M	
	A 1806 2M	Test lead 1000 V CATIII, green, HVX
	A 1806 2M5	
	A 1806 3M	
	A 1806 5M	
	A 1806 10M	
	A 1806 15M	

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TECHNICAL SPECIFICATION



Standard set MI 3201

- Instrument TeraOhm 5 kV Plus
- Small soft carrying bag
- Mains cable
- 10 kV shielded test lead with probe, black, 2 m
- 10 kV shielded test lead with probe, red, 2 m
- 10 kV crocodile clip, 2 pcs (black, red)
- Guard lead, green, 2 m
- Crocodile clip, green
- 6 x 1.2 V NiMH rechargeable batteries, type C
- Calibration certificate
- Instruction manual

Photo	Order No.	Acc. description
	A 1386	Test tip for voltage measurements 5 kV, red
	A 1387	Test tip for voltage measurements 5 kV, black
	A 1046	1.2 V NiMH battery, type C, 6 pcs
	S 2036	HV crocodile clip, 2 pcs (red, black)
	S 2058	Insulation test plates
	A 1740	Calibration box 5kV
	A 1271	Carrying bag (S)