

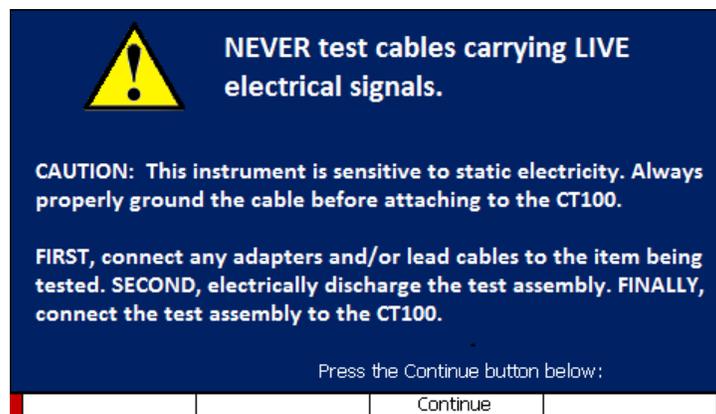
1000: CT100B Avoiding Electrical Damage

This application note will discuss how to **safely** connect the CT100B to test a cable or other device. Safely in this context refers to *avoiding possible damage to the CT100B*. The electronic circuits inside the CT100B are susceptible to electrical shock.

Always begin by making sure to electrically short your cable before connecting it to the CT100B.

The electronics inside the CT100B work by sending and receiving small electrical pulses. The electronics are extremely sensitive to electrical inputs and can be damaged by an extraneous electrical signal. Damage to the hybrid circuit by an electrical shock is not covered by the warranty.

The “splash” screen of the CT100B displays the following warning:



There are two main sources of electrical shock to the CT100B:

- 1) Connecting to “live” equipment.
- 2) Static electricity.

“Live” Equipment

Never test live equipment. Always make sure that whatever cables, etc. that you are testing are not connected to any power source. The CT100B is only designed to be used to test devices that are not powered.

Static Electricity

Any cable or wire can carry a significant static electric charge that could damage the sensitive internal electronics of the CT100B. For this reason, it is essential to discharge the electrical conductors of any cable or device-under-test (DUT) by shorting them to each other or to earth ground before connection is made to the CT100B’s sampling circuitry.

CT100B instruments supplied with a front panel BNC¹ test port are equipped with a built-in internal self-grounding connection that briefly shorts the conductors of the DUT to each other, dissipating stored

¹ Most CT100 devices are manufactured with the self-shorting BNC port. Some models are made with an SMA port. The SMA port *does not* have the self-shorting feature.

charge, before completing the connection to the CT100B's sensitive internal sampling circuitry. For this reason, the last cable connection should always be made to the CT100B test port. For example, if the DUT is a cable assembly, all internal connections within the cable assembly should be made before connection is made to the CT100B BNC test port. This ensures that all stored charge in the DUT is discharged during the connection to the CT100B BNC test port.

Sometimes it is convenient to insert a patch cable or adapter between the CT100B BNC test port and the DUT. In this case, it is recommended that all cable connections, including the connection of the patch cable to the DUT, be made before connecting the patch cable to the CT100B BNC test port. Otherwise, the BNC test port self-grounding safety feature is circumvented.

If for some reason the last connection cannot be made at the CT100B test port, then the conductors of the DUT should be discharged (shorted) manually using an industry-standard shorting cap termination or equivalent direct electrical connection.

*Note that CT100B instruments equipped with **SMA** or other front panel test ports **do not** have internal self-grounding protection.* Therefore, when using these instruments, the conductors of the cable under test/DUT should always be shorted to each other or to earth ground prior to connection to the CT100B's test port.



***CAUTION:** Failure to properly ground the cable/device under test prior to connecting it to the front panel connector, either directly or indirectly, could result in damage to the sampling electronics and will void the Warranty.*