

# S1-5001

## 5 kV Heavy Duty Insulation Tester



- Timer control and variable test voltage
- Insulation tests to 5 TΩ
- Rugged field tester, weatherproof case

### DESCRIPTION

The Megger S1-5001 is an advanced 5 kV insulation tester featuring a higher test current capability, so that users with heavier duty capacitive applications can test faster. A large, analog/digital LCD shows resistance values up to 5 TΩ and includes a timer and other test information. The output current, of up to 5 mA, decreases test time by charging capacitive loads quickly. Test voltages and test times can be pre-programmed allowing automatic safe operation. A high level of safety is provided by locking test leads, an automatic discharge circuit, and high voltage warnings on the display.

The S1-5001 measures insulation resistance to 5 TΩ allowing trends of insulation deterioration to be monitored. This provides early detection of deterioration which may lead to costly equipment downtime. High resistance can be calculated more closely because the test current measures down to 0.01 nA. The capacitance of the test sample is measured up to 10 µF allowing cable lengths to be estimated. High test current minimizes charging times on capacitive insulation. A guard terminal on the S1-5001 removes surface leakage from the measurement for applications such as cable testing when bulk insulation leakage values are required. Because the conductor voltage measures to 1000 V, the operator is alerted to live circuits. This provides added safety for the operator.

The S1-5001 provides 500, 1000, 2500 & 5000 V standard test voltages. The variable test voltage of 25 to 5000 V, in 25 V steps, allows testing to other manufacturers' specifications. A test timer up to 90 minutes can be used to control the test. Therefore, the test is automatically stopped and results are displayed saving operator time. The results can then be displayed in digital and analog form.

The S1-5001 is battery powered with the ability to be recharged from an AC or DC source. This provides 8 hours of typical testing without having to recharge the battery. The S1-5001 not only provides the user with a longer operating time, but also constantly monitors and displays battery charge to prevent the surprise of downtime.

As with all Megger instruments, safety and construction of our equipment is of utmost importance. In order to provide top of the line safety, the S1-5001 was designed to IEC1010-1 for maximum user protection. It also has a dual warning system displaying the presence of HV by LED and flashing LCD arrows. The S1-5001 is supplied with a durable case with accessory storage which is weatherproofed to IP54 for more practical use in the field.

### APPLICATIONS

The Megger S1-5001 Heavy Duty Insulation Test Set tests the insulation resistance of:

- High-voltage power cables
- Large motor/generator windings
- Line and substation transformers
- High-voltage buses

The instrument can also perform spot tests for the following applications:

- Acceptance testing at installation to check conformance to specifications
- Routine preventive/predictive maintenance testing after installation
- Quality assurance testing as part of the manufacturing process
- Diagnostic testing to isolate faulty components for repair

The instrument detects insulation problems in apparatus, cables and wiring, caused by moisture, oil, dirt, corrosion, damage to insulation or natural deterioration.

The S1-5001 can determine the presence of moisture, solvents and contamination in wires, transformers, cables and other equipment and in built-up insulation systems such as those found in motor windings.

A series of measurements taken and recorded over time show the gradual decline in insulation integrity during its operational life. The maintenance engineer or technician uses this information to anticipate future performance and to plan for repairs. These recorded measurements also show improvements in the insulation of motor, transformer, and generator windings that result from drying-out procedures after exposure to excessive humidity or water.

#### FEATURES AND BENEFITS:

- 5 mA output current speeds up testing on capacitive test pieces
- Measures insulation resistance to 5 TΩ allowing trends of insulation deterioration to be monitored
- Specially designed guard terminal removes surface leakage from the measurement for even more accuracy.

- Four standard test voltages (500, 1000, 2500 and 5000 V). Includes 25 V incremental step test voltages to allow testing to manufacturers' specifications.
- Battery powered providing 8 hours of typical testing. Can be recharged from an AC or DC source
- Designed to IEC1010-1 for maximum user protection against shock
- Rugged, weatherproof case complete with accessory storage area

#### SPECIFICATION

##### Test Voltages DC

500, 1000, 2500, 5000 V plus 25 to 5000 V in 25 V steps

**Accuracy:** (68° F or 20° C) ±5% on 100 MΩ load

##### Insulation resistance range

###### Digital

10 kΩ to 500 GΩ @ 500 V

10 kΩ to 1 TΩ @ 1 kV

10 kΩ to 2.5 TΩ @ 2500 V

10 kΩ to 5 TΩ @ 5 kV

**Analog:** 100 kΩ to 1 TΩ @ all voltages

**Basic accuracy:** ±5% of reading

1 MΩ to 1 TΩ @ 5 kV

(32° F to 86° F or 0° C to 30° C)

##### Short circuit current

5 mA nominal

##### Voltmeter range

50 to 1000 V DC or AC

(0 to 5000 V DC when testing)

**Accuracy:** ±2%, ±1 V (68° F or 20° C)

#### Display

**Analog:** (40 segment arc)

**Digital:** (3 digits)

Interference rejection

1 mA r.m.s. per kV to a maximum 2 mA

#### Capacitor charging time

<2.5 seconds per μF to charge to 5 kV

#### Capacitor discharge time

<2 s per μF to discharge from 5000 V to 50 V

#### Leakage current measurement

0.01 nA to 999 μA

**Accuracy:** ±5% ±0.2 nA

**Capacitance:** 0.01 - 10.0 μF (displayed at end of test)

**Accuracy:** ±15% ±0.03 μF

**Timer:** User Selectable 0 to 90 minutes

Test is terminated at end of preset time

#### Temperature Range

##### Operating

-4° F to +122° F (-20° C to +50° C)

##### Storage

-13° F to +149° F (-25° C to +65° C)

##### Temperature coefficient

(Applies over range 32 °F to 86° F (0 to 30° C))

0.2% per °C for test currents >100 nA

0.1% per °C for test voltage

#### Humidity range

90% RH @ 104° F max. (40° C max.)

**Safety:** IEC1010-1 (1995), EN61010 (1995) to installation category III, 300 V, phase to ground, 500 V phase to phase

**Altitude:** 6500 ft. max.(2000 m)

#### Dimensions

12½ H x 12½ W x 7½ D in. (+2½ in pouch)

327 H x 316 W x 196 D mm

(+60 mm pouch)

**Weight:** 13½ lbs. (6 kg)

**Power Supply:** 4 Ah battery rechargeable from 95-265 V AC 50/60 Hz

#### ORDERING INFORMATION

Item (Qty)	Cat. No.	Item (Qty)	Cat. No.
5 kV Insulation Tester	S1-5001	Optional Accessories	
Included Accessories		3 x 8m HV leads	EV6172-451
User Guide	EV6172-338	3 x 15m HV leads	EV6172-452
3 x 3m HV leads	210968	5 kV Calibration Box CB101	CB101
Accessory Pouch	6420-116	5 kV Shielded lead set 15 m long	EV6311-080
Mains (line) power cord (for recharging battery)		12 V d.c. charging lead with automotive cigarette lighter plug, 3 m long	EV6231-584
		Test record card (pack of 20)	6111-217
		Publications	
		'A Stitch in Time'	AVTM21-P8B

##### UK

Archcliffe Road, Dover  
CT17 9EN England  
T (0) 1 304 502101  
F (0) 1 304 207342

##### UNITED STATES

4271 Bronze Way  
Dallas, TX 75237-1019 USA  
T 1 800 723 2861  
T 1 214 333 3201  
F 1 214 331 7399

##### OTHER TECHNICAL SALES OFFICES

Norristown USA, Toronto CANADA,  
Mumbai INDIA, Paris FRANCE,  
Sydney AUSTRALIA,  
Madrid SPAIN and  
The Kingdom of BAHRAIN.

##### ISO STATEMENT

Registered to ISO 9001:1994 Reg no. Q 09250  
Registered to ISO 14001 Reg no. EMS 61597  
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