



Dr. Zap

FAQ Grounding

Frequently Asked Questions - Grounding

Written by: Gene Felder

What should be known about testing personal grounding devices?

While worn, wrist straps and ESD footwear should be tested at least daily with results logged. Per ANSI/ESD S20.20 Paragraph 6.2.2.2 Personnel Grounding Guidance, "A log should be maintained which verifies that personnel have tested their personal grounding devices." Per ESD-S1.1 paragraph 6.1.3 Frequency of Functional Testing "The wrist strap system should be tested daily to ensure proper electrical value."

Why use continuous monitors?

Per ESD Handbook TR 20.20 paragraph 5.3.2.4.4 Test Frequency, "Because wrist straps have a finite life, it is important to develop a test frequency that will guarantee integrity of the system. Typical test programs recommend that wrist straps that are used daily should be tested daily. However, 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." And per ESD-S1.1 paragraph 6.1.3 Frequency of Functional Testing, "Daily (Wrist Strap) testing may be omitted if constant monitoring is used."



Is a grounded dissipative ESD worksurface desirable?

Per ESD Handbook TR20.20 paragraph 5.3.1.7 Electrical Considerations, "(RTG is) the most important functional consideration for worksurfaces. This establishes the resistance of the primary path to ground for items placed on the surface. When worksurface materials are being selected, consideration should be given to possible Charged Device Model (CDM) damage to ESD sensitive products. If CDM damage is a concern, then setting a lower resistance limit for the worksurface should be considered. Typically, the lower limit for these types of worksurfaces is 1×10^6 ohms."

Is it acceptable to daisy-chain grounding items at the ESD protected workstation?

No. Per ANSI/EOS/ESD S6.1, Grounding paragraph 4.1.1, "Every element to be grounded at an ESD protected station shall be connected to the same common point ground." ESD-ADV53.1-1995 ESD Protective



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Product

62100 - Dual Independent Footwear and Wrist Strap Tester



Semtronic Dual Independent Footwear and Wrist Strap Tester, item 62100, provides versatility for user to use either single or dual wire technology. Reduce operator errors and ESD paper trail



while enhancing operator accountability.

Features

- RS 485 Standard Collection
- Allows product to easily be adapted to the smartlogging data acquisition system
- Tests either single or dual wrist strap
- Relay time for door locking systems, password protection
- Enables users to easily connect to automated door openers
- Paperless Data
- Automates Footwear testing when used with the Smartlog
- Split footplate design

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Dr. Zap

Workstations Electrical Requirements "Workstation elements shall be connected to, and maintain electrical continuity to, the common point ground as follows:

- Worksurfaces - Resistance: Between 1×10^6 ohms and 1×10^9 ohms
- Surfaces of shelves and drawers intended to be used for unprotected ESD sensitive devices - Resistance: Between 1×10^6 ohms and 1×10^9 ohms"

How can one ground loose leaf binders, document holders, etc.?

Instead of using the regular version, use static dissipative ESD protected product version. Per ESD Handbook TR 20.20 paragraph 2.4 "It should be understood that any object, item, material or person could be a source of static electricity in the work environment. Removal of unnecessary nonconductors, replacing nonconductive materials with dissipative or conductive materials and grounding all conductors are the principle methods of controlling static electricity in the workplace, regardless of the activity."



Do hand tools need to be grounded?

Yes. Per ANSI/ESD S20.20 Paragraph 6.2.6.1. AC Powered Tools, "The working part of AC powered tools should be capable of providing a conductive path to ground. New powered hand tools such as soldering irons typically should have a tip to ground resistance of less than 1.0 ohm. Note - This resistance may increase with use but should be less than 20.0 ohms for verification purposes." And per paragraph 6.2.6.2. Battery Powered and Pneumatic Hand Tools "Battery powered and pneumatic hand tools while being held should have a resistance to ground of less than 1×10^{12} ohms."

Is electrical ground or earth ground preferred? How is it checked?

Electrical ground is preferred. All grounding efforts are for naught if electrical outlet is not properly wired; it is easily checked with an AC Outlet Analyzer. Per ANSI/ESD S20.20 Paragraph 6.2.1.2. Grounding / Bonding Systems Guidance "In most cases, the third wire (green) AC equipment ground is the preferred choice for ground." Per ESD-ADV53.1 ESD Protective Workstations, Electrical Receptacle Verification "Prior to conducting any of the following tests, perform the Receptacle Wiring Verification tests". Note: Per EOS/ESD-S6.1 Paragraph 4.1.3 "Isolated ground receptacles should not be used to derive an ESD ground. The use of an isolated ground for ESD purposes may compromise the isolated ground's performance. Note receptacle body typically identified orange in color and with green triangle on it."



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Product

21245 - Premium Metal Expansion Wrist Straps



ESD Systems.com Premium Metal Expansion Wrist Strap, item 21245, is a durable metal band that is long wearing and easy to clean.

Features

- Premium metal design is comfortable, designed not to pinch or pull hair
- Non-flaking or scratching laminated insulator on all external surfaces - protects wearers from electrical hazards; provides many years of product life
- Superior contact with skin for reliable removal of generated static charges
- No "extra" links to lose
- Medical grade stainless steel interior expansion band will not cause allergic skin reactions for most people
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Q:953 At what interval should an ESD control program test soldering irons?

[see ANSWER 953](#)

Q:965 Is it ok to place a metal plate on the properly grounded dissipative mat in an ESD Protected Area?

[see ANSWER 965](#)

Q:1005 We are in the process of laying antistatic carpeting in the production area. I would be obliged if you can give me the appropriate method in which such a carpet should be laid. Are there specific quality standards that have to be met

[see ANSWER 1005](#)

Q:1008 How susceptible are devices in wafer form to ESD damage? And, what is the correct way to handle/package wafers to prevent ESD damage?

[see ANSWER 1008](#)

Q:1010 What effect do cell phones have on ESDS products? What precautions should be taken with cell phones on the production floor?

[see ANSWER 1010](#)

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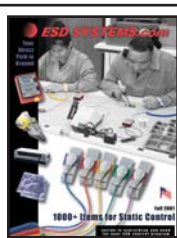


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