

# Body Voltage Monitor Installation, Operation and Maintenance



Made in the  
United States of America



Figure 1. Desco [19241](#) Body Voltage Monitor

## Description

The Desco Body Voltage Monitor is a single station continuous monitor for one operator, one ESD worksurface and one tool ground. A second monitored jack is featured for use by a supervisor or second operator.

The Body Voltage Monitor uses *Dual-Channel Voltage Monitoring Technology* for true continuous monitoring (versus pulsed or intermittent). The *Dual-Channel Voltage Monitoring Technology* uses one lead of the dual-wire wrist strap to provide a path-to-ground for the operator while the other lead continuously monitors for voltage induced onto the operator greater than  $\pm 3$  VDC. Voltage on the operator can be caused by strong AC fields in the work area or by other charge generators such as rolling a non-ESD safe chair.

The Body Voltage Monitor has a second monitored jack for a supervisor or a second operator if needed at the workstation. An optional tool ground can be used to monitor the ground integrity of a conductive tool or fixture less than 3 Ohms.

Each Body Voltage Monitor is calibrated with accepted procedures and standards traceable to the National Institute of Standards and Technology (NIST) and includes a NIST certificate.

ANSI/ESD S20.20 section 7.3 states “Compliance verification records shall be established and maintained to provide evidence of conformity to the technical requirements.” Per ANSI/ESD S1.1 Annex A.3 Daily (wrist strap system) testing may be omitted if constant monitoring used.” Per ESD Handbook ESD TR 20.20 section 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.”

## Packaging

- 1 Body Voltage Monitor
- 1 Power Adapter, 5VDC, North America
- 1 Mat Monitor Cord (White)
- 1 Tool Monitor Cord (White)
- 1 Monitor Ground Cord (Green and Yellow)
- 1 Push and Clinch Snap
- 1 Washer
- 1 Flat Head Screw, 6-32 thread
- 1 Alligator Clip
- 1 Ring Terminal
- 1 Mounting Bracket
- 2 Pan Head Screws, #8 x 3/4"
- 1 Certificate of Calibration

## Features and Components

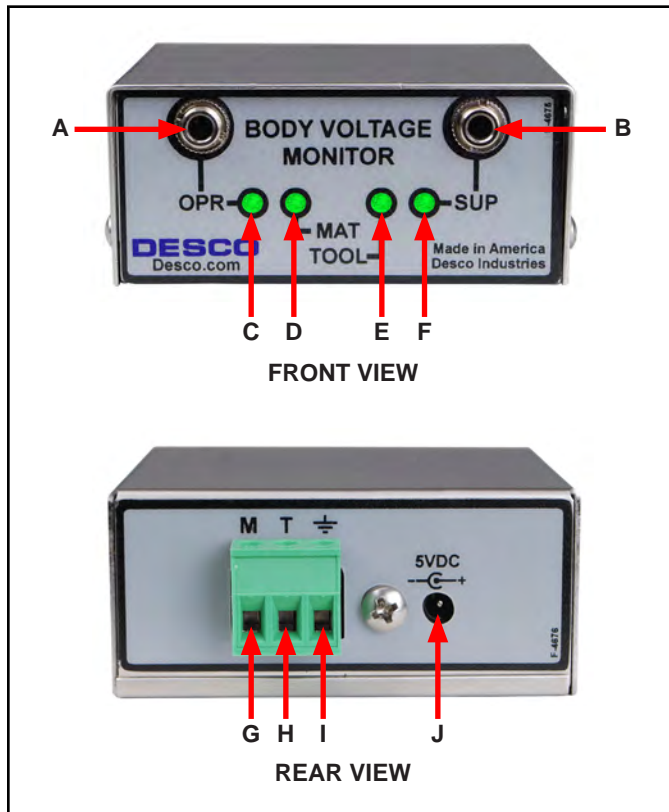


Figure 2. Body Voltage Monitor features and components

**A. Monitored Operator Jack:** The operator connects to the monitor here.

**B. Monitored Supervisor Jack:** The supervisor or second operator connects to the monitor here.

**C. Operator LED:** When the LED is illuminated green, the operator is properly grounded. When the LED is illuminated red and the alarm sounds, the operator is not properly grounded.

**D. Mat LED:** When the LED is illuminated green, the worksurface mat is properly grounded. When the LED is illuminated red and the alarm sounds, the worksurface mat is not properly grounded.

**E. Tool LED:** When the LED is illuminated green, the tool is properly grounded. When the LED is illuminated red and the alarm sounds, the tool is not properly grounded.

**F. Supervisor LED:** When the LED is illuminated green, the supervisor is properly grounded. When the LED is illuminated red and the alarm sounds, the supervisor is not properly grounded.

**G. Monitored Mat Terminal:** Monitors a worksurface mat for proper dissipative resistance and static charges. Connect the white mat monitor cord here.

**H. Monitored Tool Terminal:** Monitors a grounded metal tool fixture. Connect the white tool monitor cord here.

**I. Ground Terminal:** Common ground point for the monitor. Connect the green and yellow monitor ground cord here.

**J. Power Jack:** Connect the included 5VDC power adapter here.

## Installation

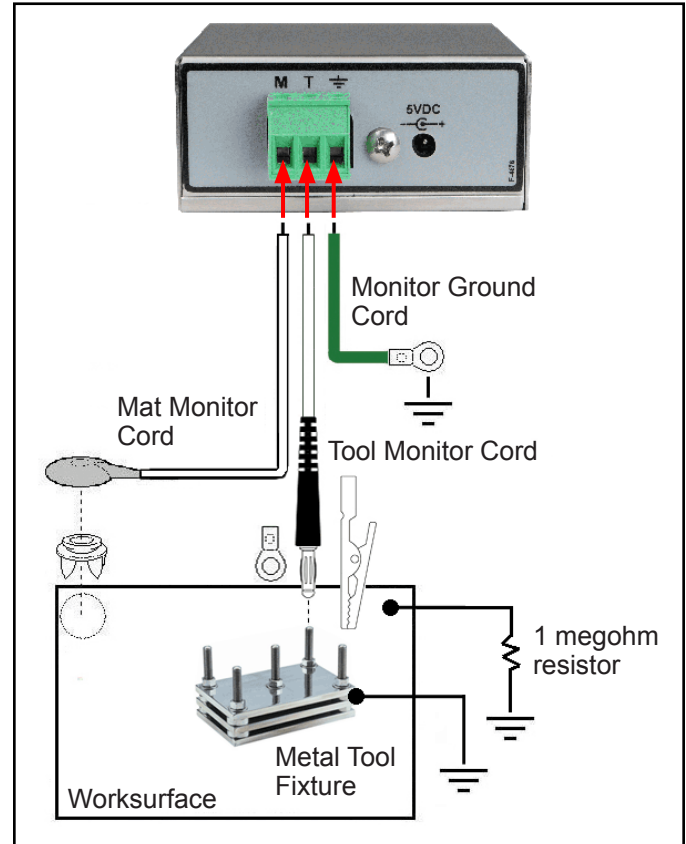


Figure 3. Installing the Body Voltage Monitor

1. Remove the monitor from the carton and inspect for damage.

**NOTE:** All Body Voltage Monitors are packaged with a wire shorting the tool terminal to the ground terminal. This is to prevent the tool circuit from alarming when not in use.

2. Determine the mounting location of the Body Voltage Monitor. The front panel should be visible to the operator. Use the included mounting bracket and #8 pan head screws if desired.



Figure 4. Body Voltage Monitor with included mounting bracket

3. Attach the tinned wire end of the mat monitor cord to its appropriate terminal block connection located on the back of the monitor.
4. Route the mat monitor cord from the back of the monitor to the worksurface mat. Use either the included push and clinch snap or washer and screw to secure the cord to the mat (see Figure 5). The worksurface mat requires its ground cord to have an embedded 1 megohm resistor such as the Desco [09813](#) (see Figure 3).

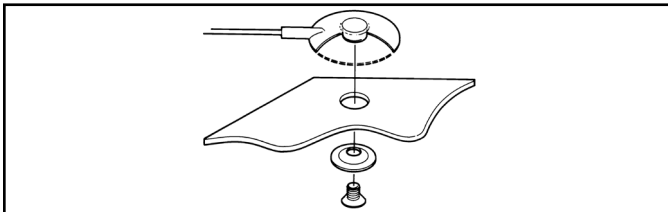


Figure 5. Screw allows ground cord to be bolted to mat to keep cord from disconnecting

5. Attach the tinned wire end of the included ground cord to the appropriate terminal block connection on the back of the monitor. Attach the ring terminal end to a ground point. It is important that this ground cord is attached to a different ground point than that of the worksurface mat. The face plate screw of a grounded AC wall outlet may provide a convenient connection point.
6. If applicable, attach the tinned wire end of the tool monitor cord to the appropriate terminal block connection on the back of the monitor. The included alligator clip or ring terminal may be applied to the banana plug for a secure connection to the grounded metal tool fixture that you choose to monitor.
7. Connect the DC power supply to the power jack located on the back of the monitor. Route the wire from the supply to a nearby AC outlet and plug it into the outlet. Make sure the voltage and frequency match those listed on the power supply. The monitor is now powered.

**NOTE:** Worksurface must have a conductive layer such as Dual Layer Rubber or Dissipative 3-Layer Vinyl or Micastat® Dissipative Laminate with conductive buried layers. Desco continuous monitors are not recommended for use with homogeneous matting.

## Operation

### USING THE MONITOR

1. Fit the wristband snugly onto your wrist.
2. Snap the wrist cord to the wristband.
3. Plug the wrist cord into the monitored jack labeled "OPR". The corresponding operator LED will illuminate solid green. This indicates that the operator is properly grounded.
4. If this does not happen, examine the wrist cord for continuity or damage and your wristband to ensure that it fits securely. If you have dry skin, apply an approved dissipative hand lotion such as [Menda Reztore™ ESD Hand Lotion](#).

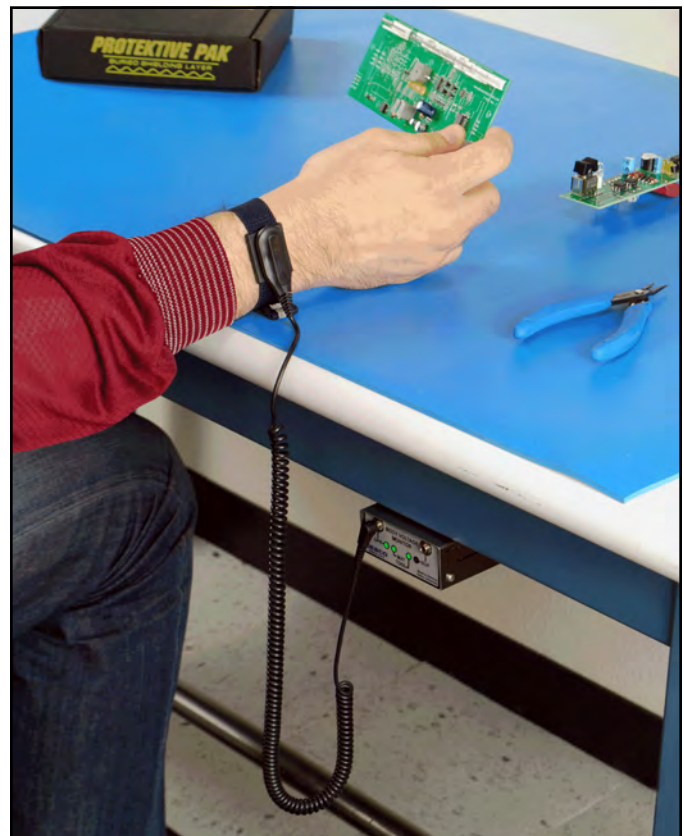


Figure 6. Using the Body Voltage Monitor

## Specifications

Operating Voltage	5 VDC
Operating Temperature	32°F - 104°F (0 - 40°C)
Monitor Dimensions	2.4" x 2.7" x 1.2" (6.1cm x 6.9cm x 3.0cm)
Monitor Weight	0.4 lbs (0.2 kg)

### DEFAULT TEST VOLTAGES

Operator (Open Circuit)	< 0.5 V
Worksurface (Open Circuit)	< 1.5 V
Tool (Open Circuit)	< 0.5 V

### DEFAULT TEST LIMITS

Operator	Fail: > ±3 VDC
Alarm Accuracy	±0.5 VDC
Worksurface	Low Fail: < 450 kilohms Pass: 500k - 5M High Fail: > 5.5 megohms
Tool	Pass: 0 - 2 ohms Fail: > 3 ohms

## Limited Warranty

Desco expressly warrants that for a period of one (1) year from the date of purchase Desco Continuous Monitors will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement Desco Continuous Monitors, or, at Desco's option, the Continuous Monitor 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 one year life times the original unit purchase price. Call our Customer Service Department at 909-627-8178 (Chino, CA) or 781-821-8370 (Canton, MA) 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 Desco factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-627-8178 (Chino, CA) or 781-821-8370 (Canton, MA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Desco 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 Desco 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.