HOW TO PREVENT EQUIPMENT DAMAGE

Did you know?

- You can damage your equipment or boards without feeling it. Just a couple hundred Volts is enough to damage equipment, but you won’t feel a discharge until it’s 2 to 3 kV.
- Pink packing materials have inconsistent electrostatic properties and should never be used.
- A common myth is that a cable’s center conductor can be triboelectrically charged just by flexing the cable. This is false. However, cables can still be charged through other means, so it’s important to properly discharge them before use.

USE A GROUNDED WRIST STRAP whenever you are handling equipment or boards.
- This prevents your body from building charge. Damage can occur if this built-up charge discharges into your equipment or test boards.

USE GROUNDED WORK SURFACES OR MATS for your boards. Do NOT use static generating or insulating materials as a work surface.
- Non-grounded mats and static generating/insulated materials can inductively charge boards, especially exposed ones. When connecting a charged board to equipment, the board can cause damage by discharging into the equipment’s inputs.

KEEP CHARGED MATERIALS AT LEAST 0.3 METERS FROM EXPOSED ASSEMBLIES. This includes plastics, foam, or other materials that can build up charge.
- Having a charged material near an exposed assembly can inductively charge the assembly. The assembly can then discharge into the equipment’s inputs.

DISCHARGE YOUR CABLES BEFORE CONNECTING THEM TO YOUR EQUIPMENT. Cable discharge process:
  i. Ensure your device is off.
  ii. Connect your cable to your device.
  iii. Attach a 50 Ω shunt to the open end of the cable.
  iv. Remove the shunt and immediately attach your device to your equipment.
- This prevents the center conductor of your cable from discharging stored charge into your equipment. A charged assembly can charge connected cables.

USE BOARD STANDOFFS AS NEEDED.
- In some situations, you need board standoff to provide extra insulation for your exposed assemblies. This prevents your grounded mats from making unwanted connections on your board.

NEVER USE “PINK” PACKING MATERIAL FOR BOARD TRANSPORT OR AS A WORK SURFACE.
- While many people think pink packing material is ESD safe, in most cases it easily builds up unwanted charge. Unless continuous, thorough testing is done, treat pink packing materials as charged.

CAP UNUSED EQUIPMENT INPUTS to avoid accidental ESD and physical damage.
- Damage often occurs by accidentally contacting equipment inputs. Capping unused inputs protects them from incidental ESD damage.

USE ESD-SAFE BAGS WHEN TRANSPORTING BOARDS.
- This protects boards from ESD damage while moving between ESD-safe locations.

DO NOT OVERDRIVE EQUIPMENT INPUTS. Start your testing at the least sensitive input setting and zoom in on your signal. Additionally, observe the maximum input levels for your specific equipment.
- The least sensitive setting is the most resilient, so starting there ensures that your inputs are at safe operating levels.

Learn More at: www.keysight.com/find/PreventESD