Ground Gard 5
Operation, Installation, and Maintenance

Made in the
United States of America

Figure 1. SPI Ground Gard 5

Description

The Ground Gard 5 is a wrist strap and ground - monitoring device for the electronics workstation. When used correctly, it will provide a static safe and properly grounded work environment. It is designed to constantly monitor two capacitance type single wire wrist straps using a remote module for each user. A Ground Sense circuit with looping capability is also provided to constantly monitor the ground condition of bench tops, mats, wrist straps and the Ground Gard 5 unit itself.

The Ground Gard 5 is available in the following model. the part numbers are listed below:

Item	Description
94393	Ground Gard 5 with Buzzer
94332	Power Supply, 12 Volt, 3 Prong (for use with 94393)
94340	Remote Operator Module, Under Bench

The Ground Gard 5 will alarm if preset values are exceeded forcapacitance, 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.

Packaging

Item 94393
1 Ground Gard 5 Monitor
2 Remote Operator Module
1 Power Adapter
2 Remote Operator Cables
1 Mat Ground Cord
1 Push and Clinch Snap
2 Velcro® Strips
4 Screws
1 Certificate of Calibration

Installation:

1. GROUND GARD 5 MONITOR:
The Ground Gard 5 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:
For item 94393 the ground connection is made through the third prong of the 3-conductor power supply.

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

3. REMOTE OPERATOR MODULES:
The remote operator module can be mounted at the front of the work surface, usually under the tabletop 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 UP TEST:
After installing the Monitor, remote units, and making the necessary connections without the wrist straps connected, the unit should POWER UP with the ground sense LED indicator GREEN, 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.

PARK SNAP
The audible alarm is designed to alert both operator and supervisor. The Park Snap feature provides a means for an operator to disconnect when normally leaving the work area, without the audible alarm sounding, and it provides a means of wrist cord storage (visual red LED will illuminate). You may also disconnect coil cord by unplugging banana plug from the remote.

Remote Module Description:

Inside the remote module is an infrared sensor that reacts 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 LED for the left or right wrist strap will light showing the condition of that strap. If correct, the LED should be GREEN.

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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 monitor is continuous and even a momentary break will cause alarms. The remote module is set at the factory to allow for sensitivity of the "average" human body model.

Calibration Procedures Using Model 94372

With coiled cords connected to test unit and each remote, observe the following. Both lights should illuminate green on the monitor, 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, make the following adjustment:

With buttons one and four not depressed, the LED display on the monitor 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 monitor. This shows the Ground Gard 5 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 troubleshoot 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 may 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.

GROUND SENSE OR TABLE TOP MONITORING:

The Ground Gard 5 includes a ground monitoring system that assures a positive ground connection for the workstation. The resistance range is preset at the factory to monitor that the connection to ground is within the resistance range of .01 to 10 megohms. A visual and/or audio alarm will verify safe or fault conditions.

CONDITION	INDICATOR
Ground Sense	
Safe - Properly Grounded with Resistance less than 10 Meg.	- LED Green - No Audible Alarm
Hi resist - Grounded, but Resistance exceeds 10 Meg.	- LED Oscillate Green to Amber or Flashing Red - Audible Alarm
Fault - Loss of 1 or both redundant grounds, failure of monitor, worktop, mat, etc.	- LED Flashing Red - Audible Alarm

Saftey Issues:

With regards to the safety issue, it is hard to conceive of a safer situation than exists with the Ground Gard 5 as designed.

1. The Ground Gard 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 miltimeter set on ohms. Connect the telephone type wire to the 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 monitor.

Limited Warranty

ESD Systems.com expressly warrants that for a period of one (1) year from the date of purchase, 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 ESD Systems.com 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 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 MERCHANT-ABILITY 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.com 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.

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