



# Single Wire Impedance Monitoring

## Advantages of Continuous Monitoring Over Periodic Testing

- Provides knowledge of a continuous, reliable ground
- Eliminates wrist strap daily testing and logging
- Intermittent strain relief failures first detected when cord is under stress
- Periodic testing failure makes prior shift's entire production suspect

## Single-Wave Distortion Impedance Continuous Monitors

- Provides true 100% continuous monitoring
- Continuous < 2 volt signal for constant sensing phase difference between current and voltage
- Any standard wrist strap can be used - more durable and less expensive
- Typically no user adjustment needed
- Also alarms there is when excessive voltage on operator
- There have not been any reported skin irritation problems



222740 Single Wire Monitor

## Advantages of Continuous Monitoring Over Periodic Testing

Continuous Monitors pay for themselves, improving quality, productivity, and eliminating wrist strap daily testing and test result logging. "The wrist strap system should be tested daily to ensure proper electrical value. Daily testing may be omitted if constant monitoring is used." (ANSI/ESD S1.1 Annex A, 3 Frequency of Functional Testing)

Companies manufacturing products containing ESD sensitive items need to ask themselves "how important is the reliability of their products"? "If the products that are being produced are of such value that knowledge of a continuous, reliable ground is needed, and then continuous monitoring should be considered or even required." "Opens in the wire at the coiled cord's strain relief are sometimes only detected under stress." (ESD Handbook ESD TR20.20 section 5.3.2.4.4 Test Frequency and section 5.3.9.1 Continuous Monitors Introduction)

Periodic testing detects wrist strap failures after ESD susceptible products have been manufactured. The costs of dealing with the resulting catastrophic failures or latent defects can be considerable. The ESD Association produced the ESD TR 12-01 technical report which is entitled "Survey of Constant (Continuous) Monitors for Wrist Straps". It contains useful information:





“Since people are one of the greatest sources of static electricity and ESD, proper grounding is paramount. Ensuring that wrist straps are functional and are connected to people and ground is a continuous task.”

“While effective at the time of testing, wrist strap checker use is periodic. The failure of a wrist strap between checks may expose products to damage from electrostatic charge. If the wrist strap system is checked at the beginning of a shift and subsequently fails, then an entire shift’s work could be suspect.”

### Single-Wire Wave Distortion Impedance Technology Provides True 100% Continuous Monitoring

EMIT designs and manufactures many of its Continuous Monitor product offerings using wave distortion impedance technology.

“The impedance monitor uses a detection circuit designed to reduce false alarms and eliminate adjustments. (It) use(s) the phase difference between current and voltage to detect changes in impedance of the cord, band and person. A very low AC voltage is used for constant sensing. Any standard wristband and coiled cord can be used.” (ESD TR 12-01)

Audio alarm will sound and visual LED alarm will illuminate when one of the following is detected: improper grounding status, or excessive voltage on operator or nearby item, or when the wrist strap coil cord is inserted into the ground jack and not parked. Typically no use adjustment is required, the wave distortion impedance Continuous Monitor is very reliable and has been used by many leading companies for over twenty years.

### Advantages of Wave Distortion Impedance and Single-Wire Technology

EMIT’s wave distortion impedance Continuous Monitor allows the use of any standard, single-wire wrist strap and coil cord. The monitor/wrist strap/cord system life-cycle costs are by typically lower than alternative systems which require more expensive and less durable dual-wire wrist straps.

The continuous < 2 volt signal provides true 100% continuous monitoring, not a pulsed current which can be off over 90% of the time. There have not been any reported skin irritation problems, and it is appropriate for use in voltage sensitive applications such as disk drive manufacturing.

