



Iron Man™ CTC330 and Iron Man™ Plus CTC331 Workstation Monitors

Protect your sensitive boards from soldering iron overvoltage and electrostatic discharge (ESD)

Product Description

Soldering irons touch the most sensitive components in your electronics assemblies. Yet, if the soldering iron is not grounded properly, these components may be exposed to significant overvoltage that can cause severe damage and affect reliability of the product. According to some studies*, soldering irons with poor grounding can inject current in excess of several amperes into the circuit. Poor grounding may be caused by many factors, including ground failure in an electrical outlet to which most soldering irons are grounded, internal failure of the soldering iron, oxidation of the tip and other factors. 3M™ Iron Man™ Workstation Monitors measure voltage directly on the circuit board during assembly. If there is any electrical overstress (EOS) on the board, 3M Iron Man Monitors will provide both an audio and a visual alarm to the operator.

Soldering irons are not the only threat; metal tools such as tweezers and screwdriver bits can also induce significant overvoltage to the circuit. Iron Man Monitors will detect most occurrences so that the corrective action can be immediately applied.

The 3M™ Iron Man™ Plus Workstation Monitor adds complete monitoring of the entire workbench; wrist strap and dissipative mat monitoring. The operator is monitored for proper connectivity and for excessive body voltage. The dissipative or conductive mat is monitored for its proper connectivity. 3M Iron Man Plus Monitors provide complete coverage of the entire workbench for ESD and EOS.

Small and Unobtrusive

3M Iron Man Monitors are small enough to fit on each workbench where assembly and service occurs. Connect the overvoltage input to any ground plane connection of the board with the supplied alligator connector and when there is a dangerous EOS exposure, the operator will be instantly informed. Additionally, the board itself will be reliably grounded via a 1 Meg ohm resistor inside the 3M Iron Man Monitor.

The 3M Iron Man Plus Monitor features a patented jack for the wrist strap which does not require soldering for its replacement improving reliability and reducing cost of ownership.



Iron Man Plus with Dual Ground Cord



3M™ Iron Man™ and 3M™ Iron Man™ Plus Monitors

Applications

- Electronics Assembly
- Repair and Service
- Medical Environment
- Military
- Aerospace
- Wherever sensitive components are being handled

Features

- Overvoltage monitoring of electronics assemblies
- Soldering iron overvoltage failure alarm
- Operator wrist strap monitoring
- Operator body voltage monitoring
- Patented replaceable wrist strap jack
- Dissipative mat ground monitoring
- Audio and visual alarms

Key Advantages

Electric Overstress Monitoring on Each Board

Iron Man Monitors indicate instances of electrical overstress that each of your assemblies experience.

Instant Feedback

Iron Man Monitors enable your operators to immediately react to instances of electric overstress. This way the causes of EOS can be identified and further damage to the assemblies prevented.

Isolation of Exposed Assemblies

If a particular board experienced electric overstress, the operator can now set it aside for a thorough examination.

Complete Workbench Coverage

Iron Man Plus Monitors provide complete coverage of a workbench for ESD and EOS. With Iron Man Plus Monitors, an operator, a dissipative mat, and most importantly, all board assembly in progress are covered.

Down to Earth Family

Iron Man and Iron Man Plus Monitors are members of the new 3M™ Down to Earth monitor family - a practical and cost effective solution to ESD and EOS in electronics assembly.

Specification

Parameter	Overvoltage Alarm	3M™ Iron Man™ Monitor	3M™ Iron Man™ Plus Monitor
Alarm Threshold Ranges		0...+/-5V; 0...+/-50V	0...+/-5V; 0...+/-50V
Threshold Adjustment		Potentiometer	Potentiometer
Threshold Range		Range selected by jumper	Range selected by jumper

Operator Grounding

Wrist Strap		Dual, 3.5 mm plug
Operator's resistance alarm		Yes
Operator body voltage alarm		Yes

Mat

Resistance to ground		Yes
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Alarm

Visual	LED	LED
Audio	Buzzer	Buzzer

General

Dimensions	0.85 in. H x 2.4 in. W x 1.63 in. L 22 mm H x 61 mm W x 42 mm L	0.85 in. H x 2.4 in. W x 2.5 in. L 22 mm H x 61 mm W x 63 mm L
Power	External Adapter	External Adapter

All specifications are subject to change without notice

Why Overvoltage?

The soldering iron provides metal-to-metal contact with the most sensitive components on the circuit board. A malfunctioning soldering iron may expose the components to a significant voltage via its tip, including electrostatic discharge (ESD event) and/or electrical overstress (EOS). If a soldering iron is not grounded properly, the voltage on the tip can reach as high as the AC line voltage (i.e. AC 110V to 220V) due to capacitive coupling with power line cables. Studies* show that the current to the boards from such contact can exceed several amperes damaging the components. Simply touching the board with tweezers when the operator is not grounded can generate a damaging discharge. Monitoring of overvoltage on the circuit board itself can provide assurance that the alarm set voltage limit has not been exceeded.

*"EOS from Soldering Irons Connected to Faulty 120VAC Receptacles"
W. Farwell et. al., Raytheon Corporation. Presented at 2005 ESD Symposium

CTC-33X-Y

Iron Man	0
Iron Man Plus	1

U.S. Power Adapter	US
Universal Power Adapter	WW

Ordering Information

3M Iron Man and Iron Man Plus Monitors come with:

- Monitor lead with alligator clip
- Ground connection hardware (Iron Man Monitor only)
- Power adapter
- User's guide

Please contact factory for other options and accessories
U.S. Patents 6,930,612; 7,118,380, other patents applied for.

Accessories

Dissipative Vinyl Three-Layer Table Mats	8200 Series
Dual Conductor Fabric Wrist Band	2368
Dual Conductor Coiled Ground Cord, 10 ft.	2370
Replacement Terminal Board with Jack	CTA251

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