MIT515, MIT525, MIT1025, MIT1525
5 kV, 10 kV, 15 kV DC Insulation Resistance Testers



- **Measures up to 30 TΩ**
- **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 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.

- **MIT515:** 5 kV IRT with PI and DAR but no memory
- **MIT525:** 5 kV IRT with all test modes including a ramp test plus advanced memory functions with recall to screen, RTC for time/date stamp of results and USB cable interface to PC / PowerDB
- **MIT1025:** 10 kV IRT with all test modes including a ramp test plus advanced memory functions with recall to screen, RTC for time/date stamp of results and USB cable interface to PC / PowerDB
- **MIT1525:** 15 kV IRT with all test modes including a ramp test plus advanced memory functions with recall to screen, RTC for time/date stamp of results and USB cable interface to PC / PowerDB

Safety rating is not compromised on the MIT range with all terminals safety rated to CAT IV 600 V to 3000 m (5 kV, 10 kV) or CAT IV 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 holdall. 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 IP65 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 shown 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.

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 15 kV leadset is insulated to 15 kV.

Advanced memory storage includes time/date stamping of results, logging of data and recall of results to screen. A fully isolated USB device interface (type B) is used for safe transfer of data to Megger's PowerDB / Pro, Advanced and Lite asset management software. (MIT525, MIT1025 nd MIT1525 only)

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 $R10_{min}$ / $R1_{min}$ and is temperature independent.

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FEATURES AND BENEFITS

- Insulation resistance up to 30 TΩ @ 15 kV, 20 TΩ @ 10kV, 10 TΩ @ 5 kV
- Measures capacitance of test object (with test voltages over 5000 V)
- 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 100 M load, battery meets IEC 2133
- 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
(MIT525, MIT1025 and MIT1525 only)
- Download of on-board results via USB interface
(MIT525, MIT1025 and MIT1525 only)
- Recorded temperature (measured by independent instruments) can be saved with test result
(MIT525, MIT1025 and MIT1525 only)
- PowerDB Lite asset management software
(MIT525, MIT1025 and MIT1525 only)
- 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

AC voltage (auto-ranging)

MIT515, MIT525, MIT1025:	90-264 V rms, 47- 63 Hz 100 VA
MIT1525 kV:	90-264 V rms, 47- 63 Hz 200 VA

Battery charge time 2.5 hours deep discharge, 2 hours normal discharge

Battery life 11.1 V, 5.2Ah Li-ion batteries, meet IEC 62133:2003, MIT1525 has 2 battery packs

Battery life

MIT515, MIT525:	6 hours (typical) continuous testing at 5 kV with a 100 MΩ load
MIT1025:	4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load
MIT1525:	4.5 hours (typical) continuous testing at 15 kV with a 100 MΩ load

Test voltage

MIT515, MIT525:	250 V, 500 V, 1000 V, 2500 V, 5000 V, User defined test voltage.
MIT1025:	500 V, 1000 V, 2500 V, 5000 V, 10000 V, User defined test voltage.
MIT1525:	1000 V, 2500 V, 5000 V, 10000 V, 15000 V, User defined test voltage.

User defined test voltage

MIT515 & MIT525:	40 V to 1 kV in 10 V steps,
MIT1025 & MIT1525:	100 V to 1 kV in 10 steps,
All units:	1 kV to 5 kV in 25 V steps,
MIT1525 only:	5 kV to 15 kV in 25 V step

Test voltage accuracy +4%, -0%, ±10 V nominal test voltage at 1 GΩ load (0°C to 30°C)

Resistance range 10 kΩ to 15 TΩ @ 5 kV, 10 kΩ to 20 TΩ @ 10 kV, 10 kΩ to 30 TΩ @ 15 kV

Accuracy

MIT515, MIT525 accuracy (20 °C)

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

MIT1025 accuracy (20 °C)

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

MIT1525 accuracy (20 °C)

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

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

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Digital:	10 kΩ to max. a above
Short circuit / charge current	3 mA @ 5 kV, 10 kV, 15 kV
Insulation test alarm:	100 kΩ to 10 GΩ
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	
MIT515, MIT525	<250 ms/µF to discharge from 5 kV to 50 V
MIT1025	<250 ms/µF to discharge from 10 kV to 50 V
MIT1525	<3500 ms/µF to discharge from 15 kV to 50 V
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 (20 °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, 45 Hz – 65 Hz
Voltmeter accuracy	±3%, ±3 V
Timer range	Up to 99 minutes 59 seconds, 15 second minimum setting
Memory capacity	5.5 hours logging @ 5 second intervals (MIT525, MIT1025 and MIT1525 only)
Test modes	
MIT515:	IR, IR(t), DAR, PI
MIT525, MIT1025, MIT1525:	IR, IR(t), DAR, PI, SV, DD, Ramp test
Interface	USB type B (device) (MIT525, MIT1025 and MIT1525 only)
Real time output	1 Hz output readings (V, I, R) (MIT525, MIT1025 and MIT1525 only)

ENVIRONMENTAL

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

Dimensions

5 kV, 10 kV	L 315 mm x W 285 mm x H 181 mm
15 kV	L 360 mm x W 305 mm x H 194 mm

TEST LEADS SUPPLIED

The MIT515, MIT525, MIT1025 and the MIT1525 are all supplied with test leads that are compliant with the requirements of IEC61010-031:2008.

The 5 kV models are supplied with one 3 m lead-set with medium sized clips.

The 10 kV models are supplied with two 3 m lead-sets, one with medium sized clips and the other with large clips with insulation suited to 10 kV use.

The 15 kV models supplied with a 3 m lead-set, with large clips with insulation suited to 15 kV use.

These leads are designed based on Megger's extensive knowledge of insulation testing using the latest technology. The leads are in compliance with IEC61010-31:2008, which requires a fully insulated clip design.

MEDIUM INSULATED TEST CLIP 3 M X 3 LEADSET - 5 KV AND 10 KV

These test leads are supplied as standard on MIT515, MIT525 and the MIT1025.

These clips are designed for clamping on larger diameter test pieces but where space is at a premium.

The insulation is designed only to protect the user from the output of Megger 5 kV and 10 kV (set below 6 kV) insulation resistance testers. The clips cannot in any circumstance be relied on to protect the user from live AC systems above 600 V AC, r.m.s. in an CAT IV environment.

Cable insulation rating: 12 kV DC (marked on cable)

Cable type: Flexible dual insulated silicon (inner insulation layer coloured white to highlight damage

MEDIUM INSULATED TEST CLIP 3 M X 3 LEADSET - 15 KV

These test leads are supplied as an option on the MIT1525.

These clips are designed for clamping on larger diameter test pieces but where space is at a premium.

The insulation is designed only to protect the user from the output of Megger 15 kV (set below 6 kV) insulation resistance testers.

The clips cannot in any circumstance be relied on to protect the user from live AC systems above 1000 V AC, r.m.s. in an CAT IV environment.



Cable insulation rating: 15 kV DC (marked on cable)

Cable type: flexible dual insulated silicon (inner insulation layer coloured white to highlight damage

These test leads may also be supplied in none standard lengths to suit a particular application. Please contact Megger for a quotation. Minimum order quantities may apply.

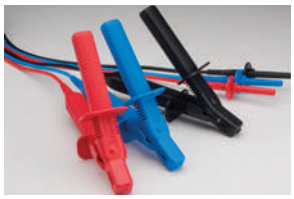
LARGE INSULATED TEST CLIP 3 M X 3 LEADSET

These test leads are supplied as standard on MIT1025 and MIT1525 models (different leadset dependant on model).

These clips are designed for clamping on to larger diameter test pieces.

The insulation is designed only to protect the user from the output of Megger 5 kV, 10 kV and 15 kV insulation resistance testers.

The clips cannot in any circumstance be relied on to protect the user from live AC systems above 600 V AC, r.m.s. in an CAT IV environment.



10 kV lead set Cable insulation rating: 12 kV DC (marked on cable) Cable type: flexible dual insulated silicon (inner insulation layer coloured white to highlight damage)



15 kV lead set Cable insulation rating: 18 kV DC (marked on cable)

Cable type: Flexible dual insulated silicon (inner insulation layer coloured white to highlight damage)

The design of the lead sets is intended to facilitate connection to a variety of de-energized systems for the purpose of making insulation resistance measurements. In all cases it is the responsibility of the user to employ safe working practices and verify that the system is safe before connection. Even isolated systems may exhibit significant capacitance, which will become highly charged during the application of the insulation test. This charge can be lethal and connections, including the leads and clips, should never be touched during the test. The system must be safely discharged before touching connections.

DESIGNED FOR EVERYDAY USE

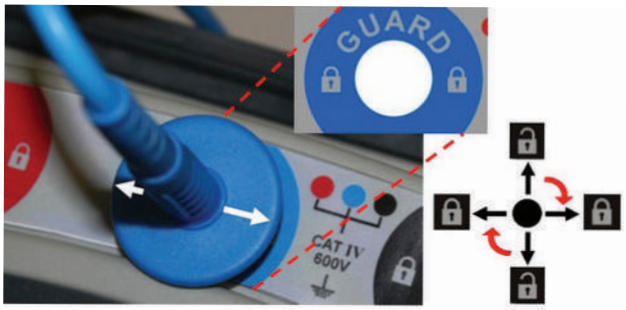
Test leads are a key component of any precision instrument and safety, long life, and the ability to provide reliable connections to a variety of test pieces found in everyday applications are of the utmost importance. Megger design test leads for both safety and practical operation.

LOCKING HV INSULATED PLUGS / NON-REMOVABLE TEST CLIPS

All Megger 5 kV, 10 kV and 15 kV insulation testing test leads are fitted with unique locking HV plugs and non-removable test clips.

This reduces the likelihood of a plug or clip inadvertently losing electrical connection and the capacitance of a long cable remaining lethally charged.

With the arrows on the plug finger guard horizontal on the instrument as shown to lock. Twist 90° to unlock. In addition, for the same reason, the test clips are not removable from the test lead.



PRACTICAL INSULATION DESIGN

Moving jaw fingers maintain the clips touch proof safety when the clip is closed but flex back to allow the metal teeth of the clip to contact test piece unimpeded when in use.



Megger clip being tested with IEC standard test finger for creepage and clearance.



PRACTICAL JAW DESIGN

Curved jaws allow reliable connection around test pieces and flat jaw tips provide excellent connection and gripping of individual wires.



More detailed information can be found on the 5 kV, 10 kV and 15 kV insulation tester lead sets application note. This document can be downloaded from: www.megger.com

MIT515, MIT525, MIT1025, MIT1525
5 kV, 10 kV, 15 kV DC Insulation Resistance Testers

	MIT515	MIT525	MIT1025	MIT1525
Max. output voltage	5 kV	5 kV	10 kV	15 kV
Max. resistance	10 TΩ	10 TΩ	20 TΩ	30 TΩ
Accuracy from 1 MΩ to	±5% ≤ 1 TΩ ±20% to 10 TΩ	±5% ≤ 1 TΩ ±20% to 10 TΩ	±5% ≤ 2 TΩ ±20% to 20 TΩ	±5% ≤ 3 TΩ ±20% to 35 TΩ
Short circuit output current	3 mA	3 mA	3 mA	3 mA
Max. noise rejection	3 mA	3 mA	3 mA	6 mA
Four averaging filters				
Safety rating (to max. altitude)	CAT IV 600 V	CAT IV 600 V	CAT IV 600 V	CAT IV 1000 V
Max. altitude	3000 m	3000 m	3000 m	3000 m
Battery charge	2.5 hrs	2.5 hrs	2.5 hrs	2.5 hrs
Battery life single charge	6 hrs	6 hrs	4.5 hrs	4.5 hrs
USB interface		■	■	■
Bluetooth® memory download and live stream				
On-board memory		■	■	■
Temperature value stored		■	■	■
Humidity value stored		*	*	*
Time / date stamped results		■	■	■
Compact / lightweight	4.5 kg	4.5 kg	4.5 kg	6.5 kg
Easy rotary switch operation	■	■	■	■
Digital / analogue display	■	■	■	■
Display backlight	■	■	■	■
Voltage output measurement	■	■	■	■
Dedicated voltmeter	■	■	■	■
Default voltmeter function	■	■	■	■
Calibration Certificate included	■	■	■	■

ORDERING INFORMATION

Description	Part number	Description	Part number
MIT515-UK	1001-935	MIT1025-UK	1001-943
MIT515-US	1001-936	MIT1025-US	1001-944
MIT515-EU	1001-937	MIT1025-EU	1001-945
MIT515-AU	1001-938	MIT1025-AU	1001-946
MIT525-UK	1001-939	MIT1525 UK	1002-907
MIT525-US	1001-940	MIT1525 US	1002-909
MIT525-EU	1001-941	MIT1525 EU	1002-908
MIT525-AU	1001-942	MIT1525 AU	1002-910

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INCLUDED ACCESSORIES

Description	Part number
Included accessories	
Power lead	
USB cable (MIT525, MIT1025, MIT1525)	
Calibration certificate - CB101	1000-113

Description	Part number
Lead sets	
Lead set 3kV 3 x 3 m meduim clips	(MIT515 and MIT525 only)
Lead set HV 3 x 3 m large clips	(MIT1025 only)
Leadset 3 x 3 m, large 15 kV insulated clips	(MIT1525 only)

OPTIONAL TEST LEAD SETS

Description	Part number
1 kV test lead sets	(MIT515, MIT525, MIT1025 only)
Fused test probe and clip lead set	1002-913
Control circuit test set	6220-822

Description	Part number
1 kV test lead sets	(MIT1525 only)
2 x 1.25 m Fused test lead set with probes and clips	1005-265
2 x 3 m Control circuit test lead set	1005-264

OPTIONAL HV TEST LEAD SETS

Description	Part number
HV test leads sets	(MIT515, MIT525, MIT1025 only)
These test leads may also be supplied in non-standard lengths to suit a particular application / requirement. **Contact Megger** for a quotation, minimum order quantities may apply.	
3 x 3 m with large clips (MIT1025 only)	1002-534
3 x 5 m with large insulated clips	1002-645
3 x 8 m with large insulated clips	1002-646
3 x 10 m with large insulated clips	1002-647
3 x 15 m with large insulated clips	1002-648
3 x 3 m with medium clips	1008-002
3 x 5 m with medium insulated clips	1002-641
3 x 8 m with medium insulated clips	1002-642
3 x 10 m with medium insulated clips	1002-643
3 x 15 m with medium insulated clips	1002-644
HV test lead sets	(MIT1525 only)
3 x 3 m lead set, large size insulated clips	1008-023
3 x 5 m lead set, large size insulated clips	1005-259
3 x 10 m lead set, large size insulated clips	1005-260
3 x 15 m lead set, large size insulated clips	1005-261
3 x 3 m lead set, medium size insulated clips	1005-262
3 x 10 m lead set, medium size insulated clips	1005-263

Description	Part number
Screened HV test lead sets	(MIT515, MIT525, MIT1025 only)
1 x 15 m, with 5 kV screened uninsulated small clips	6311-080
3 m, 10 kV screened uninsulated small clips	6220-834
10 m, 10 kV screened uninsulated small clips	6220-861
15 m, 10 kV screened uninsulated small clips	6220-833
Screened HV test lead sets	(MIT1525 only)
3 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-266
10 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-267
15 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-268
20 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-269
Other	
CB101 5 kV Calibration Box	6311-077
UKAS calibration certificate CB101	1000-047

SALES OFFICE
Megger Limited
Archcliffe Road Dover
CT17 9EN England
T +44 (0) 1304 502101
E UKsales@megger.com

MIT515--MIT525--MIT1025--MIT1525_DS_en_V17
www.megger.com
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