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ESD association technical report

Survey of Constant (Continuous) Monitors for Wrist Straps

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1.0 Introduction

Since people are one of the greatest sources of static electricity and ESD, proper grounding is paramount. One of the most common ways to ground people is with a wrist strap. Ensuring that wrist straps are functional and are connected to people and ground is a continuous task.

Wrist strap checkers

The wrist strap checker is a tool for testing the proper operation of the wrist strap system (wristband, coiled cord, and connection of the band to the person). It measures the resistance of the wrist strap system as worn. User friendly and reliable, wrist strap checkers are commonly used for wrist strap evaluation in many electronic manufacturing operations.

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.

Wrist strap checkers are usually placed in a central location for all to use. Wrist straps are stressed and flexed to their limits at a workstation. While a wrist strap is being checked, it is not stressed, as it would be under working conditions. Opens in the wire at the coiled cord's strain relief are sometimes only detected under stress.

Even if the wrist strap is working properly, a bad ground connection will render the wrist strap system ineffective. Ground connections should to be tested at the time of initial installation and periodically there after. Assumptions should not be made that the grounding system is properly installed and will remain permanently connected.

Constant monitors

Constant monitors, also called continuous monitors in ESD-S20.20, were designed to provide testing of the wrist strap system. While a number of technologies have been utilized, the goal remains consistent; electrical connections are tested between the ground point, coiled cord, wristband, and body while the wearer performs operations on static sensitive items. Failures are reported via audible and visual alarms.

2.0 Types of Constant Monitors

There are several types of constant monitors available. A brief discussion of the technologies used for constant monitoring will make differentiation easier.