



Tektronix RSA603A Real-Time Spectrum Analyzers Instruction Manual

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Tektronix[®] RSA603A and RSA607A Series Real-Time Spectrum Analyzers Installation and Safety Instructions

This document provides RSA603A and RSA607A Real-Time Spectrum Analyzer safety and compliance information, powering the instrument, and introduces the instrument controls and connections. Review the SignalVu-PC Help for more detailed setup and operating information.

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Documentation

Review the following user documents before installing and using your instrument. These documents provide important operating information.

Product documentation

The following table lists the primary product specific documentation available for your product. These and other user documents are available for download from [tek.com](https://www.tek.com). Other information, such as demonstration guides,

technical briefs, and application notes, can also be found at tek.com.

| Document | Content |
|---|--|
| Installation and Safety Instructions | Safety, compliance, and basic introductory information for hardware products. |
| SignalVu-PC Help | In-depth operating information for the product. Available from the Help button in the product UI and as a downloadable PDF on www.tek.com/downloads . |
| Specifications and Performance Verification Technical Reference | Instrument specifications and performance verification instructions for testing instrument performance. |
| Programmer Manual | Commands for remotely controlling the instrument. |
| Declassification and Security Instructions | Information about the location of memory in the instrument. Instructions for declassifying and sanitizing the instrument. |

How to find your product documentation

1. Go to tek.com.
2. Click Download in the green sidebar on the right side of the screen.
3. Select Manuals as the Download Type, enter your product model, and click Search.
4. View and download your product manuals. You can also click the Product Support Center and Learning Center links on the page for more documentation.

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, see the Service safety summary that follows the General 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.

This product shall be used in accordance with local and national 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 rating 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. 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.

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.

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.

Symbols on the product

The following symbols(s) may appear on the product.



CAUTION

Refer to Manual

Compliance information

This section lists the safety and environmental standards with which the instrument complies. This product is intended for use by professionals and trained personnel only; it is not designed for use in households or by children.

Compliance questions may be directed to the following address:

Tektronix, Inc.

PO Box 500, MS 19-045

Beaverton, OR 97077, USA

tek.com

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 2014/35/EU.

- 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.

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).

- Measurement Category I. For measurements performed on circuits not directly connected to MAINS.
- Measurement Category II. For measurements performed on circuits directly connected to the low-voltage installation.
- Measurement Category III. For measurements performed in the building installation.
- Measurement Category IV. For measurements performed at the source of low-voltage installation.

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 compliance

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 Tektronix Web site (www.tek.com/productrecycling).

Operating requirements

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% (±5%) relative humidity at 10°C to 30°C (50°F to 86°F) 5% to 75% (±5%) relative humidity above 30°C to 40°C (86°F to 104°F) 5% to 45% (±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 of the operating voltage range.

| | |
|--------------------------------|-------------------|
| Source Voltage and Frequency | Power consumption |
| 100 VAC to 240 (±10), 50/60 Hz | 45 W |

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 shipped accessories for your instrument configuration. If you ordered optional accessories, check that those you ordered are in your shipment.

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).

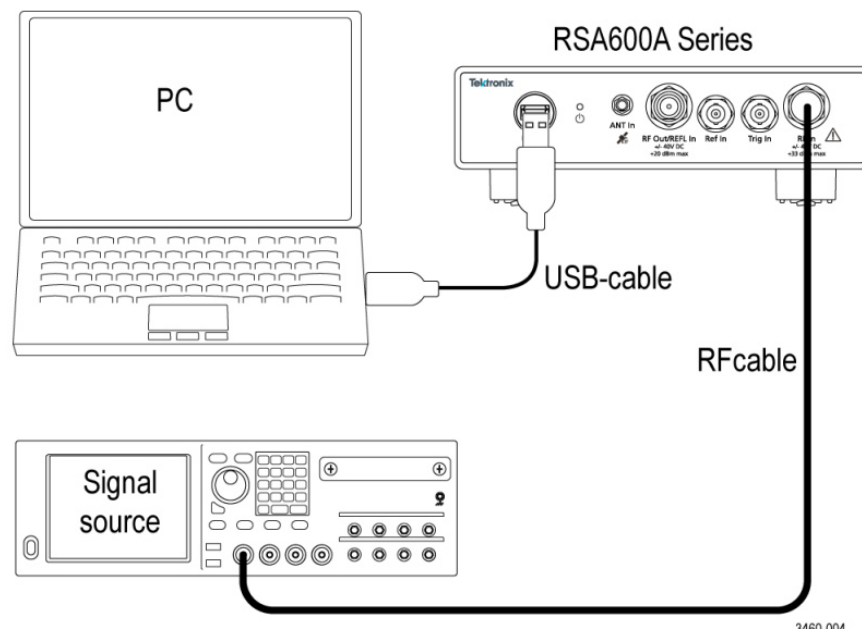
Load the API driver software

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. Click the Preset button in SignalVu-PC. This Opens the Spectrum display, set preset parameters, and set the analyzer to run a 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.

Introduction to the instrument

Connectors and controls are identified and described in the following images and text.

Front panel

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

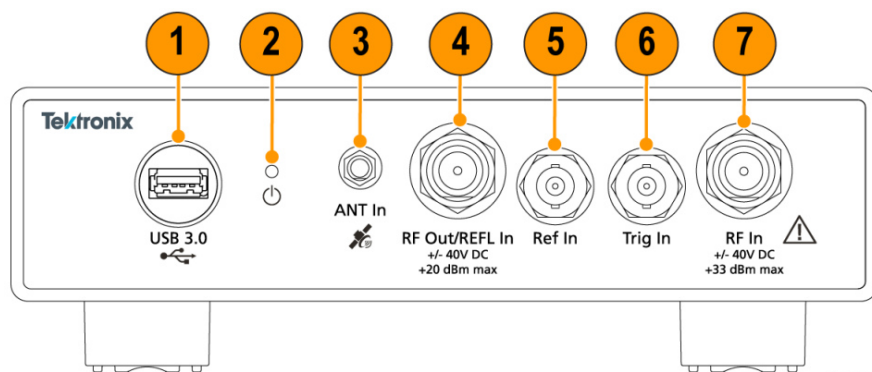


Figure 1: Front panel

3460-005

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. Fingers 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.

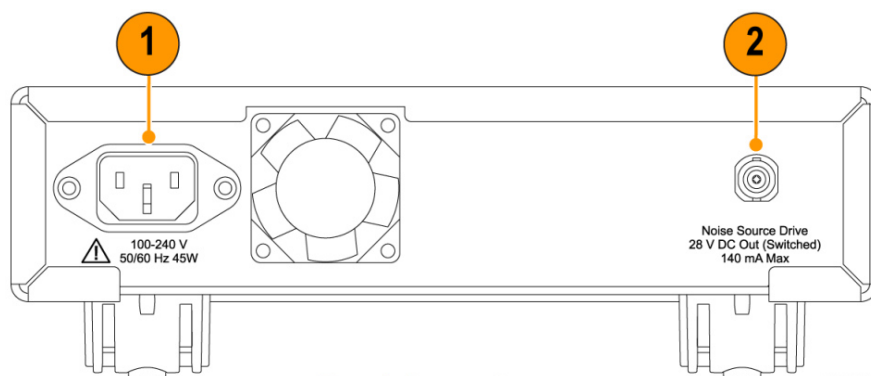


Figure 2: Rear panel

3460-006

1. Power connector

Use this connector to supply power to the analyzer using the supplied power cord.

2. Noise Source Drive Out (Switched) connector

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

Cleaning the instrument

Cleaning is not required for the safe operation of the instrument.

However, if you want to perform routine cleaning on the exterior of the instrument, clean the with a dry lint-free cloth or a soft-bristle brush. If any dirt remains, use a cloth or swab dipped in a 75% isopropyl alcohol solution. Do not use abrasive compounds on any part of the chassis that may damage the chassis.

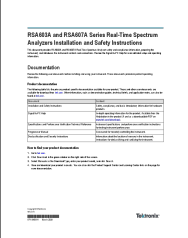
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Documents / Resources

| | |
|--|---|
|  | <p>Tektronix RSA603A Real-Time Spectrum Analyzers [pdf] Instruction Manual</p> <p>RSA603A Real-Time Spectrum Analyzers, RSA603A, Real-Time Spectrum Analyzers, Time Spectrum Analyzers, Spectrum Analyzers, Analyzers</p> |
|--|---|

References

- [Test and Measurement Equipment | Tektronix](#)
- [Test and Measurement Equipment | Tektronix](#)
- [Product Support and Downloads | Tektronix](#)
- [Product Take-Back and Recycle Program | Tektronix](#)
- [User Manual](#)

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