

# 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 at 15 kV 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 backlit 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<sup>®</sup> 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 15kV leadset is insulated to 15kV.

### FEATURES

- Resistance measurement: 15 TΩ - 5 kV, 35 TΩ - 10 kV, 35 TΩ - 15kV
- 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 6 hours 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 or 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)

## 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  $R_{10min} / R_{1min}$  and is temperature independent.

## ELECTRICAL SPECIFICATIONS

<b>AC Voltage input range:</b>	90 - 264 V rms, 50/60 Hz, 100VA
<b>Battery:</b>	11.1 V, 5.2Ah meets IEC 62133: 2003 (S1-1568 has 2 batteries)
<b>Battery life S1-568:</b>	6 hours (typical) continuous testing at 5 kV with a 100 MΩ load
<b>Battery life S1-1068:</b>	4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load
<b>Battery life S1-1568:</b>	4.5 hours (typical) continuous testing at 15 kV with a 100 MΩ load
<b>Battery charge time:</b>	2.5 hours deep discharge, 2 hours normal discharge
<b>30 min quick charge:</b>	1 hour operation at 5 kV with a 100 MΩ load
<b>Test voltages:</b>	250V, 500V, 1000 V, 2500 V, 5000 V, 10000 V, 15000 V, V <sub>AC</sub>
<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>Voltage o/p 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 (23 °C):

#### Accuracy from 1 MΩ to:

	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	

**Centrally positioned Guard ring:** Guard parallel leakage, resistance down to 250 kΩ with a maximum additional resistance error of 1% with a 100 MΩ load

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

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

**Short circuit current:** 6mA

**Insulation alarm:** 100 k to 10 GΩ

**Capacitor charge (on battery):** < 2.5 s/μF to 5 kV, <5 s/μF to 10 kV, < 7.5 s/μF to 15 kV

**Capacitor charge (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 (> 500 V):** 10 nF to 50 μF (dependant on measurement voltage)

**Capacitance accuracy (23 °C):** ±10% ±5 nF

**Current measurement range:** 0.01 nA to 6 mA

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

### Interference (noise) rejection:

**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 filtering:** 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

**Interfaces:** 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 SPECIFICATIONS

<b>Altitude:</b>	S1-568, S1-1068: 3000 m S1-1568: 4000 m
<b>Operating temperature:</b>	-20 °C to 50 °C
<b>Storage temperature:</b>	-25 °C to 65 °C
<b>Humidity:</b>	90% RH non-condensing at 40 °C
<b>Ingress protection:</b>	IP65 (lid closed), IP40 (lid open)

## SAFETY SPECIFICATIONS

<b>Safety:</b>	Meets the requirements of IEC 61010-1, CATIV 600V 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

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
S1-568-UK	1003-017	3m leadset x 3, large 15 kV insulated clips	
S1-568-EU	1003-018	(S1-1568 only)	1002-949
S1-568-US	1003-019	<b>Optional Accessories</b>	
S1-568-AU	1003-020	<b>HV test lead sets</b>	
S1-1068-UK	1003-008	3m leadset x 3, medium insulated clips	6220-820
S1-1068-EU	1003-009	3m leadset x 3, large insulated clips	6220-811
S1-1068-US	1003-010	3m leadset x 3, bare clips	8101-181
S1-1068-AU	1003-011	8m leadset x 3, bare clips	8101-182
S1-1568-UK	1002-892	15m leadset x 3, bare clips	8101-183
S1-1568-EU	1002-893	<b>Screened HV test lead sets</b>	
S1-1568-US	1002-894	3 m, 5 kV screened un-insulated small clips	6220-835
S1-1568-AU	1002-895	15 m, 5 kV screened un-insulated small clips	6311-080
<b>Included Accessories (all models)</b>		3 m, 10 kV screened un-insulated small clips	6220-834
Safety Warning Sheet		10 m, 10 kV screened un-insulated small clips	6220-861
Product information CD, includes PowerDB Lite		15 m, 10 kV screened un-insulated small clips	6220-833
Power lead		<b>Other</b>	
Screened USB cable with filters		CB101, 5 kV Calibration Box	6311-077
Remote control indicator beacon		Calibration Certificate - CB101	1000-113
<b>Included Accessories (specific models)</b>		UKAS calibration Certificate CB101	1000-047
3m leadset x 3, medium insulated clips			
(S1-568, S1-1068)	6220-820		
3m leadset x 3, large insulated clips			
(S1-1068 only)	6220-811		

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UEA, Mumbai INDIA, Durban SOUTH AFRICA,  
Chonburi THAILAND, Malaga SPAIN

**CERTIFICATION ISO**  
Registered to ISO 9001:2008 Cert. no. Q 09250  
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