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

- **PI predictor (PI*p*) function**
- **Resistance range up to 35 TΩ**
- **8 mA noise rejection plus 4 filters**
- **Safety up to CAT IV 1000 V to 4000 m**
- **Rapid charge Li-ion battery – meets IEC62133 standard**
- **Operate with flat battery from an AC source**
- **CertSuite Asset software compatible via Bluetooth®**
- **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.

PI PREDICTOR FUNCTION (PI*p*)

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. PI*p* 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 PI*p* can start as early as 3 minutes into the test and will stop when it is confident in the predicition.

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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.

Storing Results in CertSuite Asset

Test results can be tagged with asset data and transferred to CertSuite Asset, the latest cloud based Asset testing management software from Megger.

CertSuite Asset transfers asset testing results from the S1 range of insulation resistance testers straight onto an Android mobile device via Bluetooth, or a Windows laptop via USB cable, removing the need for making notes, writing down results and filling in paperwork.

Results can be stored and reviewed remotely by other team members while on site from different locations, or accessed by head office with the relevant permissions.

CertSuite Asset is available as a monthly or yearly subscription package for Asset testing management, taking results directly from the S1 whilst testing. CertSuite is suitable for multiple concurrent users and is optimised for use with the S1.

Visit Certsuite.info for your FREE 30 day trial ➔

FEATURES AND BENEFITS

- PI predictor (PIp) function
- 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
- CertSuite™ 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
Auto power off:	Instrument turns off after a few minutes if non-use to conserves battery life
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

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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	
S1-568	<120 ms/µF discharge from 5 kV to 50 V
S1-1068	<250 ms/µF to discharge from 10 kV to 50 V
S1-1568	<3500 ms/µF to discharge from 15 kV to 50 V
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

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Insulation Resistance Testers

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 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 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 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.

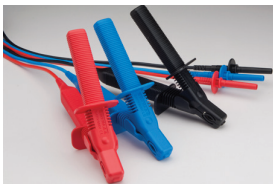
LARGE INSULATED TEST CLIP 3 M X 3 LEADSET

These test leads are supplied as standard on 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 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.

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DESIGNED FOR EVERYDAY USE

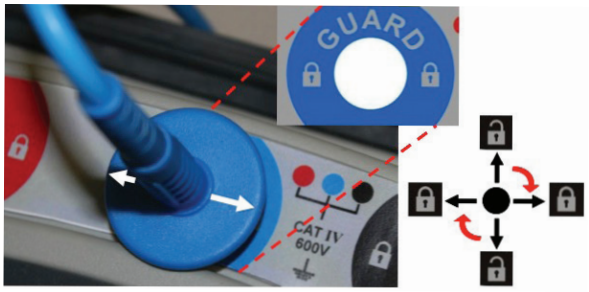
Test leads are a key component of any precision instrument and safety, long life, and the ability to provide reliable connections to a variety of test pieces found in everyday applications are of the utmost importance. Megger design test leads for both safety and practical operation.

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.

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Insulation Resistance Testers

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)	
Quick Start Guide	
Power lead	
Screened USB cable with filters	
Remote control indicator beacon	
Included Accessories (Specific models only)	
5 kV, 3 m x 3, medium insulated clips – S1-568 and S1-1068 only	
10 kV, 3 m x 3, large insulated clips – S1-1068 only	
15 kV, 3 m x 3, X-large insulated clips – S1-1568 only	
Optional Accessories	
HV test lead sets (S1-568, S1-1068 only)	
5 kV 3 m x 3, medium insulated clips	1008-022
5 kV, 5 m x 3, medium insulated clips	1002-641
5 kV, 8 m x 3, medium insulated clips	1002-642
5 kV, 10 m x 3, medium insulated clips	1002-643
5 kV, 15 m x 3, medium insulated clips	1002-644
10 kV, 3 m x 3, large insulated clips	1007-311
10 kV, 5 m x 3, large insulated clips	1002-645
10 kV, 8 m x 3, large insulated clips	1002-646
10 kV, 10 m x 3, large insulated clips	1002-647
10 kV, 15 m x 3, large insulated clips	1002-648
10 kV, 25 m x 3, large insulated clips	1003-201
10 kV, 30 m x 3, large insulated clips	1003-202

Description	Part number
Screened – HV test lead sets (S1-568, S1-1068 only)	
10 kV, 3 m screened un-insulated small clips	6220-834
10 kV, 10 m screened un-insulated small clips	6220-861
10 kV, 15 m screened un-insulated small clips	6220-833
Optional accessories – 1kV test lead sets (S1-568, S1-1068 only)	
5/10 kV fused test probe and clip	1002-913
5/10 kV control circuit test	6220-822
Optional accessories – 1 kV test lead sets (S1-1568 only)	
15 kV fused test probe and clip	1005-265
15 kV control circuit test	1005-264
HV test lead sets (S1-1568 only)	
15 kV, 3 m x 3, large insulated clips	1002-949
15 kV, 5 m x 3, large insulated clips	1005-259
15 kV, 10 m x 3, large insulated clips	1005-260
15 kV, 15 m x 3, large insulated clips	1005-261
Screened HV test lead sets (S1-1568 only)	
15 kV, 3 m screened un-insulated small clips	1005-266
15 kV, 10 m screened un-insulated small clips	1005-267
15 kV, 15 m screened un-insulated small clips	1005-268
15 kV, 20 m screened un-insulated small clips	1005-269
Other	
CB101; 5 kV Calibration Box	6311-077
Calibration certificate	1000-113
UKAS calibration certificate	1000-047
Spare Li-ion battery pack	1002-552
Remote Control Indicator Beacon	1003-228

Megger