Transforming Technologies
Outstanding Alternatives in Static Control
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RESISTANCE
RANGER
ONE

Ranger One^{TM} CM1601 Resistance Monitor Installation Instructions

Confirm you have received all the items in the "Parts Included List". You will also need a small flat head screw driver and two small screws.

Wiring
Insert the exposed end of **FM1515CM** to the jack label **ESD GND** and tighten the screw. Connect the eye bolt of the **FM1515CM** to ESD ground - typically the center screw of a properly grounded outlet.

Connect one end of the flat cable to the **OP** jack on the monitor and the other to the Wrist Strap Jack.

Mounting
Mount the constant monitor with the provided Velcro where its alarm indicators can be seen or heard by the operator. Mount the Wrist Strap Jack with two screws in an easily accessible area of the workstation.

Connect the power cable. Your constant monitor is now ready to use.

Operation
The status of a dual wrist strap resistance is indicated by a tricolor LED.

Stand-by indication - If operator wrist strap is not plugged into the remote, "OP" (operator) LED will be turned off.
Low wrist strap alarm - If the resistance of the wrist strap is less than 1.8M,"OP" led will be yellow and alarm will sound.
Normal wrist strap indication - For normal operating resistance "OP" led will be green.
High wrist strap alarm - If the wrist strap resistance is higher than 35M, "OP" led will be red and audible alarm will sound.

If Wrist Strap Jack 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 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 operator is plugged into an "OP" socket, plugging a second wrist strap into an "AUX" socket will not cause an alarm.
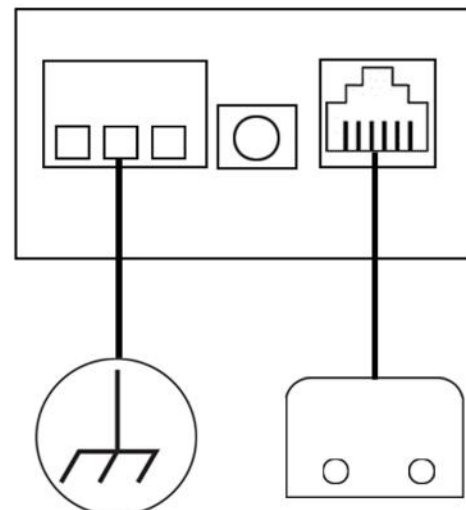
Back Of CM1601
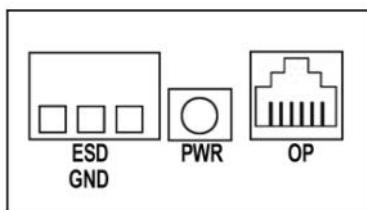
Wiring Diagram

Parts Included List
CM1602 - 1
Wrist Strap Jack - 1
Flat Cable - 1
Power Cord - 1
FM1515CM - 1
Velcro - 1

Ranger Two™ CM1602 Resistance Monitor Installation Instructions

Confirm you have received all the items in the "Parts Included List". You will also need a small flat head screw driver and two small screws.

Wiring

Insert the exposed end of **FM1515CM** to the jack label **ESD GND** and tighten the screw. Connect the eye bolt of the **FM1515CM** to ESD ground - typically the center screw of a properly grounded outlet.

Insert the exposed end of the cord **FM1515NR** to the jack label **M** and tighten the screw. Snap the other end to the 10mm snap on your ESD work surface.

Snap the **FM1515** to a 2nd snap on the ESD work surface and connect the eye bolt to ESD ground.

Connect one end of the flat cable to the **OP** jack on the monitor and the other to the Wrist Strap Jack.

Mounting

Mount the constant monitor with the provided Velcro where its alarm indicators can be seen or heard by the operator. Mount the Wrist Strap Jack with two screws in an easily accessible area of the workstation.

Connect the power cable. Your constant monitor is now ready to use.

Operation

Wrist Strap - The status of a dual wrist strap resistance is indicated by a tricolor LED.

Stand-by indication - If operator wrist strap is not plugged into the remote, "OP" (operator) LED will be turned off.
Low wrist strap alarm - If the resistance of the wrist strap is less than 1.8M,"OP" led will be yellow and alarm will sound.
Normal wrist strap indication - For normal operating resistance "OP" led will be green.
High wrist strap alarm - If the wrist strap resistance is higher than 35M, "OP" led will be red and audible alarm will sound.

If Wrist Strap Jack 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.

If 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 operator is plugged into an "OP" socket, plugging a second wrist strap into an "AUX" socket will not cause an alarm.

Work Surface - The status of a dual wrist strap resistance is indicated by a tricolor LED.
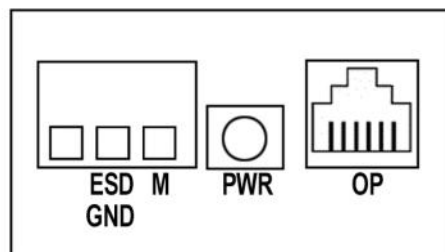
Normal mat indication - For normal operating resistance led will be green.
High mat alarm - If MAT resistance is higher than 100M, led will be red and audible alarm will sound.
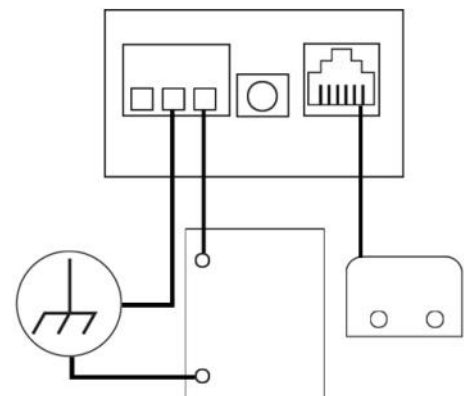
Parts Included List
CM1602 - 1
Wrist Strap Jack - 1
Flat Cable - 1
Power Cord - 1
FM1515 - 1
FM1515NR - 1
FM1515CM - 1
Velcro - 1

Back Of CM1602

ESD M   PWR   OP
GND

Wiring Diagram

Ohm Metrics Resistance Ranger Monitor

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, part number CM2015PV.

Product Specifications

Dimensions:	2" W x 3" D x 1" H
Weight:	6.8oz

Unit monitoring capabilities

CM1601	1 Person/Wrist Strap
CM1602	1 Person/Wrist Strap & 1 Worksuface Mat

Performance Specifications

Wrist Strap Alarm:	Low Alarm: 1.8 megohm.
	High Alarm: 35 meg ohm.
Mat Alarm:	100 meg ohm.
Power:	9-12V,100mA.
Temp. Limits:	50° F (10°C) to 122° F (50°C)

Unit Accessories

FM1515	Work Surface Ground Cable (1 included)
FM1515CM	Monitor Ground Cable (1 included)
FM1515NR	Monitor To Work Surface Cable (1 included)
CM2015	Periodic Verification Unit
CMREMOTE-IR	Cyclops™ Operator Presence Check
CP3000	Wrist Strap Parking Station for Mono Plug Coil Cords

*Compatible Wrist Bands**

WB2800 Series	Two Snap, Dual Wire Wrist Bands
WB2695 Series	One Snaps Dual Wire Wrist Bands
WB5000 Series	Mono Plug Dual Wire Metal Wrist Bands
WB7000 Series	Mono Plug Dual Wire Fabric Wrist Bands

*Most Standard Dual Wire Wrist Band Sets are Compatible with the CM1601 and CM1602

About Transforming Technologies

Transforming Technologies offers a wide range of unique and outstanding products to detect, protect, eliminate and monitor electrostatic charges. Our products are integral components of an effective static control program.

This document is prepared for our customers as a service, and is to the best of our knowledge true and accurate. However, it is understood and agreed by the users of this document that we will accept no liability for the conclusions reached. Users of this document may therefore wish to perform additional testing before determining that products mentioned are suitable.

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