

SmartLog V4™ Replacement Tester Installation, Operation and Maintenance



Made in the
United States of America



Figure 1. EMIT 50420 SmartLog V4™ Replacement Tester

Description

The EMIT 50420 SmartLog V4™ Replacement Tester is designed to test personnel grounding devices, wrist strap and ESD footwear, to satisfy the requirements of the ESD Association. It is intended to be used as a replacement for the testers featured on the SmartLog V4™ Data Acquisition Systems (items 50741, 50743, 50747, 50751).

Per ANSI/ESD- S1.1 Section 6.1.3 Frequency of Functional Testing “The wrist strap system should be tested daily to ensure proper electrical value.”

Per ESD Handbook ESD TR20.20 Section 5.3.2.4.2 Additional User Wrist Strap Testing “Proper testing of the wrist strap includes the resistance of the groundable point on the end of the cord, the cord itself, the resistor, the cord-to cuff snap connector, the resistance of the interface of the cuff, the cuff/wrist interface, and the resistance of the person between the wrist and the hand that contacts the test electrode.”

Per ESD Handbook ESD TR20.20 Section 5.3.2.2.2 Wrist Strap Ground Cord “At first glance, the ground cord appears to be a relatively simple assembly. However, the design requirements are considerable, given the wide range of user applications and the durability requirements of constant tugging, flexing, and dragging over the edge of workstation tops and equipment chassis.”

“Compliance verification should be performed prior to each use (daily, shift change, etc.). The accumulation of insulative materials may increase the foot grounder system resistance. If foot grounders are worn outside the ESD protected area testing for functionality before reentry to the ESD protected area should be considered.” (ESD SP9.2 APPENDIX B - Foot Grounder Usage Guidance)

“A Compliance Verification Plan shall be established to ensure the Organization’s fulfillment of the technical requirements of the ESD Control Program Plan. Process monitoring (measurements) shall be conducted in accordance with a Compliance Verification Plan that identifies the technical requirements to be verified, the measurement limits and the frequency at which those verifications shall occur. ... Compliance verification records shall be established and maintained to provide evidence of conformity to the technical requirements.

The test equipment selected shall be capable of making the measurements defined in the Compliance Verification Plan.” (ANSI/ESD S20.20-2007 section 7.3)

Packaging

- 1 SmartLog V4 Replacement Tester
- 1 Certificate of Calibration

Features and Components

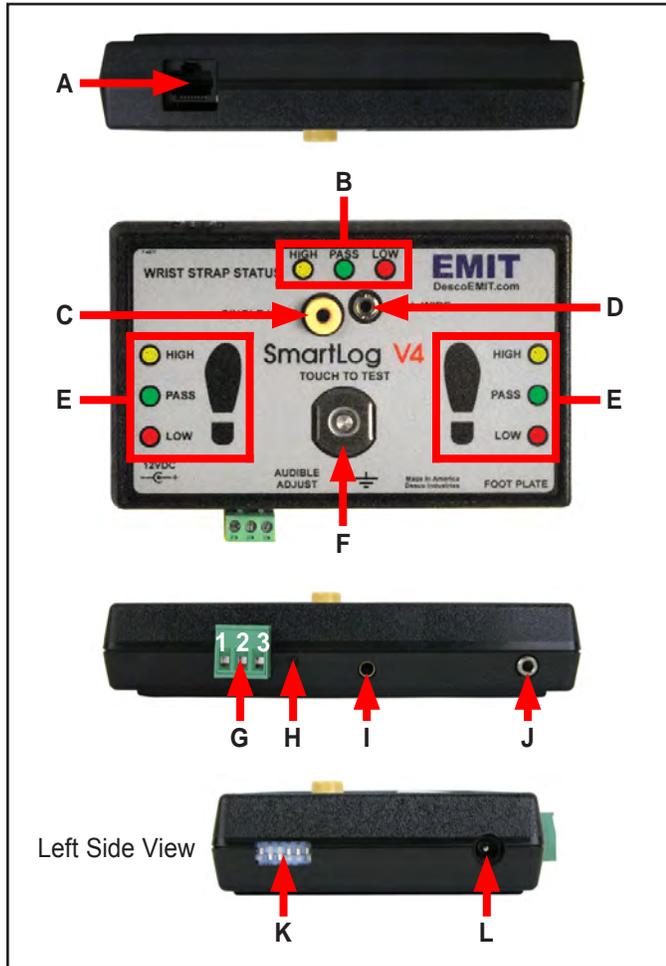


Figure 2. SmartLog V4™ Tester features and components

- A. **Data Output:** Connect the tester to the SmartLog V4 using this jack.
- B. **Wrist Strap Status LEDs:** Displays the wrist strap test results.
- C. **Single-Wire Wrist Strap Jack:** Insert your single-wire wrist cord here to test your wrist strap.
- D. **Dual-Wire Wrist Strap Jack:** Insert your dual-wire wrist cord here to test your wrist strap.
- E. **Footwear Status LEDs:** Displays the footwear test results.
- F. **Steady-State Test Switch:** Place and hold your finger here to begin the test.
- G. **Relay Terminal:** Contacts 1 and 2 are normally closed. Contacts 2 and 3 are normally open. This relay has a 1A @ 30VDC rating.
- H. **Buzzer Volume Adjustment:** Turn the trimpot clockwise to increase the buzzer volume and counter-clockwise to decrease the volume.

- I. **Ground Jack:** Use this jack to connect your tester to equipment ground. This connection will remove any static charge from the user before the test.

NOTE: Failure to correctly ground the tester may result in damage not covered under warranty.

- J. **Foot Plate Jack:** Connect one end of the foot plate cable here and the other end to the dual foot plate.
- K. **Test Limit DIP Switch:** Use this DIP switch to configure the resistance limits of the tester. See “Configuration” for more information.
- L. **Power Jack:** DO NOT use this jack. This tester will receive its power via the data output connection to the SmartLog V4.

Configuration

The resistance limits for footwear and wrist strap tests are controlled by the DIP switches located on the left side of the tester. Use the following tables for the DIP switch settings and their corresponding test values.

FOOTWEAR RESISTANCE

DIP switches 1 and 2 control the HIGH test limit.

| Switch 1 | Switch 2 | HIGH Limit Resistance |
|----------|----------|-------------------------|
| ON | ON | 10 Megohms (1 x 10E7) |
| OFF | OFF | 35 Megohms (3.5 x 10E7) |
| ON | OFF | 100 Megohms (1 x 10E8) |
| OFF | ON | 1 Gigohm |

DIP switches 3 and 4 control the LOW test limit.

| Switch 3 | Switch 4 | LOW Limit Resistance |
|----------|----------|------------------------|
| ON | OFF | 100 Kilohms (1 x 10E5) |
| OFF | ON | 1 Megohm (1 x 10E6) |

default setting

NOTE: At 1 Gigohm high limit resistance, a dirty foot plate could result in a false pass. Be sure to keep the foot plate clean particularly when using this setting. This setting is not suitable for relative humidity greater than 50%.

WRIST STRAP RESISTANCE

DIP switches 5 and 6 control the HIGH test limit.

| Switch 5 | Switch 6 | HIGH Limit Resistance |
|----------|----------|---------------------------|
| OFF | OFF | wrist strap test disabled |
| ON | ON | 10 Megohms (1 x 10E7) |
| ON | OFF | 35 Megohms (3.5 x 10E7) |

default USA setting

default Europe & Asia setting

DIP switch 5 must be ON (default setting) for the wrist strap test to be active. The wrist strap test will be disabled if DIP switch 5 is set to OFF.

The LOW limit for the wrist strap test is set to 1 Megohm and cannot be modified by the user.

Installation

1. Disconnect the power to the SmartLog V4™ that is to have its tester replaced.
2. Disconnect all cords and cables on the old SmartLog V4™ Tester (communication cable, foot plate cord, ground cord).
3. Remove all four screws that mount the old SmartLog V4™ Tester to the yellow backplate. Be sure to save all four long screws and grey stand-offs.
4. Unpack the new SmartLog V4™ Tester and remove the two small screws that hold its case together.
5. Mount the new SmartLog V4™ Tester to the yellow backplate using the four long screws and grey stand-offs from the old tester.
6. Reconnect the communication cable, foot plate cord and ground cord to the new SmartLog V4™ Tester.
7. Reconnect the power supply to the SmartLog V4™. Both the SmartLog V4™ and SmartLog V4™ Tester should power up.

Operation

See SmartLog V4™ Technical Bulletin [TB-6572](#) for more information.

Calibration

Frequency of recalibration should be based on the critical nature of those ESD sensitive items handled and the risk of failure for the ESD protective equipment and materials. In general, EMIT recommends that calibration be performed annually.

Use the EMIT 50424 Limit Comparator to perform periodic testing (once every 6-12 months) of the SmartLog V4™. The Limit Comparator can be used on the shop floor within a few minutes virtually eliminating downtime, verifying that the tester is operating within tolerances.

See [TB-6581](#) for more information.



Figure 3. EMIT 50424 Limit Comparator

Specifications

Rated tester voltage:

12 VDC, 600 mA, (2.5 mm connector - center positive)

Temperature range:

41°F - 104°F (5°C - 40°C)

Operating conditions:

Indoor use only at altitudes less than 6500 ft. (2 km).

Maximum relative humidity of 80% up to 88°F (31°C) decreasing linearly to 50% @ 104°F (40°C).

Maximum relative humidity of 50% at 1 Gigohm setting.

Pollution degree:

2 per IEC 644

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See EMIT's Warranty -

<http://emit.descoindustries.com/Warranty.aspx>