S1-552/2 and S1-1052/2
5 kV and 10 kV Insulation Resistance Testers

- CAT IV 600 V
- Mains or battery powered
- Digital/analogue backlit display
- Variable test voltage from 50 to 5000 or 10,000 V
- Automatic IR, PI, DAR, SV and DD tests
- Measures to 15 T\(\Omega\) (5 kV) and 35 T\(\Omega\) (10 kV)
- Charge current: 5 mA
- RS232 and USB download of results to Megger Download Manager
- On board memory for results storage

**DESCRIPTION**

The new 5 & 10 kV insulation resistance testers from Megger are designed specifically to assist you with the testing and maintenance of high voltage electrical equipment. IEEE 43-2000 recommends the use of 10 kV for motor windings rated above 12 kV and the Megger S1-1052/2 facilitates this. The case is incredibly rugged and easy to carry, being made of tough polypropylene and achieving an ingress protection rating of IP65. In addition, the model number is marked on both sides of the case for ease of identification in stores or vehicles.

The instruments have a large easy to read backlit LCD display making it equally suitable for use in both bright sunlight and poorly lit environments. Information displayed includes resistance, voltage, leakage current, capacitance, battery status and time constant. In addition, the elapsed time of the test is displayed constantly, removing the need for separate timers. Adjustable timers and limit alarms are included.

The instrument can test when being powered by the mains or its internal rechargeable battery, a great benefit when site conditions are unknown or long term testing is required.

The controls of the instrument are clear and unambiguous and a “quick start” guide is included in the lid of the instrument removing the need to carry bulky manuals under site conditions.

The instrument is fitted with a guard terminal to enhance accuracy. The guard test lead is included as standard with the instrument.

To further enhance the flexibility of the instruments both have the facility to set the test voltage in steps from 50 V to the maximum output voltage avoiding the expense of several insulation resistance testers to meet your application needs.

These IR instruments are designed to meet the highest safety standards and meet the requirements of EN61010. In addition, the instrument measures the voltage at the terminals and if this is above 50 V then the instrument will display the high voltage warning and inhibit testing. At the end of the test the instrument will automatically discharge the energy transferred to the equipment during the test phase.

The S1-552/2 and S1-1052/2 are equally suited to routine testing and diagnostic regimes being pre-programmed with IR, PI, DAR, SV and DD profiles.
SPECIFICATIONS

Voltage input range
85-265 V rms, 50/60Hz, 60 VA

S1-552/2 battery life
Typical capacity is 6 hours continuous testing at 5 kV with a 100 MΩ load

S1-1052/2 battery life
Typical capacity is 4 hours continuous testing at 10 kV with a 100 MΩ load

S1-552/2 test voltages
50 V to 1 kV in 10 V steps, 1 kV to 5 kV in 25 V steps

S1-1052/2 test voltages
50 V to 1 kV in 10 V steps, 1 kV to 10 kV in 25 V steps

S1-552/2 accuracy (23 °C, 5 kV)

<table>
<thead>
<tr>
<th>Voltage (V)</th>
<th>5000</th>
<th>2500</th>
<th>1000</th>
<th>500</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000 V</td>
<td>±5%</td>
<td>±5%</td>
<td>±5%</td>
<td>±20%</td>
<td>±20%</td>
</tr>
<tr>
<td>2500 V</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td>200 GΩ</td>
<td>100 GΩ</td>
<td>50 GΩ</td>
</tr>
<tr>
<td>1000 V</td>
<td>5 TΩ</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td></td>
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<tr>
<td>500 V</td>
<td>50 TΩ</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td></td>
</tr>
<tr>
<td>250 V</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td>200 GΩ</td>
<td>100 GΩ</td>
<td>50 GΩ</td>
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</table>

S1-1052/2 accuracy (23 °C, 10 kV)

<table>
<thead>
<tr>
<th>Voltage (V)</th>
<th>10 kV</th>
<th>5000 V</th>
<th>2500 V</th>
<th>1000 V</th>
<th>500 V</th>
<th>250 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 kV</td>
<td>±5%</td>
<td>±5%</td>
<td>±5%</td>
<td>±20%</td>
<td>±20%</td>
<td>±20%</td>
</tr>
<tr>
<td>5000 V</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td>200 GΩ</td>
<td>100 GΩ</td>
<td>50 GΩ</td>
</tr>
<tr>
<td>2500 V</td>
<td>5 TΩ</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000 V</td>
<td>10 TΩ</td>
<td>5 TΩ</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
<td></td>
</tr>
<tr>
<td>500 V</td>
<td>20 TΩ</td>
<td>10 TΩ</td>
<td>5 TΩ</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
<td>500 GΩ</td>
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<tr>
<td>250 V</td>
<td>50 TΩ</td>
<td>20 TΩ</td>
<td>10 TΩ</td>
<td>5 TΩ</td>
<td>2 TΩ</td>
<td>1 TΩ</td>
</tr>
</tbody>
</table>

Guard
2% error guarding 500 kΩ leakage with 100 MΩ load

Display range
Digital display (3 digits) 10 kΩ to 15 TΩ (S1-552/2) to 35 TΩ (S1-1052/2)
Analogue display 100 kΩ to 1 TΩ

Short circuit/charge current
5 mA @ 5 kV (S1-552/2) or 10 kV (S1-1052/2)

Capacitor charge time
<1.5 seconds per µF at 5 mA to 5 kV (S1-552/2)
<3 seconds per µF at 5 mA to 10 kV (S1-1052/2)

Capacitor discharge time
<120 ms per µF to discharge from 5000 V to 50 V (S1-552/2)
<250 ms per µF to discharge from 10000 V to 50 V (S1-1052/2)

Capacitance measurement (above 500 V)
10 nF to 50 µF (dependent on measurement voltage)

Capacitance measurement accuracy (23 °C)
±5% ±5 nF

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

Current measurement range
0.01 nA to 5 mA

Current measurement accuracy (23 °C)
±5% ±0.2 nA at all voltages

Default voltmeter range:
50-600 V a.c. or d.c. Accuracy (23 °C) + or -2% + or -1 V

Interference rejection
S1-552/2 1 mA per 250 V up to a maximum of 5 mA
S1-1052/2 1 mA per 600 V up to a maximum of 3 mA

Timer range
Up to 99 minutes and 59 seconds from start of test
15 second minimum setting for test voltage ≥1000 V
30 second minimum setting for test voltage < 1000 V

Memory capacity
32 kB

Test regimes
Auto IR, PI, DAR, SV, and DD.

Data store
Voltage, test time, leakage current, resistance, PI, DAR, DD, capacitance and time constant

Real time output
Serial, once per second of test voltage, current and resistance

Operating temperature
-20 °C to 50 °C

Storage temperature
-25 °C to 65 °C

Ingress protection (lid closed)
IP65

Humidity
90% RH non-condensing at 40 °C

Safety
Meets the requirements of IEC61010-1:2001 CATIV 600 V

EMC
Meets the requirements of IEC61326-1

Dimensions
305 x 194 x 360 mm (12.7 x 6 x 14.2 inches)

Weight
7.1 kg (16lb) approx.
**Test leads supplied**

The S1-552/2 and S1-1052/2 are all supplied with test leads that are compliant with the requirements of IEC61010-031:2008. The 5 kV models are supplied with one 3m lead-set with medium sized clips. The 10 kV models are supplied with two 3m 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**

These test leads are supplied as standard on S1-552/2 and S1-1052/2.

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 a.c., r.m.s. in a CATIV environment.

**Cable insulation rating:** 12 kV dc (marked on cable)

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

**LARGE INSULATED TEST CLIP 3 m X 3 LEADSET**

These test leads are supplied as standard on S1-1052/2.

These clips are designed for clamping on 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 and systems below 600 V to the category rating above.

The clips cannot in any circumstance be relied on to protect the user from live ac systems above 600 V a.c., r.m.s. in a CATIV environment.

**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-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 that 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 clip is closed but flex back to allow 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.

Optional test leads

MEDIUM AND LARGE TEST CLIPS

Test leads above with medium and large size insulated clips are available supplied as an option in 5m, 8m, 10m and 15m lengths. These are listed in the ordering information panel at the end of this data sheet. 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.

COMPACT TEST CLIP LEADS

These clips are designed for clamping on test pieces where access is limited. There is no insulation on these clips.

Extreme care must be taken to avoid electric shock when connecting/disconnecting due to the bare metallic clips.

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

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

COMPACT TEST CLIP WITH 5 OR 10 kV SCREENED CABLE

The clips are designed for clamping on test pieces where access is limited. There is no insulation on these clips.

Extreme care must be taken to avoid electric shock when connecting/disconnecting due to the bare metallic clips. The screened test lead set consists of:

- A black/negative test lead that has been screened.
- A red/positive test lead that is not screened.

Cable insulation rating: 5 kV or 10 kV dc

Cable type: flexible screened PVC

Note: Screened test leads are an important accessory for those working in high noise environments, and/or locations where test lead leakage could be a problem.

CONTROL CIRCUIT TEST SETS

This probe and clip leadset is designed for testing low voltage circuits with test voltages up to 1 kV.

The insulation is designed only to protect the user from the output of Megger 5 kV and 10 kV insulation resistance testers set to a maximum output voltage of 1 kV. Do not use this leadset at voltages above 1 kV.

Cable insulation rating: 1 kV dc

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

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<thead>
<tr>
<th>Item (Qty)</th>
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<tr>
<td>5 kV insulation resistance tester</td>
<td>S1-552/2</td>
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<tr>
<td>10 kV insulation resistance tester</td>
<td>S1-1052/2</td>
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<tr>
<td><strong>Included Accessories</strong></td>
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<tr>
<td>3 m lead set medium insulated clips</td>
<td>1002-531</td>
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<tr>
<td>User guide on CD-ROM</td>
<td>2000-213</td>
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<td>RS232 cable</td>
<td>25955-025</td>
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<tr>
<td>USB cable</td>
<td>25970-041</td>
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<td>3 x 3 m lead set large insulated clips (S1-1052/2 only)</td>
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<td><strong>Optional Accessories</strong></td>
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<tr>
<td>HV test lead sets</td>
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<td>5 m leadset x 3, medium insulated clips</td>
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<tr>
<td>8 m leadset x 3, medium insulated clips</td>
<td>1002-642</td>
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<td>10 m leadset x 3, medium insulated clips</td>
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<tr>
<td>15 m leadset x 3, medium insulated clips</td>
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<td>5 m leadset x 3, large insulated clips*</td>
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<td><strong>Screened HV test leads</strong></td>
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<td>1 x 3 m, 5 kV screened un-insulated compact clips</td>
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<td>1 x 15 m, 5 kV screened un-insulated compact clips</td>
<td>6311-080</td>
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<td>1 x 3 m, 10 kV screened un-insulated compact clip</td>
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<td>1 x 10 m, 10 kV screened un-insulated compact clip</td>
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<td>1 x 15 m, 10 kV screened un-insulated compact clip</td>
<td>6220-833</td>
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<td><strong>Other</strong></td>
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<td>CB101, 5 kV calibration box</td>
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<td>Calibration certificate - CB101</td>
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<td>UKAS calibration certificate CB101</td>
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<td><strong>Included Accessories</strong></td>
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<td>3 m leadset x 3, bare compact clips</td>
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<td>2 x 3 m control circuit, small insulated clips</td>
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</table>

*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.

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F 1 214 391 7399

**OTHER TECHNICAL SALES OFFICES**

Norristown USA, Sydney AUSTRALIA,
Ontario CANADA, Trappes FRANCE,
Dubai UAE, Mumbai INDIA, Durban
SOUTH AFRICA, Conjure THAILAND,
Täby SWEDEN, Oberursel GERMANY,
Aargau SWITZERLAND, Malaga SPAIN

**ISO STATEMENT**

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Registered to ISO 14001:2004 Cert. no. EMS 61597

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