

S1-568, S1-1068, S1-1568

Insulation Resistance Testers



- Resistance range up to 35 T Ω
- 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 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

AC voltage (auto-ranging)	<p>S1-568, S1-1068: 90 - 264 V rms, 50/60 Hz, 100 A</p> <p>S1-1568: 90 - 264 V rms, 50/60 Hz, 200 A</p>
Battery life	<p>11.1 V, 5.2Ah meets IEC 62133: 2003 (S1-1568 has 2 batteries)</p> <p>Battery life S1-568: 6 hours (typical) continuous testing at 5 kV with a 100 MΩ load</p> <p>Battery life S1-1068: 4.5 hours (typical) continuous testing at 10 kV with a 100 MΩ load</p> <p>Battery life S1-1568: 4.5 hours (typical) continuous testing at 15 kV with a 100 MΩ load</p> <p>30 min quick charge: 1 hour operation at 5 kV with a 100 MΩ load</p>
Battery charge time	<p>2.5 hours deep discharge, 2 hours normal discharge</p> <p>30 min quick charge: 1 hour operation at 5 kV with a 100 MΩ load</p>
Test voltage	250V, 500V, 1000 V, 2500 V, 5000 V, 10000 V, 15000 V, V _{AC}
Lock test voltage	<p>40 V to 1 kV in 10 V steps,</p> <p>1 kV to 5 kV in 25 V steps,</p> <p>5 kV to 15 kV in 25 V steps</p>
Test voltage accuracy	+4%, -0%, ±10 V nominal test voltage at 1GΩ 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	<table border="0"> <tr> <td>S1-568</td> <td>5000 V</td> <td>2500 V</td> <td>1000 V</td> <td>500 V</td> <td>250 V</td> </tr> <tr> <td>±5% to</td> <td>1 TΩ</td> <td>500 GΩ</td> <td>200 GΩ</td> <td>100 GΩ</td> <td>50 GΩ</td> </tr> <tr> <td>±20% to</td> <td>10 TΩ</td> <td>5 TΩ</td> <td>2 TΩ</td> <td>1 TΩ</td> <td>500 GΩ</td> </tr> <tr> <td>S1-1068</td> <td>10 kV</td> <td>5000 V</td> <td>2500 V</td> <td>1000 V</td> <td>500 V</td> </tr> <tr> <td>±5% to</td> <td>2 TΩ</td> <td>1 TΩ</td> <td>500 GΩ</td> <td>200 GΩ</td> <td>100 GΩ</td> </tr> <tr> <td>±20% to</td> <td>20 TΩ</td> <td>10 TΩ</td> <td>5 TΩ</td> <td>2 TΩ</td> <td>1 TΩ</td> </tr> <tr> <td>S1-1568</td> <td>15 kV</td> <td>10 kV</td> <td>5000 V</td> <td>2500 V</td> <td>1000 V</td> </tr> <tr> <td>±5% to</td> <td>3 TΩ</td> <td>2 TΩ</td> <td>1 TΩ</td> <td>500 GΩ</td> <td>200 GΩ</td> </tr> <tr> <td>±20% to</td> <td>30 TΩ</td> <td>20 TΩ</td> <td>10 TΩ</td> <td>5 TΩ</td> <td>2 TΩ</td> </tr> </table>	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	<p>Display range analogue: 100 kΩ to 10 TΩ</p> <p>Display range digital: 10 kΩ to 35 TΩ</p>																																																						
Short circuit/charge current	6mA																																																						
Insulation test	Alarm: 100 kΩ to 10 GΩ																																																						
Capacitor charge	<p>(on battery): < 2.5 s/μF to 5 kV , <5 s/μF to 10 kV, < 6.3 s/μF to 15 kV</p> <p>(with AC): < 1.5 s/μF to 5 kV , <2.7 s/μF to 10 kV, < 4 s/μF to 15 kV</p>																																																						
Capacitor discharge	<p>5 kV to 50 V :< 120 ms/μF 10 kV to 50 V:< 250 ms/μF 15 kV to 50 V:< 3500 ms/μF</p>																																																						
Capacitance range	<p>With test voltage set above 500V</p> <p>S1-568 10 nF to 25 μF S1-1068 10 nF to 25 μF S1-1568 10 nF to 50 μF</p>																																																						
Capacitance measurement	<p>With test voltage set above 500 V</p> <p>S1-568 S1-568 10 nF to 25 μF S1-1068 10 nF to 25μF S1-1568 10 nF to 50μF</p>																																																						
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	<p>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</p>																																																						
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

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

285 mm x 181 mm x 315 mm (5 kV & 10 kV)

305 mm x 194 mm x 360 mm (15 kV)

Weight

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		
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)		Screened - HV test lead sets (S1-568, S1-1068 only)	
Safety Warning Sheet		1 x 3 m, with 5 kV screened un-insulated small clips 6220-835	
Product information CD, includes PowerDB Lite		1 x 15 m, with 5 kV screened un-insulated small clips 6311-080	
Power lead		3 m, 10 kV screened un-insulated small clips 6220-834	
Screened USB cable with filters		10 m, 10 kV screened un-insulated small clips 6220-861	
Remote control indicator beacon		15 m, 10 kV screened un-insulated small clips 6220-833	
Included Accessories (Specific models only)		Optional accessories - 1kV test lead sets (S1-568 & S1-1068 only)	
MEDIUM TEST CLIP - S1-568 and S1-1068 only	1002-531	Fused test probe and clip lead set 1002-913	
LARGE TEST CLIP - S1-1068 only	1002-534	CONTROL CIRCUIT TEST SET 6220-822	
3m leadset x 3, large 15 kV insulated clips (S1-1568 only)	1002-949	Optional accessories – 1 kV test lead sets (S1-1568 only)	
Optional Accessories - HV test lead sets (S1-568, S1-1068 only)		Fused test lead set with probes and clips (2 x leads, 1.25m) 1005-265	
MEDIUM TEST CLIP	1002-531	Control circuit test lead set (2 x leads, 3m) 1005-264	
LARGE TEST CLIP	1002-534	HV test lead sets (S1-1568 only)	
COMPACT, BARE TEST CLIP: Lead length: 3 m	8101-181	5 m lead set, large size insulated clips (3 x leads) 1005-259	
COMPACT, BARE TEST CLIP: Lead length: 5 m	8101-182	10 m lead set, large size insulated clips (3 x leads) 1005-260	
COMPACT, BARE TEST CLIP: Lead length: 15 m	8101-183	15 m lead set, large size insulated clips (3 x leads) 1005-261	
3 x 5 m with medium insulated clips	1002-641	3 m lead set, medium size insulated clips (3 x leads) 1005-262	
3 x 8 m with medium insulated clips	1002-642	10 m lead set, medium size insulated clips (3 x leads) 1005-263	
3 x 10 m with medium insulated clips	1002-643	Screened HV test lead sets (S1-1568 only)	
3 x 15 m with medium insulated clips	1002-644	3 m, 15 kV screened, large size insulated clips, supplied in carry holdall 1005-266	
3 x 5 m with large insulated clips	1002-645	10 m, 15 kV screened, large size insulated clips, supplied in carry holdall 1005-267	
3 x 8 m with large insulated clips	1002-646	15 m, 15 kV screened, large size insulated clips, supplied in carry holdall 1005-268	
3 x 10 m with large insulated clips	1002-647	20 m, 15 kV screened, large size insulated clips, supplied in carry holdall 1005-269	
3 x 15 m with large insulated clips	1002-648	Other	
		CB101; 5 kV Calibration Box 6311-077	
		Calibration certificate - CB101 1000-113	
		UKAS calibration certificate CB101 1000-047	

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CERTIFICATION ISO
 Registered to ISO 9001:2008 Cert. no. Q 09290

S1568-S11068-S11568_DS_en_V05

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