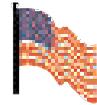


# Footwear Tester Installation, Operation and Maintenance



Made in America



Figure 1. 62090 Footwear Tester

## Description

The Semtronics 62090 Footwear Tester is a 3-state touch tester designed for fast and frequent testing of ESD personnel footwear. The 62090 tester can be used to verify that the ESD footwear resistance circuit is within the proper limits. It can be setup to test a 1M - 100M circuit (foot grounders) or a 1M - 1G circuit (dissipative shoes).

This unit can be used as one of the tools to fulfill the ANSI ESD S20.20 paragraph 6.1.3.2 Compliance Verification Plan. "Verification should include routine checks of the Technical Requirements of the Plan." The Footwear Tester incorporates a unique dual test circuit design which improves test accuracy.

### ESD TR1.0-01-01 section 1.0 Introduction

"Since people are one of the greatest sources of static electricity and ESD, proper grounding is paramount. One of the most common ways to ground people is with a wrist strap. Ensuring that wrist straps are functional and are connected to people and ground is a continuous task."

### ESD SP9.2 APPENDIX B - Foot Grounder Usage Guidance

"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."

### OPERATION

NOTE: Refer to the technical manual for your foot-grounding devices. Not all foot-grounding devices are similar and it is very important that you review their specifications.

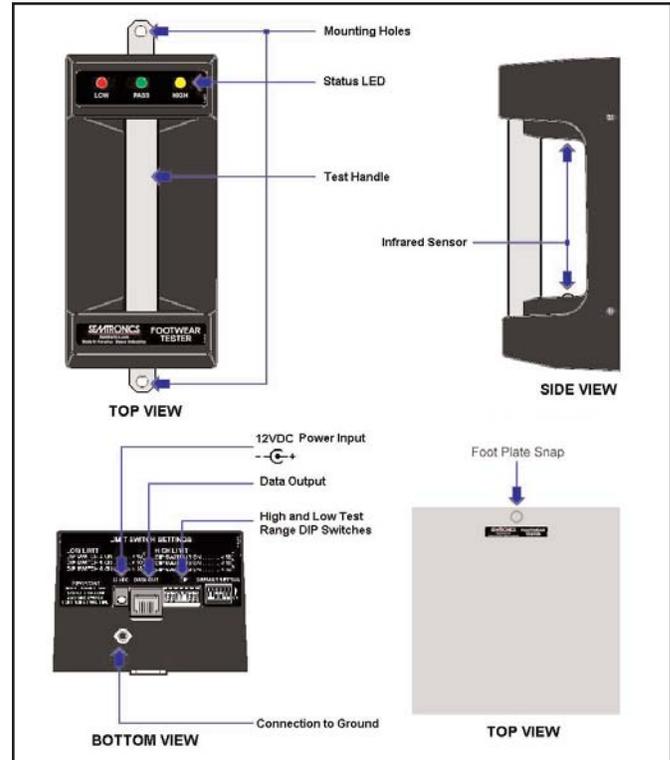


Figure 2. Footwear Tester and Foot Plate Features and Components

## Packaging

- 1 Footwear Tester
- 1 Foot Plate
- 1 12 VDC Power Adapter (500 mA positive center)
- 1 Banana Plug to Ring Terminal Cord
- 1 Snap to Ring Terminal Cord
- 1 NIST Certificate of Calibration

## Installation

### Mounting the Tester

- Verify that the correct low and high test limits are correctly set before mounting the tester to a wall. Refer to the overlay located on the bottom of the tester. (See table on Page 4 for more details)
- Be sure to install the Footwear Tester and foot plate away from any high voltage power supplies, power boxes, chemicals, and other safety hazards.
- Place in a convenient area where waiting lines may be allowed to form.
- Mount the tester in the upright position (See Figure 2) approximately 4 feet above floor level.
- Place the foot plate directly below the Footwear tester.

## Connecting the Footwear Tester and Foot Plate

I. Using the banana plug to ring terminal cord, connect the banana plug to the banana jack on the bottom side of the tester and the ring terminal to a known ground.

II. Using the snap to ring terminal cord, snap the cord to the foot plate and the ring terminal to a known ground.

III. After all connections have been made, insert the female plug of the power adapter to the bottom of the tester.

IV. Plug the power adapter into an appropriate power source. The yellow "HIGH" LED will turn on indicating standby mode.

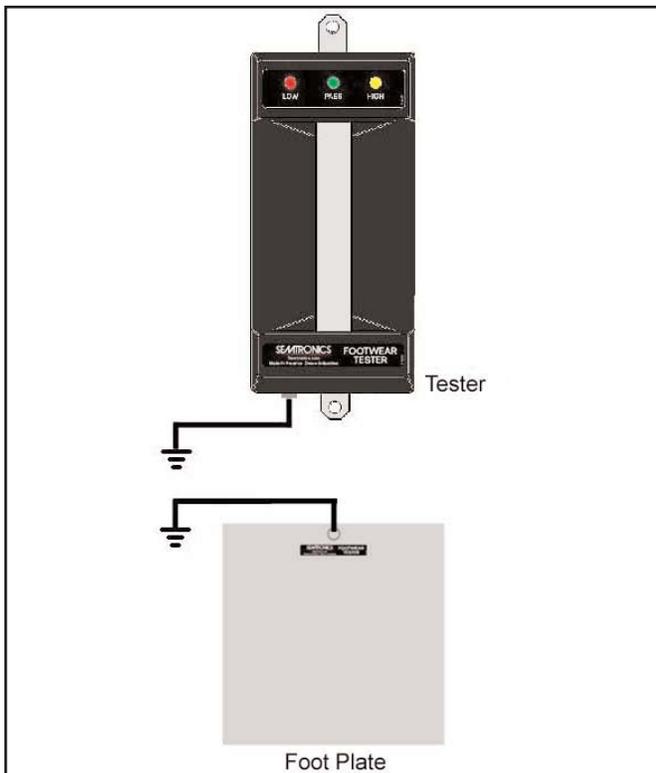


Figure 3. Connecting the Footwear Tester and Foot Plate

## Calibration

ESD Handbook TR 20.20 paragraph 5.2.3 "If the contact area between the bottom of the foot and the floor is not continuous, charge generation may occur especially when a person is walking. Heel straps must be worn on both feet to minimize the amount of time that the body of the person is isolated from ground while walking."

**Note:** Consider Semtronics Continuous Monitors Per ESD Handbook TR 20.20 paragraph 5.3.2.4.4 "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."

It is recommended that calibration of this unit be handled by a qualified technician. There are no user adjustable potentiometers, but there are DIP switches to adjust the ranges.

The Footwear Tester can be calibrated by using a 1k - 2G range decade box to load a resistance across the stainless steel handle and the banana jack located on the bottom of the tester. Resistance Load X from the decade box is the value that will be indicated as a Fail LOW, Fail HIGH, or PASS.

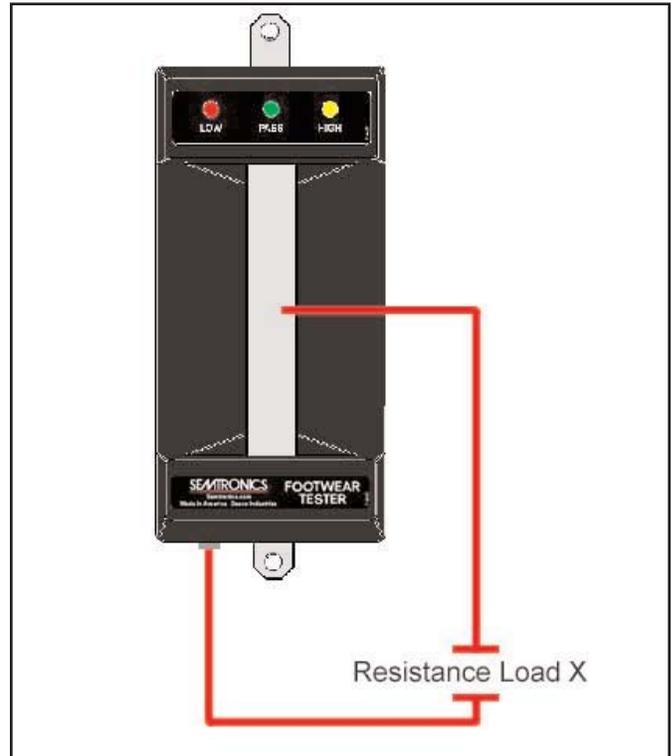


Figure 4. Applying a Load Resistance to the Footwear Tester

## Operation

**NOTE:** Refer to the technical manual for your foot-grounding devices. Not all foot-grounding devices are similar and it is very important that you review their specifications.

The tester measures the total resistance between both of the grounding devices (heel ground, dissipative shoes, etc). With the grounding devices properly attached to the operator's feet, the operator should then place one foot on the foot plate and grab the stainless steel handle. The tester will react in one of the following ways:

|   |  |
|---|--|
| <b>Green PASS LED</b>                       | The total resistance is within the limit settings    |
| <b>Yellow Fail HIGH LED + Audible Alarm</b> | The total resistance is above the high limit setting |
| <b>Red Fail LOW LED + Audible Alarm</b>     | The total resistance is below the low limit setting  |

If the test results are questionable remove both feet from the foot plate and wait 8 seconds before testing again.

The test limits can be adjusted by manipulating the DIP switches located at the bottom of the tester (See table on Page 4 for more details).

Be sure to periodically clean the foot plate to ensure accurate testing.

## Specifications

### Test Ranges and Limits Table

| LOW LIMIT                     |  |                 |                           |
|-------------------------------|--|-----------------|---------------------------|
| LOWLIMIT DIP SWITCH SETTING   | CALIBRATION RESISTANCE / RESULTING DISPLAY |                 |                           |
| 6 = OFF, 5 = OFF, 4 = ON      | 8.2K / FAIL LOW (RED)                      | 10 <sup>4</sup> | 20K / PASS (GREEN)        |
| 6 = OFF, 5 = ON, 4 = OFF      | 95K / FAIL LOW (RED)                       | 10 <sup>5</sup> | 220K / PASS (GREEN)       |
| 6 = ON, 5 = OFF, 4 = OFF      | 750K / FAIL LOW (RED)                      | 10 <sup>6</sup> | 1.5M / PASS (GREEN)       |
| HIGH LIMIT                    |  |                 |                           |
| HIGH LIMIT DIP SWITCH SETTING | CALIBRATION RESISTANCE / RESULTING DISPLAY |                 |                           |
| 3 = OFF, 2 = OFF, 1 = ON      | 9.5M / PASS (GREEN)                        | 10 <sup>7</sup> | 11M / FAIL HIGH (YELLOW)  |
| 3 = OFF, 2 = ON, 1 = OFF      | 95M / PASS (GREEN)                         | 10 <sup>8</sup> | 110M / FAIL HIGH (YELLOW) |
| 3 = ON, 2 = OFF, 1 = OFF      | 900M / PASS (GREEN)                        | 10 <sup>9</sup> | 1.5G / FAIL HIGH (YELLOW) |

## Dimensions

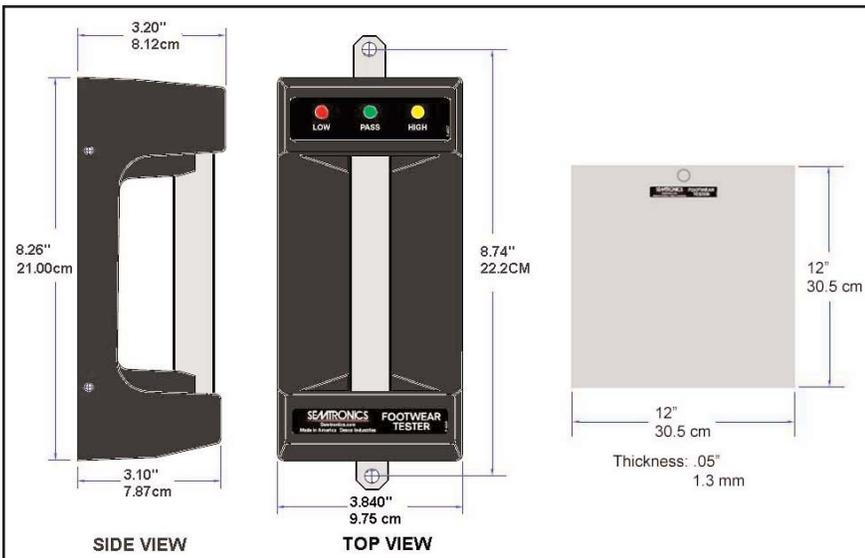


Figure 4. Footwear Tester and Foot Plate Dimensions

### Weight

|             |                   |
|-------------|-------------------|
| Tester:     | 0.9 lbs / 0.41 kg |
| Foot Plate: | 1.9 lbs / 0.86 kg |

## Troubleshooting

1. Periodically clean the stainless steel foot plate
2. Check all cords for proper connections

### NOTE:

The Yellow Fail HIGH LED will remain on when the unit is not being used (standby mode).

No Alarm will sound until the stainless steel handle is grabbed.

## Contact and Warranty

ESD Systems  
432 Northboro Road Central  
Marlboro, MA 01752  
Tel: (508) 485-7390  
Fax: (508) 480-0257

**NOTE:** Unauthorized servicing or modifications to your monitor will void the product warranty and may create dangerous conditions. Servicing should be performed only at the factory, or by a Semtronics approved technician.

### LIMITED WARRANTY

ESD Systems expressly warrants that for a period of one (1) year from the date of purchase, the ESD Systems Footwear Tester will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a unit will be tested, repaired, or replaced at our option, free of charge. Call Customer Service at 909-627-8178 (Chino, CA) or 781-821-8370 (Canton, MA) for Return Material Authorization (RMA) and proper shipping instructions and address. 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 Semtronics factory. Warranty replacements will take approximately two weeks. If your unit is out of warranty, ESD Systems will quote repair charges necessary to bring your unit up to factory standards. Call Customer Service at 909-627-8178 for proper shipping instructions and address. Ship your unit freight prepaid.

### 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 ESD Systems 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.