WFM720UP, WFM820UP, and WFM830UP Upgrades for the WFM7200, WFM8200, and WFM8300 Waveform Monitors

Instructions

Warning

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

Tektronix

Contacting Tektronix

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For product information, sales, service, and technical support:
- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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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.

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

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.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

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   Protective Ground   Standby
Refer to Manual   (Earth) Terminal

Kit Description

This document provides instructions for installing the video and audio upgrades listed below into an existing Tektronix WFM7200, WFM8200, or WFM8300 waveform monitor.

Table 1: Supported upgrades

Video Upgrades	WFM820UP	WFM830UP	WFM720UP	Description
Option 2SDI	✔	✔	✔	Adds a second SDI input module, adding 2 additional SDI inputs that support 3G-SDI, HD-SDI, and SD-SDI. (Option 3G is required for 3G-SDI support).
Option 3G	✔	✔	✔	Adds support for 3G-SDI signal formats.
Option CPS	✔	✔	✔	Adds support for Composite Analog Video Monitoring; 2 composite Analog inputs; passive loop-through. This option not compatible with Option 2SDI.
Option 3D	✔			Adds Stereoscopic 3-D Video Monitoring Capabilities (including Simultaneous Input Monitoring (SIM) of dual SDI inputs and synchronized left eye and right eye signals monitoring (SyncVu™)).
Option S3D			✔	Adds Stereoscopic 3-D Video Monitoring Capabilities (including Simultaneous Input Monitoring (SIM) of dual SDI inputs and synchronized left eye and right eye signals monitoring (SyncVu™)).
Option GEN	✔		✔	Adds color bar and pathological signal generator for SD/HD SDI. Option 3G required for 3G-SDI support.

Table 1: Supported upgrades, (cont.)

Video Upgrades	WFM820UP	WFM830UP	WFM720UP	Description
Option AVD	✔		✔	Add support for out-of-service audio/video delay measurement; requires Option AD or DPE.
Option SIM	✔		✔	Adds simultaneous monitoring of 2 HD/SD-SDI inputs or one HD/SD-SDI input and one CPS input; Option 3G required for 3G-SDI formats support.

Audio Upgrades	WFM820UP	WFM830UP	WFM720UP	Description
Option AD	✔	✔	✔	Adds Analog Audio Monitoring (2 sets of 6 channel Analog Audio inputs and 8 channels of Analog Audio outputs); 16 channels Embedded and AES/EBU Digital Audio support (8 channels at a time).
Option DPE	✔	✔	✔	Adds Option AD capabilities (Analog and Digital Audio, Embedded or External AES), plus support for decoding and monitoring Dolby E, Dolby D, and Dolby Digital Plus Audio. (Audio cable available separately).
Option DDP	✔	✔		Adds support for decoding and monitoring Dolby Digital Plus Audio. This upgrade is only available for instruments that currently support decoding and monitoring Dolby E and Dolby D.

Analysis Upgrades	WFM820UP	WFM830UP	WFM720UP	Description
Option EYE	✔			Adds Eye Pattern Display and Jitter Measurement Package (includes 3G-SDI, HD-SDI, and SD-SDI Eye pattern and Jitter waveform displays; automated measurements of Eye pattern paramenters, Jitter, and cable parameters; color bar and pathological signal generation); Option 3G required for 3G-SDI support.
Option PHY		✔		Adds Physical Layer Measurement Package (includes 3G-SDI, HD-SDI, and SD-SDI Eye pattern and jitter waveform displays; automated measurements of Eye pattern parameters, jitter, and cable parameters; color bar and pathological signal generation); Option 3G required for 3G-SDI support.
Option PHY3			✔	Adds Physical Layer Measurement Package (includes 3G-SDI, HD-SDI, and SD-SDI Eye pattern and jitter waveform displays; automated measurements of Eye pattern parameters, jitter, and cable parameters; Option 3G required for 3G-SDI support.
Option PROD	✔	✔	✔	Adds Advanced Gamut Monitoring Package (Spearhead Display and Luma Qualified Vector Display).
Option DAT	✔		✔	Adds data analysis capabilities. Allows for logic-level view of video and embedded audio data stream and ANC data extraction.

Products

The following Tektronix products are supported by this kit:

WFM7200 All instruments

WFM8200 All instruments
WFM8300 All instruments

Required Tools

The following table lists the tools required to install the upgrade.

Table 2: Required tools

Name	Description
TORX screwdriver handle (Hardware options only)	Accepts TORX-driver bits
T-10 and T-15 TORX tips (Hardware options only)	TORX-driver bit for T-10 and T-15 screw heads
1/4 inch nut driver (Hardware options only)	Standard tool
9/16 inch socket (Hardware options only)	Deep socket to fit over BNC connector
Standard PC	Running Windows 98, Windows NT 4.0, Windows ME, Windows 2000, or Windows XP
Anti-static wrist strap (Hardware options only)	
For WFM8000 Series upgrades, *WFM8200 and WFM8300 Specifications and Performance Verification* manual and all test equipment listed within to perform the verification checks	Tektronix part number 077-0259-XX Available for download from the Tektronix Web site at www.tektronix.com/manuals
For WFM7200 upgrades, *WFM7200 Specifications and Performance Verification* manual and all test equipment listed within to perform the verification checks	Tektronix part number 077-0669-XX Available for download from the Tektronix Web site at www.tektronix.com/manuals

Kit Parts Lists

The following tables list the parts supplied with each upgrade kit. Before you start the upgrade, verify that you received all of the parts for the upgrade kit you ordered.

WFM820UP 2SDI
WFM830UP 2SDI
WFM720UP 2SDI

Table 3: Option 2SDI parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP, AND WFM830UP UPGRADES
1 EA	870-0196-XX	CIRCUIT BRD ASSY; SDI, TESTED, WFM8200/WFM8300, ROHS COMPLIANT
1 EA	333-4593-XX	REAR PANEL, SAFETY CONTROLLED, STD (SDI)
4 EA	220-0497-XX	NUT, PLAIN, HEX; .5-28 X .562 HEX, BRS, NI (NICKEL) PLATED
4 EA	210-1039-XX	WASHER, LOCK; 0.521 ID, INT, 0.025 THK, STEEL, ZINC FINISH

NOTE. *Once the hardware is installed, you must download the software to activate Option 2SDI. Go to www.tektronix.com/downloads. (See page 11, Install the Software Upgrade.)*

WFM820UP CPS
WFM830UP CPS
WFM720UP CPS

Table 4: Option CPS parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP, AND WFM830UP UPGRADES
1 EA	872-0258-XX	CIRCUIT BD SUBASSY; ANALOG COMPOSITE

WFM820UP EYE

Table 5: Option EYE parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP, AND WFM830UP UPGRADES
1 EA	872-0189-XX	CIRCUIT BOARD SUBASSY; 3G-EYE

WFM830UP PHY
WFM720UP PHY3

Table 6: Option PHY and PHY3 parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP, AND WFM830UP UPGRADES
1 EA	872-0189-XX	CIRCUIT BOARD SUBASSY; 3G-EYE

WFM820UP 3G
WFM830UP 3G
WFM720UP 3G
WFM820UP PROD
WFM830UP PROD
WFM720UP PROD
WFM820UP DDP
WFM830UP DDP
WFM720UP DAT
WFM720UP SIM
WFM720UP AVD
WFM720UP GEN
WFM820UP GEN
WFM820UP 3D
WFM720UP S3D

These are SW only upgrades. No hardware is needed for these upgrades.

Table 7: SW option upgrades parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP, AND WFM830UP UPGRADES

WFM820UP AD
WFM830UP AD
WFM720UP AD

Table 8: Option AD parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP, AND WFM830UP UPGRADES
1 EA	672-6478-XX	CIRCUIT BD SUBASSY; DIGITAL AND ANALOG AUDIO
1 EA	131-7430-XX	CONN,DSUB; SLDR CUP,MALE,STR,62 POS,0.100 CTR,30 GOLD
1 EA	200-4804-XX	COVER; SHIELD,ELEC CONN,37 POS DSUB,ZINC

WFM820UP DPE
WFM830UP DPE
WFM720UP DPE

Table 9: Option DPE parts list

Quantity	Part number	Description
1 EA	——	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-1001-XX	INSTRUCTIONS; WFM720UP, WFM820UP AND WFM830UP UPGRADES
1 EA	672-6478-XX	CIRCUIT BD SUB ASSY
1 EA	131-7430-XX	CONN,DSUB; SLDR CUP,MALE,STR,62 POS,0.100 CTR,30 GOLD
1 EA	200-4804-XX	COVER; SHIELD,ELEC CONN,37 POS DSUB,ZINC
1 EA	119-7167-XX	CIRCUIT BD ASSY; CAT552 DOLBY E/DIGITAL DECODER MODULE; 72 PIN SIMM; SAFETY CONTROLLED

Upgrade Installation

This section provides instructions for the following:

- Verifying the currently installed options

- Preventing electrostatic discharge

- Installing the software upgrade

- Installing the hardware upgrade

- Installing the software option key

Verify the Currently Installed Options

The software option key supplied in this kit is based on the serial number you supplied when you ordered the upgrade for the instrument. The new software option key should enable the new option(s) you ordered, and also preserve your previously purchased options.

Before you install the upgrade, perform the following steps to verify which options are currently installed in your instrument. After you install the upgrade, you will verify that the new options are installed and that any previously installed options are still enabled.

1. Power on the instrument you are upgrading.

2. Press the **CONFIG** button on the front panel.

3. Navigate to **Utilities** > **View Instrument Options**.

4. Make a list of the installed options.

List installed options

How to Prevent Electrostatic Discharge

When you perform any service that requires internal access to the instrument, adhere to the following precautions to avoid damage due to electrostatic discharge (ESD):

1. Minimize handling of static-sensitive circuit boards and components.

2. Transport and store static-sensitive boards or modules in static protected containers.

3. Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while handling these modules.

4. Service static-sensitive modules only at a static-free work station.

5. Do not allow anything capable of generating or holding a static charge on the work surface.

6. Handle circuit boards by the edges or hold onto grounded shields when possible.

7. Do not slide circuit boards over any surface.

Install the Software Upgrade

⚠ **CAUTION.** *To prevent upgrade failure, your instrument must have the latest version of software installed before you install the hardware upgrade and before you install the software option key.*

Before You Begin You do not need to perform the software upgrade if your instrument has the latest version of software installed. Perform the following steps to determine if the software on your instrument needs to be upgraded:

1. Power on the instrument.

2. Verify the current software version installed on the instrument:

   a. Press the **CONFIG** button on the front panel.

   b. Navigate to **Utilities** > **View HW/SW Version**.

   c. In the Hardware and Software Versions display window, note the software version number of the instrument.

Instrument Software version number	

3. Verify the latest version of software at the Tektronix Web site:

   a. Use the Web browser on a PC to navigate to the following Tektronix Web site:

      `http://www.tektronix.com/downloads`

   b. On the Downloads Finder Web page, search by model number (such as WFM8300) and filter by software and software type to locate the software-upgrade package for the instrument.

   c. Note the latest version number of the software-upgrade package(s).

Web site Software version number	

4. If the latest software version at the Web site is newer than the version on your instrument, you need to upgrade the software.

5. Download the latest version to your PC.

6. After the software package is downloaded, click on the self-extracting archive to extract the following files into the directory of your choice: transfer.exe and firmware.pkg. There may also be a readme.txt file.

To perform the upgrade, you can use either the USB Software Installation procedure or the Network Software Installation procedure. The time required to complete the upgrade is about 25 minutes.

⚠ **CAUTION.** *Once the instrument has started to erase internal flash, DO NOT remove power from the instrument. If you do so, the instrument flash will be corrupted. The instrument will have to be sent to a Tektronix factory service center to have the system software restored.*

NOTE. *If power to the instrument is lost before it begins erasing the internal flash, you can restart the software upgrade after the instrument reboots.*

USB Software Installation

Use the following steps to upgrade the instrument software using a USB memory device.

1. Insert the USB memory device into a USB port (of the PC containing the latest software).

2. On the PC, navigate to the USB device.

3. On the USB device, create a directory named:

   `WfmUpgrd`

4. Open the WfmUpgrd directory and copy the firmware.pkg file (from the extracted archive) to the USB device.

   You should have a directory path `WfmUpgrd\firmware.pkg`.

5. Safely remove the USB device from the PC and insert it into the USB port on the front panel of the instrument.

6. Power on the instrument.

7. Press the **CONFIG** front panel button.

8. Navigate to **Utilities** > **System Upgrade** > **Upgrade Options** > **USB Upgrade**.

NOTE. *If the instrument displays a message indicating that a USB device containing firmware was not detected, make sure you have the correct directory path on the USB device. Also, press the MAIN front panel button to check that the USB device is properly mounted.*

9. Press the **SEL** front panel button. This displays the System Software Upgrade window.

10. Select **Continue** from the System Software Upgrade window and press **SEL** to start the software upgrade.

During the upgrade process, the instrument displays messages indicating the upgrade status. Do not remove the USB device until the upgrade is complete.

Network Software Installation

Use the following steps to upgrade the instrument software using a network connection.

1. Connect the instrument and PC to your local Ethernet network.

2. Power on the instrument.

3. Assign the instrument an IP address:

NOTE. The data-transfer utility requires that the instrument be assigned a valid IP address. To allow network access to the instrument, the instrument must be assigned a valid IP address for your network. Network addresses can be assigned either manually or automatically using DHCP. If your network does not use DHCP, you will have to manually enter the address for the instrument. To get a valid IP address, contact your local LAN administrator.

Alternatively, if you connect the PC directly to the instrument using an Ethernet cable, you can assign the instrument any IP address that is compatible with the IP address of the PC.

---

a. Press the **CONFIG** button on the front panel.

b. Navigate to **Network Settings** > **IP Config Mode**.

c. Select either **Manual** or **DHCP** as directed by your LAN administrator. Select Manual if you are using an Ethernet cable to connect the PC directly to the instrument.

d. If you selected Manual mode, enter the IP address, subnet mask, and gateway address as directed by your LAN administrator. You need to enter only an IP address if you are using an Ethernet cable to connect the PC directly to the instrument.

NOTE. If you selected DHCP mode, the network automatically assigns the instrument an IP address.

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e. Press the **CONFIG** button on the front panel to close the menus.

4. Prepare the instrument for the software upgrade:

    a. Press the **CONFIG** front panel button.

    b. Navigate to **Utilities** > **System Upgrade** > **Upgrade Options** > **Network Upgrade**.

    c. Press the **SEL** front panel button. Note the IP address of the instrument displayed in the System Software Upgrade window.

5. Perform the software upgrade:

    a. On the PC, double-click the **transfer.exe** file to launch the transfer program.

    b. Type the IP address or DNS name of the instrument you are upgrading, and then press **Enter**. This starts the software upgrade process.

⚠ **CAUTION.** *To prevent upgrade failure, do not close the transfer.exe window until the transfer utility asks for another IP address.*

When the software upgrade completes, the instrument may reboot.

    c. The transfer utility displays done when the software upgrade completes. When the software upgrade completes, the instrument will reboot.

```
Please enter DNS name or address of target instrument:
128.181.221.2
Opened TCP connection to 128.181.221.2:77
Reading Firmware Data... done
Erasing Flash... done
Programming Flash... done
Verifying Flash Programming... done
done

Please enter DNS name or address of target instrument:
▄
```

Figure 1: Sample of transfer.exe window after the upgrade is complete

6. If the instrument did not reboot at the completion of the software upgrade, remove and then reapply power to the instrument to cause it to reboot.

Install the Option Hardware

WARNING. *Before installing any hardware option, disconnect the power cord from the line voltage source. Failure to do so could cause serious injury or death.*

CAUTION. *To prevent upgrade failure, your instrument must have the latest version of software installed before you install the hardware upgrade. (See page 11, Install the Software Upgrade.)*

The procedures in this section are for upgrades that require the installation of hardware modules. For software-only upgrades, you do not need to remove the instrument cover since these upgrades are enabled by the new software key you received with this kit.

NOTE. *If you are only installing software-only upgrades (Option 3G or PROD), you only need to install the option software key. (See page 28, Install the Option Software Key.)*

The hardware installation procedure consists of the following steps:

- Removing the instrument cover and the module guide brackets

- Installing the new hardware

- Reinstalling the module guide brackets and the instrument cover

Locations of the Optional Hardware Modules

The modules for the hardware options can be installed only in the specific locations. (See Figure 2.)
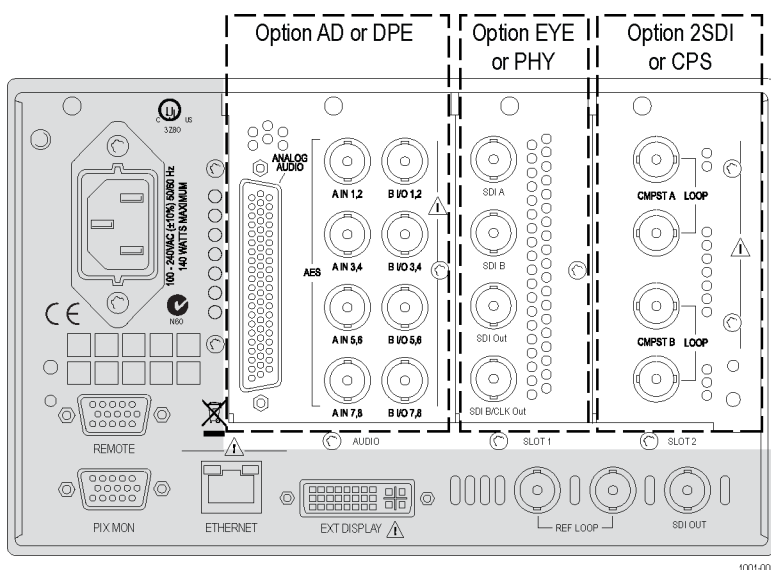

Figure 2: Rear panel showing the locations of the optional modules

Remove the Instrument Cover and Module Guide Brackets

If you are installing an upgrade option that includes hardware installation, perform the following steps to remove the instrument cover and module guide brackets.

⚠ **WARNING.** *Disconnect the power source from the instrument before beginning this or any procedure requiring you to remove the cover from the instrument chassis. Fan blades and other components inside the instrument could cause serious injury if power is on while the instrument chassis is open.*

1. Remove power from the instrument.

2. If necessary, remove the instrument from the portable cabinet or rack adapter sleeve.

3. Place the instrument on a static-safe work surface. Be sure to follow safe handling procedures to avoid electrostatic damage to the instrument or module. (See page 10, *How to Prevent Electrostatic Discharge*.)

4. Remove the screws from the chassis cover. (See Figure 3.) Save the screws for reinstallation.
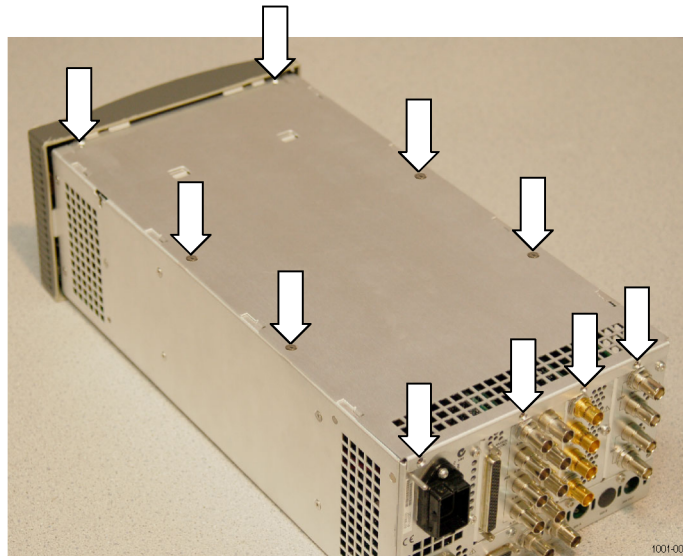
Figure 3: Removing the chassis cover

5. Slide the chassis cover toward the back of the instrument, and then lift and remove the chassis cover from the instrument.

6. Remove the module guide brackets. (See Figure 4.) Note that the brackets are keyed to the fit on the chassis in only one direction.
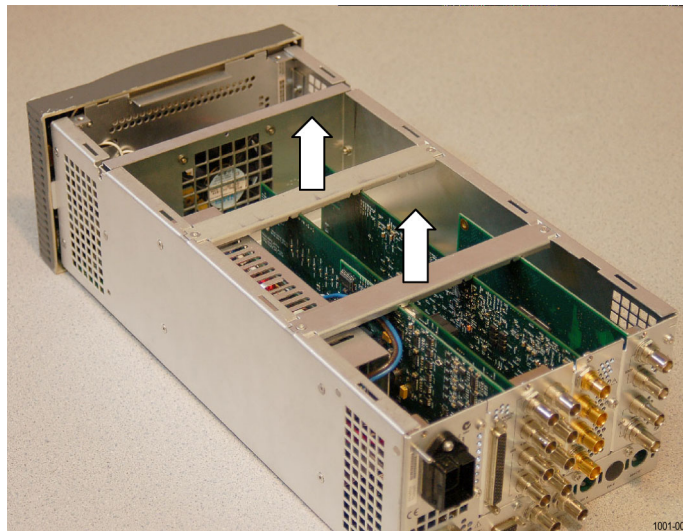
Figure 4: Removing the module guide brackets (option boards shown)

**Hardware Installation
WFM82UP EYE
WFM83UP PHY
WFM72UP PHY3**

For Option EYE and Option PHY or PHY3 upgrades, perform the following steps to install the option module into the instrument. Read the entire installation procedure before installing the module.

NOTE. Option EYE and Option PHY and PHY3 each occupy the same compartment in the instrument. If your instrument already contains a module in Slot 1, it must be removed.

If removing an option module is necessary, you can reinstall the removed option module if you require its functionality.

1. Remove the three screws from the SDI rear panel. (See Figure 5.) Save the screws for reinstallation.

2. Remove the SDI module by disconnecting the connectors from the main board and lifting the module straight up and out of the box.

NOTE. If you have difficulty removing or installing a module or rear panel because of a lack of clearance with an adjacent rear panel, loosen the screws on the adjacent panel to allow more room for moving the desired module or rear panel while you are performing this procedure.
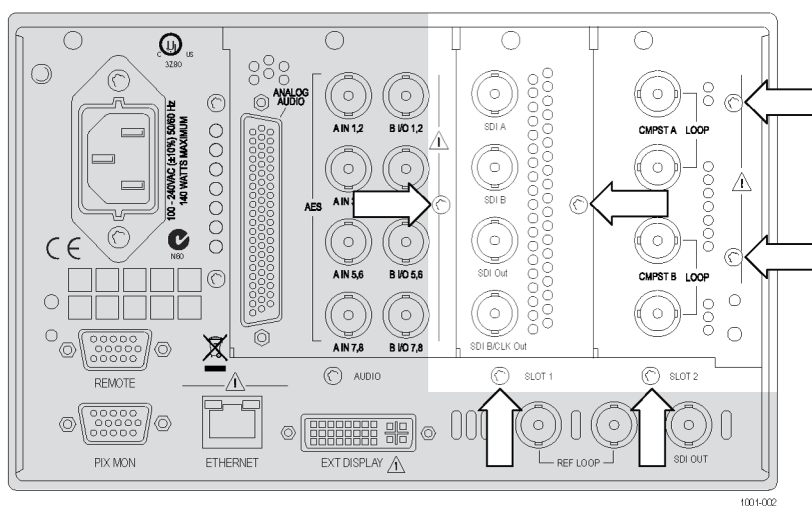
Figure 5: Removing the Option EYE/PHY/PHY3 and CPS rear panel screws

3. Install the new Option EYE or PHY or PHY3 module into the instrument, fully inserting the two connectors on the module into J16 and J24 on the Main Interface board. The recessed flange on the left side of the module rear panel slides behind the adjacent rear panel. (See Figure 6.)
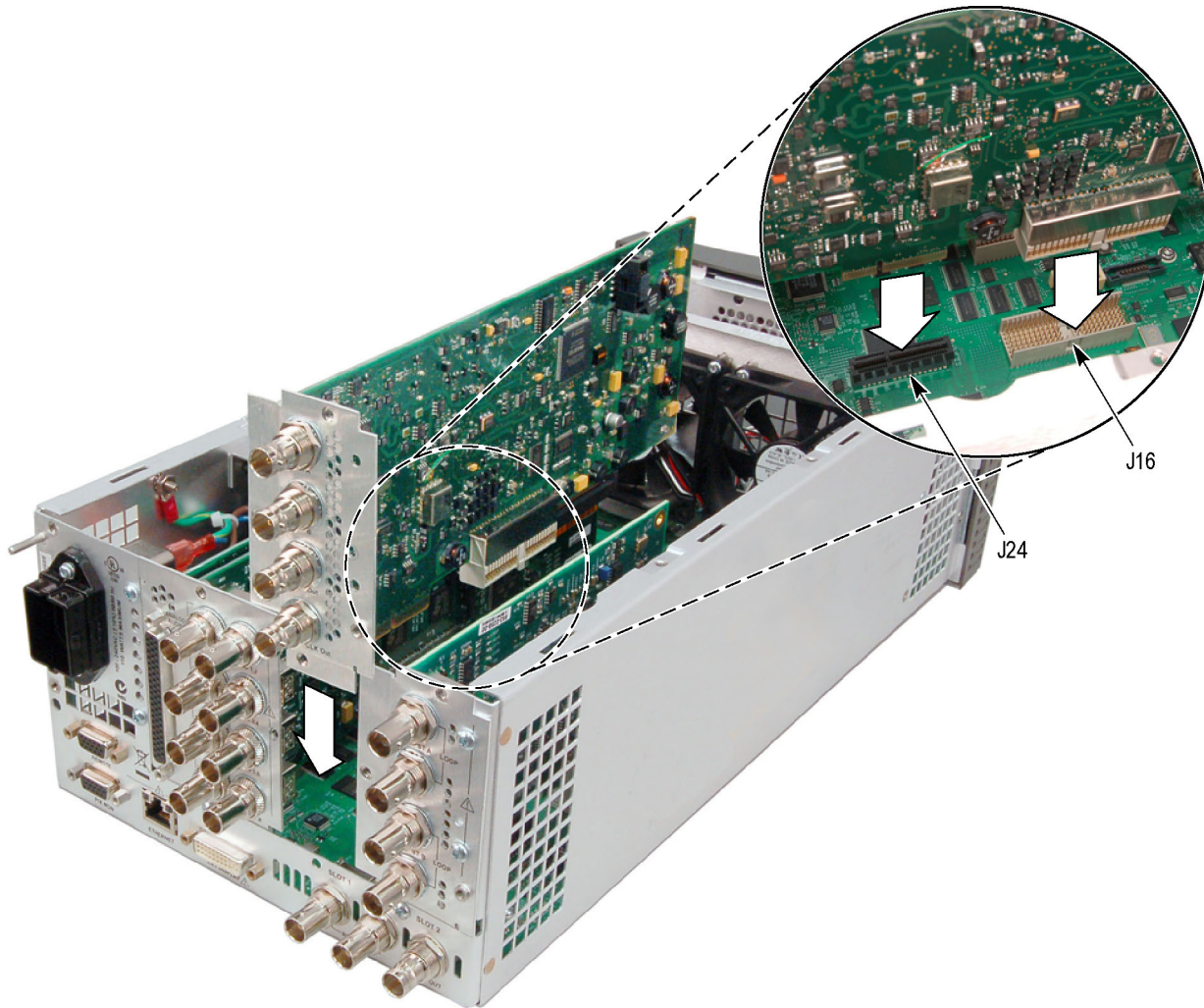
m1001-005

Figure 6: Installing the Option EYE or PHY or PHY3 board

4. Perform the following steps if you do not have any other hardware modules to install. Otherwise, proceed to installing the next module.

    a. Install the three screws into the Option EYE/PHY/PHY3 rear panel. (See Figure 5.) Tighten the three screws and any adjacent rear panel screws you loosened to 8 in/lbs.

    b. Reinstall the instrument module support brackets and cover by performing the removal procedure in reverse order. (See page 16, *Remove the Instrument Cover and Module Guide Brackets*.)

    c. Install the option software key. (See page 28, *Install the Option Software Key*.)

Hardware Installation WFM82UP 2SDI WFM83UP 2SDI WFM72UP 2SDI

For Option 2SDI upgrades, perform the following steps to install the Option 2SDI module into the instrument. Read the entire installation procedure before installing the module.

*NOTE. Option CPS and Option 2SDI boards occupy the same location in the instrument. If your instrument already contains an Option CPS board, it must be removed. You can reinstall the removed option module if you require its functionality.*

1. Remove the four screws from the Slot 2 rear panel. (See Figure 7.) Then remove the panel. Save the screws for reinstallation.

NOTE. If you have difficulty removing or installing a module or rear panel because of a lack of clearance with an adjacent rear panel, loosen the screws on the adjacent panel to allow more room for moving the desired module or rear panel while you are performing this procedure.
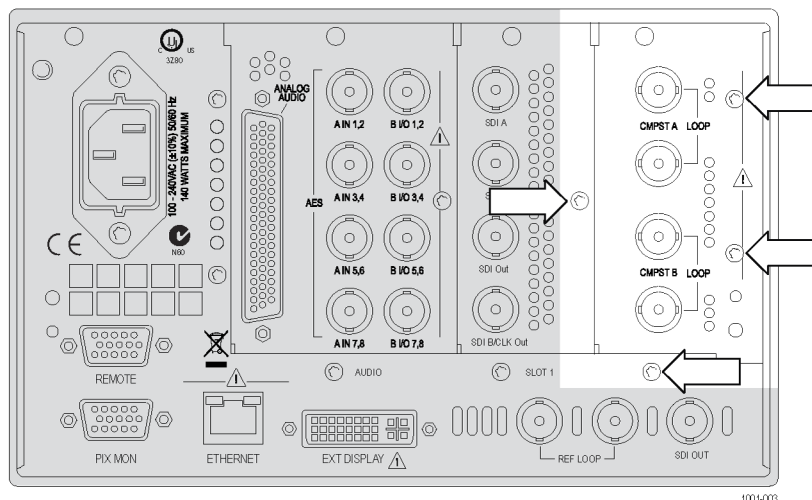
Figure 7: Removing the Slot 2 rear-panel screws

2. Install the Option 2SDI module supplied with this kit into the instrument, fully inserting the connectors on the module into J17 and J20 on the Main Interface board. The recessed flange on the left side of the module rear panel slides behind the adjacent rear panel.

3. Perform the following steps if you do not have any other hardware modules to install. Otherwise, proceed to installing the next module.

   a. Install the four screws into the Option 2SDI rear panel. Tighten the four screws and any adjacent rear panel screws you loosened to 8 in/lbs.

   b. Reinstall the instrument module support brackets and cover by performing the removal procedure in reverse order. (See page 16, *Remove the Instrument Cover and Module Guide Brackets*.)

   c. Install the option software key. (See page 28, *Install the Option Software Key*.)

NOTE. Once the hardware is installed, you must download the software to activate Option 2SDI. Go to www.tektronix.com/downloads. (See page 11, Install the Software Upgrade.)

Hardware Installation
WFM82UP CPS
WFM83UP CPS
WFM72UP CPS

For Option CPS upgrades, perform the following steps to install the Option CPS module into the instrument. Read the entire installation procedure before installing the module.

1. Remove the four screws from the Slot 2 rear panel. (See Figure 7.) Then remove the panel. Save the screws for reinstallation.

NOTE. If you have difficulty removing or installing a module or rear panel because of a lack of clearance with an adjacent rear panel, loosen the screws on the adjacent panel to allow more room for moving the desired module or rear panel while you are performing this procedure.

1001-003
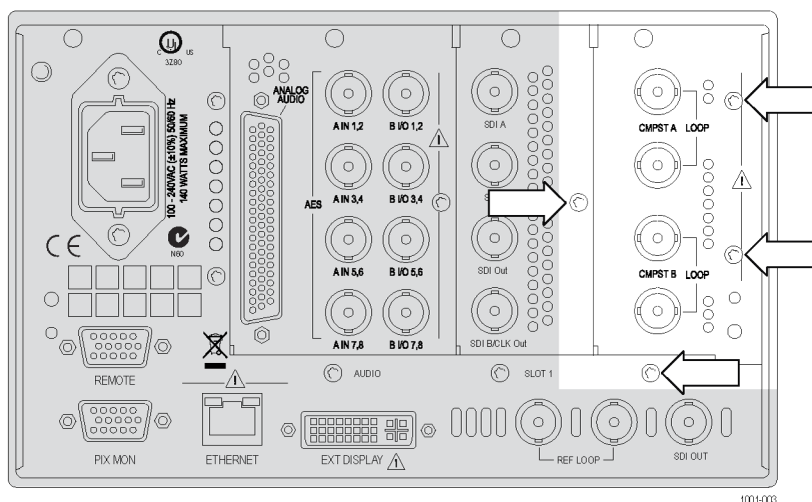
Figure 8: Removing the Slot 2 rear-panel screws

2. Install the Option CPS module supplied with this kit into the instrument, fully inserting the connector on the module into J20 on the Main Interface board. The recessed flange on the left side of the module rear panel slides behind the adjacent rear panel.

3. Perform the following steps if you do not have any other hardware modules to install. Otherwise, proceed to installing the next module.

   a. Install the four screws into the Option CPS rear panel. Tighten the four screws and any adjacent rear panel screws you loosened to 8 in/lbs.

   b. Reinstall the instrument module support brackets and cover by performing the removal procedure in reverse order. (See page 16, *Remove the Instrument Cover and Module Guide Brackets*.)

   c. Install the option software key. (See page 28, *Install the Option Software Key*.)

Hardware Installation
WFM82UP AD
WFM83UP AD
WFM72UP AD

For the Option AD audio upgrade, perform the following steps to install the audio module into the instrument. Read the entire installation procedure before installing the module.

1. Remove the four screws from the audio rear panel. Save the screws for reinstallation. (See Figure 9.)

2. Remove the audio rear panel.

NOTE. If you have difficulty removing or installing a module or rear panel because of a lack of clearance with an adjacent rear panel, loosen the screws on the adjacent panel to allow more room for moving the desired module or rear panel while you are performing this procedure.
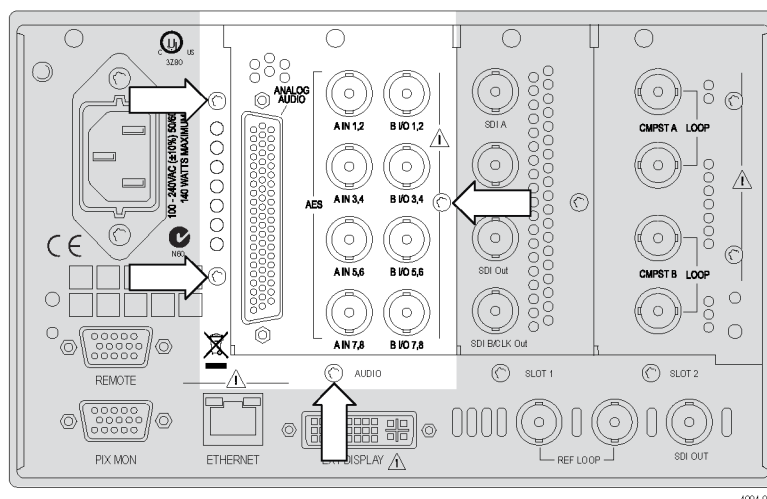
Figure 9: Removing the audio rear panel screws

3. On the new audio module, carefully squeeze the two circuit boards together near the inter-board connector and verify that the connector is fully seated. (See Figure 10.)

4. Install the new audio module into the instrument, fully inserting the module connector into J4 on the Main Interface board. The recessed flange on the left side of the module rear panel slides behind the adjacent rear panel.
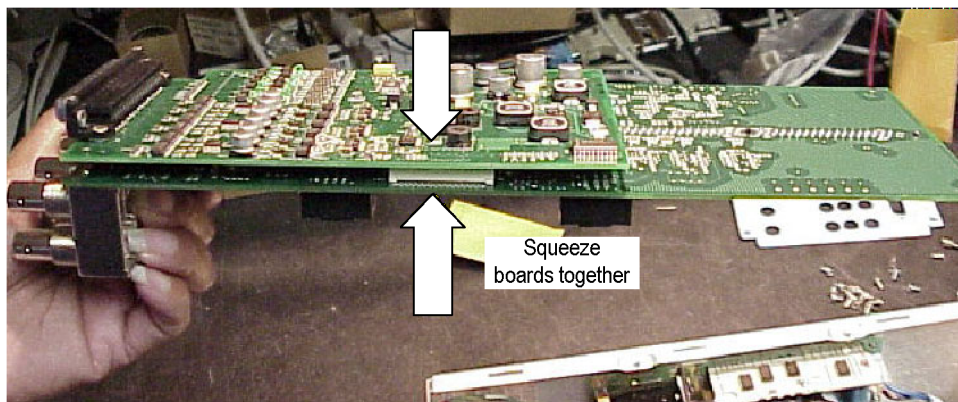
Figure 10: Checking the inter-board connection

NOTE. Use the supplied 62-pin DSUB connector to attach analog-audio signals to the instrument. Solder wires to the connector as needed to accommodate the desired audio inputs and outputs. Refer to the Safety and Installation Instructions for the connector pin assignments.

Audio signals can be connected as either balanced or unbalanced. Be sure to use a suitable cable when you are wiring balanced audio. An example of a suitable cable is Belden 8451, which is a shielded twisted pair cable.

Alternatively, you can purchase an audio breakout cable (Tektronix part number 012-1688-00), which provides a two meter cable with XLR connectors for all twelve inputs and eight outputs.

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5. Perform the following steps if you do not have any other hardware modules to install. Otherwise, proceed to installing the next module.

    a. Install the four screws into the audio rear panel. Tighten the four screws and any adjacent rear panel screws you loosened to 8 in/lbs.

    b. Reinstall the instrument module support brackets and cover by performing the removal procedure in reverse order. (See page 16, *Remove the Instrument Cover and Module Guide Brackets*.)

    c. Install the option software key. (See page 28, *Install the Option Software Key*.)

Hardware Installation WFM82UP DPE WFM83UP DPE WFM72UP DPE

For the Option DPE audio upgrade, perform the following steps to install the audio module into the instrument. Read the entire installation procedure before installing the module.

1. Remove the four screws from the audio-options rear panel. (See Figure 11.) Save the screws for reinstallation.

2. Remove the audio-options rear panel.

NOTE. If you have difficulty removing or installing a module or rear panel because of a lack of clearance with an adjacent rear panel, loosen the screws on the adjacent panel to allow more room for moving the desired module or rear panel while you are performing this procedure.
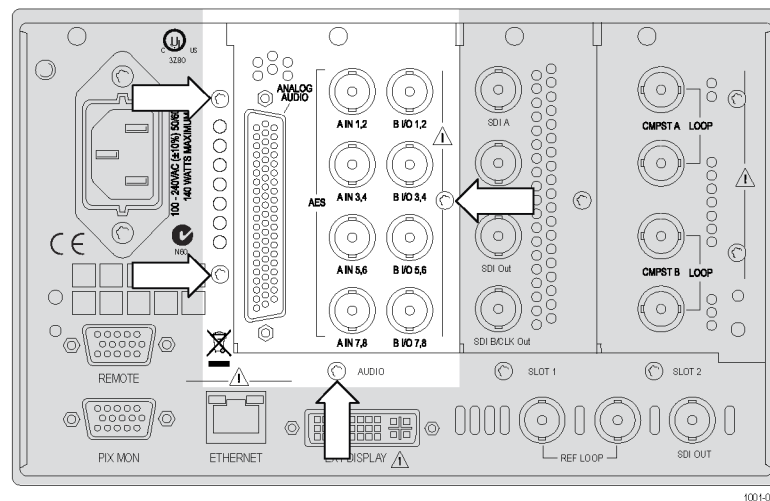
**Figure 11: Removing the audio rear panel screws**

3. On the new audio module, carefully squeeze the two circuit boards together near the inter-board connector and verify that the connector is fully seated. (See Figure 10.)
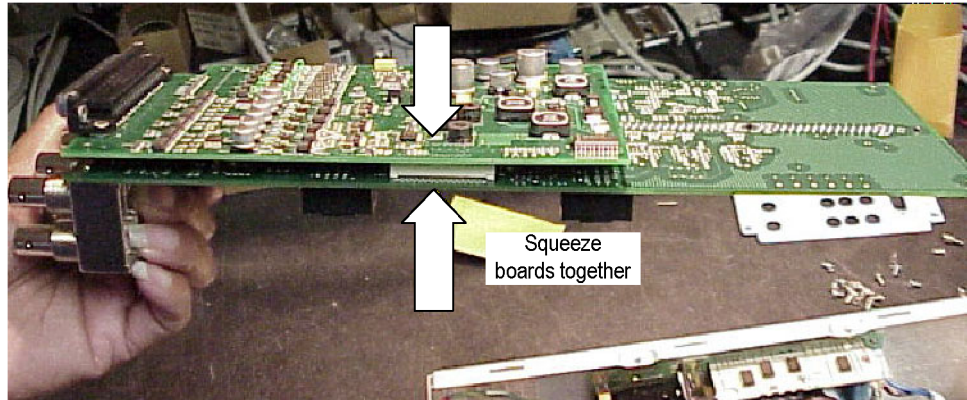
Figure 12: Checking the inter-board connection

4. Install the Dolby E module supplied in this kit into J631 of the audio module. Fully insert the connector on the Dolby E module into the socket on the audio module, and then rotate the Dolby E module in towards the audio module until the Dolby E module latches into position. (See Figure 13.)
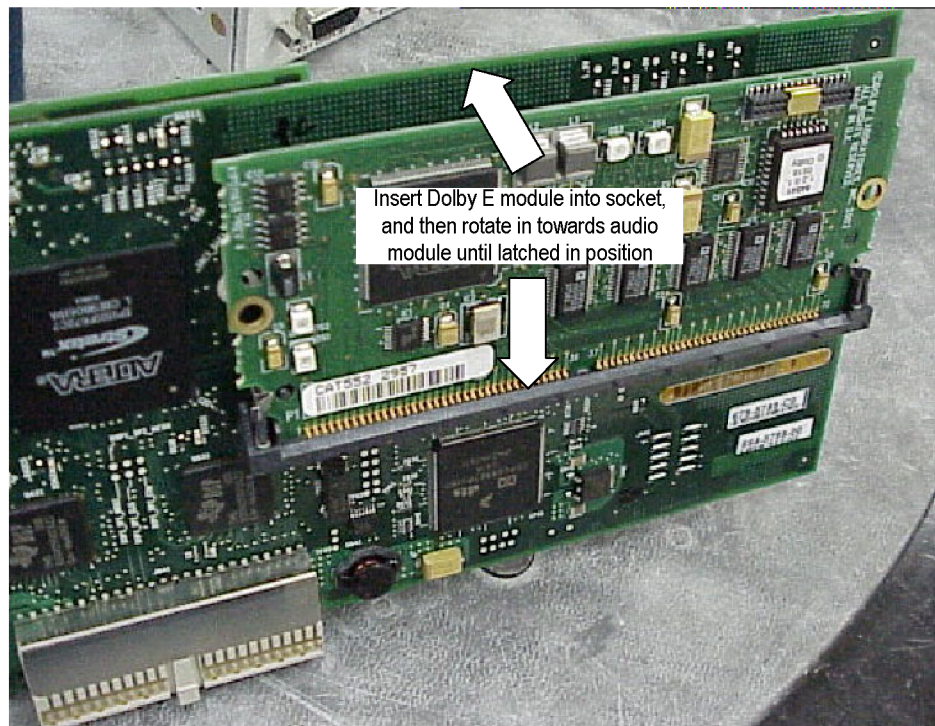
Figure 13: Installing the Dolby E module

5. Install the new audio module into the instrument, fully inserting the module connector into J4 on the Main Interface board. The recessed flange on the left side of the module rear panel slides behind the adjacent rear panel.

NOTE. Use the supplied 62-pin DSUB connector to attach analog-audio signals to the instrument. Solder wires to the connector as needed to accommodate the desired audio inputs and outputs. Refer to the Quick Start User Manual for the connector pin assignments.

Audio signals can be connected as either balanced or unbalanced. Be sure to use a suitable cable when you are wiring balanced audio. An example of a suitable cable is Belden 8451, which is a shielded twisted pair cable.

Alternatively, you can purchase an audio breakout cable (Tektronix part number 012-1688-00), which provides a two meter cable with XLR connectors for all twelve inputs and eight outputs.

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6. Perform the following steps if you do not have any other hardware modules to install. Otherwise, proceed to installing the next module.

    a. Install the four screws into the audio rear panel. Tighten the four screws and any adjacent rear panel screws you loosened to 8 in/lbs.

    b. Reinstall the instrument module support brackets and cover by performing the removal procedure in reverse order. (See page 16, *Remove the Instrument Cover and Module Guide Brackets*.)

    c. Install the option software key. (See page 28, *Install the Option Software Key*.)

Install the Option Software Key

Read the entire procedure before installing the software option key.

⚠ **CAUTION.** *To prevent upgrade failure, your instrument must have the latest version of software installed before installing the hardware upgrade and before installing the option key. (See page 11, Install the Software Upgrade.)*

1. Verify that the instrument is powered on and connected to your local network.

2. Verify the IP address of the instrument:

   a. Press the **CONFIG** button on the front panel.

   b. Navigate to **Utilities** > **Communications** > **Network Setup**.

   c. Note the IP address of the instrument.

   d. If the instrument does not have an IP address set, ask your network administrator for a valid IP address. Refer to the online help or the User manual on how to set the instrument IP address.

3. Verify that you have access to a PC with a Web browser application that is connected to a network with access to the instrument.

4. Perform the following steps to enter the software option key:

   a. On the PC, open your Web browser application.

   b. In the address bar of the Web browser, enter the IP address of the instrument you are upgrading. This opens the **Tektronix WFM8200/WFM8300 Remote Interface** screen.

   c. Click the **Instrument Options** link to open the **Active WFM8200/8300 Options** screen.

   d. In the **Key** field, enter the 20-character option key string (with or without dashes). The new option key is supplied in the Important Documents envelope.

   e. Click the **Submit** button to enable the software option. The instrument enables the option and adds the installed option to the list of currently installed options shown at the top of the screen.

NOTE. If you purchased multiple options, the software option key supplied with this kit activates all of the options you purchased.

Verify the Upgrade

Quick Verification

Perform the following procedure to verify that the new option(s) have been installed and the instrument is functioning correctly:

1. Power on the instrument.

2. Verify the installed options by performing the following steps:

   a. Press the **CONFIG** button on the front panel.

   b. Navigate to **Utilities** > **View Instrument Options** to display the installed options.

   c. Verify that the options installed prior to this upgrade are still enabled, and that the new option(s) you installed are enabled.

NOTE. If the option(s) you just installed are not listed or if your previously installed options are not listed, contact Tektronix for assistance.

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3. Verify that the instrument passes the advanced diagnostic tests by performing the following steps:

   a. In the Config menu, navigate to **Utilities** > **Run Diagnostics**.

   b. Press the **SEL** button.

   c. Press the right arrow key to highlght the box next to **Run Advanced Diagnostics**. This box is located at the bottom of the display screen.

   d. Verify that for each diagnostic test the result reads **Pass**.

   e. When the test is complete, press the right arrow key to highlight the box next to **Exit** to exit the diagnostics display.

   f. If you want to view the diagnostics test results again, select **View Diagnostic Log** from the **Utilities** menu.

NOTE. If a diagnostic test fails, contact Tektronix for assistance.

Detailed Verification

If you want to perform additional verification of the installed options, perform the *Incoming Inspection Tests* found in the Specifications and Performance Verification manual using the specified test equipment.