



**WVR8RFP
Remote Front Panel
Instructions**

Revision A
www.tek.com



071-2804-00

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- In North America, call 1-800-833-9200.
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General safety summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

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.

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.

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.

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.

Power disconnect. The power cord disconnects the product from the power source. Do not block the power cord; it must remain accessible to the user at all times.

Do not operate without covers. Do not operate this product with covers or panels removed.

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

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

Use proper AC adapter. Use only the AC adapter specified for this product.

Do not operate in wet/damp conditions.

Do not operate in an explosive atmosphere.

Keep product surfaces clean and dry.

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.

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



CAUTION
Refer to Manual

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 Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive.

Preface

The WVR8RFP is a remote front panel that lets you control WVR8200 and WVR8300 Waveform Rasterizers from a remote location.

The WVR8RFP connects directly to the **Front Panel** connector on the rear panel of the Waveform Rasterizer using the remote cable.

Using an Ethernet connection, the WVR8RFP can control the WVR8200 and WVR8300 Waveform Rasterizers and the WFM8200 and WFM8300 Waveform Monitors.

NOTE. Ethernet connection requires the WVR8RFP AC-DC Power Adapter, an RS422-to-Ethernet converter, and a custom cable to interface between the WVR8RFP D9-type connector and RS422-to-Ethernet converter.

The RS422-to-Ethernet converter and custom interface cable are not available from Tektronix.



Installation

This section provides a list of accessories and how to install the WVR8RFP Remote Front Panel.

Standard Accessories

Quantity	Description	Part Number
1 ea.	WVR8RFP module	WVR8RFP
1 ea.	25-foot remote cable	012-1721-xx
1 ea.	Instructions	071-2804-xx

Optional Accessories

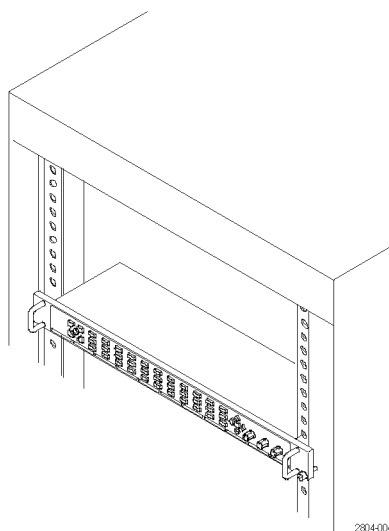
Description	Part Number
100-foot remote cable	012-1720-xx
AC-DC power supply (requires AC power cord)	119-8729-xx
AC power cords	
North America	161-0066-00
Universal Euro	161-0066-09
United Kingdom	161-0066-10
Australia	161-0066-13
Switzerland	161-0154-00
Japan	161-0298-00
China	161-0304-00
India	161-0400-00

Hardware Installation

The WVR8RFP installs in a standard equipment rack.

1. Choose a suitable remote location, which must be within reach by the connecting cable. The WVR8RFP includes a 25-foot remote cable to connect to a WVR8200 or WVR8300 Waveform Rasterizer. Should you want to use a different cable, it must meet the specific cable requirements. (See page 11, *Remote Cable Requirements*.)
2. Mount the WVR8RFP by inserting it in the rack and tightening the front panel retaining screws.

NOTE. *Rackmount rails are not required. The WVR8RFP mounts using the front-panel retaining screws only.*



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Connections

The WVR8RFP connects directly to the **Front Panel** D9-type connector on the rear panel of a WVR8200 or WVR8300 Waveform Rasterizer (with a remote cable). Control signals and power is passed through the remote cable; no additional cabling is required.

Using an Ethernet connection, the WVR8RFP can connect to WVR8200 and WVR8300 Waveform Rasterizers or WFM8200 and WFM8300 Waveform Monitors.

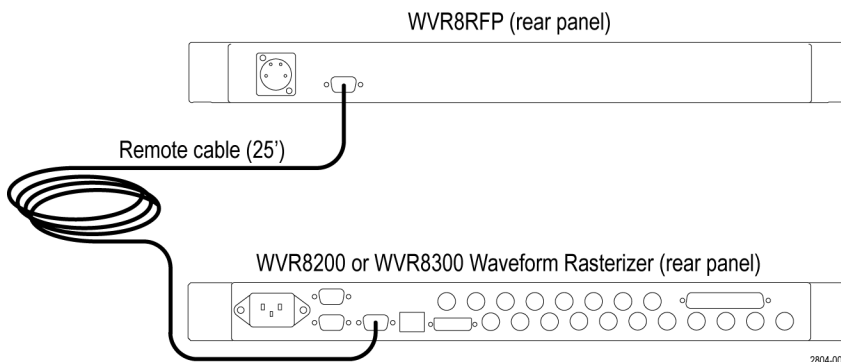
Connecting Using the Remote Cable

Use a remote cable to connect the WVR8RFP directly to a WVR8200 or WVR8300 Waveform Rasterizer. A 25-foot cable is provided for this connection.

NOTE. An optional 100-foot cable is available. Should you want to build a longer remote cable, it must meet specific cable requirements. (See page 11, Remote Cable Requirements.)

NOTE. WFM8200 and WFM8300 Waveform Monitors can not be controlled with the remote cable. They require an Ethernet type connection.

Connect the remote cable from the WVR8RFP 9-pin D-type connector to the **Front Panel** connector on the rear of the Waveform Rasterizer.



The Waveform Rasterizer provides power to the WVR8RFP through the remote cable.

When power is first applied to the remote panel, the remote panel buttons light in sequence until the instrument has established a connection to the remote panel. When a connection is established, the remote panel buttons light identically to those on the front panel of the Waveform Rasterizer.

Connecting Using an Ethernet Cable

You can use an Ethernet connection to expand the remote connection possibilities to include:

- Remote control of WVR8200 and WVR8300 Waveform Rasterizers.
- Remote control of WFM8200 and WFM8300 Waveform Monitors.
- Controlling an instrument with up to four WVR8RFP Remote Front Panels through a local area network.
- Connecting through a network, remote panel to instrument separation is only limited by the network.

You need the following items to make an Ethernet connection:

- RS422-to-Ethernet converter (with IP address and Port number) to convert Ethernet to a D9-pin connector.
- A custom-built cable to interface between the 9-pin D-type connector on the WVR8RFP and the RS422-to-Ethernet converter. (See page 12, *Building a Custom Interface Cable*.)
- AC-DC Power Adapter (optional accessory) for the WVR8RFP.
- Ethernet cables.

Connecting through a Local Area Network. Follow these steps to connect the WVR8RFP to an instrument through a Local Area Network. (See Figure 1.)

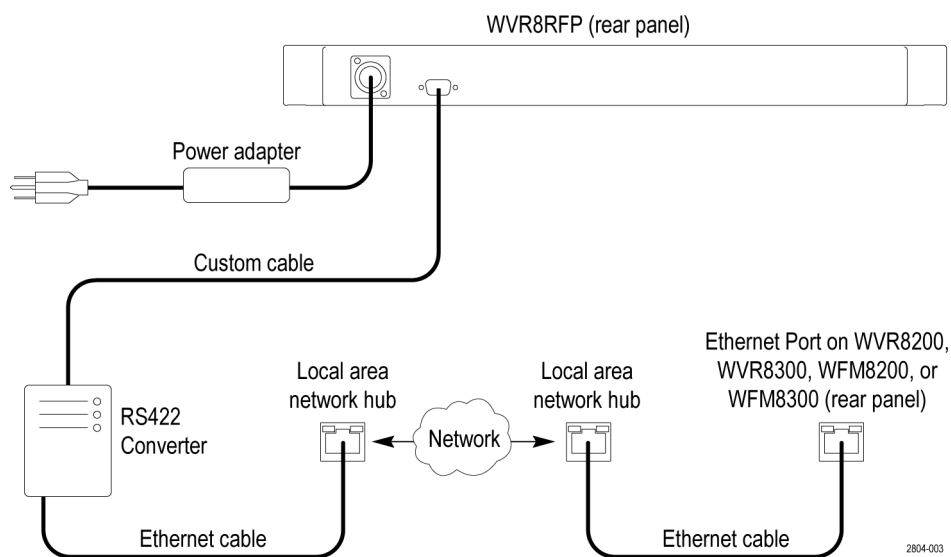


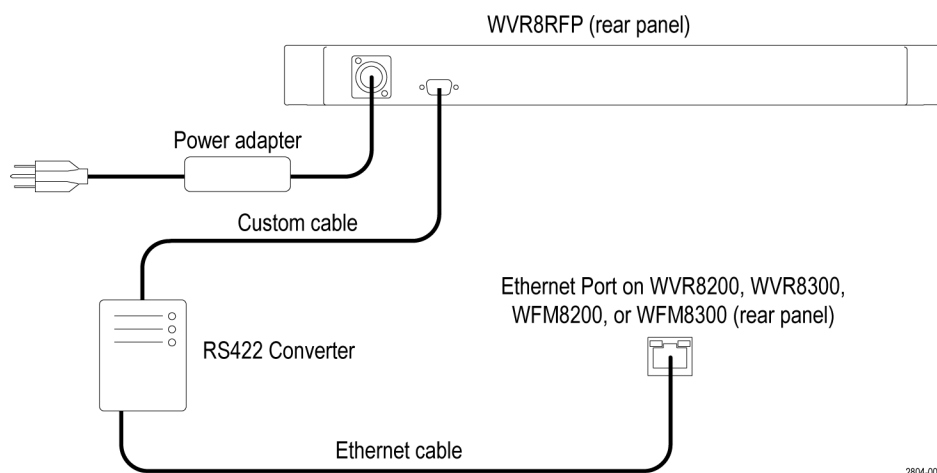
Figure 1: Ethernet connection using LAN

1. Connect the instrument (Waveform Rasterizer or Waveform Monitor) to the network using the Ethernet port on the rear of the instrument.
2. Verify the Waveform Rasterizer or Waveform Monitor is connected to the local area network. (See page 11, *Connecting the Instrument to a Network*.)
3. Connect the WVR8RFP to your RS422-to-Ethernet converter. You need to use a custom-built cable. (See page 12, *Building a Custom Interface Cable*.)
4. Use an Ethernet cable to connect the RS422-to-Ethernet converter to the local area network.
5. Connect the auxiliary power adapter to the WVR8RFP. The buttons sequentially light while waiting for a remote connection to an instrument.
6. On the instrument you want to control, do the following to enter the IP address and the Port number of the RS422-to-Ethernet converter:

NOTE. *The IP address and Port number are device dependent. See the documentation provided with your device or your system administrator.*

- a. Press the **CONFIG** button on the instrument (not the WVR8RFP) to display the configuration menu.
 - b. Use the arrow buttons to navigate to **Network Settings > Network Front Panel > FP 1 Address** (or any of the four address locations) and press the **SEL** button.
 - c. In the Network FP Address menu, enter the IP address and Port number of the RS422-to-Ethernet converter.
 - d. Select **Accept**.
 - e. Use the up or down arrow buttons to navigate to **FP Enable**. Press **SEL** button to set to **On**.
7. Watch the lights on the WVR8RFP. The buttons continue to light in sequence until communication between the WVR8RFP and instrument is established.
- Once a connection is established, the lit buttons on the WVR8RFP will match those on the instrument. This can take several seconds, depending on the network.
8. Repeat steps 3 through 7 for each WVR8RFP (up to four) that you want to connect to the instrument.

Connecting without a local area network. Follow these steps to connect the WVR8RFP to the Ethernet port on the rear panel of the instrument. (See Figure 2.)



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Figure 2: Ethernet connection directly to instrument

1. Connect the WVR8RFP to your RS422-to-Ethernet converter. You need to use a custom-built interface cable. (See page 12, *Building a Custom Interface Cable*.)
2. Use an Ethernet cable to connect the RS422-to-Ethernet converter to the Ethernet port on the rear of the instrument. The instrument has an auto-crossover feature so a crossover Ethernet cable is not required.
3. Connect the AC-DC power adapter to the WVR8RFP. The buttons sequentially light while waiting for a remote connection to an instrument.
4. On the instrument you want to control, enter the IP address and the Port number of the RS422-to-Ethernet converter.

NOTE. *The IP address and Port number are device dependent. See the documentation provided with your device or your system administrator.*

- a. Press the **CONFIG** button on the instrument (not the WVR8RFP) to display the configuration menu.
- b. Use the arrow buttons to navigate to **Network Settings > Network Front Panel > FP 1 Address** (or any of the four address locations) and press the **SEL** button.
- c. In the Network FP Address menu, enter the IP address and Port number of the RS422-to-Ethernet converter.

Operation

Operating the instrument from the WVR8RFP remote front panel is the same as operating from the instrument's front panel. If remotely controlling an instrument from several WVR8RFP remote front panels, each remote panel operates in parallel with the instrument's front panel.

See the documentation for your instrument for operating details about each control.

Fault conditions. The FAULT light on the WVR8RFP lights for detected hardware faults of the instrument it is controlling. If lit, check to see if the fault light on the instrument under control is also lit. If the instrument fault light is on, refer to your user documentation for the instrument.

If the FAULT light is lit on the WVR8RFP but the fault light on the instrument under control is not lit, there is a low voltage condition to the WVR8RFP. Check the remote cable connections and if using, the AC-DC Power Adapter.

Reference

Tips and Notes

- Presets do not store network settings.
- When connected to a WFM8200 or WFM8300 Waveform Monitor, pressing the **PRESET** button on the Waveform Monitor causes the **WFM**, **VECTOR**, **PICT**, **AUDIO**, **GAMUT**, **STATUS**, **MEAS**, and **EYE** buttons to light on the WVR8RFP. This is because the **PRESET** button on a Waveform Monitor enables these buttons to function as presets. This does not impact the function of the WVR8RFP.

Remote Cable Requirements

The WVR8RFP ships with a 25-foot remote cable. An optional 100-foot cable is available.

The WVR8RFP supports longer remote cable lengths under the following conditions:

- The WVR8RFP supports up to 1000-feet of remote cable length without auxiliary power (using the AC-DC Power Adapter). The actual cable length is limited by the DC resistance between the power and ground lines of the cable. The maximum total resistance for power to ground loop is 9 Ω .
- The WVR8RFP supports up to 4000-feet of remote cable length with auxiliary power from the AC-DC Power Adapter. The actual cable length is limited by the cable bandwidth.

When using remote cables over 100 feet, it's recommended that the Rx and Tx differential pair signal lines be carried on the twisted pair wires in the cable. The Front Panel connector table provides the functions of each pin. (See Table 1 on page 12.)

Connecting the Instrument to a Network

To connect a WVR8200, WVR8300, WFM8200, or WFM8300 to a local area network, you must set the IP address. Network addresses are assigned either automatically (DHCP) or manually. If your network does not use DHCP, you will have to manually enter the address for the instrument. To get an address, talk to your LAN administrator.

1. Press **CONFIG** to display the Configuration menu.
2. Select **Network Settings** > **Web Enable**. Press **SEL** to select **On**.
3. Set the **IP Config Mode** to Manual or DHCP, depending on your network setup.
4. If you cannot use DHCP, set the subnet mask and gateway address network parameters in this menu; see your LAN administrator for required values. (Be sure to use compatible addresses between network devices and the instrument.) You can also set the instrument name and view the MAC Address.

5. Press **CONFIG** to close the Configuration menu.
6. From a PC, use a web browser to verify you can connect to the instrument by entering the IP address in the Address bar of the web browser.

Building a Custom Interface Cable

To connect the WVR8RFP using Ethernet, you need to use an RS422-to-Ethernet converter. To connect the WVR8RFP to your RS422-to-Ethernet converter, you need to build an interface cable that connects from the 9-pin D-Type connector of the WVR8RFP to your RS422-to-Ethernet converter.

Use the following table to identify the function of each pin of the WVR8RFP connector. Map the necessary functions to your RS422-to-Ethernet converter.

Table 1: WVR8RFP D9 connector pin descriptions

Pin	Description
1	RX+ (RS422 input from RFP, Terminated)
2	RX- (RS422 input from RFP, Terminated)
3	Not used for Ethernet connection. +12 V DC power to RFP
4	Not used for Ethernet connection. Ground (chassis and 12 V DC return)
5	Not used for Ethernet connection. Ground (chassis and 12 V DC return)
6	Not used for Ethernet connection. +12 V DC power to RFP
7	TX+ (RS422 output to RFP)
8	TX- (RS422 output to RFP)
9	Not used for Ethernet connection. Fault output (5 K pull up to 12 V indicates fault, ground indicates OK)