



**RSA603A and RSA607A
Real-Time Spectrum Analyzers
Installation and Safety
Instructions**



071-3460-00



**RSA603A and RSA607A
Real-Time Spectrum Analyzers
Installation and Safety
Instructions**

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Contacting Tektronix

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Beaverton, OR 97077
USA

For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit www.tek.com to find contacts in your area.

Warranty

Tektronix warrants that this product will be free from defects in materials and workmanship for a period of three (3) years from the date of shipment. If any such product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by Tektronix for warranty work may be new or reconditioned to like new performance. All replaced parts, modules and products become the property of Tektronix.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-Tektronix supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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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.

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.

This product is not intended for detection of hazardous voltages.

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, ensure

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.

Connect and disconnect properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

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.

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.

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. 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.

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.

Provide a safe working environment. 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 only the Tektronix rackmount hardware specified for this product.

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.

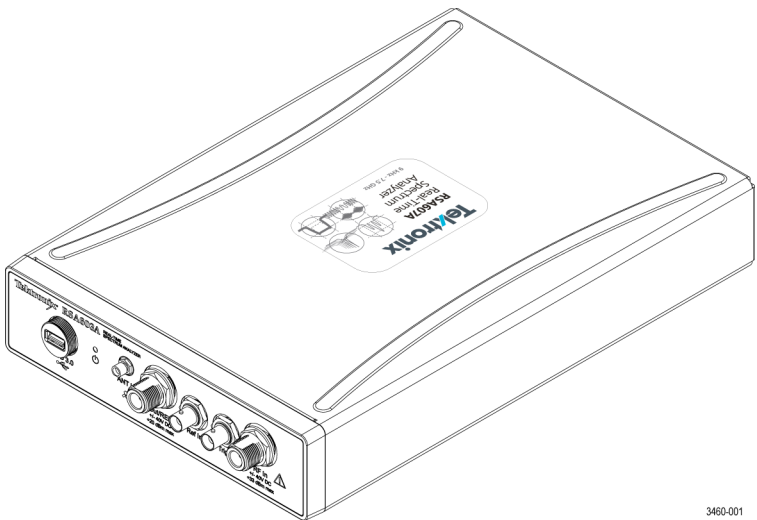


CAUTION
Refer to Manual

Preface

The RSA603A and RSA607A are bench top Real-Time Spectrum Analyzers that contains an RF acquisition system inside a small module. The user interface and display are provided by the SignalVu-PC software once it is installed on a user-provided PC (host PC). The host PC provides all control and data signals to the instrument over the USB 3.0 cable.

If you do not wish to use SignalVu-PC, a Software Application Programming Interface (API) is provided to allow you to create your own custom signal processing application.



3460-001

This document contains the following information:

- A list of standard and optional accessories
- Installation procedure
- Functional check procedure
- Front and rear panel connector description
- EMC (electromagnetic compliance), safety, and environmental standards with which the instrument complies

Key Features

- 9 kHz – 3 GHz frequency range (RSA603A)
- 9 kHz – 7.5 GHz frequency range (RSA607A)
- 40 MHz real time bandwidth
- External reference and trigger/sync inputs
- Tracking generator option
- Mapping, GPS, signal database and interference hunting
- USB 3.0 control/data interface to PC
- Publicly-accessible software Application Programming Interface (API)

Standard accessories

The instrument ships with the following accessories.

Accessory	Tektronix part number
Installation and Safety manual	071-3460-xx
USB 3.0 A-to-A cable with screw lock	174-6810-xx
Power cord	See below
USB Flash Drive containing documentation files and software: USB drivers, API drivers, SignalVu-PC software	063-4543-xx

International power cords

Your instrument was shipped with one of the following power cord options. Power cords for use in North America are UL listed and CSA certified. Cords for use in areas other than North America are approved by at least one authority acceptable in the country to which the product is shipped.

Opt. A0 – North America power

Opt. A1 – Universal EUR power

Opt. A2 – United Kingdom power

Opt. A3 – Australia power

Opt. A5 – Switzerland power

Opt. A6 – Japan power

Opt. A10 – China power

Opt. A11 – India power

Opt. A12 – Brazil power

Opt. A99¹ – No power cord

¹ When ordering the A99 option, it is the responsibility of the end user to be sure that a certified power cord, for the country or region in which it is installed, is used with this instrument.



CAUTION. *To reduce risk of fire and shock, use the certified power cord provided with the product.*

Product options

Option	Description
Option 04	Tracking generator (must be ordered with instrument)

Optional accessories

Optional accessories such as cables, adapters, calibration kits, attenuators, and antennas are available from Tektronix. Visit www.tek.com to view optional accessories.

Service options

The instrument includes a 3 year warranty. Read the warranty statement at the front of this manual for details.

Option number	Description
Purchased with instrument	
C3	Calibration Service 3 Years
C5	Calibration Service 5 Years
D1	Cal Data Report
D3	Cal Data Report 3 Years (with option C3)
D5	Cal Data Report 5 Years (with option C5)
G3	Three Year Gold Care Plan
G5	Five Year Gold Care Plan
R5	Repair Service for 5 Years (including Warranty)
Post-purchase service options	
R5DW	Repair Service Coverage, extending from date of purchase to 5 years (including warranty)

Documentation

Following is a list of documentation available for this product and shows where you can find it: in a printed manual, on the product flash drive, or on the Tektronix Web site at www.tek.com.

Item	Purpose	Location
Installation and Safety Instructions (this manual)	Provides software and hardware installation instructions and the associated safety warnings.	Printed manual and also available on the product flash drive and at www.tek.com/manuals
Performance Verification Technical Reference	Performance verification procedures to check instrument performance	Available at www.tek.com/manuals
SignalVu-PC help	Using the application and interpreting the measurement results	Help files located within the application
RSA306B, RSA500A Series, RSA600A Series API Programmer manual	Details on commands used to control the instrument through an API	Available at www.tek.com/manuals
SignalVu-PC Programmer manual	Details on commands used with the SignalVu-PC application	Available at www.tek.com/manuals

Installation

This section provides instructions on how to install the software and hardware, and how to perform a functional check to verify system operation. Refer to the SignalVu-PC application Help for more detailed operation and application information.

Unpack the instrument and check that you have received all of the standard accessories for your instrument configuration. (See page viii, *Standard accessories*.) If you ordered optional accessories, check that those you ordered are in your shipment.

Operating requirements

Cooling

Clearance requirements. Observe these clearance requirements when placing the instrument on a cart, bench, or rack.

- Bottom
 - Without feet: 6.3 mm (0.25 in)
 - With feet: 0 mm (0 in)
- Top: 6.3 mm (0.25 in)
- Left and right side: 0 mm (0 in)
- Rear: 38.1 mm (1.5 in)



CAUTION. *To reduce the risk of overheating and damage to the instrument, do not place the instrument on its bottom if the feet have been removed. This will prevent proper airflow.*

Do not place heat generating items on any surface of the instrument.

Fan function. The fan does not turn on until the internal temperature of the instrument reaches 35° C.

Environmental requirements

The environmental requirements for your instrument are listed in the following table. For instrument accuracy, ensure that the instrument has warmed up for 20 minutes and meets the environmental requirements listed in the following table.

Requirement	Description
Temperature (operating)	-10 °C to 55 °C (+14 °F to +131 °F)
Humidity (operating)	5% to 95% ($\pm 5\%$) relative humidity at 10 °C to 30 °C (50 °F to 86 °F) 5% to 75% ($\pm 5\%$) relative humidity above 30 °C to 40 °C (86 °F to 104 °F) 5% to 45% ($\pm 5\%$) relative humidity above 40 °C to 55 °C (104 °F to 131 °F)
Altitude (operating)	Up to 3,000 m (9,843 feet)

Power supply requirements

The power supply requirements for your instrument are listed in the following table.



WARNING. To reduce the risk of fire and shock, ensure that the mains supply voltage fluctuations do not exceed 10% of the operating voltage range.

Source Voltage and Frequency	Power Consumption
100 VAC to 240 VAC ($\pm 10\%$), 50/60 Hz	45 W

Prepare the PC

All of the software required to operate the RSA603A and RSA607A from a PC is included on the flash drive that ships with the instrument. The instrument can be controlled with Tektronix SignalVu-PC software, or you can control the instrument through your own custom signal processing application and API. Both SignalVu-PC and API control require a USB 3.0 connection to the instrument for communication.

Load the SignalVu-PC and TekVISA software

This software must be installed to control the instrument through the SignalVu-PC software.

1. Insert the flash drive included with the analyzer into the host PC. Windows File Explorer should open automatically. If it does not, open it manually and browse to the flash drive folder.
2. Select **SignalVu-PC** from the list of folders.
3. Select the **Win64** folder.
4. Double-click **Setup.exe** and follow the on-screen instructions to install SignalVu-PC. The USB driver will install automatically as part of this process.
5. When the SignalVu-PC setup is complete, a TekVISA dialog box appears. Verify that the Install TekVISA box is checked. TekVISA is optimized for SignalVu-PC, especially for instrument searching, and is the recommended VISA application.

For additional information about installation, option activation and operation, refer to the *SignalVu-PC Quick Start Manual* document, located in SignalVu-PC under Help/Quick Start Manual (PDF).

Load the API driver software

If you want to use the API to create your own custom signal processing application, load the software using the procedure below.

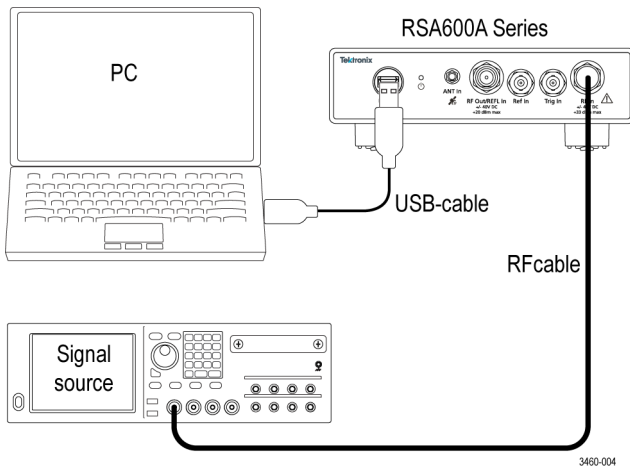
1. Insert the flash drive included with the analyzer into the host PC. Windows File Explorer should open automatically. If it does not, open it manually and browse to the flash drive folder.
2. Select **RSA API and USB** from the list of folders. The USB driver is installed automatically as part of the SignalVu-PC application installation, but if you need to install it manually, it is located in this folder.
3. Double-click the appropriate **Setup.exe** and follow the on-screen instructions to install the software.

Functional check

1. Ensure AC power is supplied from an external power supply using the power cord and adapter that shipped with the instrument.
2. Connect the USB cable included with the analyzer between the analyzer and the host PC.



NOTE. *The instrument automatically powers on and the front-panel power LED lights when a USB connection is detected.*

3. Connect an RF cable between the instrument's input and a signal source. This could be a signal generator, device under test, or an antenna.



4. Start the SignalVu-PC application on the host PC.

5. SignalVu-PC automatically establishes a connection to the instrument via the USB cable.
6. A Connect Status dialog appears in the SignalVu-PC status bar to confirm that the instrument is connected.

NOTE. You can quickly verify connection status by looking at the Connection indicator in the SignalVu-PC status bar. It is green () when an instrument is connected, and red () when not connected. You can also view the name of the instrument that is connected by hovering the mouse pointer over the indicator.

Automatic connection fails. In some instances, the automatic connection may fail. Typically, the cause is that SignalVu-PC is already connected to an instrument (either USB or network). In this situation, use the following steps to make a connection using the SignalVu-PC application.

1. Click **Connect** on the menu bar to view the drop down menu.
2. Select **Disconnect From Instrument** to end the existing connection.
3. Select **Connect to Instrument**. The USB connected instruments appear in the **Connect to Instrument** list.
4. If you do not see the expected instrument, click **Search for Instrument**. TekVISA searches for the instrument, and a notification appears when the instrument is found. Check that the newly-found instrument now appears in the **Connect to Instrument** list.
5. Select the instrument. First time connection to the analyzer may take up to 10 seconds while the instrument runs Power On Self Test (POST) diagnostics.

Confirm operation

After you have installed the software and connected the system components, do the following to confirm system operation.

1. Press the **Preset** button in SignalVu-PC. This will launch the Spectrum display, set preset parameters, and set the analyzer to run state.
2. Check that the spectrum appears.
3. Check that the center frequency is 1 GHz.

When you are ready to disconnect from the instrument, select **Disconnect from Instrument** to end the current connection.

Front panel

The following figure shows the connections and indicators on the front panel of the instrument.

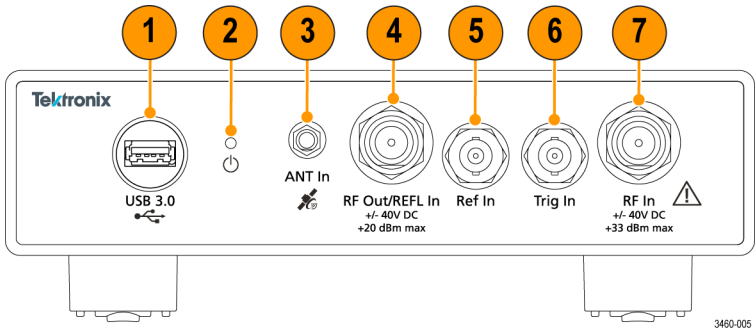


Figure 1: Front panel

1 – USB 3.0 Type A connector

Use the USB 3.0 Type A to USB 3.0 Type A cable provided with the instrument to connect the analyzer to the host PC via the USB 3.0 connector. This cable has a cap on the instrument end to ensure a reliable connection. Finger tighten the USB cable cap to the instrument.

2 – USB status LED

Indicates when the instrument is powered on and USB data transfer.

- Steady Red: USB power applied, or resetting
- Steady Green: Initialized, ready for use
- Blinking Green: Transferring data to host PC

3 – Antenna input connector

Use this SMA female connector to connect an optional GNSS antenna.

4 – Tracking Generator source output connector

Use this N-type female connector to provide RF signal output to use the optional tracking generator feature in the SignalVu-PC application. This connector is available only on instruments with Option 04 Tracking Generator.

5 – Ref In (external reference) connector

Use this BNC female connector to connect an external reference signal to the analyzer. Refer to the instrument specifications for a list of supported reference frequencies.

6 – Trigger/Sync connector

Use this BNC female connector to connect an external trigger source to the analyzer. The input accepts TTL-level signals (0 – 5.0 V), and can be rising- or falling-edge triggered.

7 – RF input connector

This N-type female connector receives the RF signal input, via cable or antenna. The input signal frequency range is 9 kHz to 6.2 GHz. Keep the protective cover on the connector when not in use.

- RSA603A: 9 kHz to 3 GHz
- RSA607A: 9 kHz to 7.5 GHz

Rear panel

The following figure shows the connections and indicators on the rear panel of the instrument.

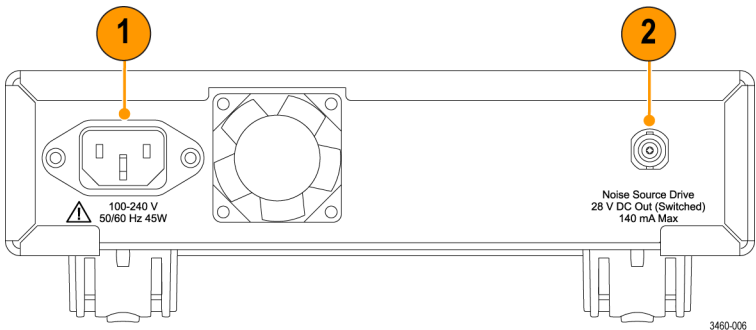


Figure 2: Rear panel

1– Power connector

Use this connector to supply power to the analyzer using the supplied power cord. (See page 2, *Power supply requirements*.)

2– Noise Source Drive Out (Switched) connector

This BNC female connector outputs 28 V DC at 140 mA to drive an external noise source.

Compliance information

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

EMC compliance

EC Declaration of Conformity – EMC

Meets intent of Directive 2004/108/EC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326-1:2006, EN 61326-2-1:2006. EMC requirements for electrical equipment for measurement, control, and laboratory use.^{1 2 3 4}

- CISPR 11. Radiated and conducted emissions, Group 1, Class A
- IEC 61000-4-2. Electrostatic discharge immunity
- IEC 61000-4-3. RF electromagnetic field immunity⁵
- IEC 61000-4-4. Electrical fast transient/burst immunity
- IEC 61000-4-5. Power line surge immunity
- IEC 61000-4-6. Conducted RF immunity⁶
- IEC 61000-4-11. Voltage dips and interruptions immunity^{7 8}

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

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

European contact.

Mfr. Compliance Contact
Tektronix, Inc. PO Box 500, MS 19-045
Beaverton, OR 97077 USA
www.tek.com

- 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.
- 4 Equipment may not meet the immunity requirements of applicable listed standards when test leads and/or test probes are connected.
- 5 Residual spurious signals in the RF section can typically increase to -60 dBm at 80 MHz to 1 GHz and to -45 dBm at 1.4 GHz to 2.7 GHz when the instrument is subjected to electromagnetic interference per the IEC 61000-4-3 test.
- 6 Residual spurious signals in the RF section can typically increase to -55 dBm when the instrument is subjected to electromagnetic interference per the IEC 61000-4-6 test.
- 7 Performance criteria C.
- 8 Self-recovery times of greater than 10 seconds can be experienced.

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. Radiated and Conducted Emissions, Group 1, Class A, in accordance with EN 61326-1 and EN 61326-2-1.

Safety compliance

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

EU declaration of conformity – low voltage

Compliance was demonstrated to the following specification as listed in the Official Journal of the European Union:

Low Voltage Directive 2006/95/EC.

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

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 description

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.

Installation (Overvoltage) Category Descriptions

Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:

Measurement Category IV. For measurements performed at the source of low-voltage installation.

Measurement Category III. For measurements performed in the building installation.

Measurement Category II. For measurements performed on circuits directly connected to the lowvoltage installation.

Measurement Category I. For measurements performed on circuits not directly connected to MAINS.

Overvoltage Category

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 2012/19/EU 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/productrecycling).

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.