Continuous Workstation Monitors
Resistance Monitor

Model WSM Series

Instruction Manual
## Contents

1. **Description**
   - WSM Series

2. **Installation**
   - Installation Instructions 2
   - Installation Diagrams 4
   - Maintenance 6

3. **Operation**
   - Wrist Strap Indications 6
   - Bench System Ground Indications 6

4. **Specifications** 7

5. **Parts Included List** 8

6. **Service and Warranty** 9
Description

Ohm Metrics Single Wire Continuous Monitors: WSM Series

Continuously verifying the integrity of the ground system is critical to an effective ESD protection program. Using specialized impedance sensing technology, the WSM-1, WSM-2 and WSM-3 single wire monitoring products continuously check the total ground loop, including the operator, the wrist band and the coil cord. The systems are compatible with most wrist straps. Units are tested to NIST traceable standards and require no user adjustments.

Reliable, Repeatable Results

Accuracy and reliability are improved with the impedance technology incorporated into our constant monitors. False alarms disappear and adjustments are not necessary. Powered and grounded by an AC adapter, the system is fully automatic and begins sensing when a coil cord is plugged into the unit. A green light indicates a safe connection and a red light and audible alarm communicate an unsafe connection.

Continuous Monitors pay for themselves

ESD-S1.1 notes that it is not necessary to test wrist straps daily when using constant monitoring systems. Higher value-added products especially benefit from the certainty of continuous monitoring. The WSM-1, WSM-2 and WSM-3 are perfect solutions for assuring workstation grounding protection.
Installation

1. Remove all items from carton and confirm you have received all items contained in the “Parts Included List.” located on Page 8.

2. Choose a location on the work station to mount the monitor where LED lights are visible and alarm can be heard by operators. Frequently, monitors are mounted toward the front edge of workstation or under an eye level shelf.

NOTE: WSM-2 and WSM-3 have an optional requirement for a Common Point ground

3. Mount monitor securely to workstation using the included screws, Velcro, or stainless steel bracket included with monitor model. Refer to installation diagrams located on Page 4 and 5

NOTE: For WSM-3 installation move to Step 4
For all other monitors skip to Step 5.

4. WSM-3 Only: To install remote wrist strap monitors, locate a convenient location for operators and mount with included screws. Frequently remote monitors are mounted on the underside of work bench near the front edge.

5. WSM-2 and WSM-3 ONLY: Plug wire from the Common Point Ground in the banana jack labeled “Bench System Ground” on back of the monitor.
Installation Cont.

. Insert the power cord into the inlet labeled “POWER” on the back of unit and connect the AC adapter to a proper power source.

   NOTE: For WSM-3 installation move to Step 6 for all other monitors skip to Step 7.

7. **WSM-3 ONLY:** Plug the first wrist strap’s coiled cord into the banana jack labeled “LEFT WRIST STRAP” or “RIGHT WRIST STRAP” on the back of the monitor. Repeat process with second wrist strap using remaining jack. The “Operator” lights on the front of unit should turn **GREEN** when wrists straps are placed around the wrist.

8. **WSM-1 and WSM-2 ONLY:** Plug the wrist strap’s coiled cord into the banana jack on the front of the monitor. The “Operator” lights on the front of unit should turn **GREEN** when wrists straps are placed around the wrist.

   NOTE: If wrists strap LED lights do not turn green when wrist strap is placed on wrist, touch the wrist strap to the Common Point Ground. If LED light turns green the wrist strap was not making good contact with the operators wrist.
Installation Diagrams

Figure 1: WSM-1

Figure 2: WSM-2
Installation Diagrams Cont.

WSM-3 Placement Options and Set Up

Figure 3: WSM-3

CALIBRATION AND PERIODIC TESTING:

Alarm resistance limits are set by the precision resistors inside the tester and never need calibration. You can verify proper operation of the monitor by periodically testing monitor with an NIST traceable resistance limit comparator box from Transforming Technologies. See Periodic Verification Units on Page 7.
Operation

Wrist strap monitor operation.

Monitoring begins when the coiled cord of the wrist strap is plugged into the monitor or remote jack. The status of a wrist strap resistance is indicated by a the tricolor LED and audible Alarm:

**Stand-by indication.**
If the wrist strap is removed or not being worn but is still plugged into monitor, an audible alarm will sound for 7-10 seconds, and the “OP” (operator) led will be will be blink RED.

**Normal indication.**
For normal operating resistance “OP” led will be GREEN.

**High alarm.**
If the operator wrist strap is plugged into the remote and resistance is higher than maximum, the “OP” led will be RED and audible alarm will sound.

Bench System Ground (BSG) operation.

If unit is equipped with (BSG) monitoring capabilities, monitoring begins when the coiled cord of the Common Point Ground is plugged into the (BSG) jack. The status of a (BSG) resistance is indicated by a the tricolor LED and audible Alarm:

**Normal (BSG) indication.**
For normal operating resistance led will be GREEN.

**High (BSG) alarm.**
If GND resistance is higher than maximum limit, led will be RED and audible alarm will sound.
# Product Specifications

## Performance Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrist strap open circuit voltage</td>
<td>0.7 VDC, +0.1 VDC @ &lt; 2mA</td>
</tr>
<tr>
<td>Mat open circuit voltage</td>
<td>5.0—7.5 VDC</td>
</tr>
<tr>
<td>Alarm indicators</td>
<td>Visual, audible (green: safe, red: unsafe)</td>
</tr>
<tr>
<td>Alarm set point</td>
<td></td>
</tr>
<tr>
<td>Wrist strap</td>
<td>38 to 87pF (human body); with 1 meg ohm wrist strap resistance</td>
</tr>
<tr>
<td>Mat</td>
<td>6.5 meg ohm</td>
</tr>
</tbody>
</table>

## Unit monitoring capabilities

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSM-1</td>
<td>One person</td>
</tr>
<tr>
<td>WSM-2</td>
<td>One wrist strap + mat</td>
</tr>
<tr>
<td>WSM-3</td>
<td>Two wrist straps + mat</td>
</tr>
</tbody>
</table>

## Periodic Verification Units

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSM-2PV</td>
<td>NIST Calibrated Periodic verification tool for WSM-1 &amp; WSM-2</td>
</tr>
<tr>
<td>WSM-3PV</td>
<td>NIST Calibrated Periodic verification tool for WSM-3</td>
</tr>
</tbody>
</table>
Product Specifications Cont.

**Dimensions/Weight**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions/Weight</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSM-1</td>
<td>0.88” H x 1.75” W x 1.25” D (2.24 x 4.45 x 3.18 cm)</td>
<td>7.4 oz</td>
</tr>
<tr>
<td>WSM-2</td>
<td>1.00” H x 2.40” W x 2.30” D (2.54 x 6.10 x 5.84 cm)</td>
<td>7.8 oz</td>
</tr>
<tr>
<td>WSM-3</td>
<td>1.00” H x 4.00” W x 2.40” D (2.54 x 10.16 x 6.10 cm)</td>
<td>12.4 oz</td>
</tr>
</tbody>
</table>

**Mounting**

Mounting materials included

**Power Supply**

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>120VAC—60hz</td>
<td>12VDC, 200mA</td>
</tr>
</tbody>
</table>

**Audible Alarm**

10 beeps (max); 5 seconds

**Adjustment**

No adjustments required

---

**Parts Included List**

1. WSM-1 series workstation monitor
2. WSM-3 only: Two (2) remote terminals boxes
3. Plug-in Power Supply (12-15 Volts DC, 200 mA, 2.1mm center positive output)
4. WSM-2 and WSM-3 Only: Velcro or Mounting Bracket
5. WSM-1 only: Two (2) mounting screws