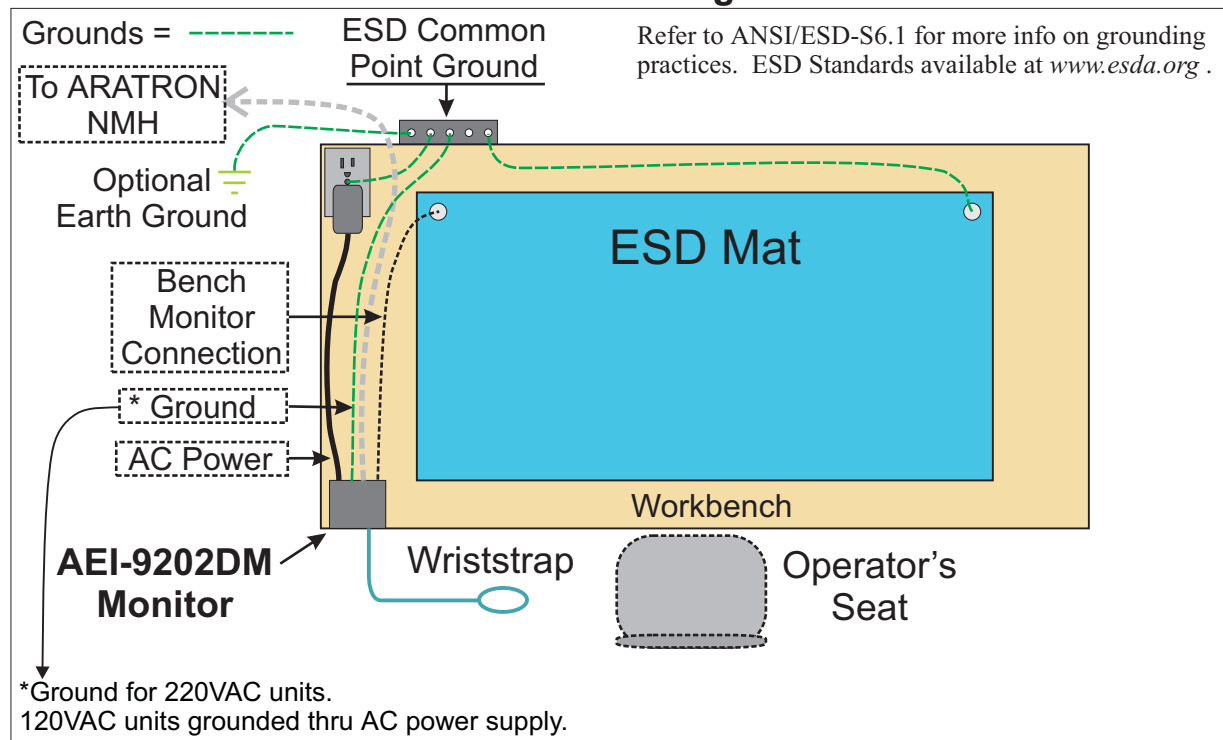


# **AEI** ARATRON II ELECTRONICS, INC.

## Installation and Test Procedures for the AEI-9202DM ESD Monitor

1. Mount the AEI-9202DM in a convenient place on the workbench using the Velcro supplied with the unit or the optional mounting bracket. Units are frequently mounted on the underside of the workbench to keep them out of the way.
2. Plug the power adaptor into the AEI-9202DM and into a grounded outlet. Both LED's should turn red and the buzzer should sound. The ground in the outlet is an important part of the system and should be also connected to the ESD Common Point Ground. The outlet and the Common Point Ground can located at any convenient place on the workbench.
3. Plug the bench cable into the back of the unit and connect it to the bench mat. It should be connected to the opposite side of the mat from the mat ground connection. The BENCH LED should turn green.
4. Plug a wrist strap into the front of the unit and put it on. The OPERATOR LED should turn green. If it doesn't, touch the wrist strap to the common point ground. If the OPERATOR LED turns green, then the wrist strap was not making good contact with the OPERATOR.
5. Plug the grey flat cable into the back of the AEI-9202DM and into the Aratron NMH. Verify that the NMH status is the same as the LED's on the front of the AEI-9202DM.

### Connection Diagram



The **TM-92xx** Calibration and Test unit is available for the AEI-92xx series ESD monitors. Plug the ground cable into the Common Point Ground, the Bench cable into the BENCH input, and the Operator cable into the OPERATOR input. The LED's should be red. They should turn green when you press the test buttons.

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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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