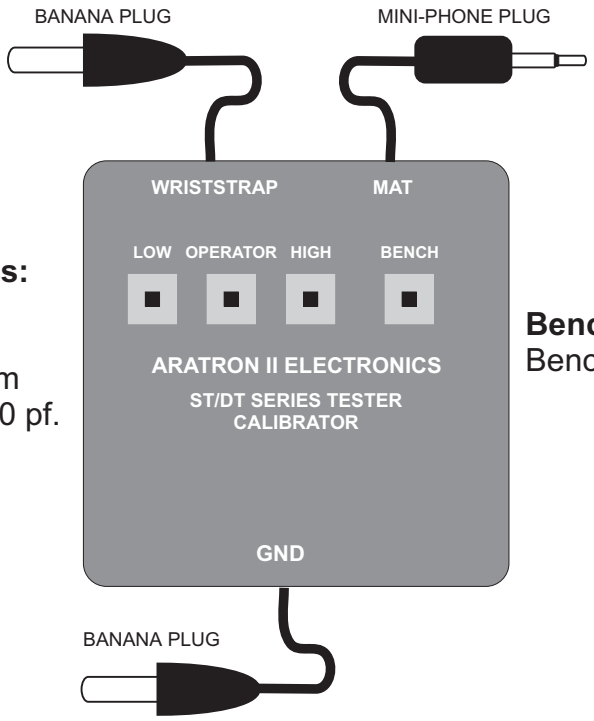
ARATRON II ELECTRONICS, INC.

Installation and Test Procedures for the ST/DT series Monitor Calibrator and Tester

Wrist Strap Test Specs:

High: 10.0 MegOhm
Operator: 1.00 MegOhm
in series with 100 pf.
Low: 511KOhm



Bench Mat Test Specs:
Bench: 10.0 MegOhm

1. Connect the ST/DT Tester ground wire to the ESD Common Point Ground.

2. When testing the operator connection, you must remove your hand from the cable after plugging it in. Holding on to the cable will invalidate the test because the monitor will detect your body capacitance where your hand touches the cable.

2A. ST (Single Threshold) Series Wrist strap test:

Plug the banana plug for the wrist strap connection into the wrist strap jack on the ESD monitor. The Operator LED should be red at this point. Pressing the High or Operator buttons should cause the LED to turn green. The Low button is not part of this test but it should cause the Operator LED to turn green.

2B. DT (Dual Threshold) Series Wrist strap test:

Plug the banana plug for the wrist strap connection into the wrist strap jack on the ESD monitor. The Operator High LED should be red at this point and the Operator Low LED should be green. Pressing the High or Operator buttons should cause the High LED to turn green. Pressing the Low button should cause the Low LED to turn yellow.

3. Bench Mat test:

Plug the bench mat plug into the ESD monitor bench jack. Press the Bench button and the Bench LED should turn green and the alarm should stop sounding.

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Electrical Environments and Continuous ESD Monitors.

Continuous ESD monitors like the AEI-ST/DT series and the AEI-920xD series operate by sensing fairly high impedance loads in the form of wriststraps and body capacitance on the operator connections and high resistance matting on the bench ports. Relatively small signals are used and sensed to detect the operators on the wriststraps and the bench mat grounding. Both of these things make them sensitive to the electrical environment that they are used in. Other equipment with similar characteristics like audio and measurement systems have the same problems.

The purpose of ESD monitors and matting is to drain off electrical charges **slowly** to eliminate damaging potentials. Low impedances like a direct ground connection let the current get too high when discharge occurs and that is what can cause ESD damage. High impedances allow only small currents that don't cause ESD damage.

The worst offenders are electrical motors. Many electrical motors generate electrical noise that cannot be filtered because the signal levels are too high. Motors like these probably should not be included in an "ESD Safe" environment in the first place. The signal levels can be so high as to cause an ESD event all by themselves. Note that this noise can come through the air or be conducted through the power lines themselves. Conducted noise can be reduced by filtering the power lines. Electrical noise induced through the air can only be reduced by moving the noise source away from the affected equipment.

Fluorescent lamps can be a significant source of electrical noise also. They radiate noise as the tubes turn on and off. The electrical ballasts radiate magnetic signals that are difficult to filter.

Continuous ESD monitors should be used in a relatively benign electrical environment. That also applies to the equipment being assembled. If your electrical equipment is causing alarms in your ESD monitors, then you should question whether that equipment should be there. Clean, noise-free power and good ground systems are requirements for the ESD monitors as well as the equipment that is being assembled.

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