

# MTX10UP Upgrades MTX100B MPEG Player & Recorder 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.

[www.tektronix.com](http://www.tektronix.com)



075-0916-01

**Tektronix**

Copyright © Tektronix. All rights reserved. Licensed software products are owned by Tektronix or its subsidiaries or suppliers, and are protected by national copyright laws and international treaty provisions.

Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specifications and price change privileges reserved.

TEKTRONIX and TEK are registered trademarks of Tektronix, Inc.

## **Contacting Tektronix**

Tektronix, Inc.  
14200 SW Karl Braun Drive  
P.O. Box 500  
Beaverton, OR 97077  
USA

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

- In North America, call 1-800-833-9200.
- Worldwide, visit [www.tektronix.com](http://www.tektronix.com) to find contacts in your area.

---

# 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, switch off the instrument power, then 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 kit provides parts and instructions to upgrade your MTX100B MPEG Recorder & Player with various software and hardware options.




---

**CAUTION.** *To ensure that the instrument functions properly after the upgrade procedures, perform the software upgrades before the hardware upgrades.*

---

## Software Upgrade Options

The following tables lists the software upgrade options which can be enabled on the MTX100B instruments.

---

**NOTE.** *To enable the UPG upgrade option refer to Software Upgrades. (See page 6.) To enable the other upgrade options refer to Entering the Option Key. (See page 9.)*

---

### MTX10UP

| option | Description                            |
|--------|--|
| SC     | Adds the scheduler option              |
| UPG    | Upgrade to the latest software version |

### MTXPAUP

| option | Description  |
|--------|--|
| IPE    | Adds the 10/100 Base-T Video-over-IP electrical interface; includes security dongle key                |
| TSCX   | Adds Real Time Transport Stream Compliance Analyzer (requires Option 07); includes security dongle key |
| TSCA   | Adds Deferred Time Transport Stream Compliance Analyzer; includes security dongle key                  |
| MX     | Adds the Deferred Time Multiplexer application   |
| ES     | Adds the ES Analyzer application   |
| PA     | Adds the PES Analyzer application  |
| BA     | Adds the Buffer Analyzer application   |
| DB     | Adds the Carousel Analyzer application   |
| CG     | Adds the Carousel Generator application  |
| DBCG   | Adds the Carousel Analyzer and Carousel Generator applications   |

## Hardware Upgrade Options

The following table lists the hardware upgrade options for the MTX100B instruments:

| <b>MTX10UP option</b> | <b>Description</b>   |
|-----------------------|--|
| Option 01             | Adds the ASI interface module  |
| Option 02             | Adds the universal parallel/serial interface module  |
| Option 05             | Adds the IEEE1394/ASI interface module   |
| Option 07             | Adds the SMPTE310M/ASI/SPI interface module  |
| Option IPTVP          | Adds the IPTV Gigabit Ethernet Interface with 10/100/1000 Base-T RJ45 Electrical Port (requires Option TSCX) |
| Option SX             | Adds 850 nm optical port to the IPTV interface module  |
| Option LX             | Adds 1310 nm optical port to the IPTV interface module   |
| Option ZX             | Adds 1550 nm optical port to the IPTV interface module   |

## Products

MTX100B standard instruments

## Minimum Tool and Equipment List

| <b>Required tools and equipment</b> | <b>Description</b>                        |
|-------------------------------------|---|
| Screwdriver handle                  | Accepts Torx-driver bits                  |
| T-10 Torx tip                       | Torx-driver bit for T-10 size screw heads |
| T-15 Torx tip                       | Torx-driver bit for T-15 size screw heads |

## Kit Parts List

| Quantity                                       | Part number     | Description   |
|--|-----------------|---|
| <b>MTX10UP &amp; MTXPAUP software upgrades</b> |                 |   |
| 1 ea   | NS <sup>1</sup> | DATA SHEET; OPTION KEY INFORMATION                              |
| 1 ea   | 063-4085-xx     | USB FLASH DRIVE   |
| 1 ea   | 063-4114-xx     | USER DOC CD   |
| 1 ea   | 075-0916-01     | MANUAL,TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION |
| <b>MTX10UP01 (for Option 01)</b>               |                 |   |
| 1 ea   | 671-6118-xx     | CKT BD ASSY: A100   |
| 1 ea   | 335-1365-00     | MARKER, IDENT: MKD CONNECTORS FOR A100                          |
| 1 ea   | 174-B924-00     | CA, ASSY, SP; 80, 30AWG, 5cm L, FLAT, W/CONN                    |
| 1 ea   | 063-4085-xx     | USB FLASH DRIVE   |
| 1 ea   | 063-4114-xx     | USER DOC CD   |
| 1 ea   | 075-0916-01     | MANUAL,TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION |
| <b>MTX10UP02 (for Option 02)</b>               |                 |   |
| 1 ea   | 671-6119-xx     | CKT BD ASSY: A110   |
| 1 ea   | 335-1366-00     | MARKER, IDENT: MKD CONNECTORS FOR A110                          |
| 1 ea   | 174-B924-00     | CA, ASSY, SP; 80, 30AWG, 5cm L, FLAT, W/CONN                    |
| 1 ea   | 063-4085-xx     | USB FLASH DRIVE   |
| 1 ea   | 063-4114-xx     | USER DOC CD   |
| 1 ea   | 075-0916-01     | MANUAL,TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION |
| <b>MTX10UP05 (for Option 05)</b>               |                 |   |
| 1 ea   | 671-6120-xx     | CKT BD ASSY: A140   |
| 1 ea   | 335-1367-00     | MARKER, IDENT: MKD CONNECTORS FOR A140                          |
| 1 ea   | 174-B924-00     | CA, ASSY, SP; 80, 30AWG, 5cm L, FLAT, W/CONN                    |
| 1 ea   | 063-4085-xx     | USB FLASH DRIVE   |
| 1 ea   | 063-4114-xx     | USER DOC CD   |
| 1 ea   | 075-0916-01     | MANUAL,TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION |
| <b>MTX10UP07 (for Option 07)</b>               |                 |   |
| 1 ea   | 671-6141-xx     | CKT BD ASSY: A170   |
| 1 ea   | 335-1368-00     | MARKER, IDENT: MKD CONNECTORS FOR A170                          |
| 1 ea   | 174-B924-00     | CA, ASSY, SP; 80, 30AWG, 5cm L, FLAT, W/CONN                    |
| 1 ea   | 063-4085-xx     | USB FLASH DRIVE   |
| 1 ea   | 063-4114-xx     | USER DOC CD   |
| 1 ea   | 075-0916-01     | MANUAL,TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION |

| Quantity                               | Part number | Description   |
|--|-------------|---|
| <b>MTX10UPIPTVP (for Option IPTVP)</b> |             |   |
| 1 ea                                   | 671-6438-00 | CKT BD ASSY; VIDEO-GBE BD   |
| 1 ea                                   | 335-2072-00 | MARKER, IDENT; MKD CONNECTORS FOR VIDEO-GBE BD                                |
| 2 ea                                   | 343-1729-00 | RETAINER; VIDEO-GBE BD  |
| 1 ea                                   | 174-5626-00 | CABLE ASSY; RF, BNC TO BNC; 75 OHM, 6.0 L                                     |
| 1 ea                                   | 174-5627-00 | CABLE ASSY; RS232 CIP   |
| 1 ea                                   | 063-4085-xx | USB FLASH DRIVE   |
| 1 ea                                   | 063-4114-xx | USER DOC CD   |
| 1 ea                                   | 075-0916-01 | MANUAL, TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION              |
| <b>MTX10UPLX (for Option LX)</b>       |             |   |
| 1 ea                                   | 131-7957-00 | OPTICAL GIGABIT ETHERNET/FIBRE CHANNEL 1310NM SFP SFF, 1.25/1.0625GBAUD, 3.3V |
| 1 ea                                   | 063-4085-xx | USB FLASH DRIVE   |
| 1 ea                                   | 063-4114-xx | USER DOC CD   |
| 1 ea                                   | 075-0916-01 | MANUAL, TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION              |
| <b>MTX10UPSX (for Option SX)</b>       |             |   |
| 1 ea                                   | 131-7834-00 | OPTICAL GIGABIT ETHERNET/FIBRE CHANNEL 850NM SFP, 1.25/1.0625GBAUD, 3.3V      |
| 1 ea                                   | 063-4085-xx | USB FLASH DRIVE   |
| 1 ea                                   | 063-4114-xx | USER DOC CD   |
| 1 ea                                   | 075-0916-01 | MANUAL, TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION              |
| <b>MTX10UPZX (for Option ZX)</b>       |             |   |
| 1 ea                                   | 131-7958-00 | OPTICAL GIGABIT ETHERNET/FIBRE CHANNEL 1550NM SFP, 1.25/1.0625GBAUD, 3.3V     |
| 1 ea                                   | 063-4085-xx | USB FLASH DRIVE   |
| 1 ea                                   | 063-4114-xx | USER DOC CD   |
| 1 ea                                   | 075-0916-01 | MANUAL, TECH:INSTRUCTIONS, MTX100B INTERFACE MODULE INSTALLATION              |

<sup>1</sup> NS - Not Saleable

## Installation Instructions

These instructions are for personnel who are familiar with servicing the product. If you need further details for disassembling or reassembling the product, refer to the *MTX100B MPEG Recorder & Player Service Manual* (Tektronix part number 077-0191-xx).



**CAUTION.** To ensure that the instrument functions properly after the upgrade procedures, perform the software upgrades before the hardware upgrades.

---

## Software Upgrades

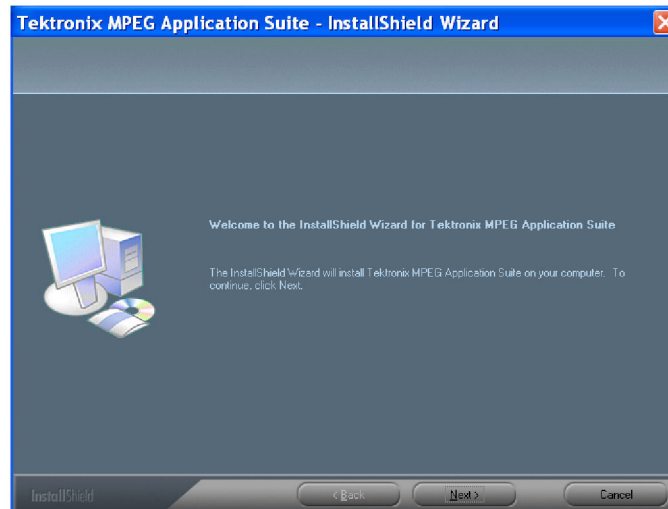
Perform the following steps to upgrade the software version from 9.X to 10.X using the USB flash drive and the UPG option.

1. Connect the USB flash drive to the USB connector of the instrument. A dialog box with various install options is displayed.

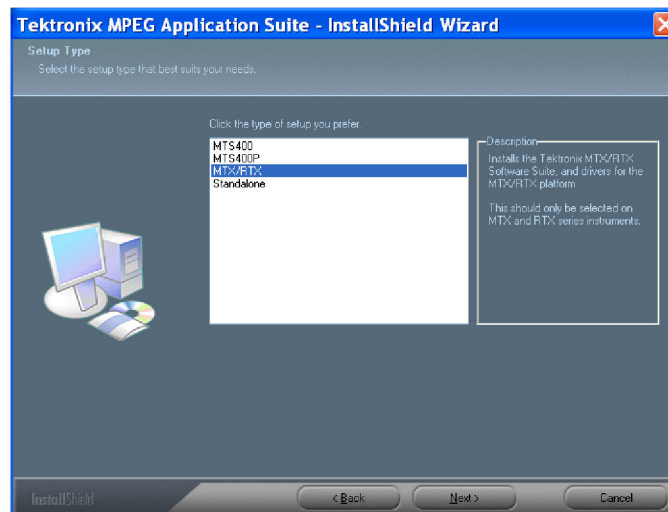




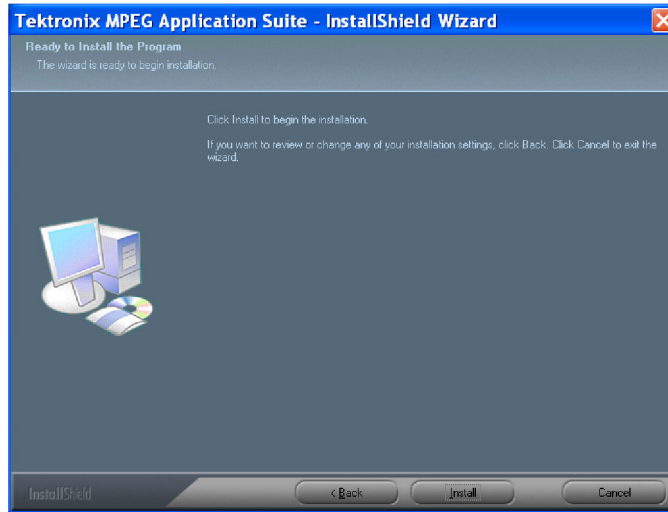
2. Select **Install Tektronix MPEG Application Suite** and click **OK**. Immediately, an InstallShield Wizard that allows you to install the application is displayed. Click **Next** to continue.



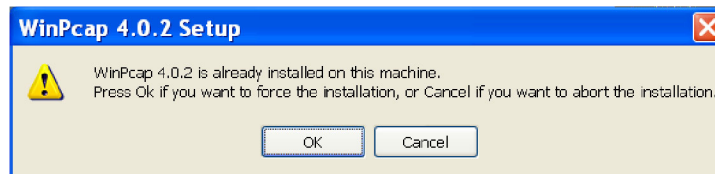
3. Select **MTX/RTX** as the Setup type and click **Next** to continue.



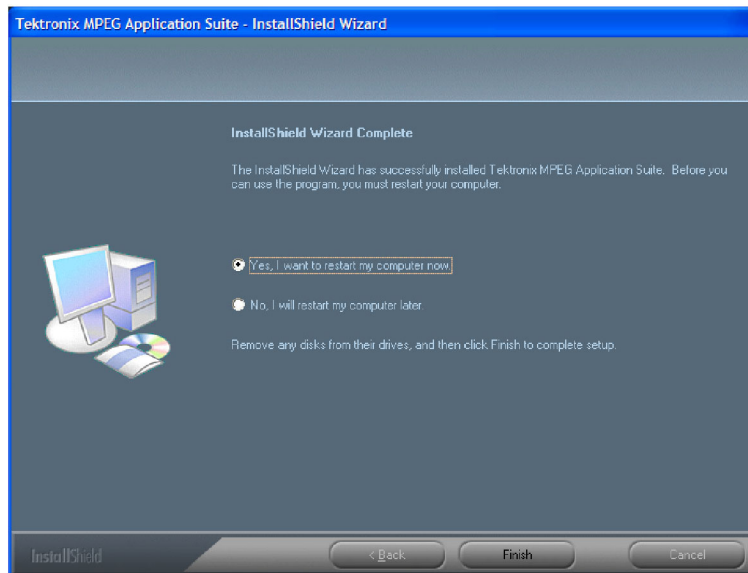
4. Click **Install** to begin the installation process.



During the progress, the following WinPcap 4.0.2 Setup message is displayed. Click **OK** to continue.



5. Choose the option to restart the PC, and then select **Finish**. The PC will shut down and restart.



6. After the restart, a Hardware Update Wizard dialog box is displayed. Choose **No, not this time** option and click **Next** to proceed. Follow the on screen instructions, and the wizard automatically installs the hardware driver.



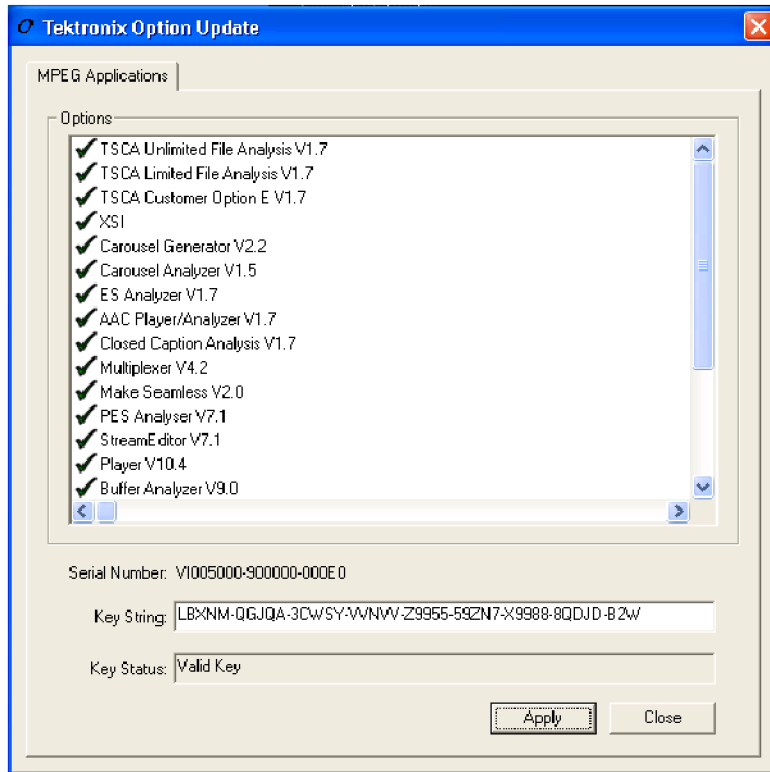
7. Perform steps 3 through 7 listed in the *Entering the Option Key* section to enter the UPG option key. (See page 9.)

### Entering the Option Key

Perform the following steps to enter the option key that is supplied with the upgrade kit.

1. Connect a keyboard and mouse to the USB connectors of the instrument (if they are not already installed).
2. Power on the instrument and wait for it to start.
3. Connect the dongle that is supplied with the instrument.

4. From the Start menu, select **Programs > Tektronix MTS400 > Optionkey Wizard** to open the Tektronix Option Update dialog box.



**Figure 1: Tektronix Option Update dialog box**

5. Refer to the option key document that is supplied with the kit to identify the option key numbers.
6. Enter the alphanumeric numbers in the **Key String** text box, and click the **Apply** button.

The Tektronix Option Update dialog box is updated and the ordered option is displayed along with the other options. If a wrong key string is entered, the **Key Status** box displays the entered string as invalid.

7. Apply the label of the ordered option to the right side of the cabinet.
8. Restart the instrument to display the application screen.

## Hardware Upgrades



---

**CAUTION.** To prevent static discharge damage, service the product only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist strap, grounded foot strap, and static resistant apparel while installing this kit.

---



---

**WARNING.** Dangerous voltages may be present inside the instrument. Before performing the hardware procedures, disconnect the power cord from the line voltage source. Failure to do so could cause serious injury.

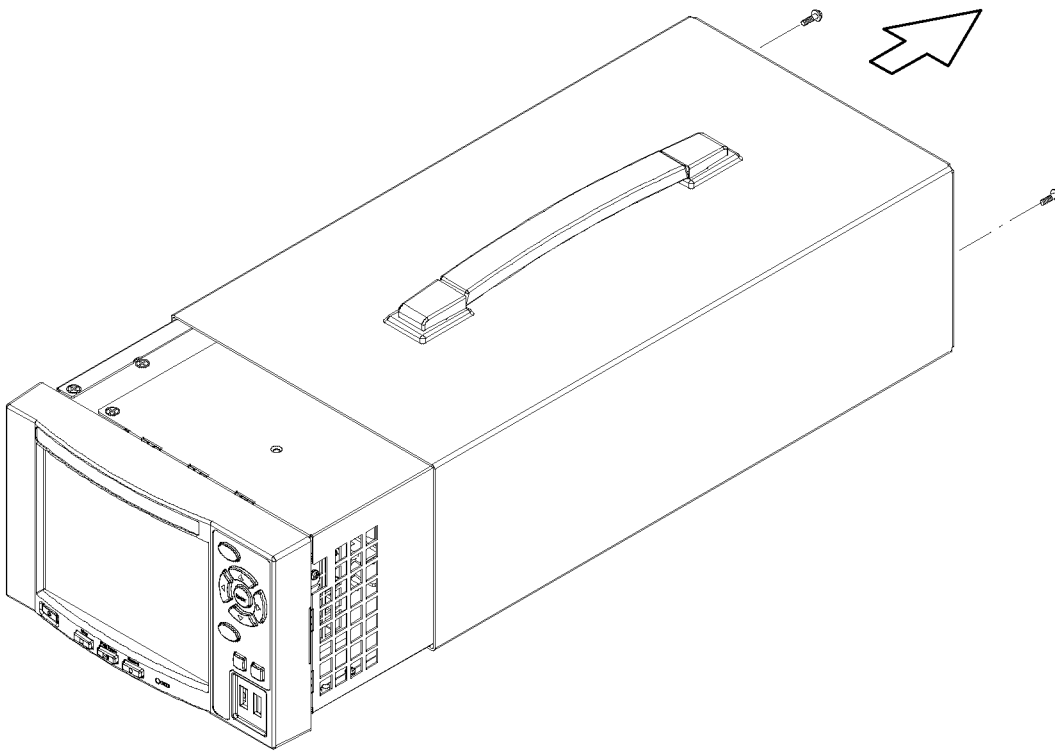
---

Perform the following procedure to install the Option 01, 02, 05, 07, or IPTVP interface modules into the MTX100B:

If you ordered SX, LX or ZX options only, refer to (See page 22, *Installing the SFP Module*.)

### Removing the Cabinet

1. Disconnect all external cables and the power cord from the MTX100B rear panel.
2. Use a screwdriver with a T-15 Torx tip to remove the two screws securing the cabinet to the instrument. (See Figure 2 on page 12.)
3. Slide the instrument forward to remove the instrument from the cabinet. (See Figure 2.)



**Figure 2: Removing the instrument cabinet**

### Removing the Right-side and Left-side Covers

1. Set the instrument so that the left side is down on the work surface and the front is facing you.
2. Use a screwdriver with a T-10 Torx tip to remove the seven screws securing the right-side cover to the top and bottom of the chassis. (See Figure 3.)
3. Remove the right-side cover from the chassis.
4. Set the instrument so that the right side is down on the work surface and the front is facing you.
5. Use a screwdriver with a T-10 Torx tip to remove the six screws securing the left-side cover to the top and bottom of the chassis. (See Figure 3.)
6. Remove the left-side cover from the chassis.

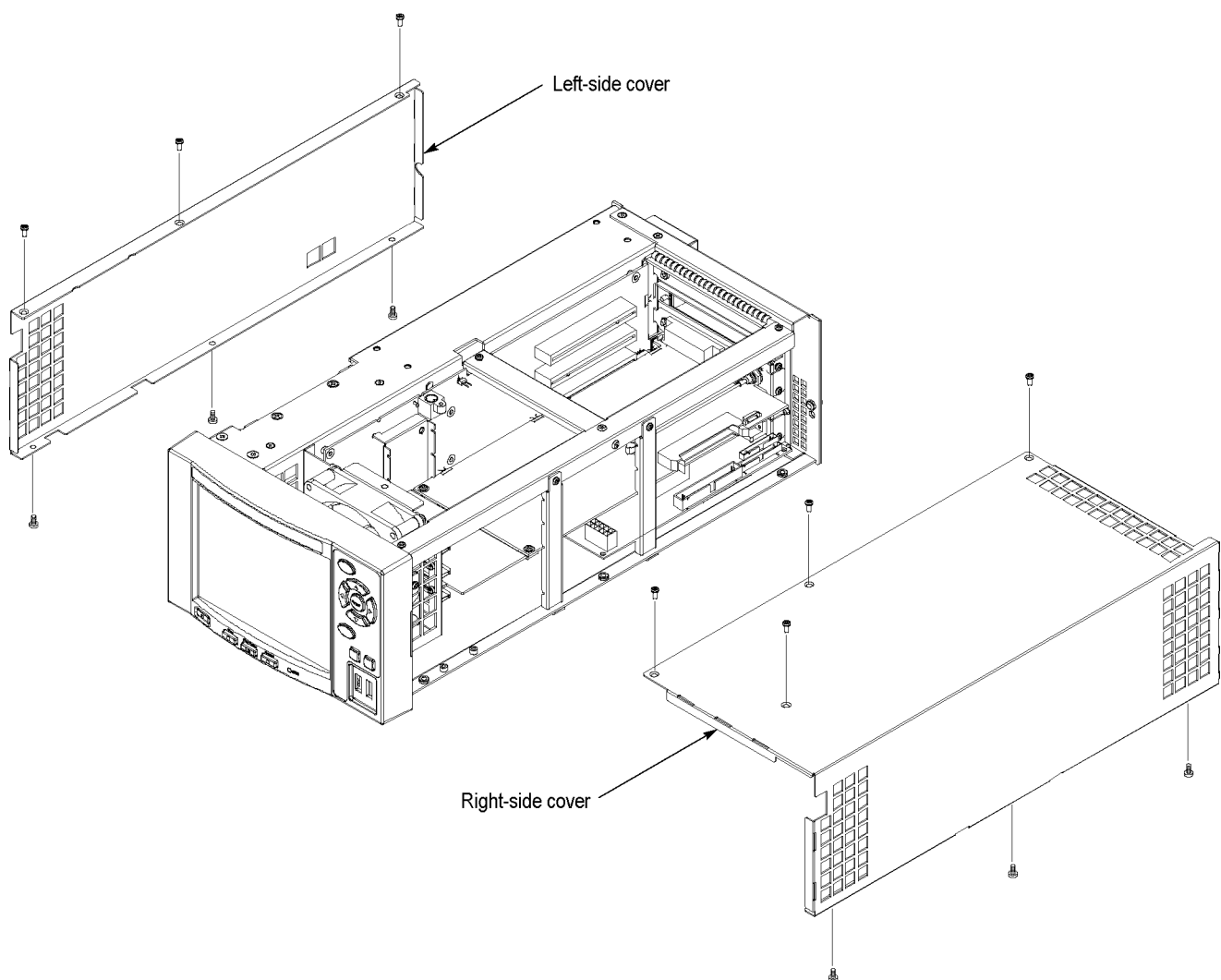


Figure 3: Removing the right-side and left-side covers

### Removing the Board Retainers

1. Set the instrument so that the bottom is down on the work surface and the right side is facing you.
2. Use a screwdriver with a T-10 Torx tip to remove the two screws securing the board retainers to the chassis. (See Figure 9.)
3. Lift the retainers away from the chassis. (See Figure 9.)

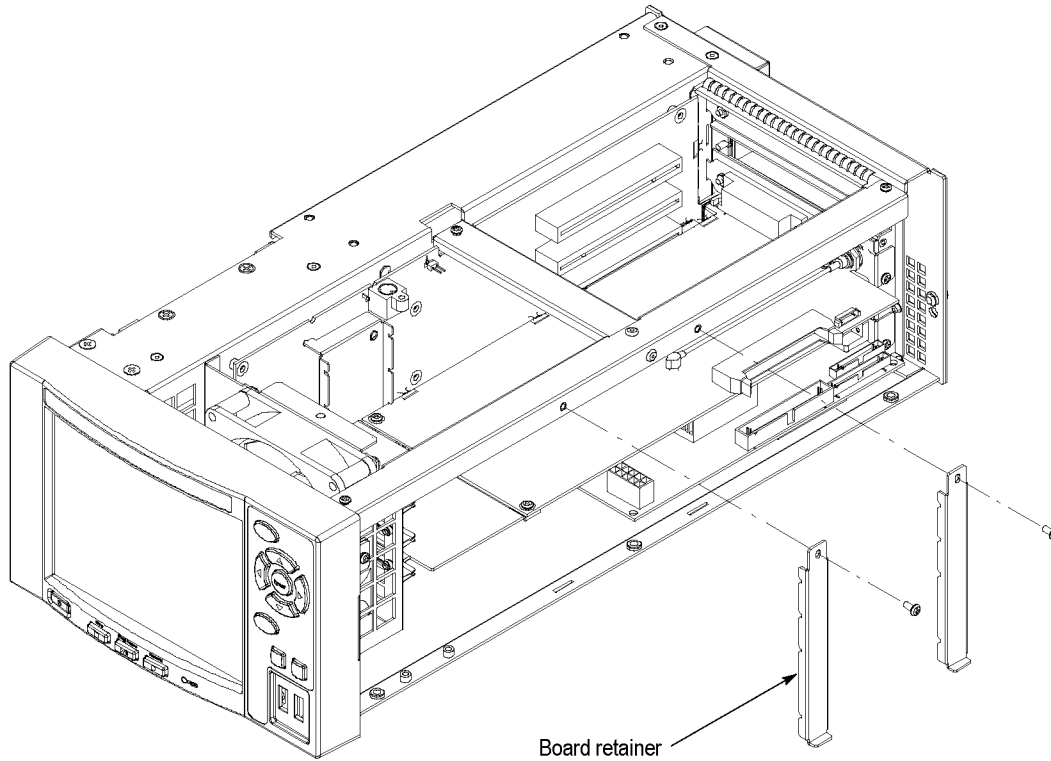
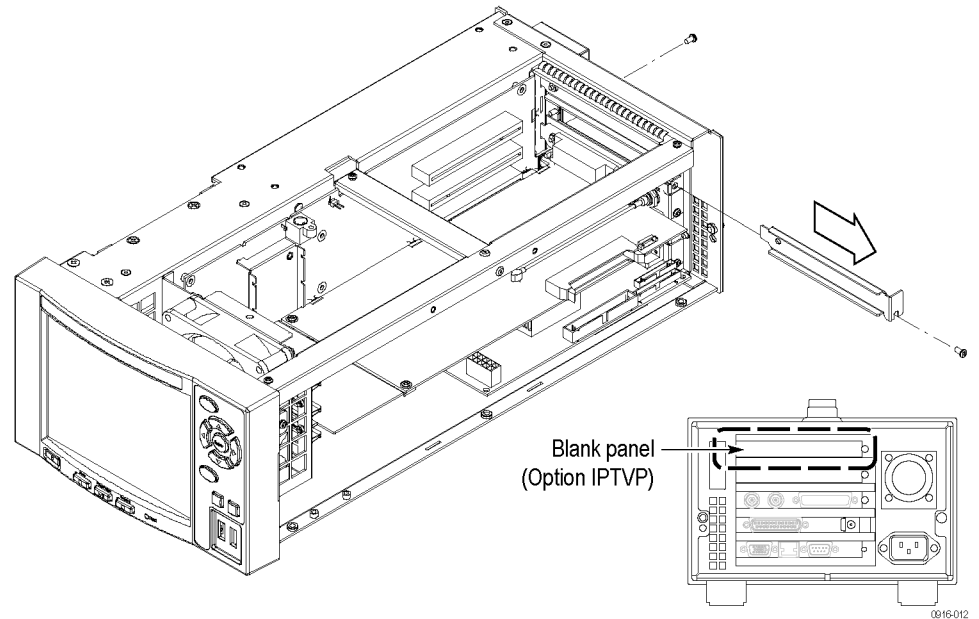


Figure 4: Removing the board retainers



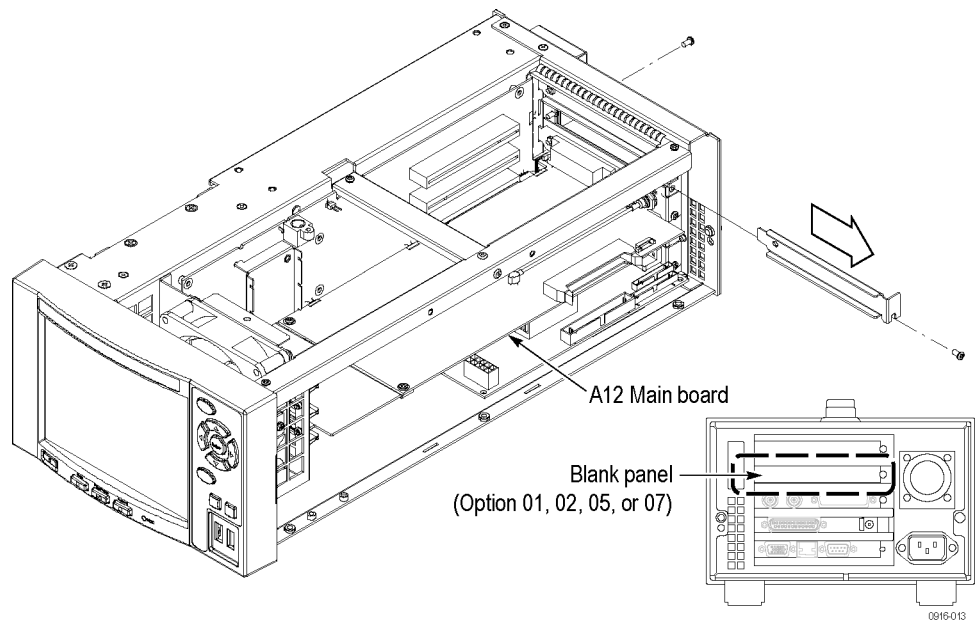
**Removing the Blank Panels**

1. Use a screwdriver with a T-10 Torx tip to remove the screws securing the top blank panel to the side and rear of the chassis.
2. Lift the blank panel away to remove it. (See Figure 5.) Save the screws.



**Figure 5: Removing the top blank panel**

3. Remove screws securing the second blank panel to the instrument and then remove the second blank panel. (See Figure 6.)

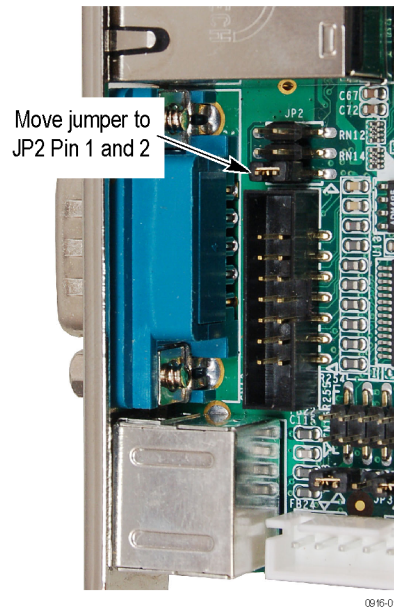
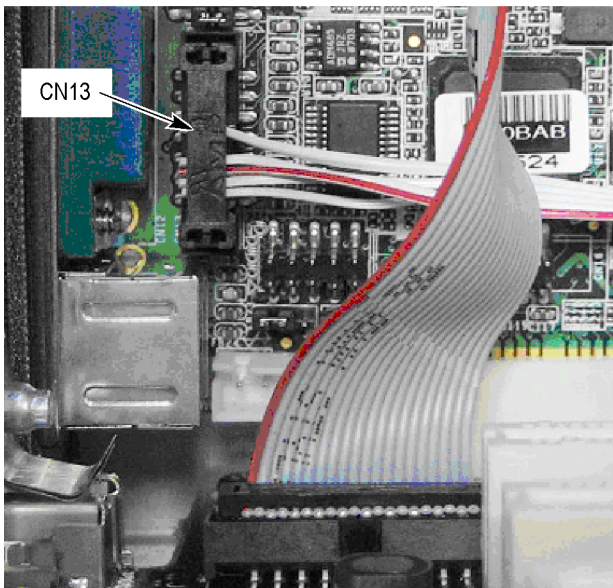


**Figure 6: Removing the second blank panel**

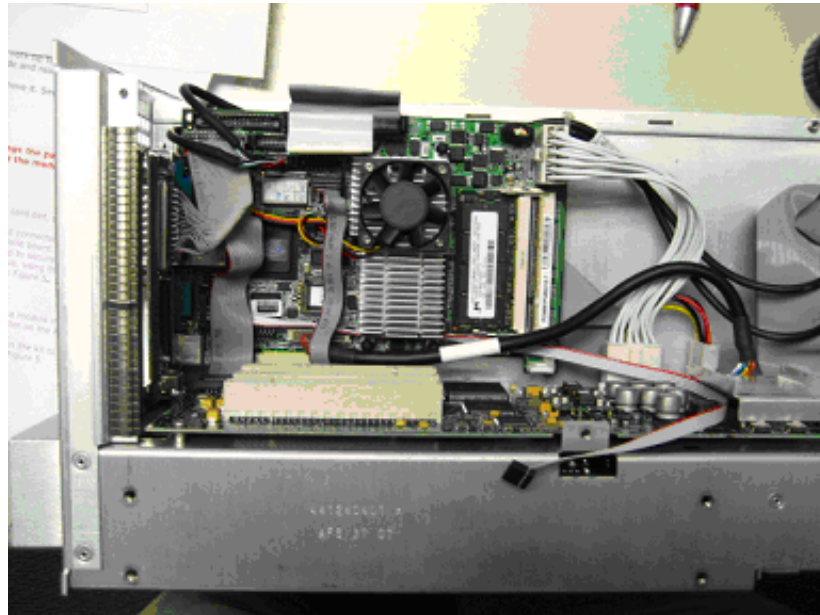
### Install the Option IPTVP Cable (Option IPTVP Only)

Perform the following steps to install the Option IPTVP cable. Skip this section if you are not installing Option IPTVP.

1. Locate the A12 Main board in the instrument. (See Figure 6.)
2. Remove the screws securing the A12 Main board to the instrument and set them aside.
3. Gently remove the A12 Main board from the instrument and set it aside.
4. On the Processor board at the bottom of the instrument, move the jumper on JP2 to pins 1 and 2 as shown in the following illustration.
5. Use the RS232 CIP cable (Tektronix part number, 174-5627-xx) provided with Option IPTVP and connect one end of the cable to CN13 as shown in the following illustration.



6. Route the new cable across the bottom of the instrument as shown in the following figure. You will connect the other end of the cable later.



7. Carefully reinstall the A12 Main board into the instrument.
8. Push the interface module in until the connector of the module is firmly engaged with the A20 PCI Backplane board making sure that you don't pinch the new RS232 CIP cable.
9. Reinstall the screws that secure the A12 Main board to the instrument.

### Installing the Interface Modules

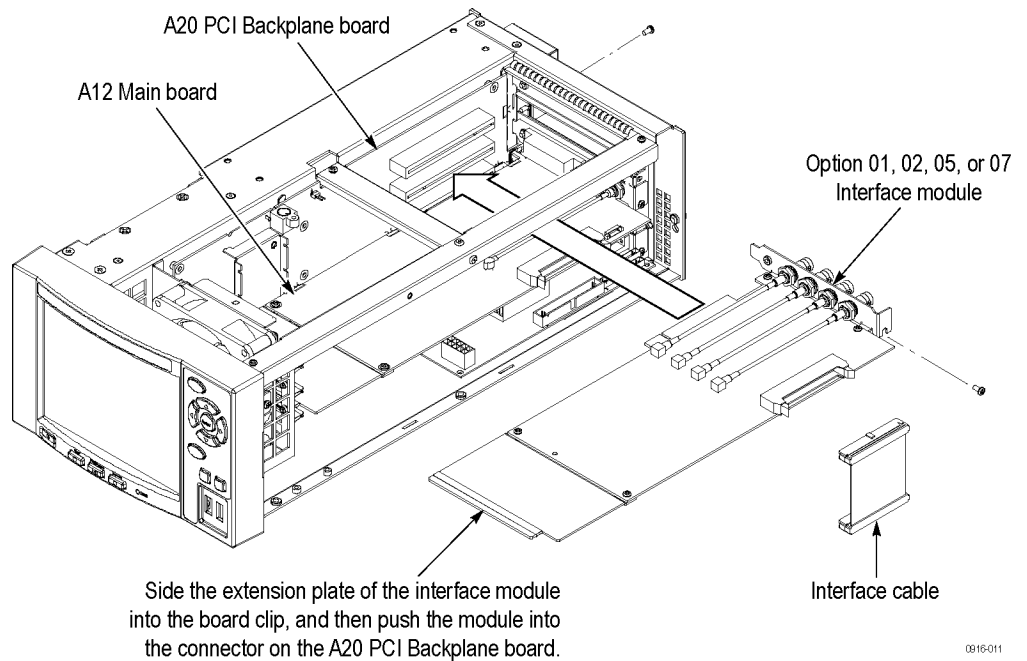
Perform the following steps to install the interface modules.



**CAUTION.** *The cables and parts of the interface modules can be damaged when you improperly insert the modules into the instrument. To avoid any damaging any parts, be careful when you insert the modules into the instrument.*

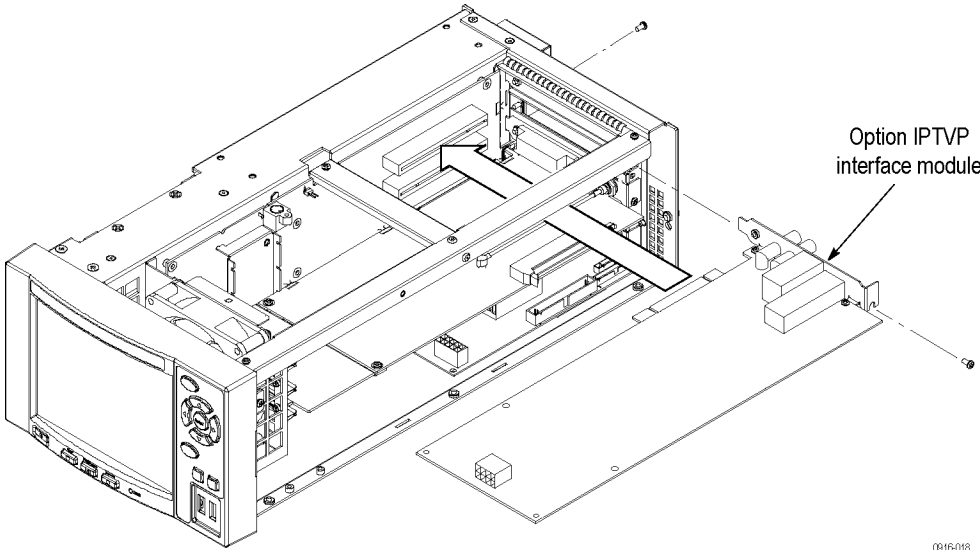
1. For Options 01, 02, 05, or 07 only, insert the interface module into the lower card slot, paying attention to the module orientation. (See Figure 7 on page 18.)
2. Push the interface module in until the connector of the module is firmly engaged with the A20 PCI Backplane board.

3. Use a screwdriver with a T-10 Torx tip to secure the interface module to the side and rear of the chassis, using the two screws that were removed from the blank panel. (See Figure 7.)
4. Use the interface cable that is provided in the kit to connect the A12 Main board and the interface module. (See Figure 7.)



**Figure 7: Installing the Option 01, 02, 05, or 07 interface module**

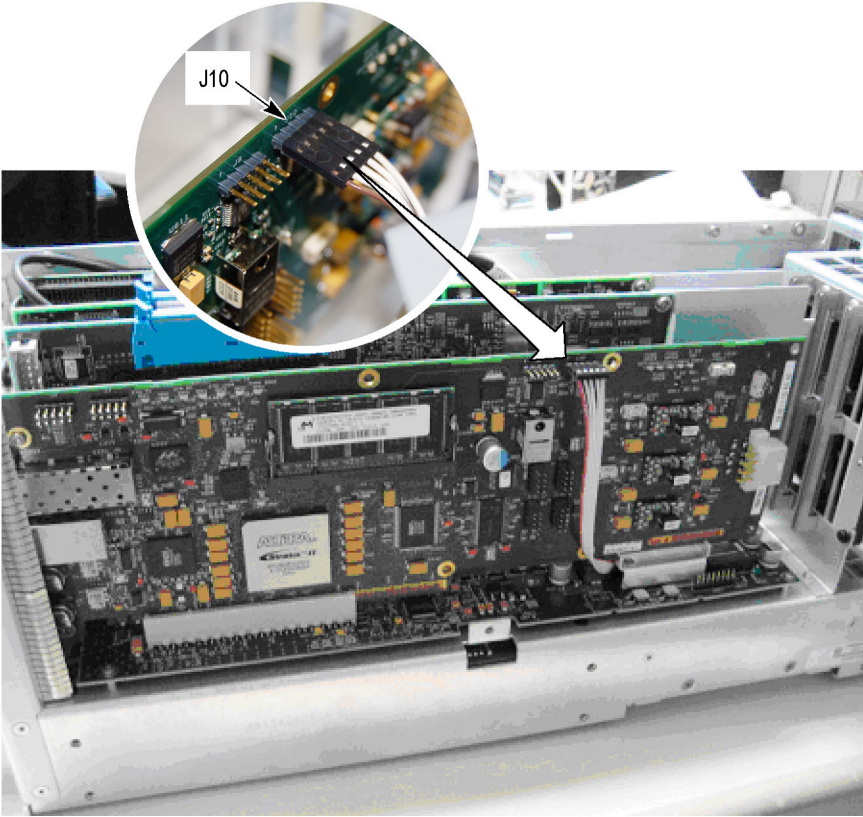
5. For Option IPTVP only, insert the interface module into the upper card slot, paying attention to the module orientation. (See Figure 8 on page 19.)
6. Push the interface module in until the connector of the module is firmly engaged with the A20 PCI Backplane board.
7. Secure the interface module to the side and rear of the chassis, using the two screws that were removed from the top blank panel.



0916-018

Figure 8: Installing the Option IPTVP interface module

- 8. Connect the end of the RS232 CIP cable to J10 on the interface module as shown in the following illustration.



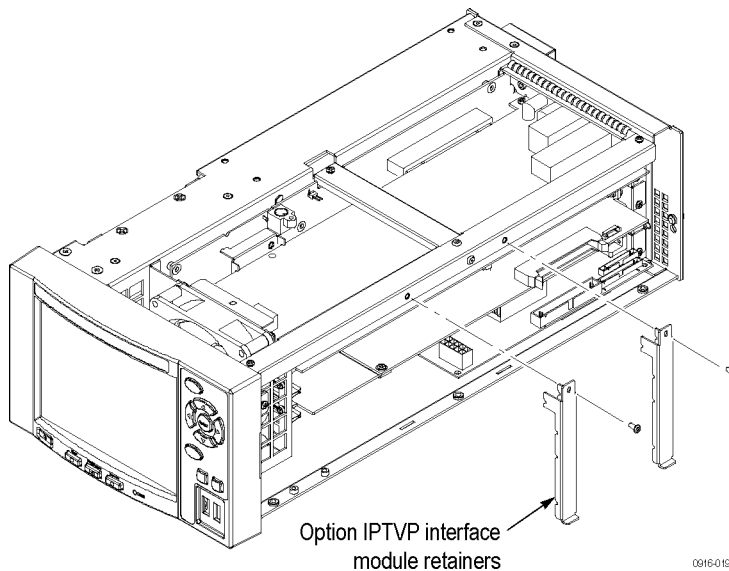
0916-015



### Installing the Board Retainers

For Options 01, 02, 05, or 07 only, install the board retainer that you removed earlier. Use a screwdriver with a T-10 Torx tip to install each screw securing the board retainers to the chassis. (See Figure 4 on page 14.)

For Option IPTVP only, install the two new board retainers provided in the kit. (See Figure 9.) Use a screwdriver with a T-10 Torx tip to install each screw securing the board retainers to the chassis.



**Figure 9: Installing the Option IPTV board retainers**

### Installing the Right-side and Left-side Covers

1. Use a screwdriver with a T-10 Torx tip to install the seven screws securing the right-side cover to the top and bottom of the chassis.
2. Use a screwdriver with a T-10 Torx tip to install the six screws securing the left-side cover to the top and bottom of the chassis.

### Installing the Cabinet

1. Slide the instrument into the cabinet.
2. Use a screwdriver with a T-15 Torx tip to install the two screws securing the cabinet to the instrument.

## Applying the Connector Label

Remove the protective backing from the connector label that is provided in the kit, and then apply it to the rear-panel frame, just below the installed module. (See Figure 10.)

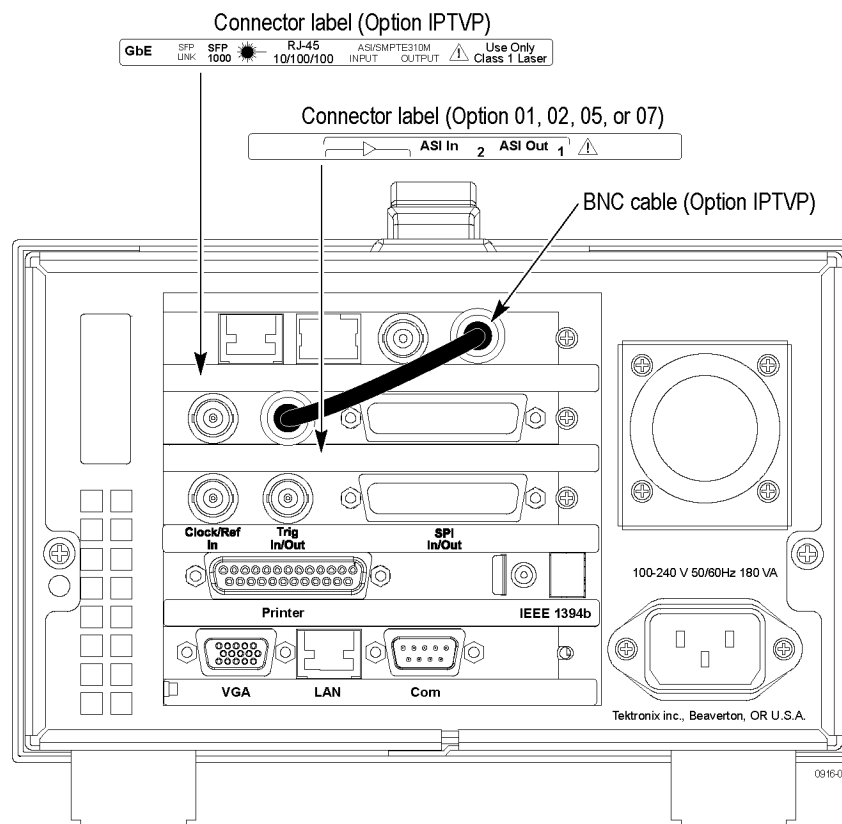


Figure 10: Applying the connector label

## Connect the BNC Cable

Connect the BNC cable provided with Option IPTVP. (See Figure 10.)

## Enabling COM2 (Option IPTVP Only)

If you installed the Option IPTVP interface module, perform the following steps to enable COM2:

1. Connect the keyboard and mouse to the instrument.
2. Power on the instrument and press the Delete key when the instrument displays “Press DEL to enter SETUP” at the bottom of the screen. The BIOS setup utility window appears.
3. Select **Integrated Peripheral**, and then set the Onboard Serial Port 2 setting to **2F8** to enable COM2 as shown in the following illustration.
4. Press the ESC key to exit the BIOS setup utility. Save your changes when prompted.

## Installing the SFP Module

### Installing the SFP Module (GbE Interface Only)

The optional IP Video Gigabit Ethernet (GbE) interface card allows you to remotely monitor and measure the quality of video-over-copper and optical IP networks. The SFP (Small Format Pluggable) modules are available to facilitate different optical wavelengths.



**WARNING.** To avoid exposure to hazardous laser radiation, use only Class 1 lasers as defined in the USA Federal Regulations CDRH 21 CFR 1040 and IEC/EN 60825/A2:2001.

---



**CAUTION.** To prevent static discharge damage, service the product only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this module. Always wear a grounded wrist strap, grounded foot strap, and static resistant apparel while installing this module.

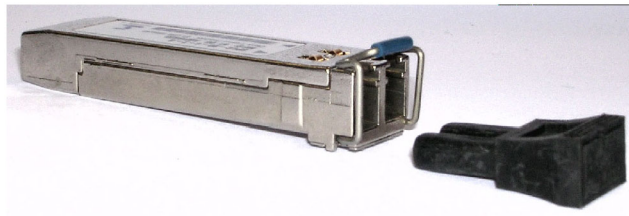
---

The following figure shows an SFP module with the optical port plug removed. Use the plug to protect the optical interface when no cable is connected or the module is not in use.

---

**NOTE.** The optical port plug must be in place when no cable is connected.

---



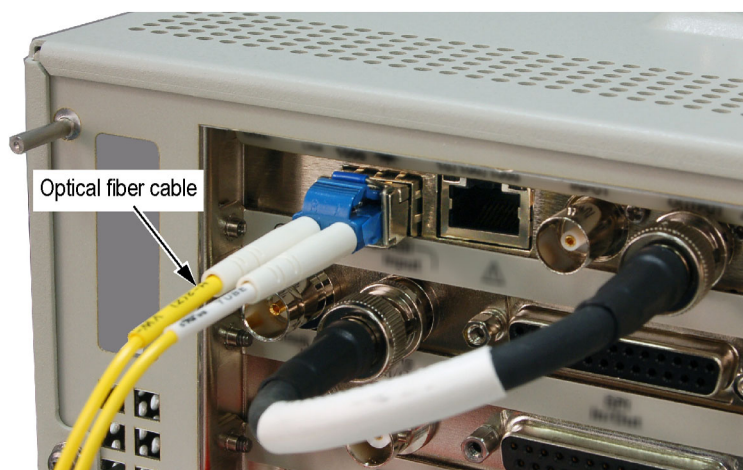


**Installing an SFP Module.** Perform the following steps to install an SFP module into the Option IPTVP interface module:



**CAUTION.** To avoid damage to the SFP module, remove power from the MTX100B instrument before removing or inserting an SFP module.

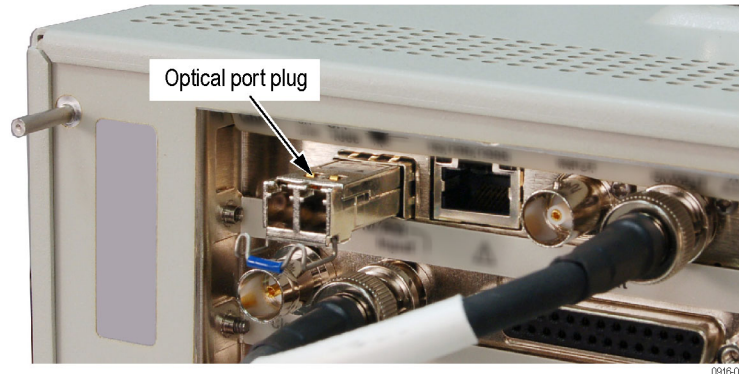
1. Disconnect the power cord from the instrument.
2. Insert the SFP module into the connector labeled SFP 1000 on the rear panel of the Option IPTVP module. When pushed in fully, the module latches into position.
3. Remove the optical port plug and insert the optical fiber cable into the SFP module as shown in the following figure. When pushed in fully, the cable connector latches into position. Retain the optical port plug for later use when you need to remove the SFP module from the instrument.
4. Reconnect the power cord to the instrument.



0316-017

**Removing an SFP Module.** Perform the following steps to remove an SFP module from the Option PTVPinterface module:

1. Disconnect the power cord from the instrument.
2. Press the top of the SFP module connector to unlatch the optical fiber cable, and then disconnect and withdraw the cable from the SFP module.
3. Flip down the SFP module retaining latch, and then remove the module from the instrument as shown in the following figure.



4. Install an optical port plug into the removed SFP module to protect the optical port interface.
5. Reconnect the power cord to the instrument.

## Checking Instrument Function

After you have installed the interface module in this kit, perform the functional check for the MTX100B as described in the *MTX100B MPEG Recorder & Player Specification and Performance Verification Technical Reference* (Tektronix part number 077-0190-xx) located on the documentation CD supplied with this kit.

*End of document.*