

Keysight InfiniiMax III N2800A-Series Probes

Handling
Guide



Notices

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CAUTION. A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

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Using the Probes

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This guide will assist you in properly handling your InfiniiMax III N2800A-series probes to prevent damage and maintain high performance. For more safe-handling information, go to www.keysight.com and search for *InfiniiMax III ESD Best Practices demo video*.

CAUTION

Electrostatic discharge (ESD) can quickly and imperceptibly damage or destroy high-performance probes, resulting in costly repairs. Always wear a wrist strap when handling probe components.

CAUTION

Probes are sensitive devices and should be treated with care. Do not bend or kink the probe amplifier cable. Do not drop heavy objects on the probe, drop the probe from large heights, spill liquids on the probe, etc. Any of these examples can significantly degrade the performance of the probe.

CAUTION

When storing the probe, it is best to coil the cable in a large radius and avoid a net twist in the cable during the process. This can be done in a similar manner to how garden hoses or extension cords are typically coiled.

CAUTION

InfiniiMax I and II probe heads cannot be used with Infiniimax III probe amplifiers and InfiniiMax III probe heads cannot be used with InfiniiMax I and II amplifiers.

Before Connecting a Probe

InfiniiMax probes and accessories are ESD sensitive devices and should be treated with care. Before using or handling the probe or accessories, always wear a grounded ESD wrist strap and ensure that cables and probe heads are discharged before being connected.

All work, including connecting probe amplifiers to the oscilloscope, should be performed at a static-safe work station.

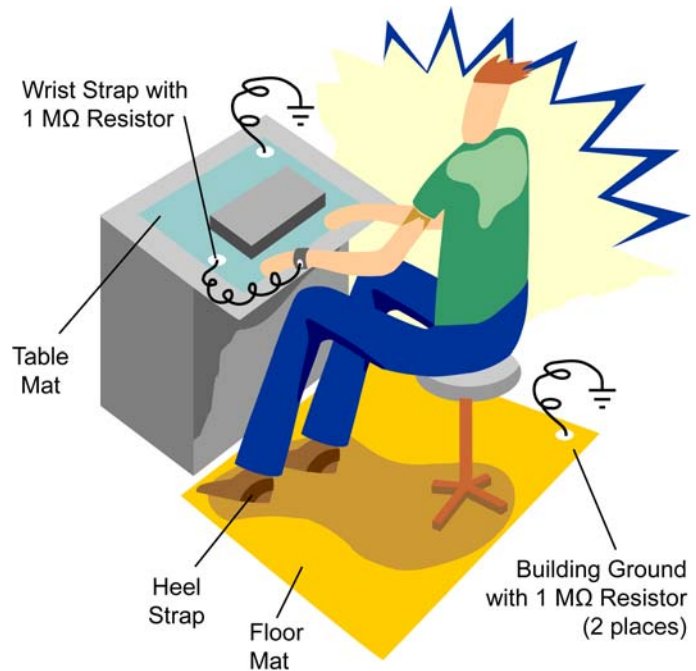


Figure 1 Static-Safe Work Station

Many scopes including Keysight's 90000X Series have a front-panel ground socket. You can plug the wrist strap into the ground socket as seen in the following picture.

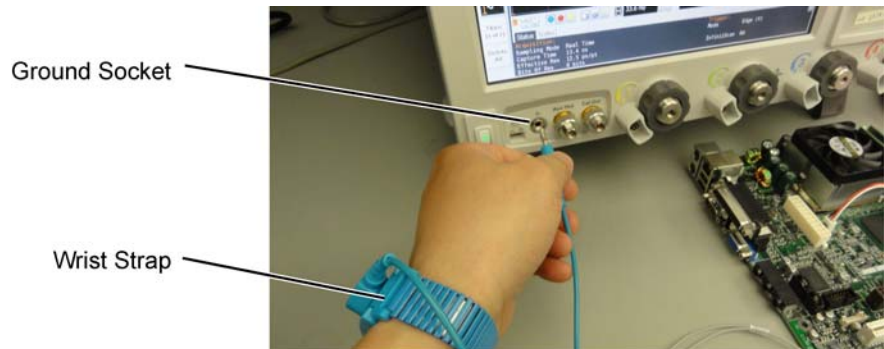


Figure 2 Wrist Strap Connected to Oscilloscope Ground Socket

The static-safe work station shown in [Figure 1](#) uses two types of ESD protection:

- Conductive table-mat and wrist-strap combination.
- Conductive floor-mat and heel-strap combination.

Both types, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone. To ensure user safety, the static-safe accessories must provide at least 1 M Ω of isolation from ground. Purchase acceptable ESD accessories from your local supplier.

WARNING

These techniques for a static-safe work station should not be used when working on circuitry with a voltage potential greater than 500 volts.

Connecting a Probe to an Oscilloscope Channel

To protect against ESD damage, always use the following steps when connecting your probe to the oscilloscope.

- 1** If the Device Under Test (DUT) is not grounded to the oscilloscope via the AC mains ground, connect the DUT ground to the oscilloscope ground. An example of a device having a floating ground would be a battery-powered DUT.
- 2** Attach the probe head to the DUT. Also connect any accessories (for example, extension cables) to the probe head.

CAUTION

At this point, the N2800A-series probe amplifier must *not* be connected to the oscilloscope or the probe head.

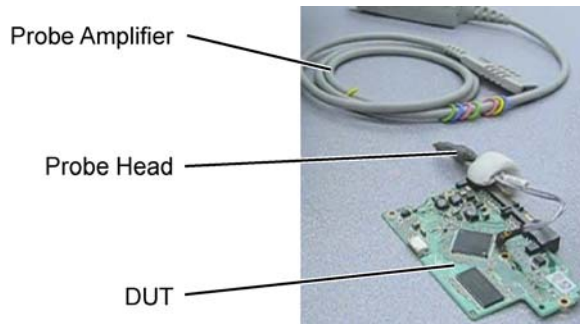


Figure 3 Probe Head Connected to DUT

- 3** Connect the probe amplifier to the oscilloscope while hand tightening the dark gray clutch ring. You will hear a click when the clutch ring reaches the torque limit of 8 in-lb (± 1 in-lb).

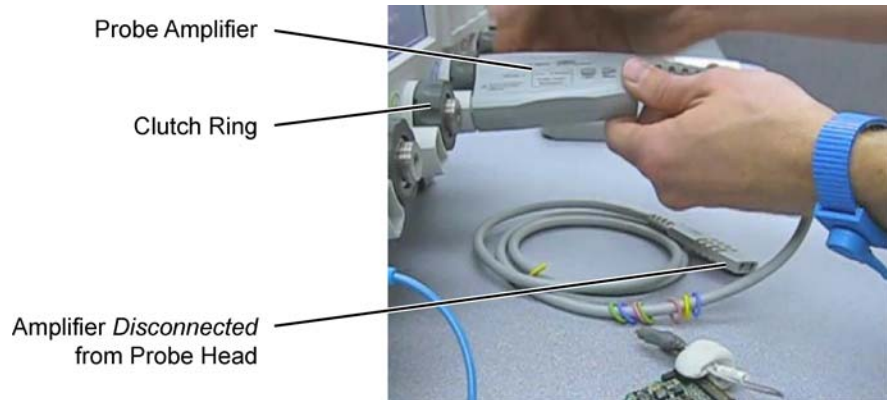


Figure 4 Amplifier Connected to Oscilloscope

4 Connect the probe head to the probe amplifier as shown in [Figure 5](#) on page 8.

CAUTION

When connecting a probe head to a probe amplifier, push straight in. When disconnecting a probe head from an amplifier, pull the probe head connectors straight out of the sockets. Never bend the probe head in order to pry it loose from the amplifier. Also, do not wiggle the probe head up and down or twist it to remove the connectors from the sockets. This can damage the pins in the amplifier or the probe head itself.

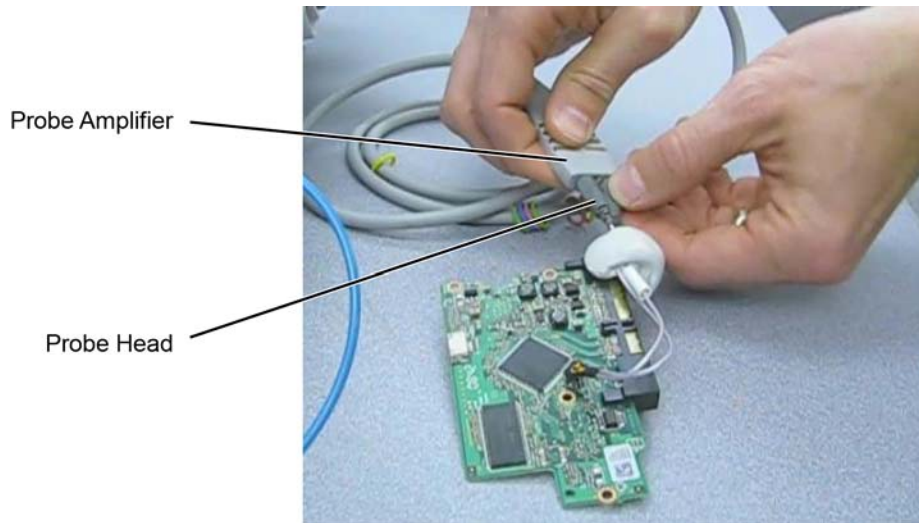


Figure 5 Amplifier Connected to Head

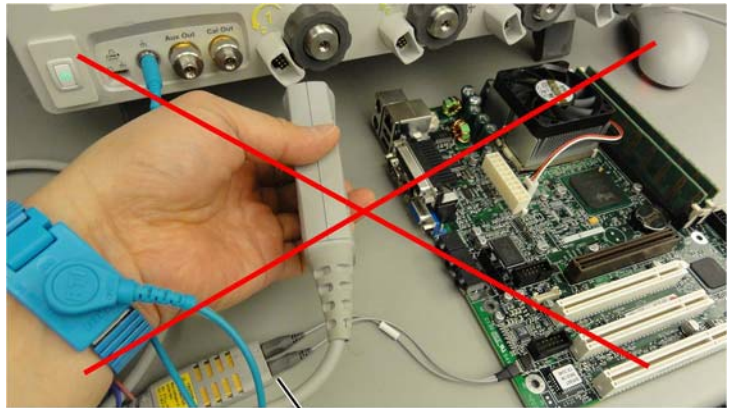
Disconnecting a Probe from an Oscilloscope Channel

Always disconnect the probe head from the probe amplifier before:

- disconnecting the probe amplifier from the oscilloscope.
- moving the probe amplifier from one oscilloscope channel to another.

CAUTION

Never allow the probe head to be connected to the probe amplifier, if the probe amplifier is *not* connected to the oscilloscope channel.



Always disconnect Probe Head
from Probe Amplifier First!

Figure 6 Probe Improperly Disconnected from Oscilloscope while Probe Head is Connected to the Probe Amplifier

Probing the DUT

When making your measurements, you'll often need to probe different location on the DUT. You can safely move any of the following three probe heads without having to first break the amplifier-to-head connection:

- N5445A differential browser head
- N5439A ZIF head
- N5444A 2.92 mm/3.5 mm/SMA head

The only exception is when the DUT is not grounded to the oscilloscope via the AC mains ground. In this case, connect the DUT ground to the oscilloscope ground before moving the probe. An example of a device having a floating ground would be a battery-powered DUT.

When probing with an N2836A or N5441A solder-in probe head, always disconnect the probe head from the amplifier before moving the head to a new probing point. This is because some soldering-iron tips can hold a charge which can damage the probe amplifier.

CAUTION

Always disconnect an N2836A or N5441A solder-in probe head from the probe amplifier before unsoldering, moving to a new position, and resoldering the head.



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