

SmartLog Pro™

Installation, Operation and Maintenance



Made in the
United States of America



Figure 1. EMIT 50780 SmartLog Pro™

Description

The patented* SmartLog Pro™ verifies the functionality of an operator's wrist strap and footwear, logs the test results, and controls access to an ESD Protected Area.

The default test limits are set to:
Wrist Strap: 750 kilohms to 10 megohms
Footwear: 750 kilohms to 35 megohms

All operator test activity is logged into a database to meet the ANSI/ESD S20.20 requirements for on-going quality control purposes. Each log entry includes operator identification, test results, resistance measurements, time, temperature and humidity. Operator identification and access control is initiated with the embedded HID OMNIKEY® proximity reader, barcode scanner or touchscreen keypad. Access control to an ESD Protected Area can be further enforced by using the relay terminal on the SmartLog Pro™. It can be connected to an electronic door lock or turnstile to grant access only to those who have passed their pre-defined ESD tests and been given clearance to the area.

The SmartLog Pro™ offers three operator identification methods: HID OMNIKEY® proximity reader, barcode scanner and touchscreen keypad. The five-inch color touchscreen provides an intuitive user interface for easy test operation and a clear indication of test results. The operator average test time is 2 seconds. Internal flash memory allows operators to continue using the tester even if network failure were to occur. All test transactions would download to the database once the network connection is restored.

The TEAM5 Software can generate automated reports that may be e-mailed to track short term and long term corrective actions. Test limits and test parameters (wrist strap only, footwear only, wrist strap and footwear, etc.) may be customized with the software to meet special requirements. The SmartLog Pro™ is calibrated to NIST traceable standards.

ESD Association Information

"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

"Process monitoring (measurements) shall be conducted in accordance with a Compliance Verification Plan that identifies the technical requirements to be verified, the measurements 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) section 7.3

ANSI/ESD S20.20 Table 1 Flooring-Footwear Systems Technical Requirements Recommended Range "less than 3.5×10^7 ohms measured per ANSI/ESD STM 97.1."

"Typical test programs recommend that wrist straps that are used daily should be tested daily. However, if the products that are being produced are of such value that knowledge of a continuous, reliable ground is needed, and then continuous monitoring should be considered or even required." (ESD Handbook ESD TR 20.20 section 5.3.2.4.4)

Note: SmartLog Pro™ provides wrist strap test per IEC 61340-5-1 Clause A.1 and footwear testing per IEC 61340-5-1 Clause A.2 with upper limits $< 3.5 \times 10^7$ ohms.

*US Patents 6,078,875 and 6,809,522

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System Overview

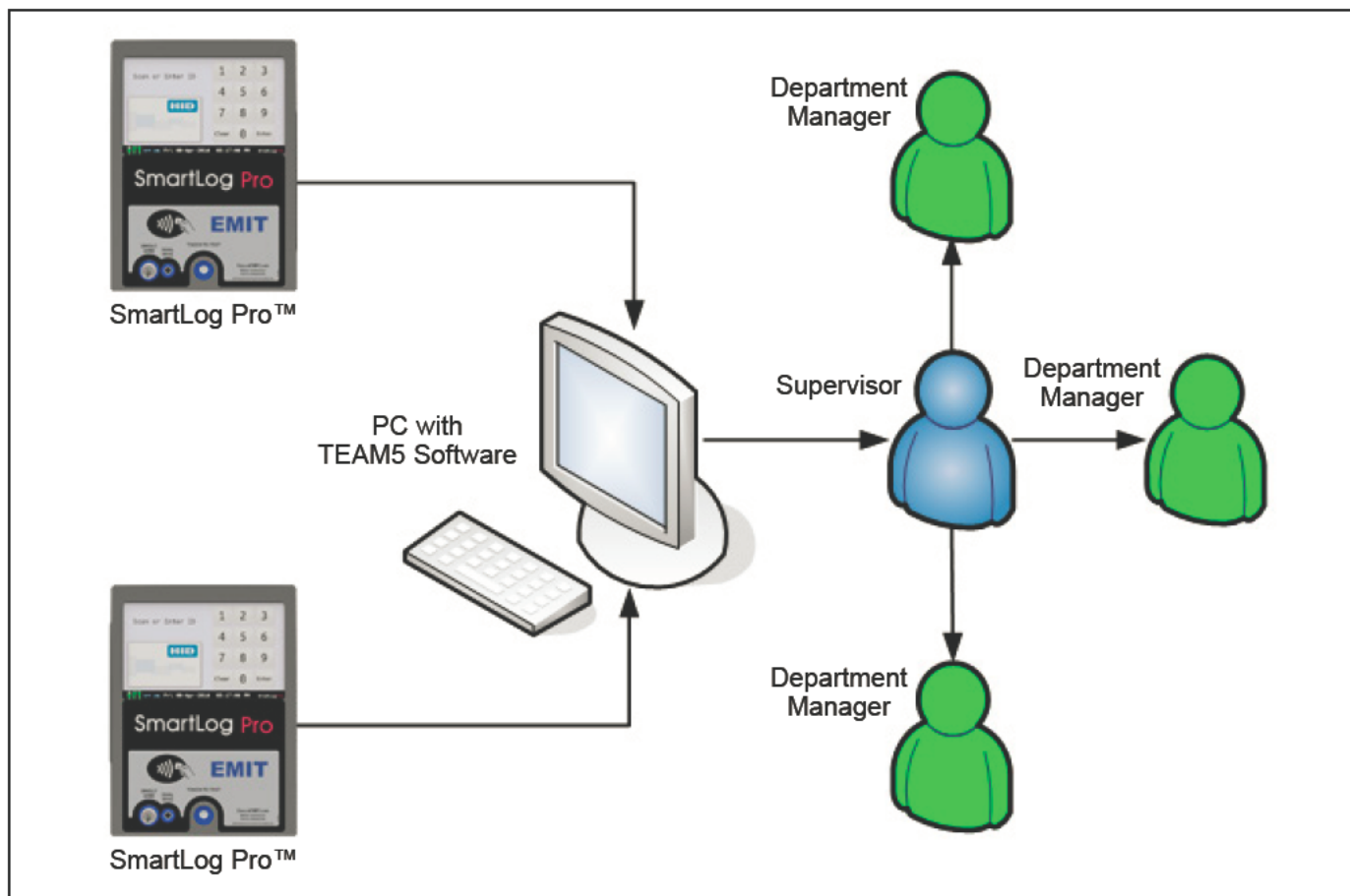


Figure 2. Illustration of the SmartLog Pro™ System collecting and transferring ESD data to a central PC where it is distributed to supervisors and department managers.

Items and Accessories

Item	Description
50780	SmartLog Pro™
50781	SmartLog Pro™ with Turnstile, 120VAC
50782	SmartLog Pro™ with Turnstile, 220VAC
50415	Stand
50783	Turnstile Mounting Kit
50755	ESD Glove Test Fixture
50424	Limit Comparator for Testers
50784	5-Pound Electrode for Limit Comparator
50785	Power Adapter, 5VDC, with interchangeable plugs
50786	Replacement Dual Foot Plate
50787	Replacement Foot Plate Cable
50788	Handheld QR Code Scanner, USB

Use the SmartLog Pro™ along with the TEAM5 Software to automate the collection of employee ESD testing. This software is offered in two tiers: TEAM5 and TEAM5 Enterprise. [Click here](#) to view the TEAM5 Comparison Chart.

Item	Description
50491	TEAM5 Enterprise Software
50493	TEAM5 Software

Packaging

- 1 SmartLog Pro™
- 1 Mounting Bracket
- 1 Dual Independent Foot Plate
- 1 Power Adapter, 5VDC 3.0A center positive, with interchangeable plugs (North America, UK/Asia, Europe)
- 1 Foot Plate Cable, 6.5 feet
- 1 Ground Cord
- 1 Thumb Screw
- 2 Mounting Anchors
- 2 Mounting Screws
- 2 Zip Ties
- 1 Plunger and Spring Assembly for 10mm Wrist Cord Adapter
- 1 Certificate of Calibration

Features and Components

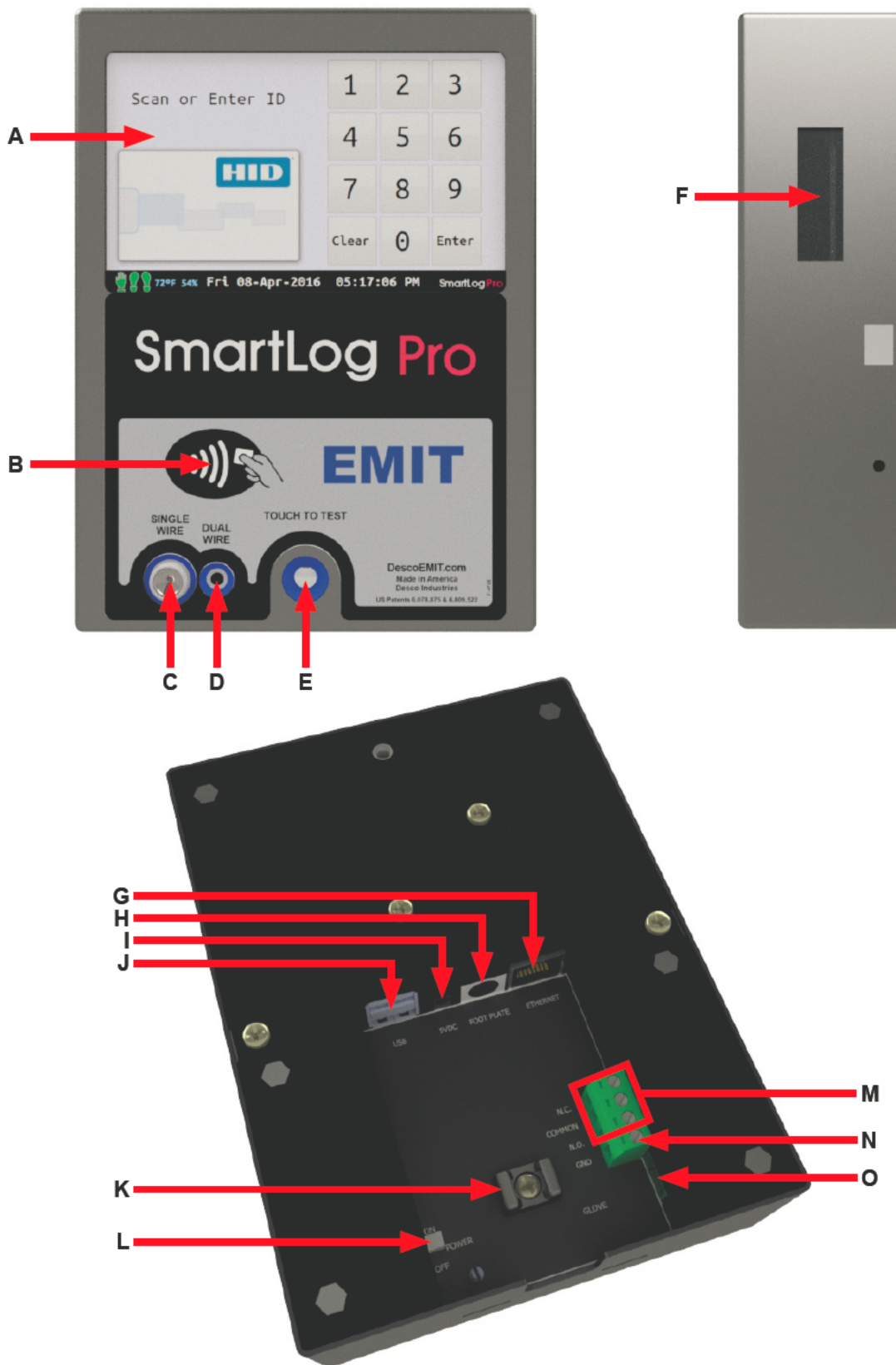


Figure 3. SmartLog Pro™ features and components

EMIT - 3651 Walnut Avenue, Chino, CA 91710 • (909) 664-9980 • Website: DescoEMIT.com

A. Touchscreen Display: Displays the keypad, time, date, temperature, humidity, command prompts, test results and settings.

B. Embedded HID OMNIKEY® Proximity Reader: Users can begin the test by holding a proximity badge in front of the proximity reader symbol. The HID OMNIKEY® reader is compatible with the following badge formats: HID Prox®, Indala Prox, MIFARE® Classic, MIFARE DESFire® EV1, iCLASS®.

Contact EMIT Customer Service if a different proximity badge format is to be used.

C. Single-Wire Wrist Strap Jack: Connect the single-wire wrist cord here to test.

See “10mm Wrist Cord Adapter” on page 7 if using single-wire wrist cords with a 10mm snap termination.

D. Dual-Wire Wrist Strap Jack: Connect the dual-wire wrist cord here to test.

E. Steady-State Test Switch: Place and hold your finger here to begin the test.

F. CCD Barcode Scanner: Reads Code 39 and 128 barcode symbologies by default. Other barcode symbologies are available upon request.

G. Ethernet Jack: Provides communication to the SmartLog Pro™ over a network. See “Network Setup” on page 8 for more information.

H. Foot Plate Jack: Connect one end of the foot plate cable here and the other end to the dual foot plate.

I. 5VDC Power Jack: Connect the included power adapter here to power the SmartLog Pro™.

J. Dual USB Ports: Used for EMIT certified external readers and accessories.

K. Cable Tie Mount: Use the included zip ties to secure all cables and cords connected to the SmartLog Pro™.

L. Power Switch: Slide the switch to the top position to turn ON the SmartLog Pro™. Slide the switch to the bottom position to turn OFF the SmartLog Pro™.

M. Relay Terminal: Integrates with electronic door locks, lights, buzzers, etc. See “Relay Terminal” on page 8 for more information.

N. Ground Terminal: Secure the tinned wire termination of the included ground cord to this terminal. Connect the ring terminal termination of the cord to equipment ground. This connection will remove any static charge from the user before the test.

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

O. ESD Glove Test Fixture Port: Used for connecting the EMIT 50755 ESD Glove Test Fixture. See [TB-6586](#) for more information.

Installation

Hardware Setup

If the SmartLog Pro™ is located near a restroom, sink or other water source, operators will need to be instructed to thoroughly dry their hands before testing. Wet hands may cause inaccurate test results and damage to the tester.

1. Connect the ground cord, foot plate cable, Ethernet cable and power adapter to the SmartLog Pro™.
2. Route all cables through the U-shaped opening located at the bottom of the SmartLog Pro™ and secure them to the cable tie mount with the included zip tie.
3. Connect the ground cord's ring terminal to a known ground point. Connect the foot plate cable to the foot plate. Verify that the Ethernet cable is connected to your network.
4. Connect the power adapter to an appropriate power outlet, and power the SmartLog Pro™ by sliding its power switch to the ON position. The display will turn on, and the boot sequence will initiate. “Scan or Enter ID” will display on the SmartLog Pro™ after the boot sequence has completed. The blue LEDs will continuously cycle around the test switch when the ESD tester is on standby.
5. Use the included screws and anchors to secure the mounting bracket to the desired location. The screws may be used in any of the four holes shown below. Be sure to locate the bracket where users can read the display and use the tester.

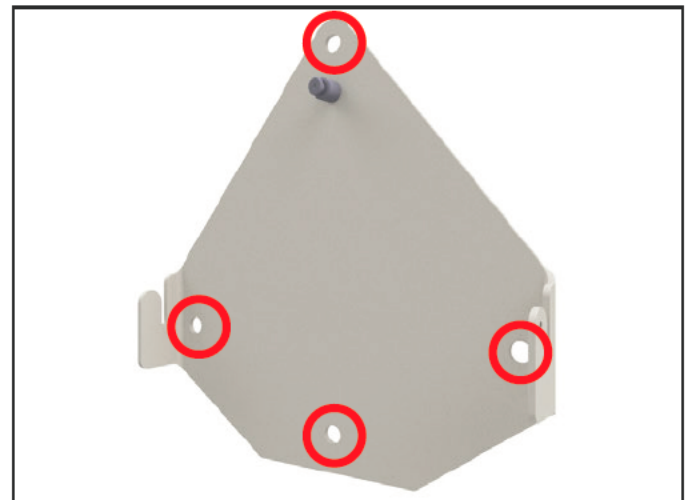


Figure 4. Mounting holes on the SmartLog Pro™ mounting bracket

6. Connect the SmartLog Pro™ to the bracket. Use the included thumbscrew to secure the SmartLog as shown below.



Figure 5. Securing the SmartLog Pro™ to the mounting bracket



Figure 6. Use the EMIT 50415 SmartLog Stand as a mounting alternative

10mm Wrist Cord Adapter

A plunger and spring assembly is included with every SmartLog Pro™. Use this assembly to retrofit the single-wire jack on the SmartLog Pro™ to test wrist cords with a 10mm termination instead of a banana plug. NOTE: This assembly cannot be removed once installed.

1. Insert the plunger assembly into the single-wire jack on the face of the SmartLog Pro™. Be sure to clear the clip at the base of the plunger's shaft when inserting into the jack.



Figure 7. Inserting the plunger and spring assembly into the single-wire jack

2. The plunger will slightly protrude out of the single-wire jack when installed. Test its installation by pushing down on the plunger. It should dip and then spring back up when released.

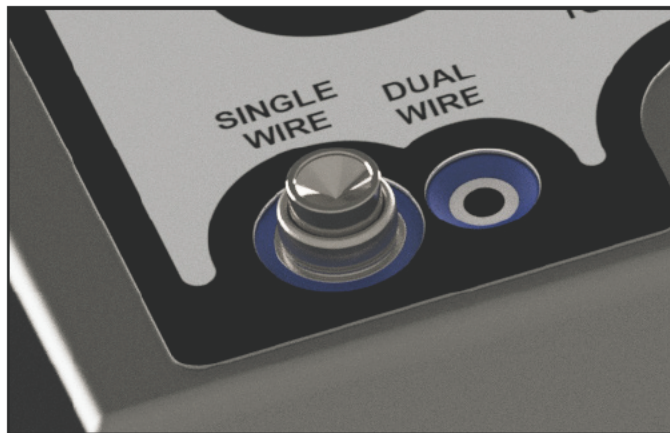


Figure 8. Completed installation of the plunger and spring assembly

Relay Terminal

The SmartLog Pro™ features a relay terminal that can be integrated with electronic door locks, lights, buzzers, etc. to control access to an area.

The relay open and close (activation) time may be modified using the TEAM5 Software. See the [TEAM5 User Manual](#) for more information.

Contact Rating	1A @ 30VDC, .5A @ 125VAC
Maximum Switching Power	30W
Maximum Switching Voltage	250VAC, 220VDC
Maximum Switching Current	1A

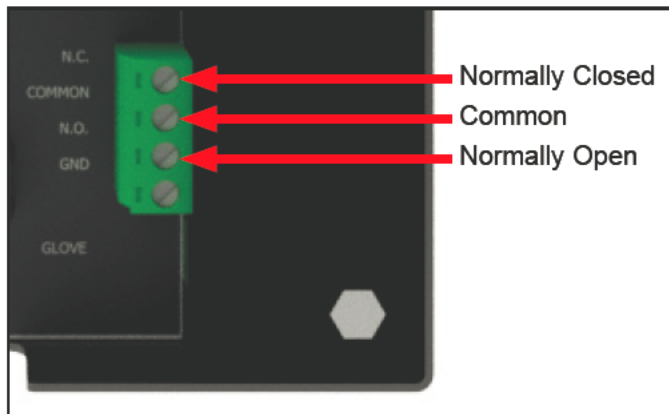


Figure 9. Relay terminal contacts located on the back of the SmartLog Pro™

Network Setup

The following procedures will outline how to connect the SmartLog Pro™ to a local area network (LAN) using its Ethernet communication module.

DYNAMIC IP PROCEDURE

1. Verify that the Ethernet cable is securely connected to your network and SmartLog Pro™. The LEDs on the Ethernet port will illuminate when a connection to the network is established.
2. The SmartLog Pro™ will automatically obtain an IP address from the DHCP server. The IP address can be located within the Admin Menu.
3. To access the Admin Menu, tap 0 then Enter on the touchscreen keypad.
4. The SmartLog will prompt for the Admin ID. Tap 0 then Enter.
5. The SmartLog will prompt for the Admin PIN. Tap 0 then Enter.
6. The Admin Menu will appear. The IP address can be found in the top left corner. Take note of this address as it will be required to establish communication between the SmartLog Pro™ and the TEAM5 Server Software.

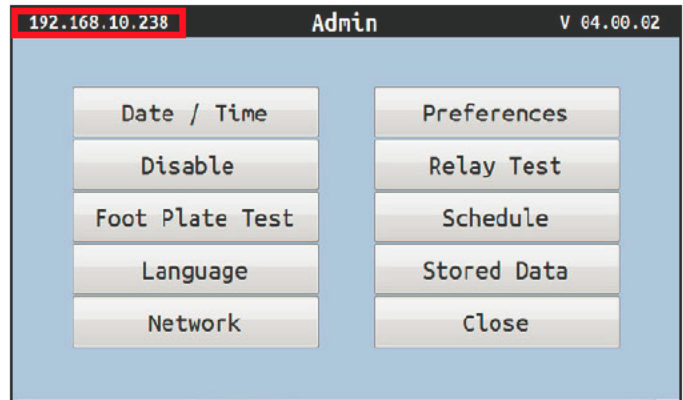


Figure 10. Locating the IP address in the Admin Menu

7. Tap the Network button to access the Wired Network Setup Menu. This menu will allow you to view and edit any network settings if desired.

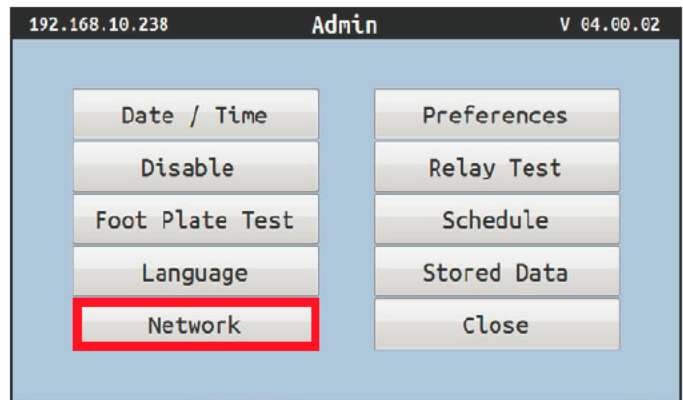


Figure 11. Locating the Network button in the Admin Menu

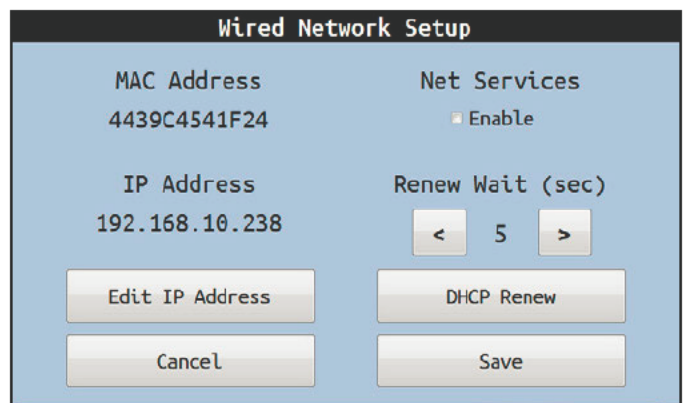


Figure 12. Wired Network Setup menu

STATIC IP PROCEDURE

1. Share the MAC address of the SmartLog Pro™ with an IT administrator, so a static IP address can be assigned to the unit. The MAC address can be found on a label applied to the back of the SmartLog Pro™.
2. Use an Ethernet cable to connect the SmartLog Pro™ to your network. Power the SmartLog Pro™.
3. The SmartLog Pro™ will communicate with the network server and receive the static IP address assigned by the IT administrator. The IP address can be located within the Admin Menu.
4. To access the Admin Menu, tap 0 then Enter on the touchscreen keypad.
5. The SmartLog will prompt for the Admin ID. Tap 0 then Enter.
6. The SmartLog will prompt for the Admin PIN. Tap 0 then Enter.
7. The Admin Menu will appear. The IP address can be found in the top left corner. Take note of this address as it will be required to establish communication between the SmartLog Pro™ and the TEAM5 Server Software.

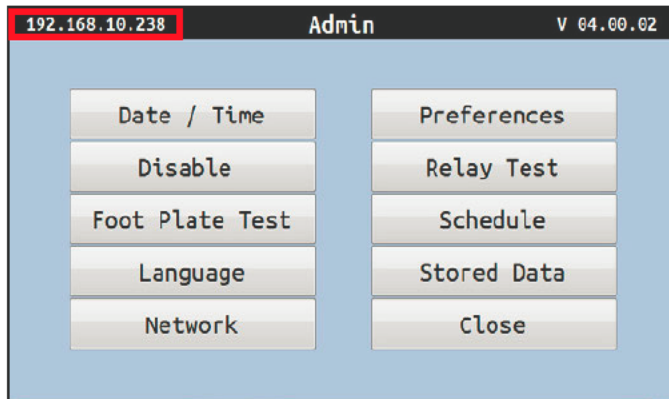


Figure 13. Locating the IP address in the Admin Menu

8. Tap the Network button to access the Wired Network Setup Menu. This menu will allow you to view and edit any network settings if desired.

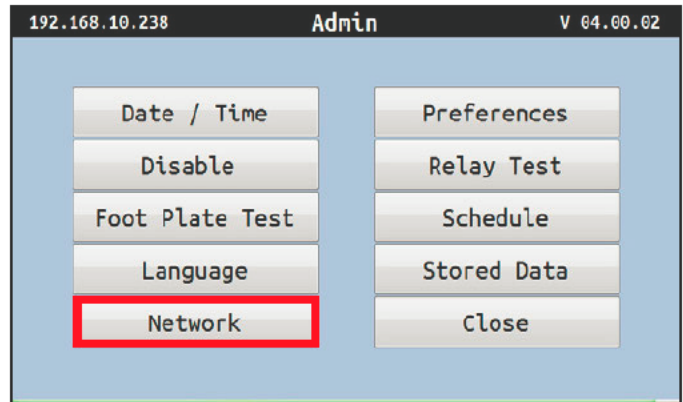


Figure 14. Locating the Network button in the Admin Menu

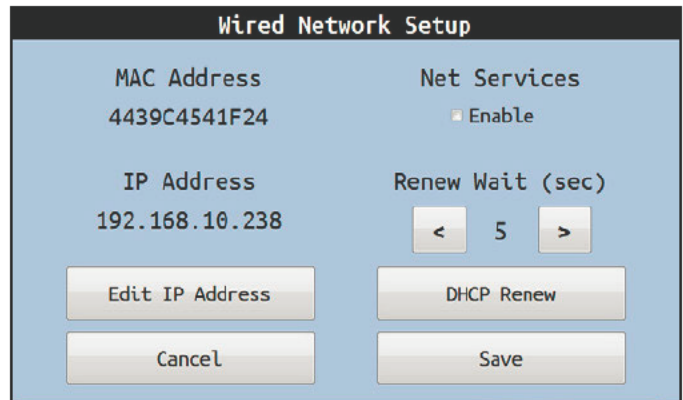


Figure 15. Wired Network Setup menu

Test Limit Configuration

The following footwear and wrist strap resistance limits are available in the SmartLog Pro™:

Footwear	Wrist Strap
LOW Limit Resistance	LOW Limit Resistance
100 Kilohms (1.0 x 10 ⁵)	100 Kilohms (1.0 x 10 ⁵)
750 Kilohms (7.5 x 10 ⁵)	750 Kilohms (7.5 x 10 ⁵)
HIGH Limit Resistance	HIGH Limit Resistance
10 Megohms (1.0 x 10 ⁷)	10 Megohms (1.0 x 10 ⁷)
35 Megohms (3.5 x 10 ⁷)	35 Megohms (3.5 x 10 ⁷)
100 Megohms (1.0 x 10 ⁸)	
1 Gigohm (1.0 x 10 ⁹)**	

Default Settings

**A dirty foot plate could result in a false pass when the footwear limit is set to 1 Gigohm. Be sure to keep the foot plate clean with 99% isopropyl alcohol when using this setting. This setting is not recommended for relative humidity greater than 50%.

SETTING THE RESISTANCE LIMITS

1. Access the Administrator Menu by entering an administrator ID number and PIN on the keypad.
2. Tap the Preferences button.

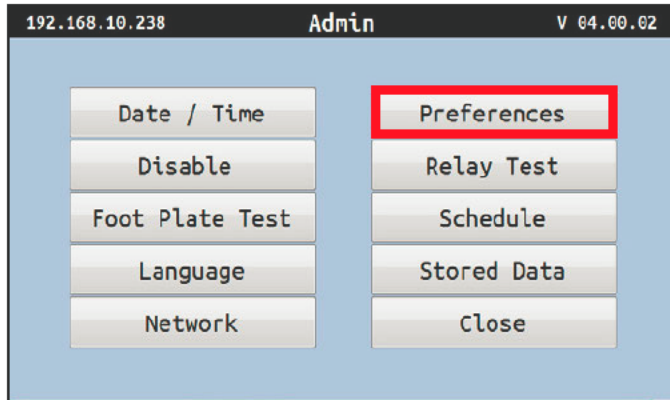


Figure 16. Locating the Preferences button in the Admin Menu

3. Tap the ESD Test button.

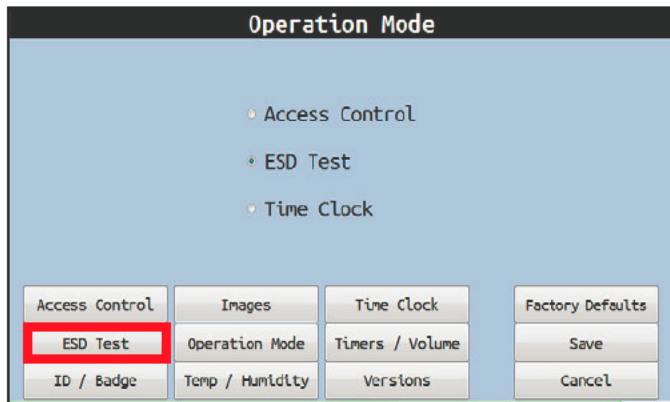


Figure 17. Locating the ESD Test button in the Preferences Menu

4. Adjust the Wrist Strap and Footwear Limits by tapping the < and > buttons. Tap the Save button when complete.

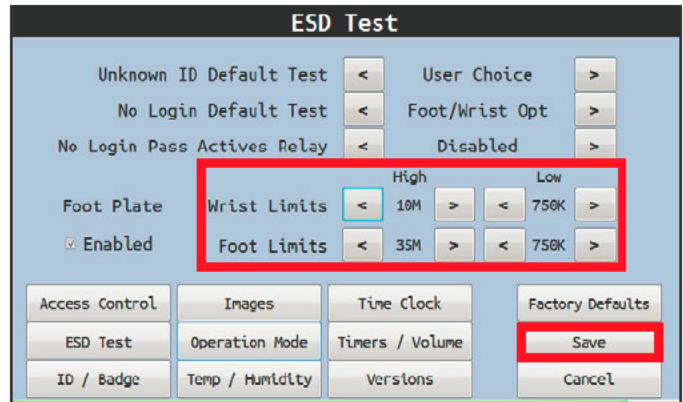


Figure 18. Locating the Wrist and Foot Limits in the ESD Test Menu

TEAM5 Software

When used with the EMIT SmartLog™, TEAM5 allows manufacturers and assemblers to automate the collection of employee ESD testing. It has a set of robust employee management functions that allows automated tracking of employee leave time, shift and department assignments and ESD training. TEAM5 connects your ESD test data to the rest of your manufacturing environment with automated electronic data interchange in a variety of formats.



TEAM5 Software is required for every SmartLog system installation. TEAM5 is compatible with the SmartLog V5™ and SmartLog Pro™ systems.

See the [TEAM5 User Manual](#) for more information.

The software may be downloaded using the following link:

<http://emit.descoindustries.com/team5.aspx>

NOTE: A license dongle is required to run the software. Contact EMIT Customer Service to schedule an installation session.

Operation

NOTE: The SmartLog Pro™ must first be programmed with the user ID table using the TEAM5 Software before being deployed for employee use, or the default test settings will be applied.

See the [TEAM5 User Manual](#) for more information.

If the SmartLog Pro™ is located near a restroom, sink or other water source, operators will need to be instructed to thoroughly dry their hands before testing. Wet hands may cause inaccurate test results and damage to the tester.

1. A circling light around the test switch indicates when the SmartLog Pro™ is on standby and ready to perform a test.
2. Initiate the test procedure by identifying yourself to the SmartLog Pro™. This may be done using the touchscreen keypad, barcode scanner or proximity reader.

NOTE: Hold the proximity badge in front of the RFID icon for a full second if using proximity badges. See Figure 20.



Figure 19. Using the barcode scanner



Figure 20. Holding a proximity badge in front of the RFID icon on the SmartLog Pro™

3. Follow the prompt on the SmartLog's display.
4. When performing a footwear test, be sure to place both feet on the dual foot plate (one foot per plate).

NOTE: Keep the foot plate clean with 99% isopropyl alcohol when using the 1 Gigohm high test limit. A dirty foot plate could yield a false pass.

When performing a wrist strap* test, be sure to completely plug in the wrist cord into the tester's jack.

5. To begin the test, use your finger to bridge the test switch's inner and outer contacts. The blue standby LED will become solid to indicate that the test has been initiated. Hold your finger down until the test results are displayed on the touchscreen.

If your finger is removed too early, the tester's blue LEDs will blink three times to indicate that the test was not completed. **DO NOT** touch any other metal while performing your test as this will affect your results.



Figure 21. Performing a test with the SmartLog Pro™

6. The relay terminal will activate if the defined tests are passed (if applicable).

NOTE: Failures may be caused by dry skin or minimal sweat layer. For wrist straps, try using an approved dissipative hand lotion such as [Menda Reztore™ ESD Hand Lotion](#) prior to use. Footwear test results can be improved by taking a short walk to build a sweat layer for better conductivity.

*The SmartLog Pro™ may also be used to test smocks or garments that feature a grounding mechanism for operators using a coiled cord connection.

Maintenance

To maintain optimum performance, cleaning should be performed on a regular basis. Use 99% isopropyl alcohol to clean the foot plate and test switch. Other cleaners are susceptible to leaving residue on these surfaces.

NOTE: Avoid wetting or mopping the foot plate. This may yield false test results and cause damage to its internal circuitry.

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 and EMIT 50784 5-Pound Electrode to perform periodic verification (once every 6-12 months) of the SmartLog Pro™. The Limit Comparator can be used to check the test limits of the SmartLog Pro™ without removing it from the factory floor.

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



Figure 22. EMIT 50424 Limit Comparator



Figure 22. EMIT 50784 5-Pound Electrode for Limit Comparator

Specifications

SmartLog Pro™	
Input Voltage and Frequency (External Adapter)	AC/DC Power Adapter Power Input: 100-240VAC, 50/60 Hz Power Output: 5VDC, 3.0A Cable Length: 5 ft. (1.5 m)
Operating Temperature	70°F to 85°F (21°C to 30°C) for 1 gigohm test limit 41°F to 85°F (5°C to 30°C) for all other test limits
Environmental Requirements	Indoor use only at altitudes less than 6500 ft. (2 km) Maximum relative humidity of 80% up to 85°F (30°C) decreasing linearly to 50% @ 85°F (30°C) Maximum relative humidity of 50% at 1 gigohm setting
Dimensions	6.75" x 5.00" x 1.75" (17.1 cm x 12.7 cm x 4.4 cm)
Weight	1.8 lbs (0.8 kg)
Test Accuracy	±20% for 1 gigohm footwear test limit ±10% for all other test limits
Test Switch Voltage	5 VDC @ open circuit
Wrist Strap and Footwear Test Voltage	30 VDC @ open circuit Test current is limited by resistors and varies on the test range setting (100 kilohms - 1 gigohm)

Dual Independent Foot Plate	
Dimensions	14.0" x 16.0" x 0.9" (35.6 cm x 40.1 cm x 2.3 cm)
Weight	7.5 lbs (3.4 kg)

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

See the EMIT Warranty -

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