

Tektronix BERTScope BSAITS125 Interference Test Set Quick Start User Manual



**Tektronix BERTScope BSAITS125
Interference Test Set
Quick Start User Manual**

This document supports BSA software V10 and above

www.tektronix.com

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Tektronix

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- Worldwide, visit www.tektronix.com to find contacts in your area.

Table of Contents

Important safety information	iii
General safety summary.....	iii
Service safety summary	v
Terms in this manual	v
Symbols and terms on the product.....	v
Compliance information	vi
EMC	vi
Safety compliance.....	vii
Environmental considerations	ix
Preface	x
Introduction	x
Product description.....	x
Features and benefits.....	x
Documentation	xi
Conventions used in this manual.....	xi
Installation.....	1
Accessories	1
Site considerations	2
Operating requirements.....	2
Preventing electrostatic discharge (ESD).....	3
Instrument connection information	4
Power on the instrument.....	5
Power off the instrument.....	6
BERTScopePC software.....	6
Operation.....	7
Front panel connectors	7
Rear panel connectors.....	10
Connector signal levels	11
Procedures.....	12
System setup.....	12
Stress Combiner view.....	14
Applications	16
User service information.....	17
Service offerings	17
General care.....	18
Preventive maintenance	18
Fuse replacement.....	19
Repack the instrument for shipment.....	19
Specifications	20
Index	

Important safety information

This manual contains information and warnings that must be followed by the user for safe operation and to keep the product in a safe condition.

To safely perform service on this product, additional information is provided at the end of this section. (See page v, *Service safety summary*.)

General safety summary

Use the product only as specified. Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. Carefully read all instructions. Retain these instructions for future reference.

Comply with local and national safety codes.

For correct and safe operation of the product, it is essential that you follow generally accepted safety procedures in addition to the safety precautions specified in this manual.

The product is designed to be used by trained personnel only.

Only qualified personnel who are aware of the hazards involved should remove the cover for repair, maintenance, or adjustment.

Before use, always check the product with a known source to be sure it is operating correctly.

This product is not intended for detection of hazardous voltages.

Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

When incorporating this equipment into a system, the safety of that system is the responsibility of the assembler of the system.

To avoid fire or personal injury

Use proper power cord. Use only the power cord specified for this product and certified for the country of use.

Do not use the provided power cord for other products.

Ground the product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, make sure that the product is properly grounded.

Do not disable the power cord grounding connection.

Power disconnect. The power cord disconnects the product from the power source. See instructions for the location. Do not position the equipment so that it is difficult to operate the power cord; it must remain accessible to the user at all times to allow for quick disconnection if needed.

Observe all terminal ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Do not float the common terminal above the rated voltage for that terminal.

The measuring terminals on this product are not rated for connection to mains or Category II, III, or IV circuits.

Do not operate without covers. Do not operate this product with covers or panels removed, or with the case open. Hazardous voltage exposure is possible.

Avoid exposed circuitry. Do not touch exposed connections and components when power is present.

Do not operate with suspected failures. If you suspect that there is damage to this product, have it inspected by qualified service personnel.

Disable the product if it is damaged. Do not use the product if it is damaged or operates incorrectly. If in doubt about safety of the product, turn it off and disconnect the power cord. Clearly mark the product to prevent its further operation.

Examine the exterior of the product before you use it. Look for cracks or missing pieces.

Use only specified replacement parts.

Use proper fuse. Use only the fuse type and rating specified for this product.

Do not operate in wet/damp conditions. Be aware that condensation may occur if a unit is moved from a cold to a warm environment.

Do not operate in an explosive atmosphere.

Keep product surfaces clean and dry. Remove the input signals before you clean the product.

Provide proper ventilation. Refer to the installation instructions in the manual for details on installing the product so it has proper ventilation.

Slots and openings are provided for ventilation and should never be covered or otherwise obstructed. Do not push objects into any of the openings.

Provide a safe working environment. Always place the product in a location convenient for viewing the display and indicators.

Avoid improper or prolonged use of keyboards, pointers, and button pads. Improper or prolonged keyboard or pointer use may result in serious injury.

Be sure your work area meets applicable ergonomic standards. Consult with an ergonomics professional to avoid stress injuries.

Use care when lifting and carrying the product.

Use only the Tektronix rackmount hardware specified for this product.

Service safety summary

The *Service safety summary* section contains additional information required to safely perform service on the product. Only qualified personnel should perform service procedures. Read this *Service safety summary* and the *General safety summary* before performing any service procedures.

To avoid electric shock. Do not touch exposed connections.

Do not service alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect power. To avoid electric shock, switch off the product power and disconnect the power cord from the mains power before removing any covers or panels, or opening the case for servicing.

Use care when servicing with power on. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

Verify safety after repair. Always recheck ground continuity and mains dielectric strength after performing a repair.

Terms in this manual

These terms may appear in this manual:



WARNING. Warning statements identify conditions or practices that could result in injury or loss of life.



CAUTION. Caution statements identify conditions or practices that could result in damage to this product or other property.

Symbols and terms on the product

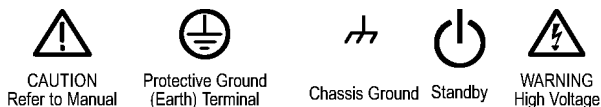
These terms may appear on the product:

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.



When this symbol is marked on the product, be sure to consult the manual to find out the nature of the potential hazards and any actions which have to be taken to avoid them. (This symbol may also be used to refer the user to ratings in the manual.)

The following symbol(s) may appear on the product:



Compliance information

This section lists the EMC (electromagnetic compliance), safety, and environmental standards with which the instrument complies.

EMC

EN 61326-1 2006. EMC requirements for electrical equipment for measurement, control, and laboratory use.^{1 2 3}

- CISPR 11:2003. Radiated and conducted emissions, Group 1, Class A
- IEC 61000-4-2:2001. Electrostatic discharge immunity
- IEC 61000-4-3:2002. RF electromagnetic field immunity
- IEC 61000-4-4:2004. Electrical fast transient / burst immunity
- IEC 61000-4-5:2001. Power line surge immunity
- IEC 61000-4-6:2003. Conducted RF immunity
- IEC 61000-4-11:2004. Voltage dips and interruptions immunity

EN 61000-3-2:2006. AC power line harmonic emissions

EN 61000-3-3:1995. Voltage changes, fluctuations, and flicker

- ¹ This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.
- ² Emissions which exceed the levels required by this standard may occur when this equipment is connected to a test object.
- ³ For compliance with the EMC standards listed here, high quality shielded interface cables should be used.

Australia / New Zealand Declaration of Conformity – EMC

Complies with the EMC provision of the Radiocommunications Act per the following standard, in accordance with ACMA:

- CISPR 11:2003. Radiated and Conducted Emissions, Group 1, Class A, in accordance with EN 61326-1:2006.

Australia / New Zealand contact.

Baker & McKenzie
Level 27, AMP Centre
50 Bridge Street
Sydney NSW 2000, Australia

Safety compliance

This section lists the safety standards with which the product complies and other safety compliance information.

U.S. nationally recognized testing laboratory listing

- UL 61010-1. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements.

Canadian certification

- CAN/CSA-C22.2 No. 61010-1. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements.

Additional compliances

- IEC 61010-1. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements.

Equipment type

Test and measuring equipment.

Safety class

Class 1 – grounded product.

Pollution degree descriptions

A measure of the contaminants that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.

- Pollution degree 1. No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.
- Pollution degree 2. Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.
- Pollution degree 3. Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.
- Pollution degree 4. Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.

Pollution degree rating

Pollution degree 2 (as defined in IEC 61010-1). Rated for indoor, dry location use only.

Measurement and overvoltage category descriptions

Measurement terminals on this product may be rated for measuring mains voltages from one or more of the following categories (see specific ratings marked on the product and in the manual).

- Category II. Circuits directly connected to the building wiring at utilization points (socket outlets and similar points).
- Category III. In the building wiring and distribution system.
- Category IV. At the source of the electrical supply to the building.

NOTE. *Only mains power supply circuits have an overvoltage category rating. Only measurement circuits have a measurement category rating. Other circuits within the product do not have either rating.*

Mains overvoltage category rating

Overvoltage category II (as defined in IEC 61010-1).

Environmental considerations

This section provides information about the environmental impact of the product.

Product end-of-life handling

Observe the following guidelines when recycling an instrument or component:

Equipment recycling. Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. To avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.



This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2002/96/EC and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Restriction of hazardous substances

This product is classified as an industrial monitoring and control instrument, and is not required to comply with the substance restrictions of the recast RoHS Directive 2011/65/EU until July 22, 2017.

Preface

Introduction

This document supports the BSAITS125 Interference test set. The software-based graphical user interface is accessed through the Tektronix BERTScope analyzer top level Views menu. Detailed information on the operation of the control interface can be accessed at any time through the Help menus available in any of the control views.

BERTScopePC Standalone Software installs the interference test set control interface on a user-supplied PC. The BERTScopePC software is included on the CD-ROM shipped with the instrument. The instrument communicates with the Tektronix BERTScope analyzer or Host PC through a USB interface. A USB interconnect cable is provided with the product.

Product description

The BSAITS125 provides a means to combine Differential Mode (DM) and Common Mode (CM) interference into the data path after the de-emphasized signal has been generated. It also provides compliant PCIe2 and PCIe3 ISI channels that can be switched in an automated manner.

The BSAITS125 EXP is an option that provides expanded switching capabilities. It is identified by the secondary input and output connectors on the front right side of the instrument.

Features and benefits

The BSAITS125 offers the following features and benefits:

- Automatic channel switching
- IC testing with calibration channels
- Addition of common mode and differential mode interference signals
- On-board S-parameters for accurately characterized channels
- Low-skew differential channels

Documentation

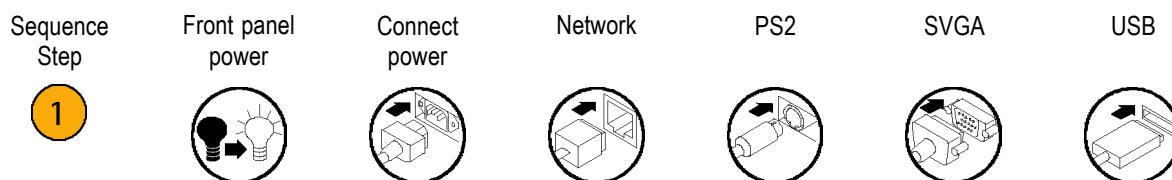
In addition to this document, the following documents are available:

- Online help, including remote control commands
- Online remote control guide (PDF)
- ITSRACK rack mount instructions, available as an option

Please check the Tektronix Web site for additional documentation at www.tektronix.com/manuals.

Conventions used in this manual

The following icons are used throughout this manual.



NOTE. A Notice statement identifies conditions which may result in unintended operating modes, incorrect measurement results, or require resetting the instrument or personal computers operating software interacting with it.

NOTE. Unless otherwise specified, the term BSAITS125 refers to all versions of the instrument.

NOTE. If the equipment described in this document is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Installation

Unpack the instrument and check that you have received all items listed as Standard Accessories. Check the Tektronix Web site (www.tektronix.com) for the most current information. The instrument is intended to be operated in a controlled laboratory environment.

The instrument is intended to operate on a bench top, in an instrument rack, or on top of another instrument such as the Tektronix BERTScope Bit Error Rate Analyzer. Operate the instrument only when positioned with the feet facing downward. Do not operate the instrument with the long axis vertical, standing on its side, as this will block the path of air required for cooling.



CAUTION. *Operating the instrument while it is standing on the side can damage and overheat the instrument. To avoid damaging the instrument or to avoid overheating the instrument, do not block any of the air vents to allow proper cooling during normal operation.*

This instrument uses a low voltage soft power switch that activates the power supply. The primary power control circuitry is always live whenever the power cable is connected to the mains. The instrument is fuse-protected to reduce the risk of fire in the event of a power supply failure. Access to the power cable for disconnection from the mains in an emergency may be required by local codes.

Accessories

The instrument comes with the following accessories:

- Power cord
- USB interconnect cable
- Two SMA to BNC adapters
- Three 30-inch RF cables
- Three 50 Ω SMA terminators, preinstalled
- Phased matched cable pair, 3.5 mm to 3.5 mm connectors
- Semi-rigid, phase match pair RF cable (only available with the BSAITS125 EXP)
- ITSRACK rack mount kit, with instructions (available as an option)
- BERTScopePC Standalone Software CD-ROM (installs the control interface on a user-supplied PC)

Site considerations

Read this section before installing the instrument. This section describes operating considerations and power requirements.

Table 1: Environmental considerations

Characteristic	Description
Temperature ¹	
Operating	+5 °C to +40 °C (+41 °F to +104 °F)
Nonoperating	-20 °C to +60 °C (-4 °F to +140 °F)
Humidity	
Operating	High: 10% to 60% relative humidity, 40 °C to 50 °C (104 °F to 122 °F)
	Low: 10% to 90% relative humidity, 0 °C to +40 °C (32 °F to +104 °F)
Nonoperating	High: 5% to 60% relative humidity, 40 °C to 60 °C (104 °F to 140 °F)
	Low: 5% to 90% relative humidity, 0 °C to +40 °C (32 °F to +104 °F)
Altitude	
Operating	To 2000 m (6562 ft.)
Nonoperating	To 12,000 m (39,370 ft.)

¹ All specifications are valid in the range from +5 °C to +40 °C (+41 °F to +104 °F) ambient.

Operating requirements

Place the instrument on a cart, in a rack, or on a bench on the bottom feet. Observe the following clearance requirements and dimensions:

Table 2: Operating requirements

Feature	Description
Top	0 mm (0 in)
Left and right sides	76 mm (3 in)
Bottom	0 mm (0 in) standing on feet
Rear	0 mm (0 in)

Before operating the instrument, verify the ambient temperature is between: 0 °C to +50 °C (+32 °F to +122 °F)



CAUTION. To ensure proper cooling, keep the sides of the instrument clear of obstructions.

Table 3: Instrument power considerations

Feature	Description
Voltage range	115/230 VAC
Frequency	50/60 Hz
Power	80 W maximum
Fuse	T 2 A 250V

Preventing electrostatic discharge (ESD)



CAUTION. To prevent damaging internal circuit boards and their components due to electrostatic discharge (ESD), please read the following guidelines.

Electrostatic discharge (ESD) is a concern when handling any electronic equipment. The instrument is designed with robust ESD protection; however it is still possible that large discharges of static electricity directly into the signal input may damage the instrument.

To avoid damage to the instrument, use the following guidelines to prevent electrostatic discharge to the instrument:

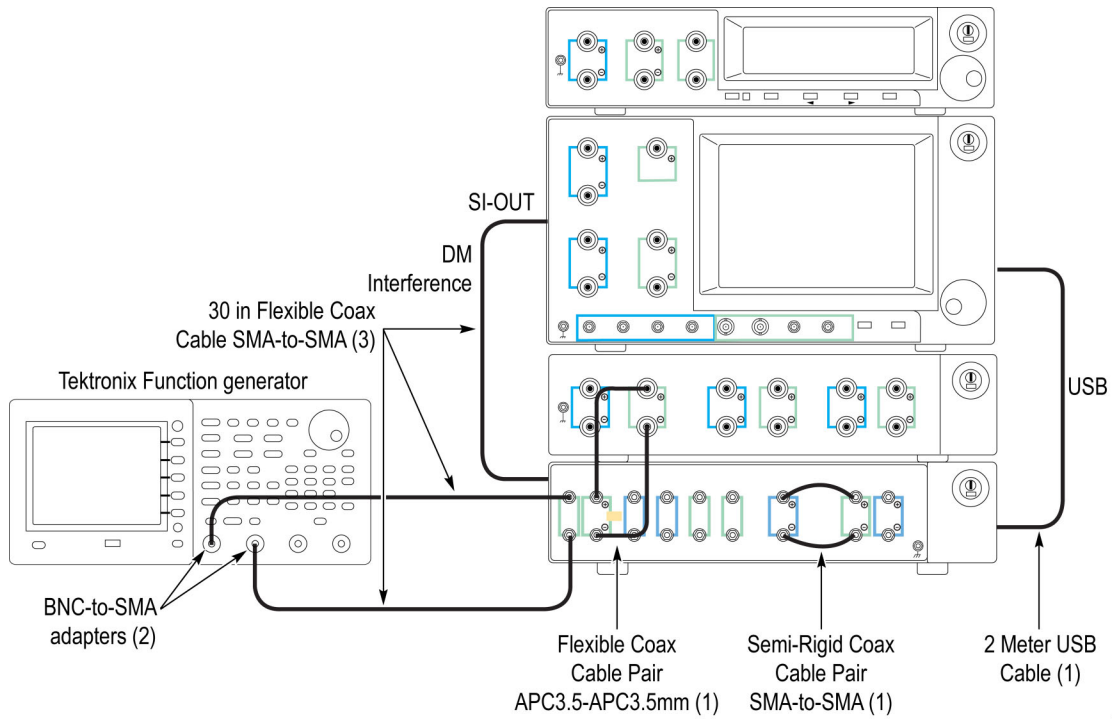
- Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while connecting and disconnecting cables and adapters. The instrument provides a front panel connection for this purpose.
- Discharge any static voltage from all cables before connecting them to the instrument or device under test by momentarily grounding the center conductor of the cable, or by connecting a 50 Ω termination to one end, prior to attaching the cable to the instrument.

A cable that is left unconnected on a bench can develop a large static charge.

- Nothing capable of generating or holding a static charge should be allowed on the work station surface.

Instrument connection information

The following illustration shows an example of the BSAITS125 connected to a system with other Tektronix BERTScope instruments and a Tektronix function generator. Your connections and setups may vary depending on your test requirements.



3045-005

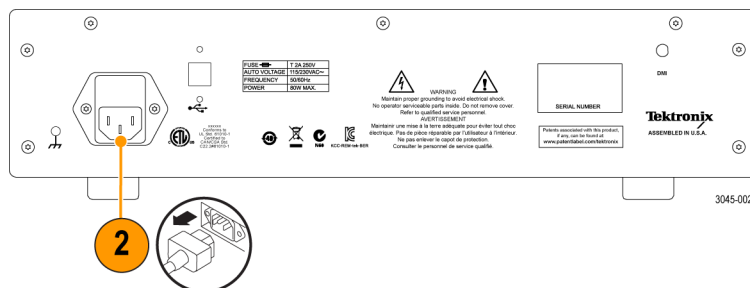
Figure 1: Sample configuration

Connect the USB interconnect cable at the rear of the BSAITS125 to a BERTScope analyzer (set up as the PC host) or to another PC host computer. Other connections depend on your system setup.

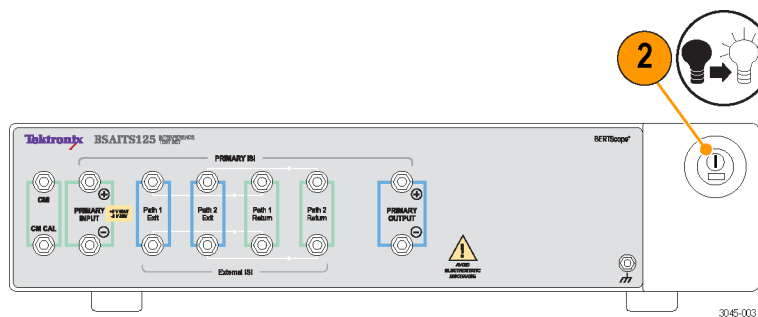
Power on the instrument

NOTE. When the BSAITS125 is connected to a system with a BERTScope analyzer, power on the BERTScope before powering on the BSAITS125.

1. Connect the AC power cord to the rear of the instrument and to a properly grounded power source.



2. Push the front-panel power button to turn the instrument on.
The green power indicator on the button will turn on.



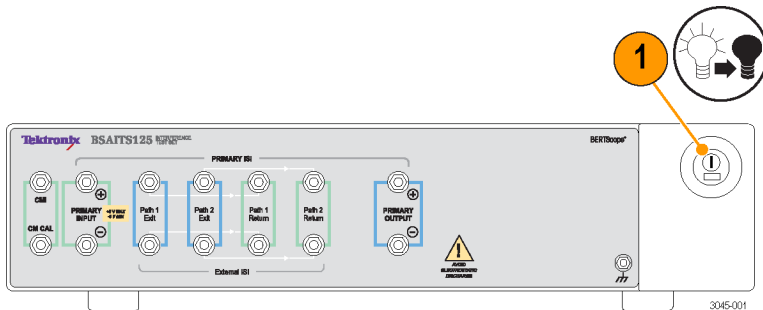
NOTE. The first time that the BERTScope analyzer starts with the BSAITS125 attached, the standard Microsoft Windows New Hardware Found message displays as the drivers automatically load.



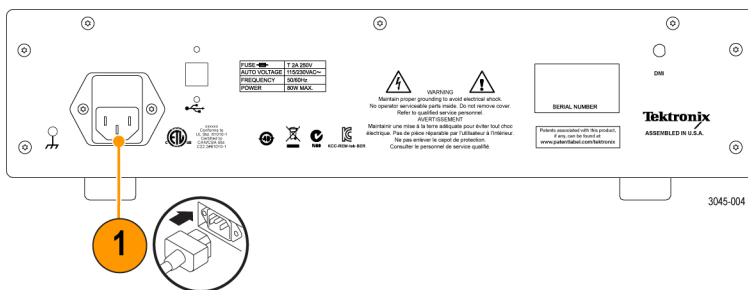
CAUTION. Static discharge can damage the instrument. To avoid static discharge while connecting cables to the front panel interface, always use the proper coaxial cables with APC-3.5, 2.92 mm, or SMA cables.

Power off the instrument

1. Press the front panel power button to turn the instrument off.
The green power indicator on the button will turn off.



2. Disconnect the power cord from the rear of the instrument to completely remove power from the instrument after it turns off.



BERTScopePC software

The BSAITS125 is primarily intended to be connected to a system controlled by a BERTScope analyzer. The BERTScope analyzer senses the presence of the BSAITS125 through the USB interface when you power on the instruments in the system. The BSAITS125 is controlled by the BERTScope analyzer through menus in the Stress Combiner view.

The BSAITS125 can also be controlled by a PC running the BERTScope PC software. With the BERTScopePC software installed on a Windows PC, and the stand-alone instrument connected to the PC via the standard USB interface, the BERTScopePC software initiates installation of the appropriate driver and provides a user interface allowing control of all BSAITS125 functions. The user interface provided for each instrument is similar to the BERTScope analyzer.

Included in the installation is the BERTScope Remote Client application which provides for remote access to the BERTScopePC application. This software must be installed on a PC running the Microsoft Windows operating system.

Insert the BERTScope PC disk in the disc drive of the PC and follow the on-screen instructions to install the software.

After the software is installed, start the software from the Start menu by selecting Start > BERTScope > BERTScope PC UI (or one of the other selections in the menu).

Operation

Front panel connectors

The following section describes the front-panel controls and connectors. For information on the on-screen buttons, refer to the online help.

Standard instrument

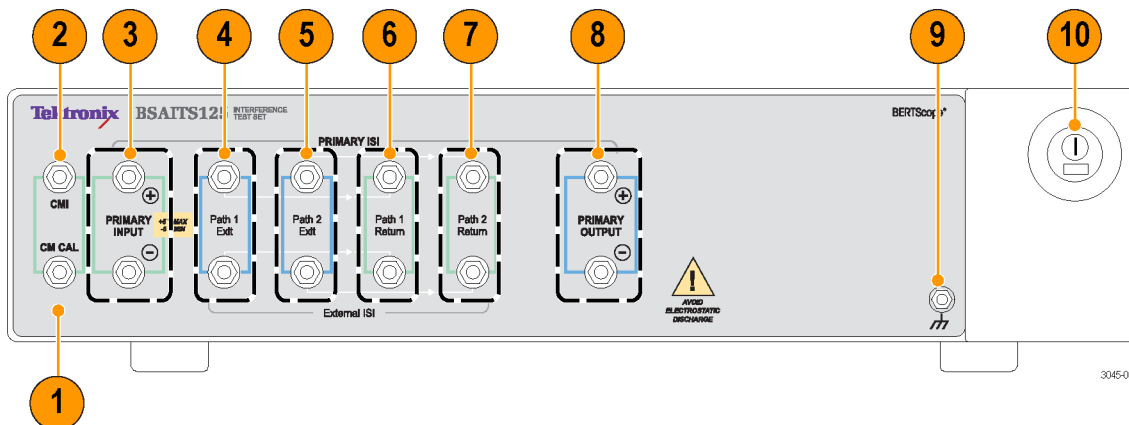


Figure 2: BSAITS125 front-panel connectors, standard instrument

Table 4: Front-panel connectors, standard instrument

Connector	Description
1 CM CAL	Common Mode Calibration Input. An AC coupled signal applied to this SMA connector is attenuated and applied differentially to the Primary Input and to the output that the Primary Input is connected to via the primary path relays in the instrument. This input is typically used to zero out any differential mode inadvertently caused by the signal at the CMI input. For example, connect the output of a function generator (Tektronix AFG3252) to the CM CAL input. Terminate this connector with a 50 Ω SMA terminator when not in use.
2 CMI	Common Mode Interference. An AC coupled signal applied to this SMA connector is attenuated and applied common mode to the Primary Input and to the output that the Primary Input is connected to via the primary path relays in the instrument. For example, connect the output of a function generator (Tektronix AFG3252) to the CM CAL input. Terminate this connector with a 50 Ω SMA terminator when not in use.

Table 4: Front-panel connectors, standard instrument (cont.)

Connector	Description
3 PRIMARY INPUT + and PRIMARY INPUT -	<p>Input signals applied to these SMA connectors are combined with the input signals from the CMI, CM CAL, and DMI inputs on to the data. The internal combiner has 1.5 dB of frequency-independent loss. The output of the combiner connects to internal relays which direct the signals to outputs controlled by the user interface:</p> <ul style="list-style-type: none"> ■ Directly to the Primary Output ■ Indirectly to the Primary Output through internally selected PC board ISI traces ■ Path 1 or Path 2 connections <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
4 Path 1 Exit + and Path 1 Exit -	<p>Use these SMA connectors with matched length cables to connect to an external path and back to the BSAITS125. An example of an external path might be another ISI board.</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
5 Path 2 Exit + and Path 2 Exit -	<p>Use these SMA connectors with matched length cables to connect to an external path and back to the BSAITS125. An example of an external path might be another ISI board.</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
6 Path 1 Return + and Path 1 Return -	<p>Use these SMA connectors to connect the return side of externally matched cables back to the BSAITS125.</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
7 Path 2 Return + and Path 2 Return -	<p>Use these SMA connectors to connect the return side of externally matched cables back to the BSAITS125.</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
8 PRIMARY OUTPUT + and PRIMARY OUTPUT -	<p>Use these SMA connectors to connect the differential output to the device under test (DUT). Depending on your configuration, the output signals can be connected to the Secondary input connectors of the BSAITS125 EXP instrument. For best results, when connecting the Primary Outputs to the Secondary Inputs, use the Tektronix-supplied phase-matched, semi-rigid cables.</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
9 Ground connector	<p>Use this connector to connect a common ground between other instruments.</p>

Table 4: Front-panel connectors, standard instrument (cont.)

Connector	Description
10 Power switch	<p>Activates the power supply to provide power to the primary circuits in the instrument. The switch lights green when power is turned on.</p> <p>The primary power control circuitry is always live whenever the power cord is connected to the instrument. To completely disconnect power from the instrument, disconnect the power cord at the rear of the instrument after properly powering off the instrument using the power switch.</p>

NOTE. For PCIe, the DPP connects to the Primary Inputs and the DUT connects to the Primary Outputs because the Combiner is before the ISI channel. For other standards, the Combiner is after the ISI channel where the DPP would connect to the Primary or Secondary Outputs and the DUT would connect to the Primary Inputs.

BSAITS125 EXP

The BSAITS125 EXP has the same front panel connectors as the standard instrument. It includes the Secondary Input and Output connectors shown in the following illustration and table. This version of the instrument provides six switch selections: a bypass channel and five additional ISI channels that can be switched in and out via the user interface.

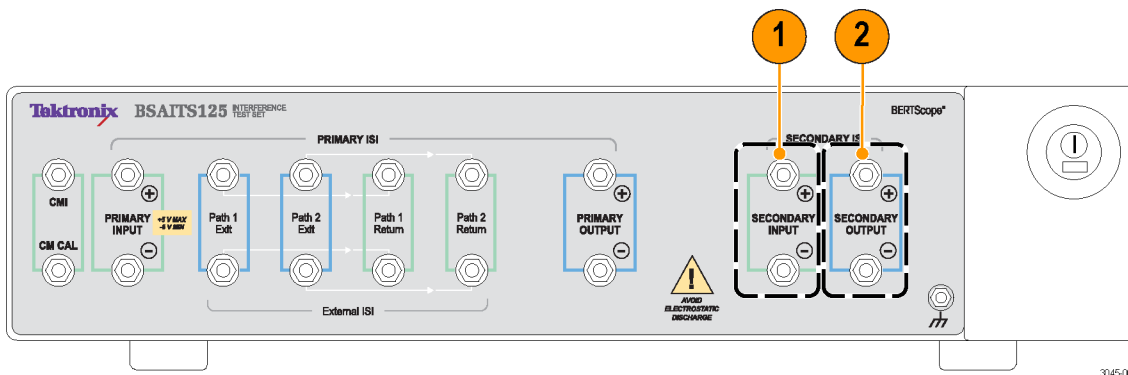


Figure 3: Additional front panel connectors with the BSAITS125 EXP

Table 5: BSAITS125 EXP front panel connectors

Connector	Description
1 SECONDARY INPUT + and SECONDARY INPUT -	<p>The input connectors connect to the Secondary output connectors differentially through internal relays. The connection can be a direct bypass to the Secondary output or through internally selected PC board ISI traces, controlled by the user interface.</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>
2 SECONDARY OUTPUT + and SECONDARY OUTPUT -	<p>Use these SMA connectors to connect the differential output to the device under test (DUT).</p> <p>If your application only uses single-ended connections, terminate the unused connector with a 50 Ω SMA terminator.</p>

Rear panel connectors

The following section describes the rear panel controls and connectors; the connectors are the same on all versions of the instrument.

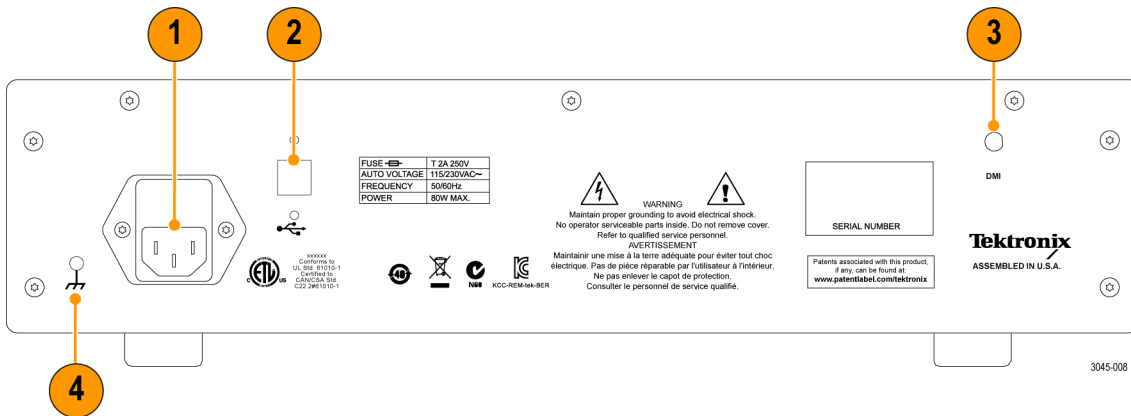


Figure 4: Rear panel connectors

Table 6: Rear panel connectors

Connector	Description
1 AC Power	Connect with a suitable power cable to match the local power outlet type.
2 USB IN	USB 2.0 type B connector used to interface the instrument for control. When used with a BERTScope analyzer, connect to any available USB connector.
3 DMI	Differential Mode Interference. An AC coupled signal applied to this SMA connector is attenuated and applied differentially to the Primary Input and to the output that the Primary Input is connected to via the primary path relays in the instrument. A typical example would be to connect the SI-OUT output on the rear of the BERTScope analyzer to the DMI input. Terminate this connector with a 50 Ω SMA terminator when not in use.
4 Ground screw	Use this screw to connect the common ground between other instruments to reduce the risk of ground loop noise.

Connector signal levels

The following table specifies the level of signals applied to the front and rear panel SMA connectors.

Table 7: Input signal levels

Connector	Coupling	Operating level	Absolute maximum level
CM CAL CMI DMI	AC Freq: 2 MHz to 3 GHz	+18 dBm (5 V _{p-p})	+20 dBm (6.32 V _{p-p})
Primary Input	DC	±4 V maximum	±5 V
Primary Output External Path	AC (each leg)	+24 dBm (10 V _{p-p})	+26 dBm (12.64 V _{p-p})
Secondary Input	DC	±4 V maximum	±5 V
Secondary Output	AC (each leg)	+24 dBm (10 V _{p-p})	+26 dBm (12.64 V _{p-p})

Procedures

Complete the following procedures after properly connecting the BSAITS125 to your system or to your host PC.

System setup

When you first start the BERTScope analyzer with the BSAITS125 attached to your system, the standard Microsoft Windows New Hardware Found message displays as the drivers automatically load. Follow the online instructions, if needed.

The BSAITS125 is intended to be used in a system with a BERTScope analyzer. This section assumes that the various instruments in your system configuration are properly installed and connected.

Power on the BERTScope before powering on any connected instruments.

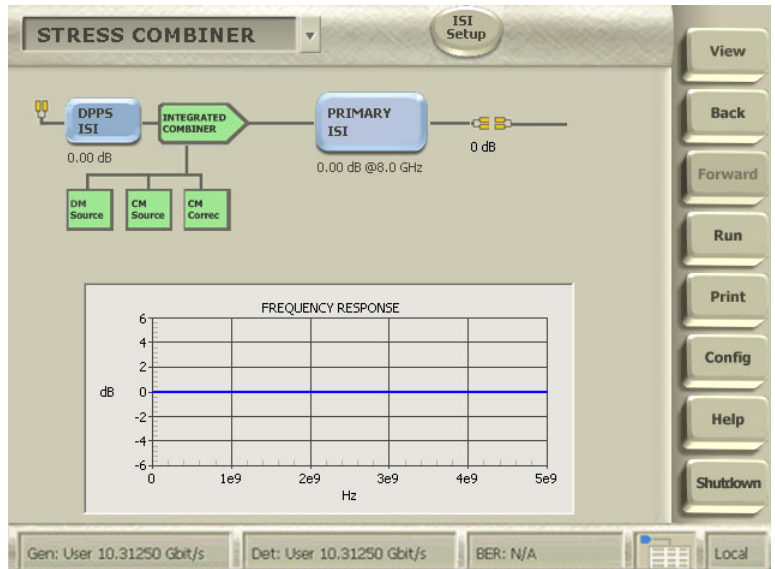
The BERTScope Home view displays.



Click the **View** button and then select **Stress Combiner** to open the Stress Combiner view.



The Stress Combiner view displays showing the graphical user interface.



Stress Combiner view

This section provides a brief overview of the Stress Combiner view. For additional information on the controls in the user interface, refer to the online help topics.

The following table describes some of the features of the Stress Combiner view.

Table 8: Stress Combiner view features








Item	Description
	<p>Click the ISI Setup to define the main setups for the BSAITS125 in the Stress Combiner view, such as changing the reference frequency for the S-Parameter data used to calculate losses on the ISI paths. Another selection enables the use of variable ISI. Screen selections depend on the ISI Setup selections.</p>
	<p>DPP ISI icon (information only). This icon displays when a DPP is connected to the BSAITS125 inputs and Use DPP is enabled in the ISI Setup menu. The amount of stress from the DPP displays under the icon.</p>
	<p>Integrated Combiner icon (information only). This icon shows how signals applied to the CM CAL, CMI, and DMI connectors are combined with the signals applied to BSAITS125 front-panel inputs. The integrated combiner contributes a frequency-independent loss of 1.5 dB; the loss is added to the primary ISI paths.</p>
	<p>Click the Primary ISI to select the Primary ISI channel. Select from among three internal ISI channels or Pass Through to bypass the internal ISI channels. Front-panel connectors allow the selection of either of two differential ISI paths (Path 1 or Path 2). The outputs of the Primary ISI are applied to the Primary output connectors on the front panel.</p>
	<p>This button is available when Enable Variable ISI is enabled in the ISI Setup menu. When enabled the label of the Primary ISI button changes to Variable ISI. The Variable ISI button allows you to enter a loss from -50 dB to 0 dB and software selects the appropriate ISI paths. The loss that you enter can also be combined with the loss from an attached DPP.</p>
	<p>This button is available on BSAITS125 EXP instruments when you select Link Primary Secondary from the ISI Setup menu. Use this selection when the Primary Outputs are connected to the Secondary Inputs. Select the ISI channels from the Primary ISI and Secondary ISI lists. The Primary and Secondary Channels are connected in series and the result is available at the Secondary Output connectors.</p>

Table 8: Stress Combiner view features (cont.)

Item	Description
	<p>Click the Secondary ISI to select the Secondary ISI channel. Select from among five internal ISI channels or Pass Through to bypass the internal ISI channels. The Secondary ISI runs from the Secondary Input connectors to the Secondary Output connectors on the front panel.</p>
Frequency Response graph	<p>This graph shows the S-Parameter data (S21 magnitude in dB) for the selected ISI path over a frequency range of 10 MHz to 20 GHz.</p> <ul style="list-style-type: none"> ■ When only the Primary ISI is selected, the plot shows only the S-Parameter data for the primary ISI. ■ When the Secondary option is present, the plot shows both the primary and secondary S-Parameter data. ■ When the Primary and Secondary are linked, the plot shows the combined S-Parameter data (the sum of the S21 of the Primary and the S21 of the Secondary) ■ When a variable loss is entered or a DPP is used as an additional source, the plot shows the combined data.

Applications

The BSAITS125 is primarily intended to be used in a system with a BERTScope analyzer and other Tektronix instruments. The following section describes high-level setups in the example shown in the following illustration. Refer to the individual product manuals for other setup information.

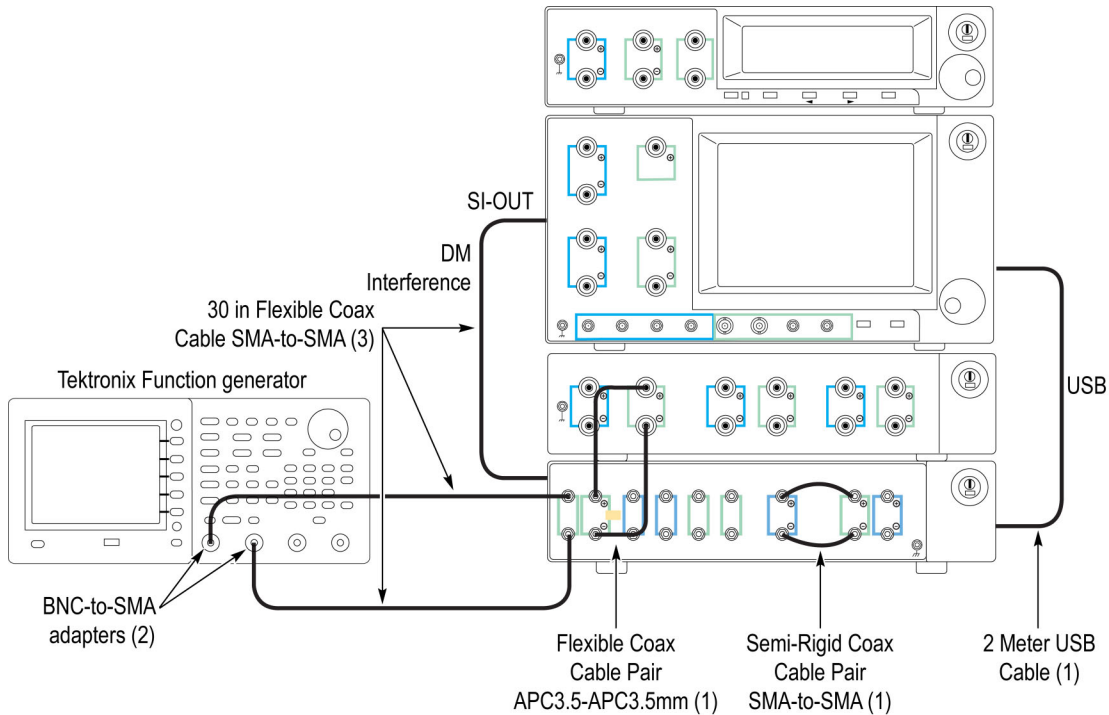


Figure 5: Sample application connection diagram

Guidelines for connecting the instruments in the example are listed below:

- Connect the USB interface cables from the rear panel of the BERTScope analyzer to the BSAITS125 and the DPP125C ECM instruments. The USB interface cables provide the communications between the instruments in the system.
- The AFG3252 function generator provides the stress inputs to the CM CAL and CMI input connectors on the BSAITS125. Use the 30-in flexible coaxial cables with the BNC-to-SMA adapters on the function generator.
- In addition to providing the user interface information, the BERTScope analyzer provides the single-ended stress input from the SI OUT connector on the rear panel of the analyzer to the DMI input connector on the rear panel of the BSAITS125.
- Connect the Data Outputs from the DPP125C ECM to the Primary Inputs of the BSAITS125 with the Tektronix-supplied matched-cable pair (3.5 mm connector to 3.5 mm connector, 0.5 m long). The DPP125C provides the input signals for this setup.
- Use the Tektronix-supplied phase-matched, semi-rigid coaxial cable pair to connect the Primary Output connectors of the BSAITS125 to the Secondary Input connectors.
- Connect the Secondary Output connectors of the BSAITS125 to the DUT with a matched-cable pair.

User service information

This section describes high-level service and maintenance information for your instrument.

Service offerings

Tektronix provides service to cover repair under warranty as well as other services that are designed to meet your specific service needs.

Whether providing warranty repair service or any of the other services listed below, Tektronix service technicians are well equipped to service the instrument. Services are provided at Tektronix Service Centers and on-site at your facility, depending on your location.

Warranty repair service

Tektronix warrants this product as described in the warranty statements at the front of this manual. Tektronix technicians provide warranty service at most Tektronix service locations worldwide. The Tektronix product catalog lists all service locations worldwide.

Other repair service

In addition to warranty repair, Tektronix Service offers other services that provide cost-effective solutions to your service needs and quality standards compliance requirements. Our instruments are supported worldwide by the leading-edge design, manufacturing, and service resources of Tektronix to provide the best possible service.

General care

Protect the instrument from adverse weather conditions. The instrument is not waterproof. Do not store or leave the instrument where the display will be exposed to direct sunlight for long periods of time.



CAUTION. To avoid damage to the instrument, do not expose it to sprays, liquids, or solvents.

Preventive maintenance

Preventive maintenance mainly consists of periodic cleaning. Periodic cleaning reduces instrument breakdown and increases reliability. Clean the instrument as needed, based on the operating environment. Dirty conditions may require more frequent cleaning than computer room conditions.

Exterior cleaning

Clean the exterior surfaces with a dry, lint-free cloth or a soft-bristle brush. If dirt remains, use a cloth or swab dampened with a 75% isopropyl alcohol solution. A swab is useful for cleaning in narrow spaces around the controls and connectors. Do not use abrasive compounds on any part of the instrument.

Cleaning guidelines

- Avoid getting moisture inside the instrument during external cleaning and use only enough solution to dampen the cloth or swab.
- Do not wash the front-panel On/Standby switch. Cover the switch while washing the instrument.
- Use only deionized water when cleaning. Use a 75% isopropyl alcohol solution as a cleanser and rinse with deionized water.
- Do not use chemical cleaning agents; they may damage the instrument. Avoid chemicals that contain benzene, toluene, xylene, acetone, or similar solvents.

Fuse replacement

The instrument is protected by a fuse placed in series with the power line input. The fuse is conservatively rated and should never open through the life of the instrument. A blown fuse would generally indicate a problem with the instrument which requires factory service. It is recommended that you arrange to have the instrument serviced if you experience a blown fuse.

Repack the instrument for shipment

If the instrument is to be shipped to a Tektronix service center for repair, attach a tag showing the following information:

- Name of the product owner
- Address of the owner
- Instrument serial number
- A description of the problems encountered and/or service required

When packing an instrument for shipment, use the original packaging. If it is unavailable or not fit for use, contact your Tektronix representative to obtain new packaging.

Specifications

Table 9: Physical specifications

Characteristic	Description
Dimensions	
Width	39.4 cm (15.5 in)
Height	10.4 cm (4.1 in) with feet
Depth	53.3 cm (21 in)
Weight	6.4 kg (14.0 lb.)
Power consumption	80 W, maximum
Power requirements	115/230 VAC, 50/60 Hz
Power fuse	T 2A 250 V

Index

A

AC Power connector, 10
 accessories, 1
 altitude specifications, 2

B

BERTScope Remote Client, 6
 BERTScopePC application, 6
 BERTScopePC software, x, 6
 BSAITS125 EXP, x, 9
 connectors, 9

C

cleaning
 exterior, 18
 guidelines, 18
 clearance requirements, 2
 CM CAL input, 7
 CMI input, 7
 Combiner, 9
 connections
 system, 4, 16
 connector
 signals levels, 11
 connectors
 BSAITS125 EXP, 9
 front panel, 7
 rear panel, 10

D

dimensions, 2
 DMI input, 10
 documentation, xi
 DPP connections, 9
 DPP ISI, 14

E

electrostatic discharge, 3
 environmental considerations, 2
 ESD
 preventing, 3

F

frequency response graph, 15

front panel
 connectors, 7
 fuse, 19

G

ground connector
 front panel, 8
 ground screw
 rear panel, 10

H

humidity specifications, 2

I

instrument rack, 1
 integrated combiner, 14
 Interference test set, x
 ISI channel, 9
 ISI Setup button, 14

M

maintenance
 cleaning, 18
 information, 17
 preventive, 18

O

operating requirements, 2

P

Path 1 Exit, 8
 Path 1 Return, 8
 Path 2 Exit, 8
 Path 2 Return, 8
 power considerations, 3
 power off procedure, 6
 power on procedure, 5
 power switch, 1, 9
 precautions
 static electricity, 3
 preventive maintenance, 18
 PRIMARY INPUT, 8
 Primary ISI button, 14

PRIMARY OUTPUT, 8

R

rear panel
 connectors, 10

S

SECONDARY INPUT, 9
 Secondary ISI button, 15
 SECONDARY OUTPUT, 9
 signals levels
 connectors, 11
 site considerations, 2
 specifications, 20
 environmental, 2
 static electricity
 precautions, 3
 Stress Combiner view, 14
 system
 connections, 4, 16

T

temperature
 ambient, 2
 temperature specifications, 2

U

USB IN, 10
 USB interface, x, 4, 6
 user interface, 14

V

Variable ISI button, 14

W

warranty service, 17