

## S1-568, S1-1068, S1-1568

Insulation Resistance Testers

### 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 CATIV 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 t with clamps rated at 3 kV t equivalent to 6 kV single insulation for the medium clip leadset and 5 kV t equivalent to 10 kV single insulation for the large clip. The 15kV leadset is insulated to 15kV.

#### 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: 10s, 30s, 100s, 200s
- Li-ion battery – charges in 2 hours and gives up to 6hours continuous testing a 100 MΩ load (S1-568), battery meets IEC 62133
- CATIV 600 V safety rating up to 3000m (S1-568, S1-1068)
- CATIV 1000 V safety rating up to 4000m (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 software
- Option to record temperature and/or relative humidity with saved results (measured independently)

## SPECIFICATIONS

<b>AC voltage (auto-ranging)</b>	<p><b>S1-568, S1-1068:</b> 90 - 264 V rms, 50/60 Hz, 100 A</p> <p><b>S1-1568:</b> 90 - 264 V rms, 50/60 Hz, 200 A</p>
<b>Battery life</b>	<p>11.1 V, 5.2Ah meets IEC 62133: 2003 (S1-1568 has 2 batteries)</p> <p><b>Battery life S1-568:</b> 6 hours (typical) continuous testing at 5 kV with a 100 MΩ load</p> <p><b>Battery life S1-1068:</b> 4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load</p> <p><b>Battery life S1-1568:</b> 4.5 hours (typical) continuous testing at 15 kV with a 100 MΩ load</p> <p><b>30 min quick charge:</b> 1 hour operation at 5 kV with a 100 MΩ load</p>
<b>Battery charge time</b>	<p>2.5 hours deep discharge, 2 hours normal discharge</p> <p><b>30 min quick charge:</b> 1 hour operation at 5 kV with a 100 MΩ load</p>
<b>Test voltage</b>	250V, 500V, 1000 V, 2500 V, 5000 V, 10000 V, 15000 V, VL
<b>Lock test voltage</b>	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
<b>Test voltage accuracy</b>	+4%, -0%, ±10 V nominal test voltage at 1GΩ load (0°C to 30°C)
<b>Resistance range</b>	10 k to 15 TΩ @ 5 kV, 10 k to 35 TΩ @ 10 kV, 10 k to 35 TΩ @ 15 kV

## Accuracy

<b>S1-568</b>	<b>5000 V</b>	<b>2500 V</b>	<b>1000 V</b>	<b>500 V</b>	<b>250 V</b>
±5% to	1 TΩ	500 GΩ	200 GΩ	100 GΩ	50 GΩ
±20% to	10 TΩ	5 TΩ	2 TΩ	1 TΩ	500 GΩ
<b>S1-1068</b>	<b>10 kV</b>	<b>5000 V</b>	<b>2500 V</b>	<b>1000 V</b>	<b>500 V</b>
±5% to	2 TΩ	1 TΩ	500 GΩ	200 GΩ	100 GΩ
±20% to	20 TΩ	10 TΩ	5 TΩ	2 TΩ	1 TΩ
<b>S1-1568</b>	<b>15 kV</b>	<b>10 kV</b>	<b>5000 V</b>	<b>2500 V</b>	<b>1000 V</b>
±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

**Display range analogue:** 100 kΩ to 10 TΩ

**Display range digital:** 10 kΩ to 35 TΩ

## Short circuit/charge current

6mA

## 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

With test voltage set above 500V  
S1-568

**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 (23 °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

<b>Interface</b>	USB type B (device), Bluetooth® Class 2
<b>Real time output</b>	(V, I, R) readings at a rate of 1 Hz
<b>Remote control</b>	Remote control via USB cable only (requires RC dongle to be in position)
<b>ENVIRONMENTAL</b>	
<b>Maximum altitude</b>	S1-568, S1-1068: 3000 m S1-1568: 4000 m
<b>Operating temperature range</b>	-20 °C to 50 °C
<b>Storage temperature range</b>	-25 °C to 65 °C
<b>Humidity</b>	90% RH non-condensing at 40 °C
<b>IP rating</b>	IP65 (lid closed), IP40 (lid open)

<b>SAFETY</b>	
<b>Safety</b>	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)
<b>EMC</b>	Meets the requirements of IEC61326-1
<b>Dimensions</b>	285 mm x 181 mm x 315 mm (5 kV & 10 kV) 305 mm x 194 mm x 360 mm (15 kV)
<b>Weight</b>	4.5 kg (5 kV, 10 kV), 6.5 kg (15 kV)

## ORDERING INFORMATION

Description	Order Code	Description	Order Code
S1-568-UK	1003-017	1 x 15 m, with 5 kV screened un-insulated small clips	6311-080
S1-568-EU	1003-018	3 m, 10 kV screened un-insulated small clips	6220-834
S1-568-US	1003-019	10 m, 10 kV screened un-insulated small clips	6220-861
S1-568-AU	1003-020	15 m, 10 kV screened un-insulated small clips	6220-833
S1-1068-UK	1003-008	<b>Optional accessories – 1 kV test lead sets (S1-1568 only)</b>	
S1-1068-EU	1003-009	Fused test lead set with probes and clips (2 x leads, 1.25m)1005-265	
S1-1068-US	1003-010	Control circuit test lead set (2 x leads, 3m)	1005-264
S1-1068-AU	1003-011	<b>HV test lead sets (S1-1568 only)</b>	
S1-1568-UK	1002-892	5 m lead set, large size insulated clips (3 x leads)	1005-259
S1-1568-EU	1002-893	10 m lead set, large size insulated clips (3 x leads)	1005-260
S1-1568-US	1002-894	15 m lead set, large size insulated clips (3 x leads)	1005-261
S1-1568-AU	1002-895	3 m lead set, medium size insulated clips (3 x leads)	1005-262
<b>Included Accessories (all models)</b>		10 m lead set, medium size insulated clips (3 x leads)	1005-263
<b>Included Accessories (specific models)</b>		<b>Screened HV test lead sets (S1-1568 only)</b>	
MEDIUM TEST CLIP	6220-820	3 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-266
LARGE TEST CLIP	6220-811	10 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-267
3m leadset x 3, large 15 kV insulated clips (S1-1568 only)	1002-949	15 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-268
<b>Optional Accessories - HV test lead sets (S1-568, S1-1068 only)</b>		20 m, 15 kV screened, large size insulated clips, supplied in carry holdall	1005-269
MEDIUM TEST CLIP	6220-820	<b>Other</b>	
LARGE TEST CLIP	6220-811	CB101; 5 kV Calibration Box	6311-077
COMPACT TEST CLIP: Lead length: 3 m	8101-181	Calibration certificate - CB101	1000-113
COMPACT TEST CLIP: Lead length: 5 m	8101-182	UKAS calibration certificate CB101	1000-047
COMPACT TEST CLIP: Lead length: 15 m	8101-183		
<b>Screened - HV test lead sets (S1-568, S1-1068 only)</b>			
1 x 3 m, with 5 kV screened un-insulated small clips	6220-835		

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