

A2CM2 Dual Wire Continuous Resistance Monitor



Instruction Manual



BOKAR International
10 Enterprise Drive
Carbondale, PA 18407, USA

Tel: (570) 842-2812 Fax: (570) 842-4290 E-mail: bokar@bomir.com

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Contents

Contents.....	2
Description.....	2
Installation.....	2
Installation Instructions.....	2
Installation Diagram.....	3
Mounting Instructions.....	3
Mounting Diagram.....	3
Operation.....	4
Wrist strap monitor operation.....	4
Mat monitor operation.....	4
GND monitor operation.....	4
Maintenance.....	4
Product Specifications.....	4
Parts Included.....	5
Service and Warranty.....	5

Description

The Ohm Metrics A2CM2 Dual Wire Continuous Resistance Monitor continuously checks two (2) operators and two(2) work surface ground connections. The unit has a nor-mal voltage of 200mV when wearing a wrist strap and 900mV is the maximum (open wrist strap condition). The A2CM2 packaged in a stainless steel case with remote jacks.

Utilizing very precise, low-voltage, resistive loop technology, the A2CM2 is an extremely sensitive and reliable ground monitoring instrument that uses the operator's skin resistance to determine if the system is operating properly. Audible and visible alarms are triggered if the operator's resistance exceeds 10 or 35 megohm (selectable at factory with default of 35 megohm). Low resistance also triggers an alarm event. Each monitor uses the AWB2500 series dual wire wrist strap and coil cord although other compatible wrist strap sets may be substituted. Dual conductor wrist straps enable efficient, accurate resistance monitoring and grounding redundancy.

Features

- Ability to monitor two workstations
- Three color LED to indicate status of operator and workstation: HIGH, LOW, SAFE
- Audio and LED will give alarms when monitor detects problems on grounding wires from operator to remote jack and remote jack to monitor

Installation

Installation Instructions

1. Install the Monitor and remote wrist strap terminals in workstation that has a Common Point Ground, an AC out-let and in a location where the alarm indicators will be visible.

NOTE: See **Mounting** for further instructions.

2. Plug a telephone cable from the left remote to OP1 connector on the back of the monitor
3. Plug a telephone cable from the right remote to OP2 connector on the back of the monitor.
4. Connect grounding Zero Ohm wire to the terminal on the back of the monitor labeled ESD GROUND.

If there are no **grounded** ESD mats to be monitored, connect a wire from **M1** and **M2** terminals to the **ESD GROUND** terminal on the back of the monitor and skip steps 5 and 6.

5. Connect monitor wire from the first grounded Mat to the terminal on the back of the monitor labeled M1.
6. Connect monitor wire from the second grounded Mat to the terminal on the back of the monitor labeled M2.

Note: The Mat must be grounded with a Zero Ohm wire for proper mat monitoring operation. If your workstations are required to be grounded with 1M resistance the monitor must be modified.

If monitor has optional low resistance monitoring called "GND" monitoring, but there are no **grounded** connections needed to be monitored, connect a wire from **G1** and **G2** terminals to **ESD GROUND** terminal on the back of the monitor and skip steps 7 and 8.

7. Connect monitor wire the first grounded connection to the terminal on the back of the monitor labeled G1.
8. Connect monitor wire the second grounded connection to the terminal on the back of the monitor labeled G2.
9. Plug power supply into the PWR connector on the back of the monitor and into the power line.

Installation Diagram

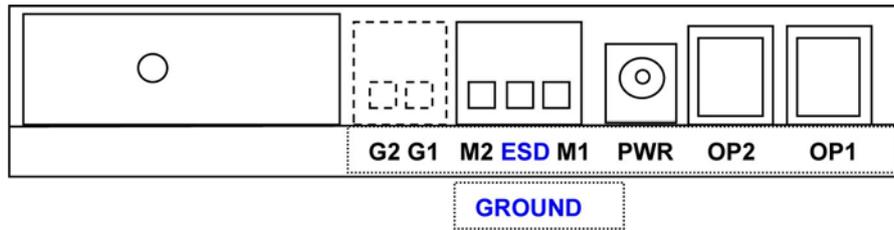


Figure 1: Back View

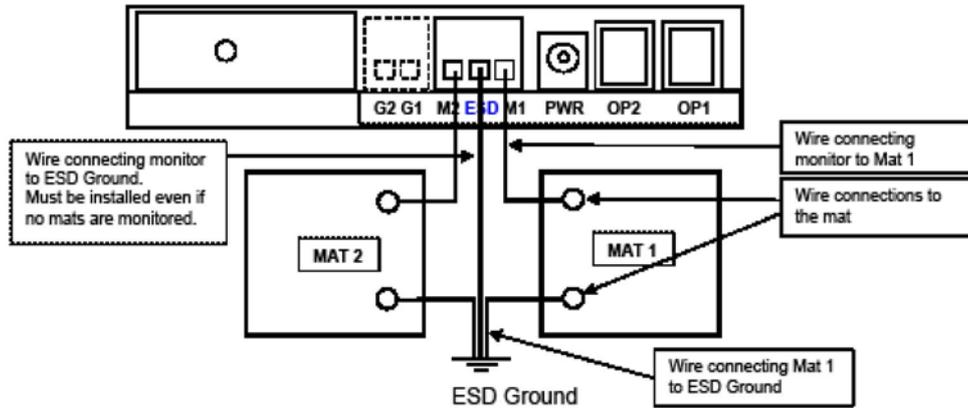


Figure 2: Connection of Mat1 and Mat2 to the monitor and ESD Ground

Mounting Instructions

1. Install monitor in a location where alarm indicators will be visible and audible to operator such as under a shelf or on workstation table top.
2. Mount monitor securely in place with Velcro.
3. Install remote wrist strap terminals in a convenient lo-cation for operators. Frequently units are mounting on the underside of the workbench.
4. Mount terminals with two (2) screws each.
5. Power outlet and Common Point Ground (CPG) can be in any convenient place on workstation.

Mounting Diagram

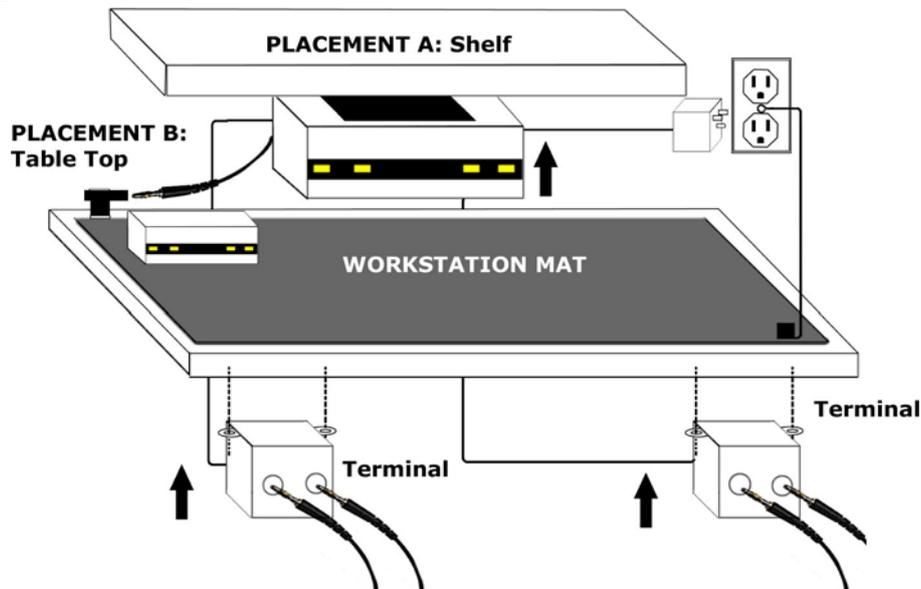


Figure 3: Mounting of monitor and remote jacks with outlet and CPG

Operation

Wrist strap monitor operation.

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

Stand-by indication.

If operator wrist strap is not plugged into the remote, "OP" (operator) led will be **TURNED OFF**.

Low alarm.

If operator wrist strap is plugged into the remote and resistance is less than 1.8M, "OP" led will be **YELLOW** and audible alarm will sound.

Normal indication.

For normal operating resistance "OP" led will be **GREEN**.

High alarm.

1. 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.
2. If remote is not plugged into the monitor, or there is a break in the connection between the monitor and remote, "OP" led will be **RED** and audible alarm will sound.
3. If the wrist strap is plugged into the auxiliary "AUX" socket and "OP" socket is not used, high alarm will sound to indicate that operator is plugged into a non-monitored connection. If the operator is plugged into an "OP" socket, plugging a second wrist strap into an "AUX" socket will not cause an alarm.

The Alarm settings for the wrist strap are 1.8M for "Low" alarm and 35M for high alarm

Mat monitor operation.

The status of Mat resistance is indicated by the tricolor LED:

Normal Mat indication.

For normal operating resistance, led will be **GREEN**.

High Mat alarm.

If MAT resistance is higher than maximum limit, the led will be **RED** and audible alarm will sound.

Alarm setting for a mat is 3.5M for high alarm.

GND monitor operation.

Normal GND indication.

For normal operating resistance led will be **GREEN**.

High GND alarm.

If GND resistance is higher than maximum limit, led will be **RED** and audible alarm will sound.

"GND" inputs alarm setting for high alarm is 10 Ohm.

Maintenance

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 a resistance limit comparator box from Bokar International, part number A2CM2PV.

Product Specifications

Performance Specifications	
Dimensions (W x D x H)	4" x 3" x 1" (10.16 x 7.62 x 2.54 cm)
Weight	6.8oz
Power Supply	120VAC—60hz, 9-15 Volts DC, 100-600 mA, 2.1mm center positive output
Unit monitoring capabilities	
A2CM2	2 wrist straps/persons + 2 mats
A2CM2PV	Periodic verification tool for A2CM2

Performance Specifications			
Maximum operator voltage (alarm condition)	900mV		
Typical operator voltage	< 200mV		
Maximum GND current	1.25V		
Maximum GND voltage (alarm condition)	< 900mV		
Maximum GND voltage (open circuit condition)	100μA		
Maximum GND voltage (alarm condition)	1mV		
Maximum GND voltage (open circuit condition)	50mV		
Alarm Limits	Min	Typical	High
Wrist strap low limit*	1.6M	1.8M	2.3M
Wrist strap high limit	30M	35M	40M
Mat high limit	3.0M	3.5M	4.0M
GND (tool) high limit	9.5Ω	10Ω	10.5Ω
Temperature limits	50° F (10°C) to 122° F (50°C)		
Adjustments	No field serviceable components; see periodic verification tools		

*Operator wrist strap is grounded through 2M resistors inside the monitor

Parts Included

1. CM2015 Dual workstation monitor
2. Two (2) remote terminals boxes
3. Plug-in Power Supply (9-15 Volts DC, 100-600 mA, 2.1mm center positive output)
4. Instruction manual
5. Two (2) 10 ft., 4 wire, telephone cables
6. Velcro
7. Four (4) mounting screws
8. Two (2) 6 ft. dual-wire anti-allergic wrist-straps (optional)

Service and Warranty

Bokar International provides a limited warranty. All new products are guaranteed to be free from defects in material and workmanship for a period of one (1) year from the date of shipment. Liability is limited to servicing (after evaluating, repairing or replacing) any product returned to Bokar International. The company does not warrant damage due to misuse, neglect, alteration or accident. In no event shall Bokar International be liable for collateral or consequential damages.

To receive service under warranty, please contact Bokar International Technical Support.



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