

Instructions



AMM7UP Upgrades

AMM768 Audio Multi-Channel Monitor

075-0936-00

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.

www.tektronix.com



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- 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.

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 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:



Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

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

Disconnect Power. To avoid electric shock, disconnect the power cord from the mains power.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Kit Description

This document provides instructions for installing the audio and video upgrades listed below into an existing Tektronix AMM768 Audio Multi-Channel Monitor.

Table 1: Supported upgrades

Upgrade options	Description
Option AD	Adds support for analog audio monitoring and digital audio monitoring (embedded and AES/EBU inputs).
Option DD	Adds support for decoding Dolby Digital (AC-3), digital audio monitoring (embedded and AES/EBU inputs), and for analog audio monitoring.
Option DDE	Adds support for decoding Dolby E and Dobby Digital (AC-3), and for digital (embedded and AES/EBU inputs) and analog audio monitoring. Supports digital ASUI formats with up to eight channels.
Option SDI	Provides audio de-embedding and Tektronix exclusive HD/SD picture, closed caption, and video session displays.

Products

The following Tektronix products are supported by this kit:

AMM768 All instruments

Required Tools

The following table listed the tools required to install the upgrade:

Table 2: Required tools

Name	Description
TORX screwdriver handle	Accepts TORX-driver bits
T-10 and T-15 TORX tips	TORX-driver bit for T-10 and T-15 screw heads
Anti-static wrist strap	
AMM768 Audio Multi-Channel Monitor Specifications and Performance Verification Technical Reference and appropriate test equipment listed in the recommended test equipment tables	071-2174-xx Available from the Tektronix Web site

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.

AMM7UP AD

Table 3: Option AD parts list

Quantity	Part number	Description
1 EA	-----	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-0936-00	INSTRUCTIONS; AMM7UP UPGRADES
1 EA	131-7430-XX	CONN, DSUB; SLDR CUP, MALE, STR, 62 POS
1 EA	672-6307-XX	CIRCUIT BD SUBASSY; DIGITAL AND ANALOG AUDIO

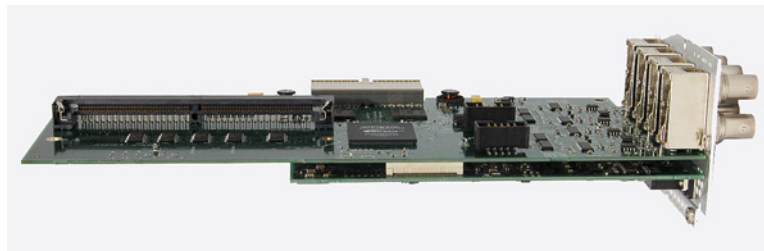
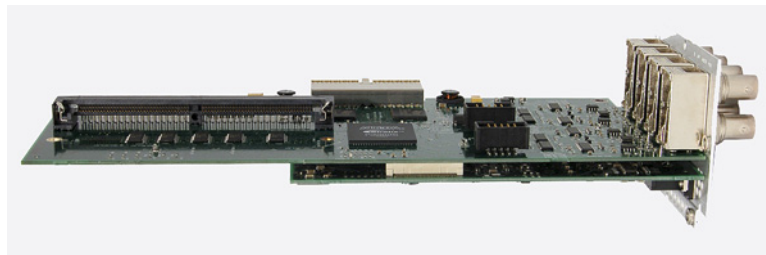


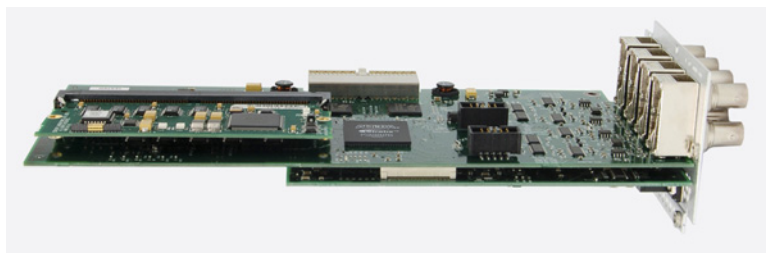
Figure 1: Option AD module

AMM7UP DD**Table 4: Option DD parts list**

Quantity	Part number	Description
1 EA	-----	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-0936-00	INSTRUCTIONS; AMM7UP UPGRADES
1 EA	131-7430-XX	CONN, DSUB; SLDR CUP, MALE, STR, 62 POS
1 EA	672-6308-XX	CIRCUIT BD SUBASSY; DIGITAL AND ANALOG AUDIO

**Figure 2: Option DD module****AMM7UP DDE****Table 5: Option DDE parts list**

Quantity	Part number	Description
1 EA	-----	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-0936-00	INSTRUCTIONS; AMM7UP UPGRADES
1 EA	119-7167-XX	CIRCUIT BD ASSY; CAT552 DOLBY E/DIGITAL DECODER MODULE; 72 PIN SIMM
1 EA	131-7430-XX	CONN, DSUB; SLDR CUP, MALE, STR, 62 POS
1 EA	672-6309-XX	CIRCUIT BD SUBASSY; DIGITAL AND ANALOG AUDIO

**Figure 3: Option DDE module**

AMM7UP SDI

Table 6: Option SDI parts list

Quantity	Part number	Description
1 EA	-----	ENVELOPE, IMPORTANT DOCUMENTS; CONTAINS SOFTWARE OPTION KEY
1 EA	075-0936-00	INSTRUCTIONS; AMM7UP UPGRADES

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 audio monitor. The new software option key enables 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 waveform monitor. 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 **MAIN** button on the front panel.
3. Touch the **Config** soft key, and then touch the **Utilities** soft key.
4. Touch the **View Instmt Options** soft key.
5. Make a note of which options are installed.

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, if your instrument does not have the latest version of software installed, you must upgrade the software to the latest version 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 already 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 installed software version:
 - a. Press the **MAIN** button on the front panel.
 - b. Touch the **Config** softkey, touch the **Utilities** soft key, and then touch the **View Hw/Sw Version** soft key.
 - c. In the Hardware and Software Versions display window, note the 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.tek.com/products/video_test`
 - b. On the Video Test Web page, click the link **Software and Firmware** under Product Resources.

- c. On the Software and Firmware Finder Web page, search by model number (i.e.: AMM768) or use the keyword AMM to locate the software-upgrade package for your instrument.
- d. Note the latest version number of the software-upgrade package(s).

NOTE. *If the search for your product produces no results, there are no upgrades available.*

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

To perform the upgrade, you will use a PC to transfer the new software to the instrument using your local Ethernet network or using an Ethernet cross-over cable. Read the entire procedure before starting the software upgrade. 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.*

PC System Requirements. The data-transfer utility used to upgrade the waveform monitor runs on the following PC systems: Windows 98, Windows NT 4.0, Windows ME, Windows 2000, and Windows XP. The utility also requires an Ethernet interface and 128 MB of free disk space on the PC system.

Upgrade the Software

After you have verified that your instrument needs to have the software upgraded, perform the following procedure:

1. If you are connecting your PC directly to the instrument, connect the Ethernet cross-over cable between the Ethernet ports on the PC and instrument, otherwise proceed to step 2.
2. Connect the instrument and PC to your local Ethernet network.
3. Power on the instrument.

4. Assign the instrument an IP address:

NOTE. *The data-transfer utility requires that the instrument 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 cross-over cable. You can assign the instrument any IP address that is compatible with the IP address of the PC.

- a. Press the **MAIN** button on the front panel.
- b. Touch the **Config** soft key, touch the **Utilities** soft key, and then touch the **Communications** soft key.
- c. Touch the **Config Mode** soft key, and then touch either the **Manual** or **DHCP** soft key as directed by your LAN administrator. Select **Manual** if you are using an Ethernet cross-over cable to connect the PC directly to the instrument. Touch the **Close Config Mode** soft key to exit the **Config** mode.
- d. If you selected **Manual** mode, touch the **Network Setup** soft key. 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 cross-over cable connection. Touch **OK** to close the **Network Setup** dialog box.

NOTE. *If you selected DHCP mode, the network will automatically assign the instrument an IP address.*

5. Download the latest version of software at the Tektronix Web site:

- a. Use the Web browser on the PC to navigate to the Tektronix Software and Firmware Finder Web site:

`http://www.tektronix.com/software`
- b. On the Software and Firmware Finder Web page, search by model number (i.e.: AMM768) to locate the latest software-upgrade package for the instrument.
- c. Download the latest version to your PC.
- d. 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.

6. Prepare the instrument for the software upgrade:
 - a. Press the front panel **MAIN** button.
 - b. Touch the **Config** soft key, and then touch the **Utilities** soft key.
 - c. Touch the **System Upgrade** soft key. This displays a dialog box that asks you to confirm that you want to shutdown to upgrade the system.
 - d. Touch **Yes** to confirm you want to upgrade the system. The instrument display will go to black and will display a screen stating that it is waiting for data transfers from the network.
 - e. Note the IP address displayed on the screen of the instrument.
7. 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. When the software upgrade is complete, the transfer utility asks you to enter another IP address. Press **Enter** to exit the transfer utility.
8. 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.
9. During the reboot, you are forced to recalibrate the touchscreen. On-screen instructions direct you to touch crosshairs in five locations: top left, top right, bottom right, bottom left, and then center. After you recalibrate the touchscreen, the instrument completes the reboot.
10. Verify the software upgrade:

NOTE. *If the software-upgrade package includes a Readme.txt file, read this file to determine whether all of the Configuration menu and instrument-mode settings from the previous software version are preserved in the new version you just installed.*

- a. Press the **MAIN** button on the front panel.

- b. Touch the **Config** soft key, touch the **Utilities** soft key, and then touch the **View Hw/Sw Version** soft key.
- c. In the Hardware and Software Versions display window, verify that the software version number matches the version of the software-upgrade package you installed.

Install the Hardware Upgrade



CAUTION. *To prevent upgrade failure, if your instrument does not have the latest version of software installed, you must upgrade the software to the latest version before you install the hardware upgrade. Refer to *Install the Software Upgrade* on page 6.*

The procedures in this section are only for upgrades that include 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.

If you are installing a software-only upgrade (Option SDI), proceed to *Install the Software Option Key* on page 15.

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 location shown in Figure 4.

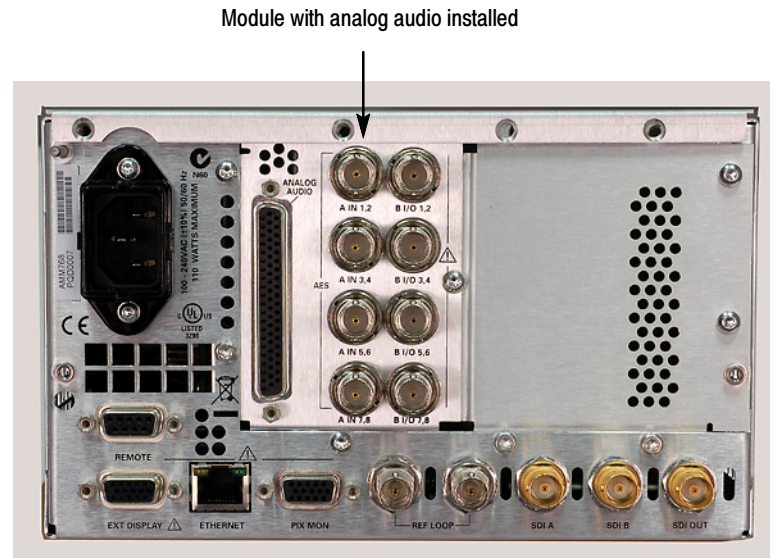


Figure 4: Rear panel showing the location of the optional modules

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. If necessary, remove the instrument from the portable cabinet or rack adapter sleeve. Refer to the *WFM7F05 Instruction* manual for complete details if needed.
2. 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 (refer to *How to Prevent Electrostatic Discharge* on page 5).
3. Remove the six screws from the chassis cover as shown in Figure 5. Save the screws for reinstallation.

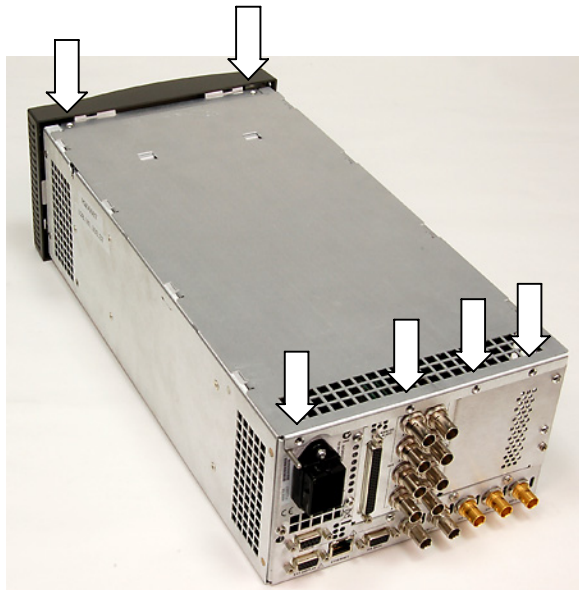


Figure 5: Removing the chassis cover

4. Slide the chassis cover toward the back of the instrument, and then lift and remove the chassis cover from the instrument.
5. Remove the four screws from the module guide brackets as shown in Figure 6. Remove the brackets and save the screws for reinstallation. Note that the brackets are keyed to the fit on the chassis in only one direction.

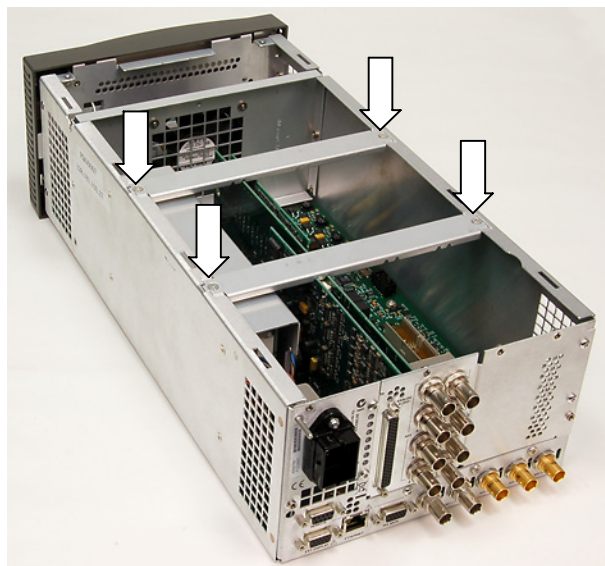


Figure 6: Removing the module guide brackets

Hardware Installation
AMM7UP AD
AMM7UP DD
AMM7UP DDE

For audio upgrades only (Option AD, DD, or DDE), 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 7. Save the screws for reinstallation.

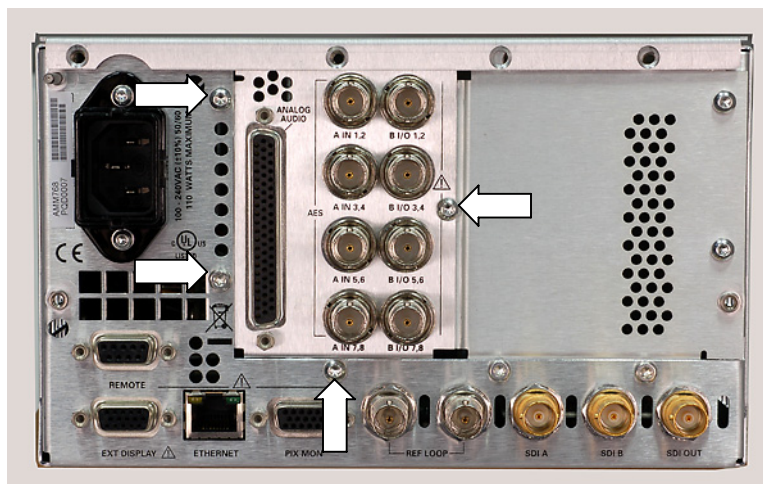


Figure 7: Removing the audio-options rear panel screws

2. Remove the existing audio module from the instrument. Place the removed module in an anti-static bag for storage.

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.*

3. Install the new audio module into the instrument, fully inserting the module connector into J8 on the Main Interface board. The recessed flange on the left side of the module rear panel slides behind the adjacent rear panel. See Figures 8 and 9.

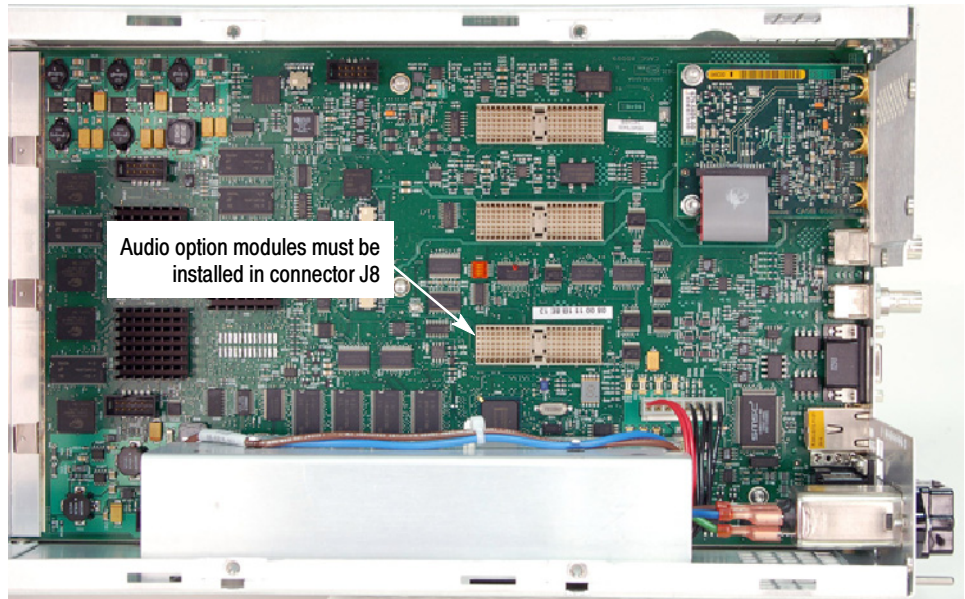


Figure 8: Location of the optional modules connector on main board

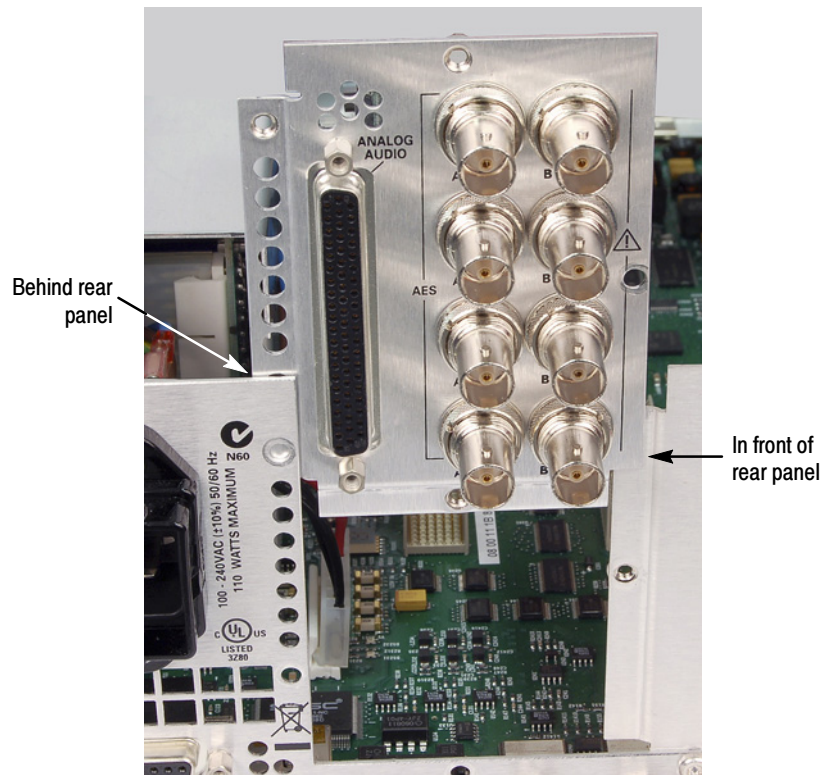


Figure 9: Proper orientation of flanges on rear panel and module

NOTE. For audio options AD, DD, and DDE, 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 AMM768 Audio Multi-Channel Monitor 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.

4. Perform the following steps to reassemble the instrument.
 - a. Install the four screws into the audio-options rear panel. Tighten the four screws and any adjacent rear panel screws you loosened to 8 in/lbs.
 - b. Reinstall the instrument cover and module support brackets by performing the removal procedure in reverse order. (See page 11.)
 - c. Proceed to *Install the Software Option Key* on page 15.

Install the Software Option Key

Read the entire procedure before installing the software option key.



CAUTION. To prevent possible upgrade failures, should upgrade the software to the latest version before you install any hardware upgrades and software option keys. Refer to *Install the Software Upgrade on page 6*.

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 **MAIN** button on the front panel. Then press the **Config > Utilities > Communications > Network Setup** soft keys.
 - b. Note the IP address of the instrument.
 - c. If the instrument does not have an IP address set, ask your network administrator for a valid IP address. Refer to the *AMM768 Audio Multi-Channel Monitor Quick Start User Manual* for instructions on how to set the 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 AMM768 Remote Interface** screen.
 - c. Click the **Instrument Options** link to open the **Active AMM768 Options** screen.
 - d. In the **Key** field, enter the 20-character option key string (you can include or omit any dashes in the string). The new option key is supplied in the Important Documents envelope you received with this upgrade kit.
 - 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 activated all of the options you purchased.*

Apply the Option Label

The upgrade kit contains a label to indicate that the instrument has been modified with the option. Apply the option label to the side panel of the instrument.

Verify the Upgrade

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 **MAIN** button on the front panel.
 - b. Touch the **Config** soft key, and then touch the **Utilities** soft key.
 - c. Touch the **View Instmt Options** soft key to display the installed options.
 - d. Verify that the options installed prior to this upgrade are still enabled, and that the new option(s) you installed are enabled.
 - e. Touch the **OK** softkey to close the installed options display, and then touch the **Close Utilities** softkey.

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

3. Verify that the instrument passes the advanced diagnostic tests by performing the following steps:
 - a. In the Config menu, touch the **Diagnostics** soft key.
 - b. Touch the **Run Advanced** soft key, and then touch the **Run** soft key to start the tests.
 - c. Verify that for each diagnostic test the result reads **Pass**.
 - d. Press the **SELECT** button on the front panel to reboot the instrument (or cycle power).

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

4. Verify the performance of the installed options by performing the appropriate performance verification procedures in the *AMM768 Audio Multi-Channel Monitor Specifications and Performance Verification Technical Reference* manual.

❖ End of document ❖