

# MIT515, MIT525, MIT1025, MIT1525

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



- Measures up to 35 T $\Omega$
- Safety rated up to CAT IV 1000 V to 3000 m
- Unique dual-case design - additional user protection
- Operates from battery or AC mains supply
- Rapid charge Li-ion battery
- 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 TW maximum resistance and an accuracy of  $\pm 5\%$  from

1 MW up to 3 TW. 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 t equivalent to 6 kV single insulation for the medium clip leadset and 5 kV t equivalent to 10 kV single insulation for the large clip. The 15k V leadset is insulated to 15 kV.

### 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 is temperature independent.

## FEATURES AND BENEFITS

- Insulation resistance up to 30 TW @ 15 kV, 20 TW @ 10kV, 10 TW @ 5 kV
- IR, Timed IR, DAR, PI, DD, SV and ramp diagnostic tests
- High current – 3 mA short circuit current
- High noise immunity – 3 mA (5 kV and 10 kV) 6 mA (15 kV) of noise rejection
- Li-ion battery – up to 6 hrs continuous testing @ 5 kV with a 100M load, battery meets IEC 2133
- 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
- MIT515, MIT525 and MIT1025 safety rated at CAT IV 600 V (maintained to 3000 m altitude)
- MIT1525 safety rated at CAT IV 1000 V (maintained to 3000 m altitude)

## SPECIFICATIONS

<b>AC voltage (auto-ranging)</b>	<b>5 kV, 10 kV:</b> 90-264 V rms, 47- 63 Hz 100 VA <b>15 kV:</b> 90-264 V rms, 47- 63 Hz 200 VA
<b>Battery charge time</b>	2.5 hours deep discharge, 2 hours normal discharge
<b>Battery life</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 MW load <b>Battery life MIT1025:</b> 4.5 hours (typical) continuous testing at 10 kV with a 100 MW load <b>Battery life MIT1525:</b> 4.5 hours (typical) continuous testing at 15 kV with a 100 MW load
<b>Test voltage</b>	<b>MIT515, MIT525:</b> 250 V, 500 V, 1000 V, 2500 V, 5000 V, VL <b>MIT1025:</b> 500 V, 1000 V, 2500 V, 5000 V, 10000 V, VL <b>MIT1525:</b> 1000 V, 2500 V, 5000 V, 10000 V, 15000 V, VL
<b>Lock test voltage</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>Test voltage accuracy</b>	+4%, -0%, ±10 V nominal test voltage at 1 GΩ load (0°C to 30°C)

**Resistance range** 10 k to 15 TΩ @ 5 kV,  
10 k to 35 TΩ @ 10 kV,  
10 k to 35 TΩ @ 15 kV

### Accuracy

#### MIT515, MIT525 accuracy (23 °C)

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

#### MIT1025 accuracy (23 °C)

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

#### MIT1525 accuracy (23 °C)

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

### Guard terminal performance

Guards out parallel leakage resistance down to 250 kΩ with a maximum additional resistance error of 1% with a 100 MΩ load

### Display

**Analogue:** 100 kΩ to 10 TΩ  
**Digital:** 10 kΩ to 305 TΩ

### Short circuit/charge current

3 mA @ 5 kV, 10 kV, 15 kV

### Insulation test

**Alarm:** 100 kW to 10 GW

### Capacitor charge

**MIT515, MIT525** <3 s/μF at 3 mA to 5 kV  
**MIT1025** <5 s/μF at 3 mA to 10 kV  
**MIT1525** <7.5 s/μF at 3 mA to 15 kV

### Capacitor discharge

### Capacitance range

**With test voltage set above 500 V**

**MIT515, MIT525 MIT1025:** 10 nF to 25 μF

**MIT1525:** 10 nF to 50 μF

### Capacitance measurement accuracy

±10% ±5 nF

### Current range

0.01 nA to 6 mA

### Current accuracy

±5% ±0.2 nA at all voltages (23 °C)

### Interference

**MIT515, MIT525:** 3 mA from 450 V to 5 kV

**MIT1025:** 3 mA from 960 V to 10 kV

**MIT1525:** 6 mA from 2100 V to 15 kV

### Voltmeter range

30 V to 660 V ac or dc,  
45Hz – 65Hz

### Voltmeter accuracy

±3%, ±3V

### Timer range

Up to 99 minutes 59 seconds,  
15 second minimum setting

### Memory capacity

5.5 hours logging @  
5 sec intervals

### Test modes

IR, IR(t), DAR, PI, SV, DD, ramp test

### Interface

USB type B (device)

### Real time output

1 Hz output readings (V, I, R)

## ENVIRONMENTAL

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

## SAFETY

**Safety** **MIT515, MIT525, MIT1025:** CAT IV 600 V to 3000 m altitude

**MIT1525:** CAT IV 1000 V to 3000 m altitude

Meets the requirements of IEC 61010-1,

Meets the requirements of IEC61326-1

## EMC

## 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

Description	Order Code	Description	Order Code
MIT515-UK	1001-935	3 x 15 m with large insulated clips	1002-648
MIT515-US	1001-936	3 x 5 m with medium insulated clips	1002-641
MIT515-EU	1001-937	3 x 8 m with medium insulated clips	1002-642
MIT515-AU	1001-938	3 x 10 m with medium insulated clips	1002-643
MIT525-UK	1001-939	3 x 15 m with medium insulated clips	1002-644
MIT525-US	1001-940	COMPACT, BARE TEST CLIP: Lead length: 3 m	8101-181
MIT525-EU	1001-941	COMPACT, BARE TEST CLIP: Lead length: 5 m	8101-182
MIT525-AU	1001-942	COMPACT, BARE TEST CLIP: Lead length: 15 m	8101-183
MIT1025-UK	1001-943	<b>HV test lead sets (MIT1525 only)</b>	
MIT1025-US	1001-944	5 m lead set, large size insulated clips (3 x leads)	1005-259
MIT1025-EU	1001-945	10 m lead set, large size insulated clips (3 x leads)	1005-260
MIT1025-AU	1001-946	15 m lead set, large size insulated clips (3 x leads)	1005-261
MIT1525 UK	1002-907	3 m lead set, medium size insulated clips (3 x leads)	1005-262
MIT1525 US	1002-909	10 m lead set, medium size insulated clips (3 x leads)	1005-263
MIT1525 EU	1002-908	<b>Screened - HV test lead sets</b>	
MIT1525 AU	1002-910	<b>(MIT515, MIT525, MIT1025 only)</b>	
<b>Included Accessories</b>		1 x 3 m, with 5 kV screened un-insulated small clips	6220-835
Power lead		1 x 15 m, with 5 kV screened un-insulated small clips	6311-080
USB cable		3 m, 10 kV screened un-insulated small clips	6220-834
PowerDB Lite software		10 m, 10 kV screened un-insulated small clips	6220-861
Product information CD		15 m, 10 kV screened un-insulated small clips	6220-833
<b>Included accessories (5 kV, 10 kV, 15kV)</b>		<b>Screened HV test lead sets (MIT1525 only)</b>	
3 m lead set, medium size insulated clips	1002-531	3 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-266
3 m leadset x 3, large insulated clips (MIT1025 only)	1002-534	10 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-267
3m leadset x 3, large 15 kV insulated clips (MIT1525 only)	1002-949	15 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-268
<b>Optional Accessories</b>		20 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-269
<b>1 kV test lead sets (MIT515, MIT525, MIT1025 only)</b>		<b>Other</b>	
Fused test probe and clip lead set	1002-913	CB101; 5 kV Calibration Box	6311-077
CONTROL CIRCUIT TEST SET	6220-822	Calibration certificate - CB101	1000-113
<b>Optional accessories 1 kV test lead sets (MIT1525 only)</b>		UKAS calibration certificate CB101	1000-047
Fused test lead set with probes and clips (2 x leads, 1.25m)	1005-265		
Control circuit test lead set (2 x leads, 3m)	1005-264		
<b>HV test leads sest (MIT515, MIT525, MIT1025 only)</b>			
* 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.			
3 x 5 m with large insulated clips	1002-645		
3 x 8 with large insulated clips	1002-646		
3 x 10 m with large insulated clips	1002-647		

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