Reference Guide

Keysight

N495xA through N498xA Connector Care

KEYSIGHT TECHNOLOGIES

Notices

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Safety Notices

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.

WARNING

A WARNING 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 personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Safety Summary

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings or operating instructions in the product manuals violates safety standards of design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements. Product manuals are provided with your instrument on CD-ROM and/or in printed form. Printed manuals are an option for many products. Manuals may also be available on the Web. Go to www.keysight.com and type in your product number in the Search field at the top of the page.

General

This product is a Safety Class 1 instrument (provided with a protective earth terminal). The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

All Light Emitting Diodes (LEDs) used in this product are Class 1 LEDs as per IEC 60825-1.

Environment Conditions

This instrument is intended for indoor use in an installation category II, pollution degree 2 environment. It is designed to operate at a maximum relative humidity of 95% and at altitudes of up to 2000 meters.

Refer to the specifications tables for the ac mains voltage requirements and ambient operating temperature range.

Before Applying Power

Verify that all safety precautions are taken. The power cable inlet of the instrument serves as a device to disconnect from the mains in case of hazard. The instrument must be positioned so that the operator can easily access the power cable inlet. When the instrument is rack mounted the rack must be provided with an easily accessible mains switch.

Ground the Instrument

To minimize shock hazard, the instrument chassis and cover must be connected to an electrical protective earth ground. The instrument must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the instrument in the presence of flammable gases or fumes.

Do Not Remove the Instrument Cover

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made only by qualified personnel.

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Safety Symbols

Table 1. Safety Symbol

Symbol	Description
	Indicates warning or caution. If you see this symbol on a product, you must refer to the manuals for specific Warning or Caution information to avoid personal injury or damage to the product.
	Frame or chassis ground terminal. Typically connects to the equipment's metal frame.
	Indicates hazardous voltages and potential for electrical shock.
	Indicates that antistatic precautions should be taken.
	Indicates hot surface. Please do not touch.
	CSA is the Canadian certification mark to demonstrate compliance with the Safety requirements.
	CE compliance marking to the EU Safety and EMC Directives. ISM GRP-1A classification according to the international EMC standard. ICES/NMB-001 compliance marking to the Canadian EMC standard.
	The RCM mark indicates that this product meets EMS/Product Safety Requirements and may be imported to Australia and New Zealand.
ICES/NMB-001	This mark indicates compliance with the Canadian EMC regulations.
ISM 1-A	This text denotes the instrument is an Industrial Scientific and Medical Group 1 Class A product.
	China RoHS regulations include requirements related to packaging, and require compliance to China standard GB18455-2001. This symbol indicates compliance with the China RoHS regulations for paper/fiberboard packaging.
	Indicates the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of the product.

	The South Korean Class A EMC declaration (KC) mark indicates that this product is Class A suitable for professional use and is for use in electromagnetic environments outside of the home. The KC mark includes the marking's identifier code that has up to 26 digits and follows this format: KCC-VWX-YYY-ZZZZZZZZZZZZZ.

Compliance and Environmental Information

Table 2. Compliance and Environmental Information

Safety Symbol	Description
	This product complies with WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in WEEE Directive Annex I, this product is classed as a "Monitoring and Control instrumentation" product. Do not dispose in domestic household waste. To return unwanted products, contact your local Keysight office, or see www.keysight.com/environment/product/ for more information.

Contents

Product specific recommendations

Proper connector care and connection techniques are critical for accurate, repeatable measurements, and for extending the life of your devices.

Prior to making connections, be sure to read all of the connector care information provided with your product.

This document provides quick reference tips on proper connector care as well as some product-specific recommendations.

Product	Recommendations	Part Number
N4951A N4952A N4955A N4956A	Always use provided flexible 2.92 mm connector savers. Male-male (M-M) and male-female (M-F) connector savers are provided for your convenience. Note: Connecting both in series is not recommended as it may affect signal quality at higher data rates.  Shown here: Flex 2.92 mm M-F (N4960-60026)	Flex 2.92 mm M-M: N4960-60018 Flex 2.92 mm M-F: N4960-60026 These parts are included with instrument purchase. Additional parts may be purchased online: www.keysight.com/find/parts
N4951B	Use standard 2.4 mm connector savers if frequent mate/un-mate cycles are anticipated.  	Rigid 2.4 mm M-F: 11900C This part is not included with instrument purchase. For purchase information, contact your local Keysight office: www.keysight.com/find/contactus

N4962A N4963A	Front Panel: Use 2.92 mm (rigid) connector savers for front panel data ports if frequent mate/un-mate cycles are anticipated.  Rear Panel: Use flexible 2.92 mm connector savers on rear panel connections if frequent mate/un-mate cycles are anticipated.  	Front Panel: Rigid 2.92 mm M-F: N8990-01910 This part is included with N4962A purchase only. Additional parts may be purchased online: www.keysight.com/find/parts Rear Panel: Flex 2.92 mm M-F: N4960-60026 This part is included with N4962A purchase only. Additional parts may be purchased online: www.keysight.com/find/parts
N4968A N4974A N4975A	Data connections for this product are 1.85 mm. Use standard 1.85 mm connector savers if frequent mate/un-mate cycles are anticipated.  	Rigid 1.85 mm M-F: N5520C This part is not included with instrument purchase. For purchase information, contact your local Keysight office: www.keysight.com/find/contactus
N4984A	Use standard 2.92 mm connector savers if frequent mate/un-mate cycles are anticipated.  	Rigid 2.92 mm M-F: N8990-01910 This part is not included with instrument purchase. Parts may be purchased online: www.keysight.com/find/parts

Handling and Storage	
Do	**Do Not**
• Keep connectors clean • Extend sleeve or connector nut • Use plastic end caps during storage	• Touch mating-plane surfaces • Set connectors contact-end down

Visual Inspection	
Do	**Do Not**
• Inspect all connectors carefully before every connection • Look for metal particles, scratches, and dents	• Use a damaged connector- ever

Connector Cleaning	
Do	**Do Not**
• Try compressed air first • Use isopropyl alcohol[1] • Clean connector threads	• Use any abrasives • Get liquid into plastic support beads

Gaging Connectors	
Do	**Do Not**
• Clean and zero the gage before use • Use the correct gage type • Use correct end of calibration block • Gage all connectors before first use	• Use an out-of-spec connector

Making Connections	
Do	**Do Not**
• Align connectors carefully • Make preliminary connection lightly • Turn only the connector nut • Use a torque wrench for final connect • Support attached cables on bench or other surface	• Apply bending force to connection • Over tighten preliminary connection • Twist or screw any connection • Tighten past torque wrench "break" point • Allow cables to hang unsupported (cable weight places strain on connectors)

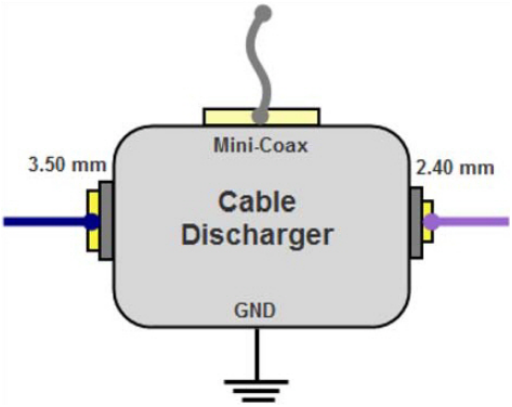
[1] Use isopropyl alcohol in a well-ventilated area, allowing adequate time for moist alcohol to evaporate and fumes to disperse prior to energizing equipment.

Discharging cables

Loose cables are like a capacitor and can hold electrostatic charges. In addition, the free end of a cable touching surfaces that have voltage levels will damage the equipment.

Therefore, before connecting any cable to a connector, short the center and outer conductors of the cable together to ground momentarily or use the cable discharger (p/n M8000-68750) shown below. This cable discharger is shipped with the N4952A.

Before discharging a cable, make sure to ground the cable discharger using the “GND” connector to the same ground as the equipment. Refer to the graphic shown below. A grounding cable is provided with the cable discharger.



Discharge your cables using the connector that mates with your cable. Supported cable connectors include 2.40 mm (also mates with 1.85 mm), 3.50 mm (also mates with 2.92 mm), and Mini-Coax. You may attach the cable discharger to your equipment using the fastener tape provided.

Fixtures made of plastic can store charges, and probing powered devices can subject inputs to damaging voltage and power levels. In addition, poor AC power supplies connected to a product or DUT may create AC transients, insufficient grounding, or floating neutral lines, which cause damaging currents to flow into or out of the equipment.

For more information on Keysight Technologies' products, applications, or services, please contact your local Keysight office. The complete list is available at www.keysight.com/find/contactus.

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