S1-568, S1-1068, S1-1568
Insulation Resistance Testers

- **Resistance range up to 35 TΩ**
- **8 mA noise rejection plus 4 filters**
- **Safety up to CATIV 1000V to 4000 m**
- **Rapid charge Li-ion battery – meets IEC62133**
- **Operate with flat battery from an AC source**
- **Tough dual case design**

DESCRIPTION

Megger's new S1-Series of insulation resistance testers consist of a 5 kV, 10 kV and 15 kV models called S1-568, S1-1068 and S1-1568. These top end instruments are targeted at power utilities and service companies working in generation, transmission and distribution markets. Class leading charge current, noise rejection and software filters make the S1-Series Megger's most advanced DC insulation resistance testers to date.

Instrument productivity is a focus of the new S1-Series which offers rapid charge batteries and operation from an AC source when the battery is flat. 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 results to be displayed simultaneously. A graphical quick start guide is provided inside the lid of each model to assist first time users.

Safety of operation is built in, 5 kV and 10 kV models are safety rated to CAT IV 600 V up to 3000 m and the 15 kV S1-1568 is rated at CAT IV 1000 V up to 4000 m. Original equipment manufacturers and repairers will welcome the remote control feature allowing them to automate resistance testing on the factory floor, as will technicians in substations wanting to operate from a more convenient, safe distance.

The S1-Series have 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 clip-on lead pouches ensuring that leads remain with the instrument at all times. Case lids are removable for improved access to the terminals.

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 or on-board Bluetooth® interface is used for safe transfer of data to Megger's asset management software; PowerDB Pro, Advanced or 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 15 kV 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 R10min / R1min and is temperature independent.

FEATURES AND BENEFITS

- Resistance measurement: 15 TΩ - 5 kV,
- 35 TΩ - 10 kV, 35 TΩ - 15 kV
- High current – 6 mA short circuit current
- High noise immunity – 8 mA of noise rejection
- Four software filters: 10 s, 30 s, 100 s, 200 s
- Li-ion battery – charges in 2 hours and gives up to 6 hours

continuous testing a 100 MΩ load (S1-568), battery meets IEC 62133

- CAT IV 600 V safety rating up to 3000 m (S1-568, S1-1068)
- CAT IV 1000 V safety rating up to 4000 m (S1-1568)
- Remote operation via USB cable
- Download of memory via isolated USB cable Bluetooth®
- IR, timed IR, DAR, PI, DD, SV and ramp diagnostic tests
- Large LCD display with backlight
- Dedicated voltmeter function (30 V to 660 V) AC or DC
- Advanced memory, on screen recall and real time clock for date/ time stamped results
- PowerDB Lite asset management compatabilty
- Option to record temperature and/or relative humidity with saved results (measured independently)

SPECIFICATIONS

AC voltage (auto ranging)
S1-568, S1-1068 90 - 264 V rms, 50/60 Hz, 100 A
S1-1568 90 - 264 V rms, 50/60 Hz, 200 A

Battery life 11.1 V, 5.2Ah meets IEC 62133: 2003 (S1-1568 has 2 batteries)

Battery life
S1-568: 6 hours (typical) continuous testing at 5 kV with a 100 MΩ load
S1-1068: 4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load
S1-1568: 4.5 hours (typical) continuous testing at 15 kV with a 100 MΩ load

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

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

Test voltage 250 V, 500 V, 1000 V, 2500 V, 5000 V, 10000 V, 15000 V, V

Lock test voltage 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

Test voltage accuracy +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

S1-568	**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
S1-1068	**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
S1-1568	**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

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 range analogue 100 kΩ to 10 TΩ

Display range digital: 10 kΩ to 35 TΩ

Short circuit/charge current 6 mA

Insulation test Alarm 100 kΩ to 10 GΩ

Capacitor charge
(on battery): < 2.5 s/µF to 5 kV , <5 s/µF to 10 kV, < 6.3 s/µF to 15 kV
(with AC): < 1.5 s/µF to 5 kV , <2.7 s/µF to 10 kV, < 4 s/µF to 15 kV

Capacitor discharge 5 kV to 50 V :< 120 ms/µF
10 kV to 50 V:< 250 ms/µF
15 kV to 50 V:< 3500 ms/µF

Capacitance range With test voltage set above 500V
S1-568 10 nF to 25 µF
S1-1068 10 nF to 25 µF
S1-1568 10 nF to 50 µF

Capacitance measurement accuracy 10 nF to 10 µF : ±10% ±5 nF

Current range 0.01 nA to 6 mA

Current accuracy ±5% ±0.2 nA at all voltages (20 °C)

Interference
S1-568 8 mA from 1200 V to 2500 V
S1-1068 8 mA from 2560 V to 10 kV
S1-1568 8 mA from 2800 V to 15 kV

Software 4 filter settings 10 s, 30 s, 100 s, 200 s

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 11 hrs logging @ 5 sec intervals

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

Interface USB type B (device), Bluetooth® Class 2

Real time output (V, I, R) readings at a rate of 1 Hz

Remote control Remote control via USB cable only (requires RC dongle to be in position)

ENVIRONMENTAL

Maximum altitude
S1-568, S1-1068: 3000 m
S1-1568: 4000 m

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	Meets the requirements of IEC 61010-1, CATIV 600 V to 3000 m (5 kV, 10 kV) CATIV 1000 V to 4000 m (15 kV)
EMC	Meets the requirements of IEC61326-1
Dimensions	
S1-568, S1-1068:	285 mm x 181 mm x 315 mm
S1-1568:	305 mm x 194 mm x 360 mm
Weight	
S1-568, S1-1068:	4,5 kg
1568:	6,5 kg

TEST LEADS SUPPLIED

The S1568, S11068 and the S11568 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 3m 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 3m 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 S1568 and the S11068.

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 a.c. systems above 600 V a.c., r.m.s. in an CAT IV environment.

Cable insulation rating: 12 kV d.c. (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 S11568.

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 a.c. systems above 1000 V a.c., r.m.s. in an CAT IV environment.

Cable insulation rating: 15 kV d.c. (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 S11068 and S11568 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 a.c. systems above 600 V a.c., r.m.s. in an CAT IV environment.

10 kV lead set Cable insulation rating: 12 kV d.c. (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 d.c. (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

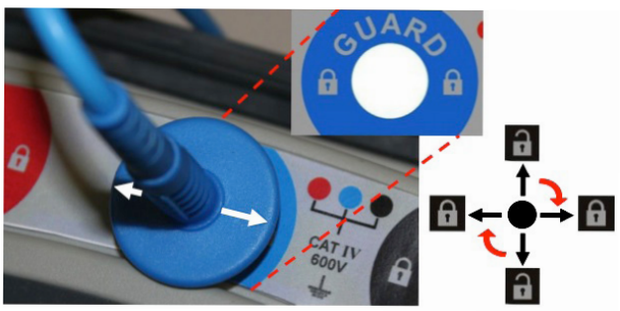
Test leads are a key component of any precision instrument and safety, long life, and the ability to provide reliable connections to a variety of test pieces found in everyday applications are of the utmost importance. Megger design test leads for both safety and practical operation.

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.

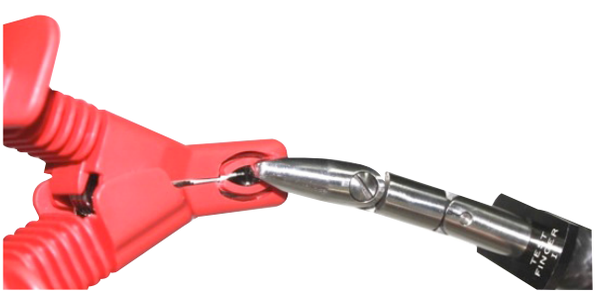
With the arrows on the plug finger guard horizontal on the instrument as shown to lock. Twist 90° to unlock. In addition, for the same reason, the test clips are not removable from the test lead.



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

ORDERING INFORMATION

Description	Part number
S1-568-UK	1003-017
S1-568-EU	1003-018
S1-568-US	1003-019
S1-568-AU	1003-020
S1-1068-UK	1003-008
S1-1068-EU	1003-009
S1-1068-US	1003-010
S1-1068-AU	1003-011
S1-1568-UK	1002-892
S1-1568-EU	1002-893
S1-1568-US	1002-894
S1-1568-AU	1002-895

Included Accessories (all models)

- Safety Warning Sheet
- Product information CD
- Power lead
- Screened USB cable with filters
- Remote control indicator beacon

Included Accessories (Specific models only)

- MEDIUM TEST CLIP - S1-568 and S1-1068 only
- LARGE TEST CLIP - S1-1068 only
- 3m leadset x 3, large 15 kV insulated clips (S1-1568 only)

Optional Accessories - HV test lead sets (S1-568, S1-1068 only)

Lead set 3kV 3x3 m medium clips	1008-022
Lead set HV 3x3 m large clips	1002-534
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
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

Screened - HV test lead sets (S1-568, S1-1068 only)

1 x 15 m, with 5 kV screened un-insulated small clips	6311-080
3 m, 10 kV screened un-insulated small clips	6220-834
10 m, 10 kV screened un-insulated small clips	6220-861
15 m, 10 kV screened un-insulated small clips	6220-833

Optional accessories - 1kV test lead sets (S1-568 & S1-1068 only)

Fused test probe and clip lead set	1002-913
CONTROL CIRCUIT TEST SET	6220-822

Optional accessories – 1 kV test lead sets (S1-1568 only)

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

HV test lead sets (S1-1568 only)

3 m lead set, large size insulated clips (3 x leads)	1008-023
5 m lead set, large size insulated clips (3 x leads)	1005-259
10 m lead set, large size insulated clips (3 x leads)	1005-260
15 m lead set, large size insulated clips (3 x leads)	1005-261
3 m lead set, medium size insulated clips (3 x leads)	1005-262
10 m lead set, medium size insulated clips (3 x leads)	1005-263

Screened HV test lead sets (S1-1568 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
Calibration certificate - CB101	1000-113
UKAS calibration certificate CB101	1000-047

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