Made in the
United States of America

Body Voltage Monitor
Installation, Operation and Maintenance

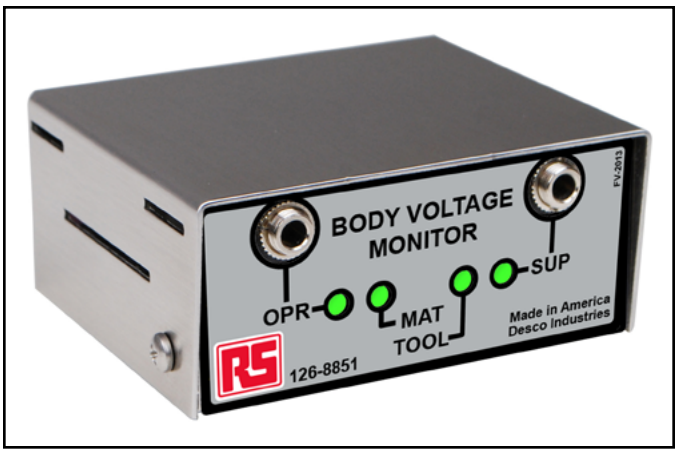

Figure 1. RS 126-8851 Body Voltage Monitor

Description

The RS 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 (not included) to provide a path-to-ground for the operator while the other lead continuously monitors for voltage induced onto the operator greater than ±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.

"A properly grounded wrist strap will keep a person's body voltage to approximately + 10 V. The main advantage to a constant [or continuous] monitor is the immediate indication that the employee receives if the wrist strap falls open. With an unmonitored system, the employee will not be aware of a wrist strap failure until the start of the next shift. This has reliability benefits for an ESD program as it might help reduce or eliminate ESD damage.
There are also other process benefits from using constant monitors such as the elimination of the need to maintain daily test logs and a reduction in the time for employees to make the daily test." [CLC/TR 61340-5-2 User guide Annex B.1.3 Constant monitors]

"Wrist straps should be tested periodically. The frequency of testing, however, is driven by the amount of usage, wear and ESD risk exposure that can occur between tests. For, example, what is the quantity of product handled between test periods?
Because wrist straps have a finite life, it is important to develop a test frequency that will guarantee integrity of the system. 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 a guarantee of a continuous, reliable ground is needed then continuous monitoring should be considered or even required.
Data taken from the test program will ultimately allow the user to make the choice of how often the wrist strap should be checked and which wrist straps have the most useful service life." [CLC/TR 61340-5-2 User guide Wrist Strap Test frequency subclause 4.7.2.4.4]

Packaging

1 Body Voltage Monitor
1 Power Adapter, 5VDC
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

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

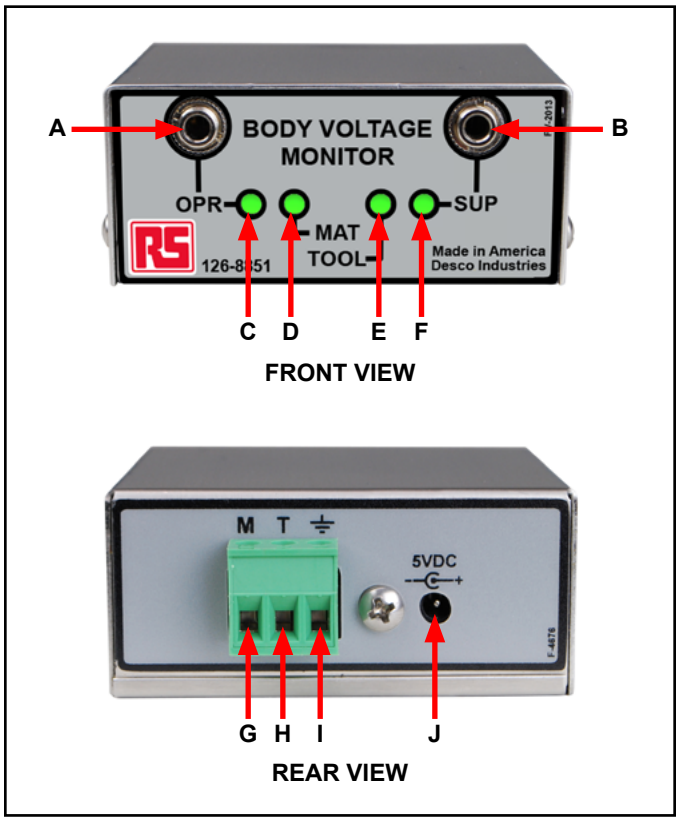

Figure 2. Body Voltage Monitor features and components

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

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

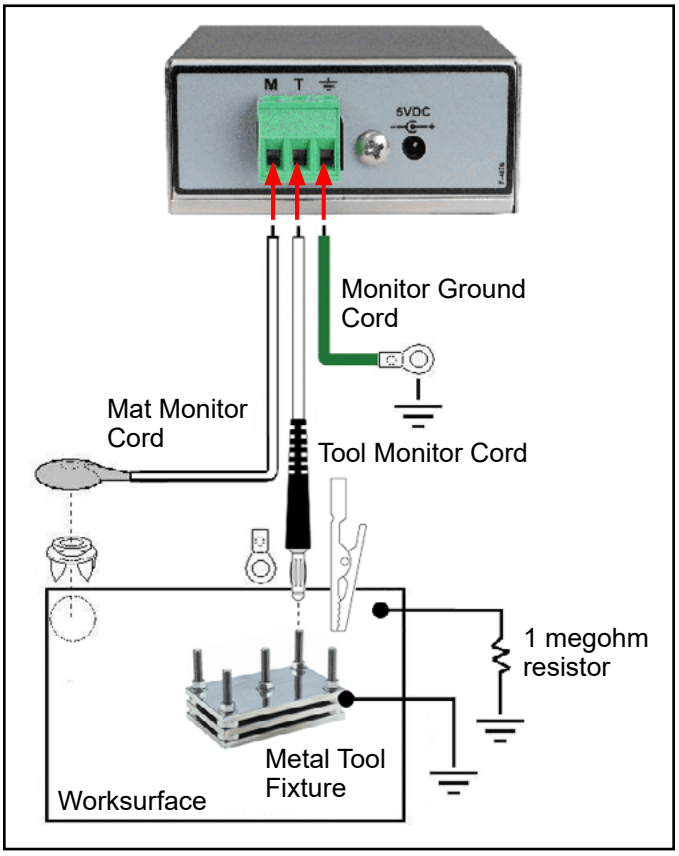

Figure 3. Installing the Body Voltage Monitor

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.

3. Attach the tinned wire end of the mat monitor cord to its

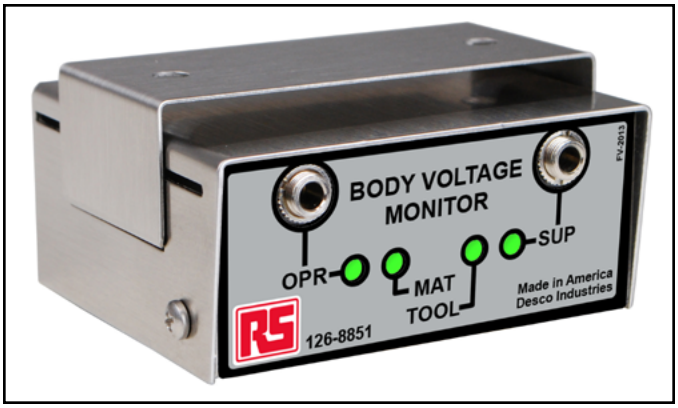

Figure 4. Body Voltage Monitor with included mounting bracket

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 RS 798-9335 (see Figure 3).

5. Attach the tinned wire end of the included ground cord to

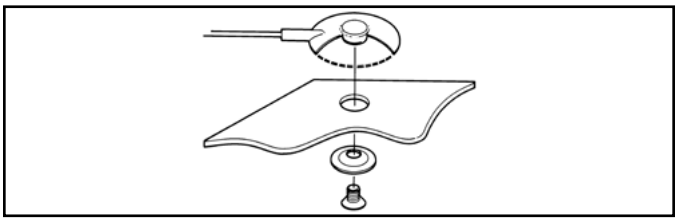

Figure 5. Screw allows ground cord to be bolted to mat to keep cord from disconnecting

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. The Body Voltage Monitor is 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.

Specifications

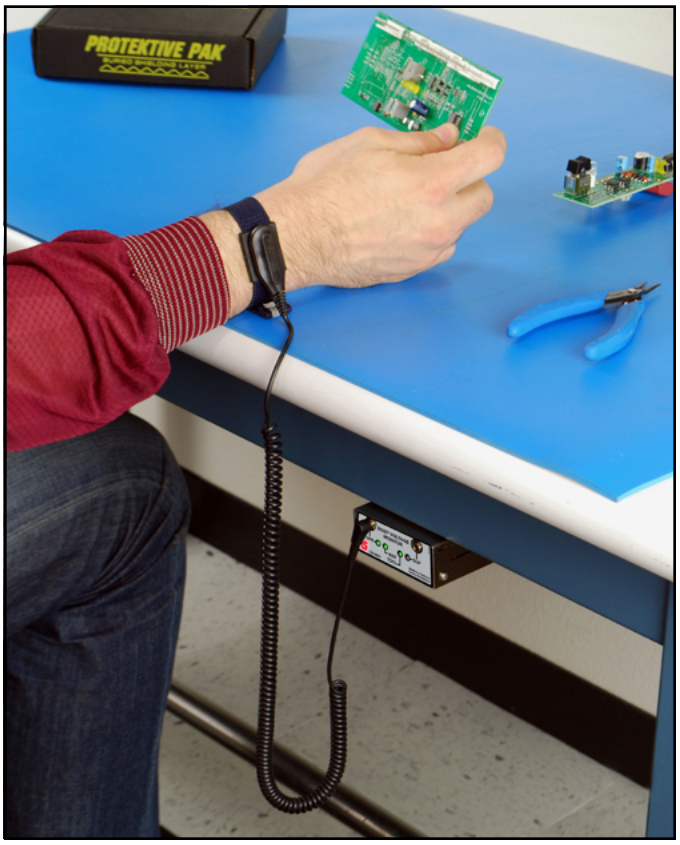

Figure 6. Using the Body Voltage Monitor

Operating Voltage	5 VDC
Operating Temperature	41°F - 86°F (5° - 30°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	±1 VDC
Worksurface	Low Fail: < 450 kilohms Pass: 500k - 5M High Fail: > 5.5 megohms
Tool	Pass: 0 - 2 ohms Fail: > 3 ohms

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

See Vermason's Warranty -
http://www.vermason.co.uk/Warranty.aspx