The **ESSENTIAL** range

5 kV and 10 kV
Insulation Resistance Testers



- **RE>Act mode enhanced accuracy and safety**
- **PI predictor function (PI*p*)**
- **Measures up to 20 TΩ**
- **Up to 3 mA noise rejection**
- **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**

DESCRIPTION

The Megger range of 5, 10 and 15 kV insulation testers are known worldwide for their rugged dependability, long service life and accurate, reliable measurements. The extensive range of models means that there will always be a perfect match for your requirements. One common feature across the whole range is the Megger, **'no compromise'** approach to safety. The Megger level of safety will always go further than simply complying with the relevant safety standards.

Another common feature is the **intuitive colour custom display**, with its ability to work in extreme environments and unbeatable viewing angle.

The range starts with the **MIT** (Megger Insulation Tester) models. These instruments provide an excellent level of noise immunity, test performance, and safety.

For customers requiring higher capacitance charge rates (testing long cables), working in electrically noisy environments (e.g. transmission voltages), remote operation, or data storage, the **S1** models are the ideal solution.

Once the best level has been selected, the only remaining choice is the maximum test voltage required.
The **Essential** models come in either 5 kV or 10 kV, whilst **Advanced** and **Expert** come in either 5, 10 or 15 kV instruments.

Please see the selection chart on page 2 of this data sheet for more detailed information on the differentiating features across the range.

ESSENTIAL

MIT515/2 (5 kV)
MIT1015 (10 kV)

Scan the QR-code for information

The Essential models are perfect for performing 'go/no go' testing; no need to record test results; working in tough locations; using under 10 kV test voltage.

ADVANCED

MIT525/2 (5 kV)
MIT1025/2 (10 kV)
MIT1525/2 (15 kV)

Scan the QR-code for information

The Advanced models are an ideal choice if, in addition to the above, you need to record test results, transfer results to software/mobile app (via USB or Bluetooth LE), and want the benefits of more diagnostic insulation testing. The Advanced range also adds additional noise immunity for power distribution environments, and the ability to either increase or decrease the output current.

EXPERT

S1-568/2 (5 kV)
S1-1068/2 (10 kV)
S1-1568/2 (15 kV)

Scan the QR-code for information

The Expert range combines everything from the Essential and Advanced ranges. If you work in extreme environments, even 765 kV switch yards, want the additional safety and convenience of remote operation via a USB cable, and full control of the output current, this is the choice for you.

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Megger

= New feature for 2025

	FEATURE	MIT515/2 MIT1015 ESSENTIAL	MIT525/2 MIT1025/2 MIT1525/2 ADVANCED	S1-568/2 S1-1068/2 S1-1568/2 EXPERT
Test capability	High Guard Terminal performance	■	■	■
	IR	■	■	■
	IR(t)	■	■	■
	PI Polarisation Index	■	■	■
	PI Predictor	■	■	■
	DAR Dielectric Absorption Ratio	■	■	■
	DD Dielectric Discharge		■	■
	Ramp test		■	■
	RE>Act mode	■	■	■
	PDC test		■	■
Test voltage	Max. voltages available	5 kV or 10 kV	5 kV, 10 kV or 15 kV	5 kV, 10 kV or 15 kV
Charging and burn mode current	Default maximum current	3 mA	3 mA	6 mA
	User selectable max. current values	N/A	1 mA, 3 mA, 6 mA (6 mA only from mains supply)	1 mA, 2 mA, 3 mA 4 mA, 5 mA, 6 mA (6 mA from internal battery and mains suppy)
Noise immunity	Max. noise current with measurement within accuracy spec.	3 mA (LV and MV <45 kV)	6 mA (HV <230 kV)	8 mA (EHV <1000 kV)
	Adaptive filter			■
	Negative current handling	■	■	■
	Averaging filter			■
Safety	CAT IV 1000 V		■	■
	CAT IV 600 V	■	■	■
	Hazardous peak voltage detection during IR measurement	■	■	■
Data storage / features	On board - time stamped		■	■
	Temperature value stored		■	■
	Humidity value stored			■
Communications	Test result transfer via wired USB		■	■
	Test results transfer via wireless Bluetooth LE		■	■
	Test result live streaming via wired USB		■	■
	Test result live streaming via wireless Bluetooth LE		■	■
	Remote control via wired USB			■
Display	New custom colour display	■	■	■
Accessories	Carry all holdall	■	■	■
	Deeper lid pouch	■	■	■
Software support	CertSuite Asset Lite **FREE**		■	■
	CertSuite Asset compatible		■	■
	Power DB Lite **FREE**		■	■
	Power DB Advance or Pro support		■	■

5 kV and 10 kV
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INSTRUMENT PRODUCTIVITY AND ACCURACY

This is a focus of the MIT and S1-Series, offering rapid charge batteries and operation from an AC source when the battery is flat or low. An intuitive user interface ensures no lost time remembering how to use the tester. Simplicity of operation is achieved with two rotary switches and a large backlight display which enables multiple measurement information to be displayed simultaneously. A graphical quick start guide is provided inside the lid of each model to assist first time users and has QR code links to the online User Guide.

Measurement accuracy is of high importance for any insulation resistance measurement. It is particularly important to ensure that the accuracy is maintained up to higher IR values that are required by some applications. The Essential range provides an excellent ±5% accuracy all the way up to 1 TΩ at 5,000 V or 2 TΩ at 10,000 V. Always check that your expected range of measurements sits within the accuracy range capability of your selected instrument.

PI PREDICTOR FUNCTION (PIP) PATENTED

The Polarisation Index test can be time consuming, with a 10 minute test (30 mins on 3 phase) and with multiple items to test, any time saved is a bonus. PIp does just that. The PI predictor function uses the first part of the IR curve to predict the rest at 5 minutes into the test. The PIp can start as early as 3 minutes into the test and will stop when it is confident in the prediction.

RE>ACT TEST MODE PATENT APPLIED FOR

This ground breaking feature will revolutionise the reliability of your measurements. When insulation testing it is essential that any re-absorption current from the insulation under test is fully discharged before starting the test. Remaining absorption current, depending on polarity, can result in IR measurements that are falsely high or low, with the potential to incorrectly pass any failing insulation. The RE>Act mode not only measures this reabsorption current but also provides an indication to the user of the impact it will have on the instruments' measurement range and accuracy.

For more detailed information please refer to the application note "Reliable DC insulation measurements using RE>Act", available on www.megger.com/support or Scan the QR code

SAFETY FEATURES

The list of safety features is quite extensive and include the following:

Safety of operation is built in, all 5 kV and 10 kV models are safety rated to CAT IV 600 V up to 3000 m altitude.

Dual case. The whole range feature a dual case design with a tough outer case to protect the tester from knocks and drops and a fire retardant inner case. The case IP rating prevents moisture and dust ingress when storing or carrying the instrument. The lids have velcro-on pouches ensuring that leads remain with the instrument at all times. Case lids are removable for improved access to the terminals.

Voltage warnings. The entire range also feature a multitude of voltage warnings to help ensure user safety. In fact there are five levels of warnings. Before testing has started the instrument will provide these warnings:

- **Level 1:** Live voltage above 30 V applied
- **Level 2:** 75 % of the instruments noise limit exceeded, check filter settings
- **Level 3:** 100 % of instruments noise limit exceeded warning and test inhibited
- **Level 4:** External voltage overheating discharge resisitors disconnect
- **Level 5:** The fifth warning is a unique one. During testing in high noise environments induced noise surges can result in extremely high voltages being applied to the instrument. In the event that these voltages are higher than the instruments reinforced insulation limits the instrument will halt the test to reduce terminal voltage and warn the user not to touch the instrument.

RE>Act adds two important safety features. Firstly, it removes the possibility to pass insulation that should have been failed, and secondly, it can also be used to monitor discharge following a test. This means the user can ensure that a dangerous return voltage will not occur.

Test leads. The supplied 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.

Non-detachable test clips. All test leads feature non-detatchable test clips for additional safety, and 4 mm HV insulated plugs that lock into the instrument, again for additional safety.

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EASE OF USE

Preset voltage ranges are provided in insulation test mode.

Preconfigured diagnostic tests include:

Polarisation Index (PI), Dielectric Absorption Ratio (DAR) on all models.

APPLICATIONS

Applications for the Essential range of insulation testers is wide and varied. Here is short example list, but this is not exhaustive.

Suitable for varied testing reasons:

- During manufacture, as part of quality inspection or safety checking prior to shipment
- Prior to product/asset shipment to provide benchmark measurements
- On site inspection, comparing to benchmark results, to ensure everything is good before installation
- Checking after installation of a new asset
- During maintenance to drive predictive maintenance
- Following repair prior to powering up

Suitable for varied environments:

- Production line
- On construction sites
- Industrial locations
- Power distribution

Suitable for many assets, the list is endless:

- Cables of all types
- Power transformers
- Measurement transformers
- Circuit breakers
- Motors
- Generators
- Bushings

SPECIFICATIONS

AC voltage (auto-ranging)

MIT515/2, MIT1015: 90-264 V rms, 47- 63 Hz 100 VA

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

Battery voltage: 10.8 V, 5.2 Ah Li-ion batteries, meet IEC 62133:2003

Battery life

MIT515/2: 6 hours (typical) continuous testing at 5 kV with a 100 MΩ load

MIT1015: 4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load

Auto power off: Instrument turns off after a few minutes if not used to conserve battery life

30 min quick charge: 1 hour operation at 5 kV with a 100 MΩ load

Test voltage

MIT515/2: 250 V, 500 V, 1000 V, 2500 V, 5000 V, User defined test voltage.

MIT1015: 500 V, 1000 V, 2500 V, 5000 V, 10000 V, User defined test voltage.

User defined test voltage

MIT515/2: 40 V to 1 kV in 10 V steps

MIT1015: 40 V to 1 kV in 10 V steps

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,

Re<Act: Reabsorption current measurement nominal accuracy. Operational up to 30 V external applied.

Accuracy

MIT515/2 accuracy (23 °C) from 1 MΩ to

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

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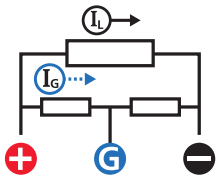
MIT1015 accuracy (23 °C) from 1 MΩ to

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

Guard terminal performance

When measuring an insulation resistance of 100 GΩ at 5000 V the tester can guard out current IG at least 5000 times the insulation test current IL with a maximum additional resistance error of 1%.



Display analogue: 100 kΩ to 10 TΩ

Digital:

MIT515/2 10 kΩ to 10 TΩ

MIT1015 10 kΩ to 20 TΩ

Short circuit / charge current

3 mA @ 5 kV, 10 kV

Insulation test alarm: 100 kΩ to 10 GΩ

Capacitor charge

MIT515/2 <3 s/µF at 3 mA to 5 kV

MIT1015 <5 s/µF at 3 mA to 10 kV

Capacitor discharge

MIT515/2 <250 ms/µF to discharge from 5 kV to 50 V

MIT1015 <250 ms/µF to discharge from 10 kV to 50 V

Capacitance range

With test voltage set above 500 V 10 nF to 25 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

MIT515/2: 3 mA from 450 V to 5 kV

MIT1015: 3 mA from 960 V to 10 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

Test modes IR, IR(t), DAR, PI

ENVIRONMENTAL

Maximum altitude 3000 m (5 kV, 10 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 CAT IV 600 V to 3000 m altitude

Dimensions L 315 x W 285 x H 181 mm

Weight

5 kV, 10 kV 4.5 kg

15 kV 6.3 kg

TEST LEADS SUPPLIED

The MIT515/2 and MIT1015 are supplied with test leads that are compliant with the requirements of IEC 61010-031:2008.

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.

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 MIT515/2 and the MIT1015.

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 a 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).

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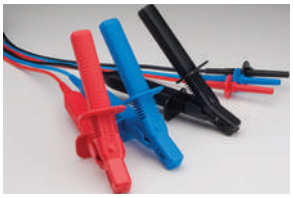
LARGE INSULATED TEST CLIP 3 M X 3 LEADSET

These test leads are supplied as standard on the MIT1015. 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 and 10 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 a 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)

The design of the lead sets is intended to facilitate connection to a variety of de-energised 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

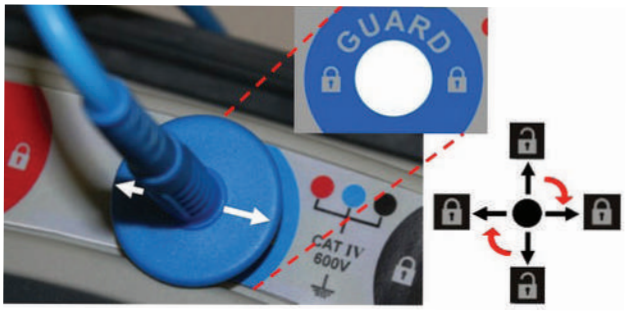
Test leads are a key component of any precision instrument and safety, long life, and the ability to provide reliable connections to a variety of test pieces found in everyday applications are of the utmost importance. Megger design test leads for both safety and practical operation.

LOCKING HV INSULATED PLUGS / NON-REMOVABLE TEST CLIPS

All Megger 5 kV and 10 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 and 10 kV insulation tester lead sets application note.
Click here or scan the QR code.

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ORDERING INFORMATION

Description	Part number
MIT515/2-UK ESSENTIAL 5kV IRT 2024 PIP	1016-079
MIT515/2-EU ESSENTIAL 5kV IRT 2024 PIP	1016-080
MIT515/2-US ESSENTIAL 5kV IRT 2024 PIP	1016-081
MIT515/2-AU ESSENTIAL 5kV IRT 2024 PIP	1016-082
MIT515/2-CN ESSENTIAL 5kV IRT 2024 PIP	1016-083
MIT515/2-BR ESSENTIAL 5kV IRT 2024 PIP	1016-621
MIT1015-UK ESSENTIAL 10kV IRT 2024 PIP	1016-089
MIT1015-EU ESSENTIAL 10kV IRT 2024 PIP	1016-090
MIT1015-US ESSENTIAL 10kV IRT 2024 PIP	1016-091
MIT1015-AU ESSENTIAL 10kV IRT 2024 PIP	1016-092
MIT1015-CN ESSENTIAL 10kV IRT 2024 PIP	1016-093
MIT1015-BR ESSENTIAL 10kV IRT 2024 PIP	1016-623

Description	Part number
Included accessories	
Power lead	1008-017
Calibration certificate	
Lead sets	
Lead set 3kV 3 x 3 m, with medium clips	1008-022
Lead set HV 3 x 3 m, with medium and large clips (MIT1015 only)	1002-534
1 kV test lead sets	
Fused test probe and clip lead set	1002-913
Control circuit test set	6220-822

OPTIONAL HV TEST LEAD SETS

Description	Part number
HV test leads sets (MIT515/2, MIT1015 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 (MIT1015 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

Description	Part number
Screened HV test lead sets (MIT515/2, MIT1015 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
Other	
CB101 5 kV Calibration Box	6311-077
UKAS calibration certificate	1000-047

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