



Made in America

SmartLog X3 Tester Installation, Operation and Maintenance



Figure 1. EMIT [50420](#) SmartLog X3 Tester

Description

The EMIT SmartLog X3 Tester is designed to test personnel grounding devices, wrist strap and ESD footwear, to satisfy the requirements of the ESD Association. It is to be used as a replacement for the testers featured on the SmartLog X3 Data Acquisition Systems (items 50430-50435, 50440-50442, 50730-50735).

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 X3 Tester
- 1 Certificate of Calibration

Installation

The resistance limits for footwear and wrist strap tests are controlled by the DIP switches located on the left-side of the tester (see Figure 2). See the following tables for the DIP switch settings and their corresponding test values.

FOOTWEAR RESISTANCE

Switch 1	Switch 2	HIGH Limit Resistance
ON	ON	10 Megohms (1 X 10E7 ohms)
OFF	OFF	35 Megohms (3.5 X 10E7 ohms)*
ON	OFF	100 Megohms (1 X 10E8 ohms)
OFF	ON	1 Gigohm† (1 x 10E9 ohms)

DIP switches 1 and 2 control the “HIGH” test limit.

Switch 3	Switch 4	LOW Limit Resistance
ON	OFF	100 Kiloohms (1 X 10E5 ohms)
OFF	ON	1 Megohm (1 X 10E6 ohms)*

DIP switches 3 and 4 control the “LOW” test limit.

* 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. Not suitable for relative humidity greater than 50%.

WRIST STRAP RESISTANCE

Switch 5	Switch 6	HIGH Limit Resistance
ON	OFF	35 Megohms (3.5 X 10E7 ohms)*
ON	ON	10 Megohms (1 X 10E7 ohms)**

DIP switches 5 and 6 control the “HIGH” test limit.

* Default Europe Setting

** Default USA Setting

The "LOW" limit for the wrist strap test is set to 1 Megohms

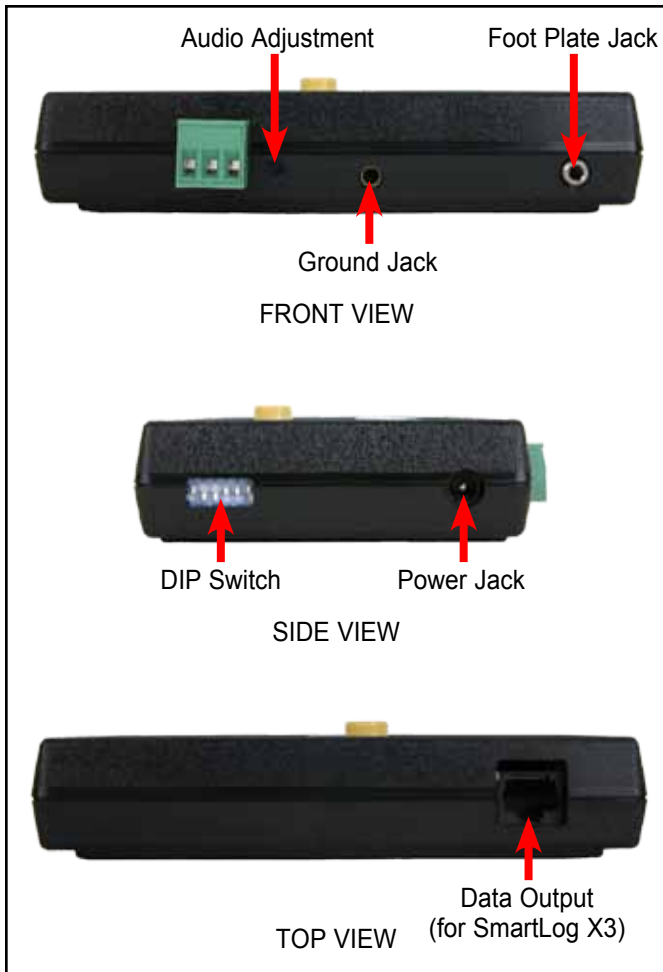


Figure 2. SmartLog X3 Tester side views

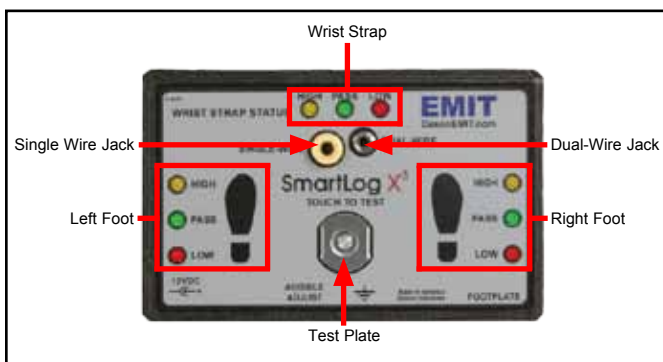


Figure 3. SmartLog X3 Tester features and components

and cannot be changed by the user.

INSTALLING THE TESTER TO THE SMARTLOG X3

- I. Disconnect the power to the SmartLog X3 that is to have its tester replaced.
- II. Disconnect all cords and cables on the old SmartLog X3 Tester (communication cable, foot plate cord, ground cord).
- III. Remove all four screws that mount the old SmartLog X3 Tester to the yellow backplate. Be sure to save all four long screws and grey stand-offs.
- IV. Unpack the new SmartLog X3 Tester and remove the two small screws that hold its case together.
- V. Mount the new SmartLog X3 Tester to the yellow back plate using the four long screws and grey stand-offs from the old tester.
- VI. Reconnect the communication cable, foot plate cord and ground cord to the new SmartLog X3 Tester.
- VII. Reconnect the power supply to the SmartLog X3. Both the SmartLog X3 and SmartLog X3 Tester should power up.

Operation

See SmartLog X3 Technical Bulletin [TB-6561](#) for more information.

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

Calibration

The EMIT SmartLog X3 Tester is calibrated to standards traceable to NIST. 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, we recommend that calibration be performed annually.

The accuracy of the SmartLog X3 Tester is specified as:

- ±5% for 1 Megohm and lower resistance ranges
- ±10% for 1 Megohm and higher resistance ranges

A periodic check (once every 6 to 12 months) using a precision resistance box should be performed to verify proper operation.

The EMIT [50422](#) Limit Comparator is available for the convenient periodic testing of the SmartLog X3 Tester (see



Figure 4. EMIT [50422](#) Limit Comparator

Figure 4). The EMIT Limit Comparator provides the ability to perform NIST traceable calibration on the EMIT SmartLog X3 Tester. The Limit Comparator can be used on the shop floor within a few minutes virtually eliminating downtime, verifying that the SmartLog X3 Tester is operating within tolerances.

USING THE [50422](#) LIMIT COMPARATOR

Wrist Strap Operation Test

- I. Insert the Limit Comparator's test plug into the "DUAL-WIRE" phono jack located on the face of the tester.
- II. Select "1M LOW" with the Limit Comparator's rotary switch.
- III. Press and hold the touch plate of the tester until the test is completed. The tester should indicate a wrist strap FAIL LOW condition.
- IV. Select "1M PASS" on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
- V. Select either the "10M PASS" or "35M PASS" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap PASS condition.
- VI. Select either the "10M HIGH" or "35M HIGH" setting, whichever one is appropriate, on the Limit Comparator and repeat the test. The tester should indicate a wrist strap FAIL HIGH condition.

Footwear Operation Test

- I. Insert the Limit Comparator's test plug into the phono jack labeled "FOOT PLATE" on the tester.
- II. Select the appropriate FAIL LOW setting on the Limit Comparator.
- III. Press and hold the touch plate of the tester until the test is completed. The tester should indicate a FAIL LOW condition for both feet.
- IV. Select the appropriate PASS LOW setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
- V. Select the appropriate PASS HIGH setting on the Limit Comparator and repeat the test. The tester should indicate a PASS condition for both feet.
- VI. Select the appropriate FAIL HIGH setting on the Limit Comparator and repeat the test. The tester should indicate a FAIL HIGH condition for both feet.

Limited Warranty

EMIT expressly warrants that for a period of five (5) years from the date of purchase EMIT SmartLog X³ Testers will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement EMIT SmartLog X³ Testers, or, at EMIT's option, the SmartLog X³ Tester will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected five year life times the original unit purchase price. Call our Customer Service Department at 909-664-9980 (Chino, CA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Please include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the EMIT factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-664-9980 (Chino, CA) for a Return Material Authorization (RMA) and proper shipping instructions and address. EMIT will quote repair charges necessary to bring your unit up to factory standards.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of Liability

In no event will EMIT or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.