



Made in America

# Ground Gard 4.5 Operation, Installation and Maintenance



Figure 1. SPI Westek Ground Gard 4.5

## DESCRIPTION

The Ground Gard 4.5 is a wrist strap and ground monitoring device for the electronics work station. Used correctly it will provide a "static safe and properly grounded" work environment. It is designed to constantly monitor 2 capacitance type single wire wrist straps using a remote module for each user.

The Ground Gard 4.5 is available in 5 models. The part numbers are listed below:

Part #	Description
94345	Ground Gard 4.5 Without Buzzer
94346	Ground Gard 4.5 Without Buzzer, Building Ground
94351	Ground Gard 4.5 With Buzzer, Building Ground
94350	Ground Gard 4.5 With Buzzer
94352	Ground Gard 4.5 With Buzzer, Building Ground, No Switch
94330	Power Supply, 12 Volt, 2 Prong (for use with 94346, 94351 and 94352)
94332	Power Supply, 12 Volt, 3 Prong (for use with 94345 and 94350)
94340	Remote Control, Under Bench, for Ground Gard

The Ground Gard 4.5 will alarm if preset values are exceeded for capacitance, high resist and ground loss conditions. The grounding system is redundant and will still provide a limited grounding even if the utility ground is lost and the system is in an alarm state.

## INSTALLATION

### 1. GROUND GARD 4.5 Monitor Head:

The Ground Gard 4.5 Head Monitor is designed to not reduce valuable work area and should be mounted at eye level above the workstation, either on a post or shelf support. A double-sided adhesive Velcro attachment is provided to hold the lightweight head in place.

### 2. GROUND CONNECTION

The black wire extending from the monitor head must be attached to a qualified utility ground, or designated ESD connection. This wire can be connected directly or looped through the conductive table top or mat to Ground.

**Caution:** The total amount of resistance through all monitored parts should not exceed 10.0 megohms total.

### 3. REMOTE WRIST STRAP MODULES

The wrist strap remote modules can be mounted at the front of the work surface, usually under the table top and flush with the front edge. Two screws for each unit are provided for mounting. Connect each remote to the monitor unit using the telephone cable with RJ11 connectors.

### 4. POWER

The Ground Gard 4.5 is provided with a special, 3 Conductor, 12VDC power supply that will provide a ground path even with the loss of the normal utility ground. Plug this adaptor into a standard grounded ACD outlet and connect to the Ground Gard 4.5 using the 3.5mm plug.

### 5. POWER UP TEST

After installing the Monitor Head, remote units, and making the necessary connections without the wrist straps connected, the unit should POWER UP with the wrist strap LED's OFF and the audible alarm SILENT. If you have no response to power or a red LED, check AC outlet for proper ground or refer to trouble shooting section.

### WRIST STRAP REMOTES DESCRIPTION

Inside both remote modules are infrared sensors that react to the insertion of a wrist strap wire with a banana plug. When the banana plug is inserted, the base unit is activated for that remote module. The Monitor head LED for the left or right wrist strap will light showing the condition of that strap. If correct, the LED should be GREEN.

Should the wrist strap fail, be worn incorrectly or removed by the operator, the red indicator will flash, calling attention to a problem. Should the ground connection be lost, the red light and alarm will be activated. The monitors are continuous and

even a momentary break will cause alarms. The remote modules are set at the factory to allow for sensitivity of the "average" human body model.

## CALIBRATION PROCEDURES USING MODEL 94335 TESTER:

With coils wires connected to test unit and each remote, observe the following. Both lights should illuminate green on the head module, with no buttons depressed on the tester. Pressing button one or four should cause the left or right wrist strap to go red simulating a high resist condition on the wrist strap, this shows the wrist remote is properly calibrated.

If the above conditions are not met, do the following adjustment:

With buttons one and four not depressed, the LED display on the head module should be in a green condition. If not, find the adjusting port on the remote. Inside there is an adjusting trim pot. Turn the trim pot slightly until the head module LED turns green.

**Step One:** Turn the pot until the green LED triggers red, then ease back until LED triggers green.

**Step Two:** Press the corresponding button on the test unit and the LED will go red on the head module. This shows the Ground Gard remote is in a proper calibration.

**Note:** If the unit does not go red, go back to step one and repeat procedure.

## INSTALLATION ADJUSTMENTS

Should your system alarm without obvious cause, first trouble-shoot and verify all connections. If all the connections are correct, the base unit should be adjusted to compensate for a different HBM (human body model). We preset the units at the factory at 100pF and your operator might be out of the tolerance range caused either by body chemistry, bulk capacitance or impedance differences.

Follow these steps to adjust and personalize the base unit:

Locate the small hole in the face of the remote module (factory adjustment label my cover hole). Inside this hole is a trim pot device that is adjustable by using a small flat-head screwdriver.

With the system set up and operating, and the operator's wrist strap connected to the remote module:

1. Turn the pot until the green light activates. Disconnect the wrist wire from the band. The unit should alarm and activate the red light. If not, turn the trim pot until the red light activates. Reconnect the wire to the wrist band and the alarm should cease and the green light should activate.

2. Turn the pot until the green light begins. Disconnect the wrist wire from the band. The unit will alarm and activate the red light. If not, turn the trim pot until the red light activates. Reconnect the wire to the wristband and the alarm will cease, the green light will activate.

## SAFETY ISSUES:

With regards to the safety issue, it is hard to conceive of a safer situation than exists with the Ground Gard 4.5 as designed.

1. The Ground Gard 4.5 has a built-in safety resistance of no less than 500K ohms at each remote unit.
2. The transformer is wound on a split bobbin with 1500-volt insulation to assure no possible line leakage.
3. The circuits are double insulated by virtue of the insulated plastic boxes.
4. 500k ohms internal to the Ground Gard and one Meg in the wrist strap isolate the operator.

This may be varified by using a millimeter set on ohms. Connect the telephone type wire to the head monitor and to the remote unit. Place one end of the probe into the banana receptacle at the remote, and the other to the collar (power supply jack) located at the head monitor.

### Limited Warranty

SPI Westek expressly warrants that for a period of one (1) year from the date of purchase, SPI Westek Ground Gards will be free of defects in material (parts) and workmanship (labor). Within the warranty period, the product will be tested, repaired, or replaced at our option, free of charge. Call our Customer Service Department at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. Include a copy of your original packing slip, invoice, or other proof of purchase date. Any unit under warranty should be shipped prepaid to the SPI Westek factory. Warranty repairs will take approximately two weeks.

If your unit is out of warranty, call Customer Service at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. SPI Westek 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 SPI Westek 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.