

# MIT515, MIT525, MIT1025, MIT1525

## 5 kV, 10kV, 15 kV DC Insulation Resistance Testers



- **30 TΩ maximum resistance**
- **PI, DAR, DD, SV and ramp test**
- **Operate from battery or AC source**
- **Rapid charge Li-ion battery**
- **Safety rated CATIV 1000 V to 3000 m (15 kV)**
- **Advanced memory with time/date stamp**

### DESCRIPTION

Megger's new range of DC insulation testers MIT515, MIT525, MIT1025 and MIT1525 are targeted at original equipment manufacturers and industrial companies. The top of the range MIT1525 performs insulation resistance tests up to 15 kV with a 30 TΩ maximum resistance and an accuracy of ±5 % from 1 MΩ up to 3 TΩ. The MIT515 offers IR, DAR and PI functions but has no memory functionality. MIT525, MIT1025 and MIT1525 have a full suite of test modes as well as on-board memory and the ability to stream data/download data to a PC/laptop.

Instrument productivity is a focus of the new MIT range which offers rapid charge batteries and operation from an AC source if the batteries are flat. Rapid charge batteries enable > 60 minutes testing after a 30 minute charge.

Safety rating is not compromised on the MIT range with all terminals safety rated to CATIV 600 V to 3000 m (5 kV, 10 kV or CATIV 1000 V to 3000 m (15 kV). A range of 5 kV and 10 kV test leads are available plus dedicated 15 kV test leads which are double insulated with clips designed for 15 kV creepage paths. The 15 kV leads are supplied in a rucksack. Suitably rated HV gloves and other personal protection equipment are required to be worn when testing.

The MIT range share dual case design which includes a tough outer case to protect the tester from knocks/drops and an inner fire retardant case. The IP rating is IP 65 case closed eliminating moisture and dust ingress.

An intuitive user interface ensures no lost time remembering how to use the tester. Simplicity of operation is achieved with two rotary switches and the large backlight display which enables multiple results to be displayed simultaneously. A graphical quick start guide is provided inside the lid to assist first time users.

Five preset voltage ranges are provided in insulation test mode, plus a user settable lock voltage range. Preconfigured diagnostic tests include Polarisation Index (PI), Dielectric Absorption Ratio (DAR), dielectric discharge (DD), Stepped Voltage (SV) and ramp test.

Advanced memory storage includes time/date stamping of results, logging of data and recall of results to screen. A fully isolated USB interface is used for safe transfer of data to Megger's asset management software; PowerDB Pro, Advanced and Lite packages.

Test leads are double insulated with clamps rated at 3 kV equivalent to 6 kV single insulation for the medium clip leadset and 5 kV equivalent to 10 kV single insulation for the large clip. The 15kV leadset is insulated to 15kV.

### FEATURES AND BENEFITS

- Insulation resistance up to 30 TΩ @ 15 kV, 20 TΩ @ 10kV, 10 TΩ @ 5 kV
- IR, Timed IR, DAR, PI, DD, SV and ramp diagnostic tests
- High current – 3 mA short circuit current
- High noise immunity – 3mA (5kV and 10kV) 6mA (15kV) of noise rejection
- Li-ion battery – up to 6 hrs continuous testing @ 5 kV with a 100M load, battery meets IEC 62133
- Safety rating: CATIV 600 V to 3000 m (5 kV, 10 kV)  
CATIV 1000 V to 3000 m (15 kV)
- Large LCD display with backlight
- Dedicated voltmeter function (30 V to 660 V)
- Advanced memory, on screen recall and real time clock for date/time stamped results
- Download of on-board results via USB interface
- PowerDB Lite asset management software
- Recorded temperature (measured by independent instruments) can be saved with test result
- PowerDB Lite asset management software supplied

### APPLICATION

The Insulation Resistance (IR) test is a quantitative test which indicates the effectiveness of a product's electrical insulation. Applications include cables, transformers, motors/generators, circuit breakers and bushings. Common insulation tests are the "spot test", a 1 minute IR test and a 10 minute Polarisation Index (PI) test, where PI is the ratio  $R_{10min}/R_{1min}$  and temperature independent.

### ELECTRICAL SPECIFICATIONS

<b>AC Voltage input range:</b>	85-265 V rms, 50/60 Hz, 100VA
<b>Battery:</b>	11.1 V, 5.2Ah Li-ion batteries, meet IEC 62133:2003, MIT1525 has 2 battery packs
<b>Battery life MIT515, MIT525:</b>	6 hours (typical) continuous testing at 5 kV with a 100 MΩ load
<b>Battery life MIT1025:</b>	4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load
<b>Battery life MIT1525:</b>	4.5 hours (typical) continuous testing at 15 kV with a 100 MΩ load
<b>Battery charge time:</b>	2.5 hours from deep discharge, 2 hours normal discharge
<b>Test voltages MIT515, MIT525:</b>	250 V, 500 V, 1000 V, 2500 V, 5000 V, $V_{\hat{c}}$
<b>Test voltages MIT1025:</b>	500 V, 1000 V, 2500 V, 5000 V, 10000 V, $V_{\hat{c}}$
<b>Test Voltages MIT1525:</b>	1000 V, 2500 V, 5000 V, 10000 V, 15000 V, $V_{\hat{c}}$
<b>Lock test voltage <math>V_{\hat{c}}</math>:</b>	40 V to 1 kV in 10 V steps, 1 kV to 5 kV in 25 V steps, 5 kV to 15 kV in 25 V steps
<b>Voltage o/p accuracy:</b>	+4%, -0%, ±10 V nominal test voltage at 1GΩ load (0°C to 0°C)
<b>Resistance Range:</b>	10 k to 10 TΩ @ 5 kV 20 k to 20 TΩ @ 10 kV 10 k to 30 TΩ @ 15 kV

**Accuracy from 1 MΩ to:**  
MIT515, MIT525 accuracy (23 °C)

	5000 V	2500 V	1000 V	500 V	250 V
±5% to	1 TΩ	500 GΩ	200 GΩ	100 GΩ	50 GΩ
±20% to	10 TΩ	5 TΩ	2 TΩ	1 TΩ	500 GΩ

MIT1025 accuracy (23 °C)

	10 kV	5000 V	2500 V	1000 V	500 V
±5% to	2 TΩ	1 TΩ	500 GΩ	200 GΩ	100 GΩ
±20% to	20 TΩ	10 TΩ	5 TΩ	2 TΩ	1 TΩ

MIT1525 accuracy (23 °C)

	15 kV	10 kV	5000 V	2500 V	1000 V
±5% to	3 TΩ	2 TΩ	1 TΩ	500 GΩ	200 GΩ
±20% to	30 TΩ	20 TΩ	10 TΩ	5 TΩ	2 TΩ

<b>Centrally positioned Guard ring:</b>	Guard parallel leakage, resistance down to 250 kΩ with a maximum additional resistance error of 1% with a 100 MΩ load.
<b>Display range analogue:</b>	100 kΩ to 10 TΩ
<b>Display range digital:</b>	10 kΩ to 30 TΩ
<b>Short circuit current:</b>	3 mA @ 5 kV, 10 kV, 15 kV
<b>Insulation alarm:</b>	100 kΩ to 10 GΩ
<b>Capacitor charge:</b>	< 3 s/μF to 5 kV, < 5 s/μF to 10 kV, < 7.5 s/μF to 15 kV
<b>Capacitor discharge:</b>	5 kV to 50 V :< 120 ms/μF 10 kV to 50 V:< 250 ms/μF 15 kV to 50 V:< 3500 ms/μF
<b>Capacitance range:</b> (> 500 V)	10 nF to 50 μF (dependant on measurement voltage)
<b>Capacitance accuracy:</b> (23 °C)	±10% ±5 nF
<b>Current measurement range:</b>	0.01 nA to 6 mA
<b>Current measurement accuracy:</b>	±5% ±0.2 nA at all voltages (23 °C)
<b>Interference (noise) rejection:</b>	
<b>MIT515, MIT525,</b>	3 mA from 450 V to 5 kV
<b>MIT1025</b>	3 mA from 960 V to 10 kV
<b>MIT1525</b>	6 mA from 2100 V to 15 kV
<b>Voltmeter range:</b>	30 V to 660 V ac or dc, 45Hz – 65Hz
<b>Voltmeter accuracy:</b>	±3%, ±3V
<b>Timer range:</b>	Up to 99 minutes 59 seconds, 15 second minimum setting
<b>Memory capacity:</b>	5.5 hours logging @ 5 sec intervals
<b>Test regimes:</b>	IR, IR(t), DAR, PI, SV, DD, ramp test
<b>Interface:</b>	USB type B (device)
<b>Real time output:</b>	1 Hz output readings (V, I, R)

### ENVIRONMENTAL SPECIFICATIONS

<b>Altitude:</b>	3000 m (5 kV, 10 kV) 3000 m (15 kV)
<b>Operating temperature:</b>	-20 °C to 50 °C
<b>Storage temperature:</b>	-25 °C to 65 °C
<b>Humidity:</b>	90% RH non-condensing at 40 °C
<b>Ingress protection:</b>	IP65 (lid closed), IP40 (lid open)

## SAFETY SPECIFICATIONS

**Safety:** CATIV 600 V to 3000 m (5 kV, 10 kV)  
CATIV 1000 V to 3000 m (15 kV)  
Meets the requirements of IEC 61010-1,

**EMC:** Meets the requirements of IEC61326-1

### Dimensions:

**MIT515, MIT525, MIT1025** L 315 mm x W 285 mm x H 181 mm  
**MIT1525** L 360 mm x W 305 mm x H 194 mm

### Weight:

**MIT515, MIT525, MIT1025** 4.5 kg  
**MIT1525** 6.5 kg

## ORDERING INFORMATION

Item (Qty)	Order Code	Item (Qty)	Order Code
MIT515-UK	1001-935	<b>HV test lead sets 5kV, 10kV</b>	
MIT515-US	1001-936	5 m leadset x 3, large insulated clips*	1002-645
MIT515-EU	1001-937	8 m leadset x 3, large insulated clips	1002-646
MIT515-AU	1001-938	10 m leadset x 3, large insulated clips	1002-647
MIT525-UK	1001-939	15 m leadset x 3, large insulated clips	1002-648
MIT525-US	1001-940	5 m leadset x 3, medium insulated clips*	1002-641
MIT525-EU	1001-941	8 m leadset x 3, medium insulated clips	1002-642
MIT525-AU	1001-942	10 m leadset x 3, medium insulated clips	1002-643
MIT1025-UK	1001-943	15 m leadset x 3, medium insulated clips	1002-644
MIT1025-US	1001-944	3 m leadset x 3, bare compact clips	8101-181
MIT1025-EU	1001-945	8 m leadset x 3, bare compact clips	8101-182
MIT1025-AU	1001-946	15 m leadset x 3, compact bare clips	8101-183
MIT1525-UK	1002-907		
MIT1525-US	1002-909		
MIT1525-EU	1002-908		
MIT1525-AU	1002-910		
<b>Included Accessories</b>		<i>* These test leads may also be supplied in non-standard lengths to suit a particular application / requirement. Please contact Megger for a quotation, minimum order quantities may apply.</i>	
Power lead		<b>Screened HV test lead sets</b>	
USB cable		3 m, 5 kV screened un-insulated small clips	6220-835
PowerDB Lite software		15 m, 5 kV screened un-insulated small clips	6311-080
Product Information CD		3 m, 10 kV screened un-insulated small clips	6220-834
<b>Included Accessories 5 kV, 10 kV, 15kV</b>		10 m, 10 kV screened un-insulated small clips	6220-861
3 m leadset x 3, medium insulated clips	1002-531	15 m, 10 kV screened un-insulated small clips	6220-833
3 m leadset x 3, large insulated clips (MIT1025 only)	1002-534		
3m leadset x 3, large 15 kV insulated clips (MIT1525 only)	1002-949	<b>Other</b>	
<b>Optional Accessories</b>		CB101, 5 kV Calibration Box	6311-077
<b>1 kV test lead sets</b>		Calibration Certificate - CB101	1000-113
Fused test probe and clip lead set	1002-913	UKAS calibration Certificate CB101	1000-047
Control circuit test lead set	6220-822		

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**CERTIFICATION ISO**  
Registered to ISO 9001:2008 Cert. no. Q 09250  
Registered to ISO 14001:2004 Cert. no. EMS 61597

**MIT515-525-1025-1525\_DS\_en\_V01**  
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