

# 3M™ EM Aware TNG ESD Event Monitor

## Essential Tools for ESD/EMI Management

As an ESD management tool, the EM Aware TNG ESD Event Monitor will:

- Assess the existing ESD environment by collecting factual data and provide information to make an informed decision on the level of ESD protection needed.
- Verify in real time how effective these ESD protective measures are.
- Provide continual information on the actual ESD environment to help ensure that ESD problems don't go unchecked.
- Be a comprehensive diagnostics and troubleshooting tool for ESD and EMI problems.

The improved design features a metal case module with a built-in LCD display, a joystick control feature, CDM mode to reject non-ESD/EMI events, local or remote antenna, power supply, communication interface to a PC and data logging software. Several EM Aware monitors can be connected to a PC for a comprehensive analysis of your manufacturing process.

### Applications

- Semiconductor fabrication
- Disk drive assembly
- Flat panel fabrication
- Electronic assembly
- Industrial robotics
- Medical
- Military

### Features

- ESD events: magnitude and count
- Static voltage
- Ionization balance
- Closed-loop ionizer feedback
- Ionizer decay
- EMI
- CDM mode
- LCD user interface
- Broad sensitivity range
- Adjustable sensitivity
- Audio and visual indication
- Stand-alone or networked
- Output to FMS and DAQ
- Individual alarm settings
- Local or remote antenna
- Joystick control



## Key Parameters

The EM Aware TNG Monitor is designed to monitor the following parameters that help keep you aware of critical symptoms of ESD problems:

1. **ESD Events** — Detects ESD events and measures their magnitude in a wide range of sensitivity. Also provides an event count.
2. **Static Voltage** — Real time measurements of static voltage dynamics are done in a wide range that can be adjusted in the field.
3. **Ionization Balance** — Allows for high sensitivity of the ionizer balance while maintaining a wide range for static voltage.
4. **Ionizer Decay** — Provides on-going measurements of ionizer decay where sensitive components are handled.
5. **Connectivity** — Provides outputs for every parameter to all major facility monitoring systems (FMS).

The thresholds for these parameters are fully adjustable.

## 3M™ EM Aware TNG ESD Event Monitor

Properties	Typical Value
ESD Event Threshold Range	60 – 140 dBuV (default setting: 80 dBuV)
R Load	250 Ohm
Raw Input signal	60 dBu (1mV), U <sub>out</sub> = 1.25 V, I <sub>out</sub> = 5 mA 136.7 dBu (6.8 uV), U <sub>out</sub> = 5 V, I <sub>out</sub> = 20 mA The dependence is linear
Static Voltage Range	12.5, 100, 250, 500, 1000 Volts
Signals	U <sub>out</sub> = 1 V (4 mA for 250 Ohm) for high negative static voltage value range U <sub>out</sub> = 5 V (20 mA for 250 Ohm) for high positive static voltage value range
Ionization Balance Range	+/- 5 Volts max
Charge Decay Limit	5 Volts max (10 seconds)
R Load	250 Ohm
Decay	00.0, U = 1 V 16.0, U = 2 V The dependence is linear Decay which is >15.0 does not show on display
Alarm Indicators	Buzzer (with disable switch)
Operating Environmental Range	Temperature: 41°F, (5°C) to 104°F (40°C) Humidity: 80% R.H. Maximum for temperatures up to 88°F (31°C), decreasing linearly to 50% relative humidity at 104°F (40°C)
Dimensions	3.15 in. W x 1.60 in. H x 2.20 in. L (antenna not included) 80 mm x 40 mm x 56 mm
Ground cable	20AWG, multi-strand, OD: 2.5mm, black, #6 ring terminal.
Inputs	SMA Connector for Bell antenna, or Remote antenna
Outputs	RJ45 connector, 4 — 20mA analog output RJ45 connector, relay output at pin7-gnd (PC is not included)
Color	Silver, Teal Green
Display	LCD segment
Power Supply	Adapter, 12 Vdc , center positive, 0.3A

EM Aware TNG ESD Event Monitor Selection Guide

Model	ESD Events	Event Magnitude	Event Counter	Static Voltage	Ionizer Balance	Ionizer Decay
3M034-031-TNG	✓	✓	✓	✓	✓	✓
3M034-030-TNG	✓	✓	✓	✓	✓	
3M034-3-TNG	✓	✓	✓			

### 3M™ EM Aware TNG ESD Event Monitor Starter Kits

The easiest way to get started with EM Aware TNG Monitor is to use one of the Starter Kits, which contains everything needed to connect several EM Aware TNG Monitors to your computer to start collecting data on your ESD/EMI environment. EM Aware TNG Starter Kits are ideal for diagnostics and portable or small installations. Each starter kit includes a number of selected EM Aware TNG Monitors, remote antennae, USA data acquisition system, Windows™-based software, worldwide power adapter, and necessary cables and interconnects.

EM Aware TNG ESD Event Monitor Starter Kit Selection Guide

Model	ESD Events	Static Voltage	Ionization Balance	Ionization Decay
3M3A5-C-TNG	✓	✓	✓	✓
3M2A6-C-TNG	✓	✓	✓	
3M1A4-C-TNG	✓			

The number of monitors per kit can vary depending on selected features.

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