*FiberPlex FPX6000 Series*
# Audio, Video, and Peripherals over IP Gateway

*Quick Start Guide*



| CE Class B | $C E$ | This is a Class B device and is intended for use in a light industrial (commercial) or residential environment. It is not intended for use in a heavy industrial environment. REGULATORY MODEL NUMBER: FPX6000D4 |
|---|---|---|

# 1.0  Safety Information

## 1.1  Notation

In this guide, hazard levels are classified as follows:

| ⚠ WARNING | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
|---|---|

| ⚠ CAUTION | Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. |
|---|---|

| NOTICE | Indicates potential risks of damage to the device or to property. |
|---|---|

🛈 Highlights a helpful tip to help the user work more efficiently.

## 1.2  Explanation of the Symbols

Symbol on the device indicates direct current (DC).

In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.

CE Indicates that the product conforms to regulations set out by the EC Directive.

# 2.0  Operating Precautions

| ⚠ WARNING | **Electrical Shock Hazard**<br>• To reduce the risk of fire or electric shock, do not attempt to remove the device's outer cover. There are no user-service-able parts inside. This device shall be returned to Patton Electronics for repairs or repaired by qualified service personnel.<br>• For units with an external power adapter, the adapter shall be a listed Limited Power Source. |
|---|---|

| **⚠ WARNING** | • The device does not have a power switch, so line voltages are present in the power supply when the power cord is connected. The outlet used to power the device shall be within 10 feet (3 meters) of the device, be easily accessible, and protected by a circuit breaker.<br><br>• Do not work on the system or connect or disconnect cables during periods of lightning activity. |
|---|---|

| **⚠ CAUTION** | The interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability. |
|---|---|

| **NOTICE** | Mishandling could damage the device. Be certain that you understand the instructions and precautions in this guide before use. |
|---|---|

## 3.0  Introduction

Congratulations on having purchased the only device in the world capable of sending high-quality, 4Kp60 4:4:4 video and up to 8 channels of perfectly synchronized audio over a 1G network!

> ❶ To obtain maximum performance from the device, read this guide first, and keep it handy for future reference.

Let's get started on installing it!

### 3.1  FPX6000 Package Contents

- **FPX6000T/A3/PD48** Transmitter or **FPX6000R/A3/PD48** Receiver
- **10-2500** Ethernet Cable (length 10 ft/1.5 m, Cat. 5 EIA 568B, color: black, RJ-45 connectors)
- **50000141** FiberPlex FPX6000 Series Quick Start Guide

### *Optional Accessories*
- **CL141E/BT60/24** Power Supply, Industrial Gigabit 60 W (802.3BT) PoE (Power over Ethernet) Injector; 24–56 VDC input
- **CL241E/BT90/DC** Power Supply, Industrial Gigabit 15–90 W PoE Splitter; Output 12/16/24/48 VDC
- **PS-03671H1-021** Power Supply, AC/DC, Universal Input, 54 VDC,1.2 A, 65 W

- **FP101E/SFP/BT90/52** Industrial Gigabit SFP Media Converter with IEEE802.3bt Power Injector (90 W); 10/100/10000Base-TX (RJ45); 1G (SFP); -40 to 167°F (-40 to 75°C); 52–56 VDC Input
- **FPX-001/U2** 19-in. Rack Mounting Bracket, Holds up to 2 FPX6000 Units
- **FPX-001/VM1** VESA Mounting Bracket

## 3.2 Installation steps

Installation consists of the following steps:

1. **Install the FPX6000** onto a mounting surface:
   - For mounting on a VESA-compatible TV or monitor, refer to section 4.0, **"Installing the VESA mounting bracket on a TV or monitor"** on page 4.
   - For mounting the device in a 19-inch rack, refer to section 5.0, **"Installing into a 19-inch Rack"** on page 7.
   - For mounting on a wall, refer to section 6.0, **"Wall Mounting"** on page 9.
   - For mounting on a desktop or similar flat, sturdy surface, refer to section 7.0, **"Desktop Mounting"** on page 9.
2. **Install data and video cables** onto the device. Refer to section 8.0, **"Installing Cables"** on page 9.
3. **Connect power** to the device. Refer to section 9.0, **"Connecting Power"** on page 12.
4. **Install the Dante Controller software**. Refer to section 10.0, **"Installing the Dante Controller Software"** on page 13 to download* and install the software.
5. **Configure the FPX6000 with the Dante Controller**. Refer to section 11.0, **"Configuring the FPX6000 with the Dante Controller"** on page 15 to use the Dante Controller to connect an FPX6000 transmitter and receiver

Refer to the *FiberPlex FPX6000 Series User Manual* (document #50000137) if you need more information to install, configure, operate, or troubleshoot the FPX6000. It can be downloaded here: https://www.patton.com/manuals/50000137_fpx6000-um.pdf.

### 4.0 Installing the VESA mounting bracket on a TV or monitor

Do the following:

> ❗ Mounting holes in the VESA mounting bracket align with the VESA standard used by most TV and display manufacturers. The mount is compatible with 75, 100 or 200 mm VESA hole patterns (see **figure 1** on page 5).
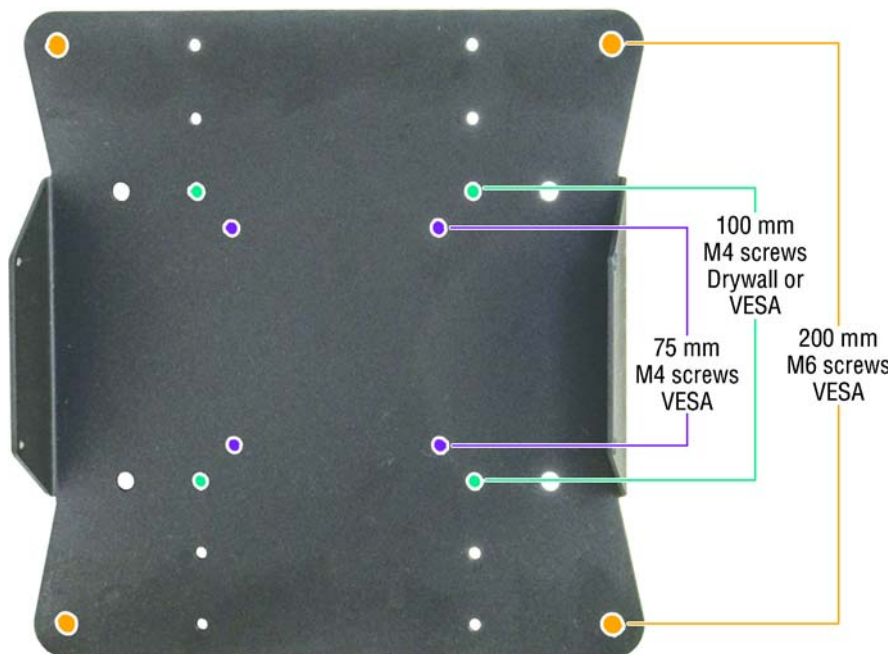
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\* Audinate account is required.

**Figure 1.** VESA mounting bracket holes



Typical VESA Mounting Holes (4 places)

**Figure 2.** VESA mounting holes example

1.  Locate the VESA mounting holes on the rear panel of the TV or monitor (see **figure 2**).

2. Install the mounting bracket using the screws recommended in the manual that came with the TV or monitor.

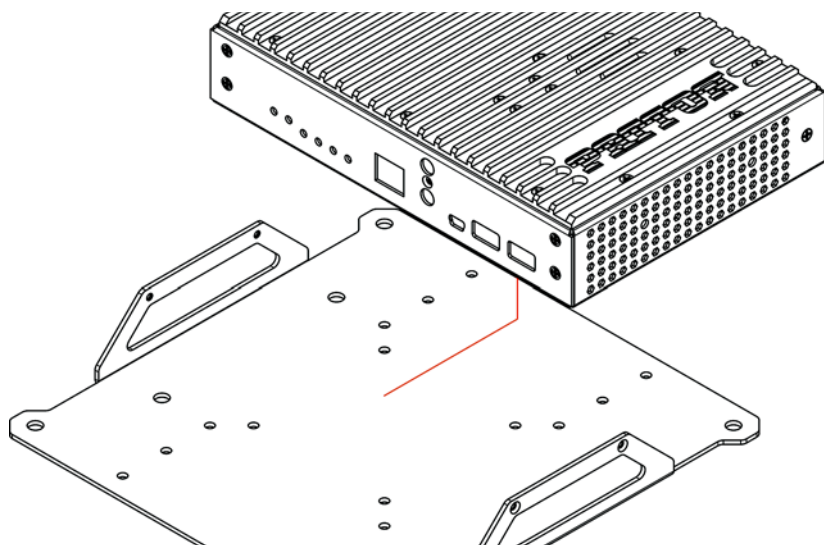3. Place the FPX6000 in the bracket (see **figure 3**).



**Figure 3.** Placing the device on the VESA mounting bracket

4. Use 4 mounting screws included with the bracket to secure the FPX6000 in the bracket (see **figure 4**).
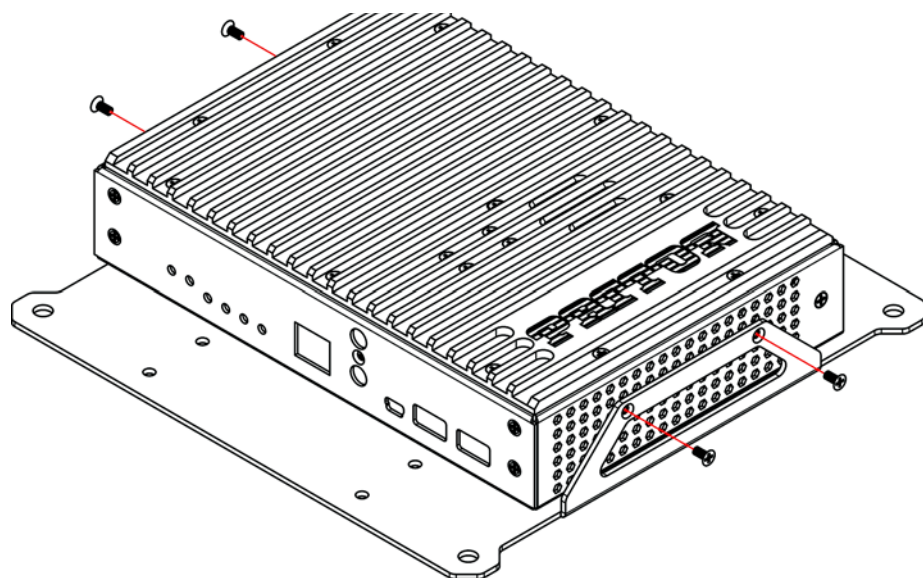


**Figure 4.** Securing the device to the VESA mounting bracket

The FPX6000 is installed in the VESA mounting bracket. Refer to section 8.0, **"Install-ing Cables"** on page 9.

## 5.0  Installing into a 19-inch Rack

Do the following to install up to two devices in a 19-inch rack using the rack-mounting bracket (see **figure 5**):
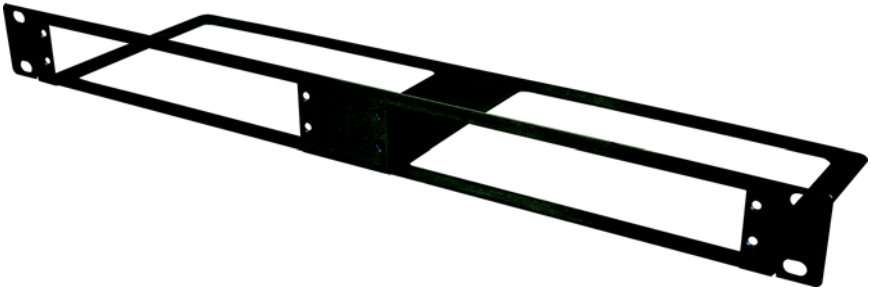


**Figure 5.** Rack-mounting bracket

1.  Remove 4 screws from below the rear panel as shown in **figure 6**.
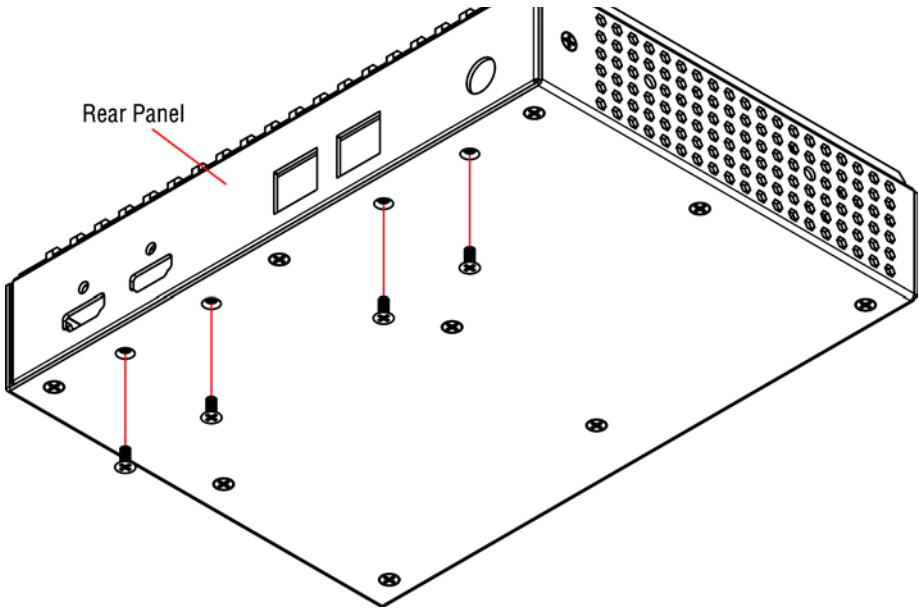


**Figure 6.** Removing the 4 screws from the underside of the device

2.  Use 4 mounting screws included with the bracket to secure the FPX6000 front panel to the bracket at one of the mounting locations on the rack-mounting bracket (see **figure 7** on page 8).
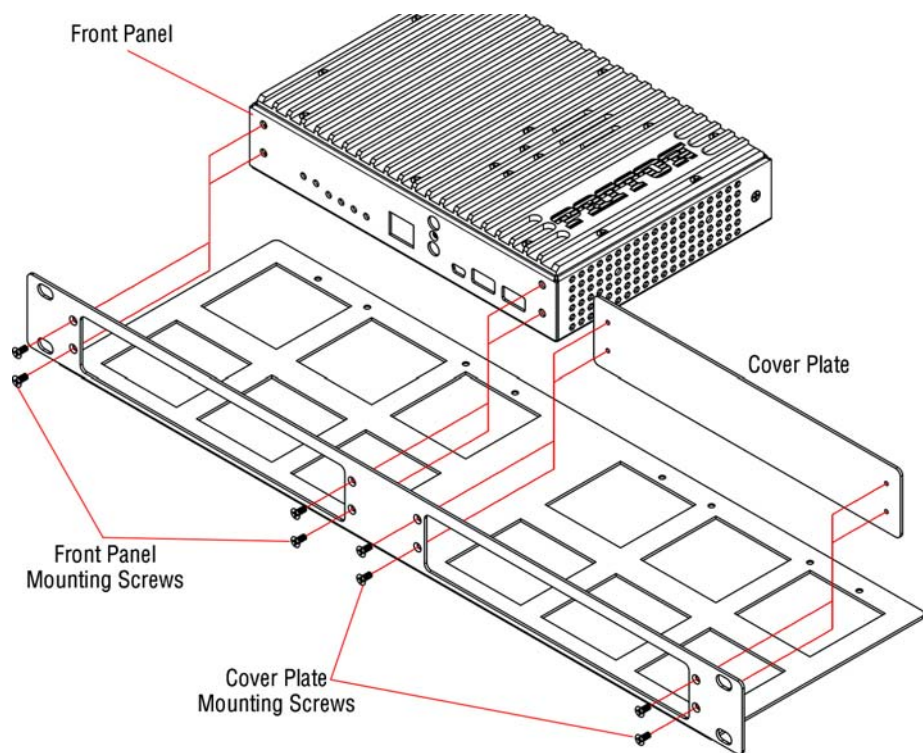
**Figure 7.** Installing the FPX6000 and Cover Plate

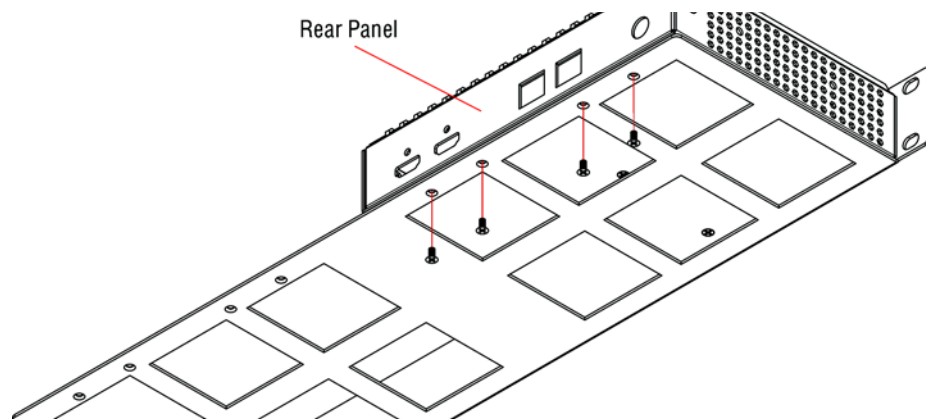3. Install the 4 screws that were removed in step 1 (see **figure 8**).



**Figure 8.** Installing 4 screws to the underside of the rack mount

4. If there is another FPX6000 to install in the bracket, go to step 5. Otherwise, use 4 mounting screws included with the bracket to install the cover plate (see **figure 7**), then go to step 6.

5. Repeat steps 1 through 3 to secure the second FPX6000 to the bracket.

6. Place the rack mounting bracket at the desired location in the rack (verify that the bracket is level), then secure it by using 4 rack fasteners.

7. The device or devices are installed in the rack. Refer to section 8.0 **"Installing Cables"**.

## 6.0 Wall Mounting

Do the following to mount the device on a wall using the VESA mounting bracket (see **figure 1** on page 5):

1. Place the VESA bracket at the desired location where it will be installed. Using the 100-mm holes in the bracket as a template (see **figure 1** on page 5), make a mark inside each of the 4 holes where the mounting hardware for hanging the device will be installed.

2. Install the bracket using mounting hardware appropriate for the wall material.

3. Place the FPX6000 in the bracket as shown in **figure 3** on page 6.

4. Use 4 mounting screws included with the bracket to secure the FPX6000 in the bracket (see **figure 4** on page 6).

The device is installed. Refer to section 8.0 **"Installing Cables"**.

## 7.0 Desktop Mounting

Place the FPX6000 on a desktop or similar sturdy, flat surface. Allow sufficient space at the rear of the device for cable connections. Additionally, you should consider the need to access the unit for future upgrades and maintenance.

The device is installed. Refer to section 8.0 **"Installing Cables"**.

## 8.0 Installing Cables

| ⚠ WARNING | **Electrical Shock Hazard**<br>Do not work on the system or connect or disconnect cables during periods of lightning activity. |
|-----------|---------|

| ⚠ CAUTION | The interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability. |
|-----------|---------|

## 8.1 Installing cables on the FPX6000T Transmitter

Do the following:

1. Install cables on the front panel of the FPX6000T (see **figure 9**) as follows:

   – If you are connecting a PTZ control input (RS422/VISCA) from a camera or controller, attach the cable to the *Serial* port.

   – If you will be remotely controlling the PC host with a USB keyboard and mouse, connect a USB cable (male type A USB to male mini-USB) from a USB port on the PC host to the *USB OTG* port on the FPX6000T.

   **!** The USB ports can only be used by HID-class devices such as a keyboard and mouse. USB flash drives and hard drives are not supported.
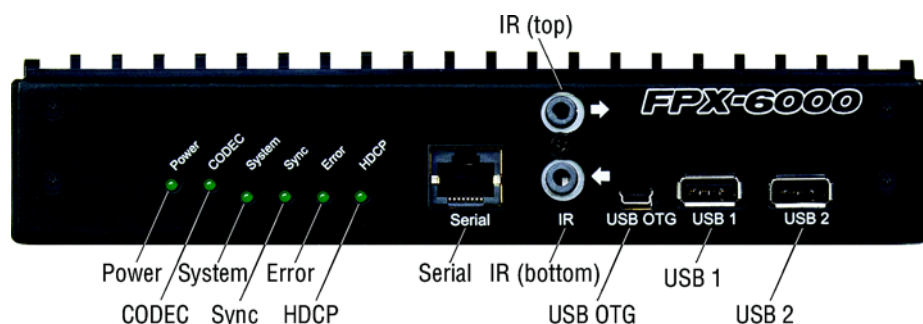


**Figure 9.** Front panel ports and LEDs (same for Transmitter and Receiver models)

2. Install cables on the rear panel of the FPX6000T Transmitter (see **figure 10** on page 11) as follows:

   – Connect an HDMI 2.0/1.4b video source input (for example: a PTZ camera, broadcast camera, or video player outputting up to 4Kp60 10-bit 4:4:4) to the *HDMI Input* port.

   – Connect a monitor to the *HDMI Monitor Out* port.

   **!** 
   - The *HDMI Monitor Out* port does not support HDCP.
   - High-bandwidth signals require high-speed HDMI cables.
   - Changing resolutions after the initial encode/decode sequence can take up to 10 seconds to reconfigure.
   - The FPX6000s will correctly encode and decode HDCP compliant content up to HDCP 2.3.

   – If you are daisy-chaining multiple devices, connect the Ethernet cable to the *ETH2* port.

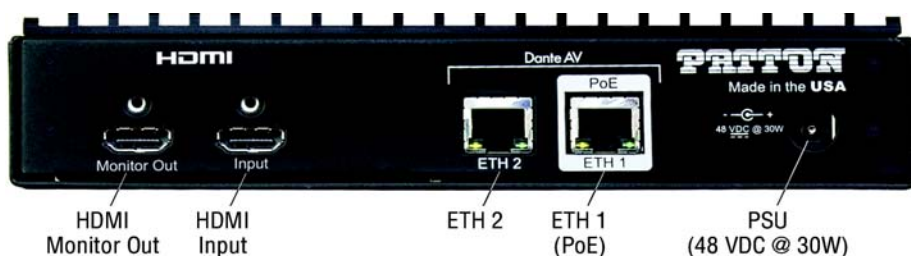> **!** ETH2 will not provide PoE power to a daisy-chained device.



**Figure 10.** Transmitter rear panel ports

Go to section 8.2 "**Installing cables on the FPX6000R Receiver**".

## 8.2 Installing cables on the FPX6000R Receiver

Do the following:

1. Install cables on the front panel of the FPX6000R (see **figure 9** on page 10) as follows:

   – If you are connecting a USB keyboard and mouse, connect the keyboard to *USB 1* and the mouse to *USB 2*.

   > **!** The USB ports can only be used by HID-class devices such as a keyboard and mouse. USB flash drives and hard drives are not supported.

2. Open the Windows Device Manager on the PC host and verify that you see the following device: "Mouse, keyboard & pen: Dante AV PDS keyboard/mouse".

3. Install cables on the rear panel of the FPX6000R Receiver (see **figure 11** on page 12) as follows:

   – Connect the HDMI 2.0/1.4b video endpoint (a high-quality 4K monitor is recommended) to the *HDMI Output* port.

   > **!** If a 1080p monitor is used instead of a 4K monitor, the FPX6000R will automatically scale the 4K output to 1080p.

   – If you are daisy-chaining multiple devices, connect the Ethernet cable to the *ETH2* port.

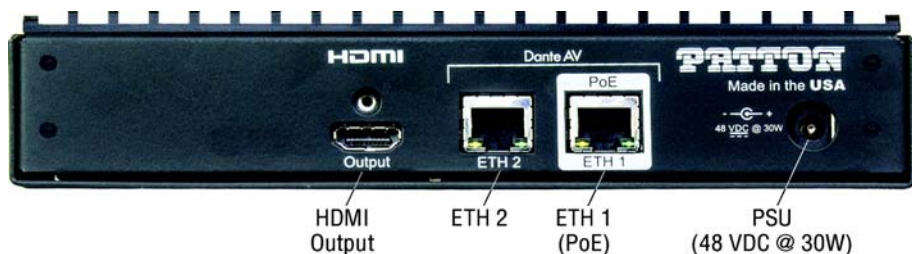   > **!** ETH2 will not provide PoE power to a daisy-chained device.

**Figure 11.** Receiver rear panel ports

4. The data and video cables are installed, refer to section 9.0, "**Connecting Power**" on page 12.

## 9.0 Connecting Power

| ⚠ **WARNING** | **Electrical Shock Hazard**<br>The device does not have a power switch, so line voltages are present in the power supply when the power cord is connected. The outlet used to power the device shall be within 10 feet (3 meters) of the device, be easily accessible, and protected by a circuit breaker. |
|---|---|

The FPX6000 is compatible with the following power supplies:

• A customer-provided 802.3bt-compliant switch will work to power the device via PoE.

> ❶ For best results, Patton recommends you use only professional 1G (or better) switches with IGMP Packet Snooping and a non-blocking backplane.

• Patton's CL141E will power the device via PoE if the customer does not already have a suitable supply.

• If PoE is not required, the customer can power the device with an existing 48-VDC (30-W) input or use Patton's PS-03671H1-021, which converts wall outlet AC to the 48 VDC (30 W) the device requires.

Do the following:

1. If you are powering the device with PoE, go to step 2. Otherwise, connect the power supply cable to the *48 VDC at 30 W* port (see **figure 10** on page 11 for the Transmitter or **figure 11** on page 12 for the Receiver), then go to step 3.

2. Connect the Dante Network Ethernet/PoE cable to the *ETH1* port (see **figure 10** on page 11 for the Transmitter or **figure 11** on page 12 for the Receiver).

3. After at least one minute for the device to power up and initialize, verify that the green Power LED (see **figure 9** on page 10) is lit. Refer to **table 1** for LED light indications.

**Table 1.** Front panel LED descriptions

| LED | Description |
|---|---|
| Power | **Green**: Power is detected |
| | **Off**: Power is **not** detected |
| CODEC | **Green**: Indicates the CODEC is active |
| | **Off**: CODEC is **not** active |
| System | **Solid Green**: All OK |
| | **Amber**: Booting up, awaiting sync |
| | **Red**: System failed to boot correctly |
| | **Off**: No power |
| Sync | **Solid Green**: Dante network clock slave, sync achieved |
| | **Blinking Green**: Dante Network clock master |
| | **Amber**: Syncing in progress |
| | **Red**: Error achieving sync |
| | **Off**: No Power |
| Error | **Solid Green**: Software running |
| | **Blinking Green**: Identify function activated |
| | **Solid or Blinking Red**: Software fault or exception |
| | **Off**: No power |
| HDCP | **Solid Green**: Non-HDCP unprotected video sync or source detected |
| | **Blinking Green**: HDCP protected content detected |
| | **Solid Red**: Invalid non-HDCP video sync or source |
| | **Blinking Red**: Failed HDCP negotiation |
| | **Blinking Amber**: HDCP negotiation in progress |
| | **Off**: No power |

Refer to section 10.0 **"Installing the Dante Controller Software"**.

## 10.0  Installing the Dante Controller Software

Supported Platforms:

- Windows 10 (Windows 11 is **not** currently supported).
- macOS 11 Big Sur, macOS 10.15 Catalina or macOS 10.14 Mojave (macOS 12 Monterey is **not** currently supported).

🛈 All operating systems should be updated to the latest supported version.

Hardware Requirements:

- At least a 1-GHz CPU.
- At least 512 MB of storage.
- A 1-Gbps Ethernet connectivity port.
- A display resolution of at least 1024 x 768, with a screen size of at least 19 inches is recommended for Dante Controller.

> **!** Dante Controller requires 64-bit capable hardware.

## 10.1  Downloading the Dante Controller

To download the latest version, go to https://my.audinate.com/support/downloads/download-latest-dante-software?lang=zh-hans

> **!** You will have to create an account with Audinate or log into an existing account before downloading.

Locate the Dante Controller section on the page, then click on a Mac OS or Windows OS download link as appropriate. Refer to section 10.2 **"Installing Dante Controller on Windows OS"** or 10.3 **"Installing Dante Controller on Mac OS"**.

## 10.2  Installing Dante Controller on Windows OS

To install Dante Controller, you will need to be logged on with administrator privileges.

> **!** You do not have to uninstall the previous version before installing this update.

Do the following to install the Dante Controller:

1. Log on to your computer as an administrator.
2. Navigate to and double-click the downloaded Dante Controller installer file.
3. Read the license agreement. If you agree to the terms, select the *I agree* checkbox and click *Install*.
4. If you do not agree to the terms, click *Close*.
5. Confirm/acknowledge any Windows security prompts that are displayed.
6. Dante Controller software has been installed. Refer to section 11.0, **"Configuring the FPX6000 with the Dante Controller"** on page 15.

## 10.3  Installing Dante Controller on Mac OS

To install Dante Controller you will need to be logged on with administrator privileges.

> ⓘ You do not have to uninstall the previous version before installing this update.

Do the following to install the Dante Controller:

1. Log on to your computer as an administrator.
2. Double-click the downloaded Dante Controller installer file.
3. A drive icon will appear on your Desktop Finder window. Double-click it to open.
4. Double-click the Dante Controller.pkg file. This will run the installer.
5. Read the license text, and if you accept the terms of the agreement, click *Agree*.
6. If you do not accept these terms, click *Disagree* to terminate the installation.
7. Dante Controller software has been installed. Refer to section 11.0, **"Configuring the FPX6000 with the Dante Controller"** on page 15.

## 11.0  Configuring the FPX6000 with the Dante Controller

All Dante devices have transmit (Tx) or receive (Rx) channels. Receiver channels and devices are listed down the left side of the grid (see **figure 12**). Transmitter channels and devices are listed along the top of the grid.
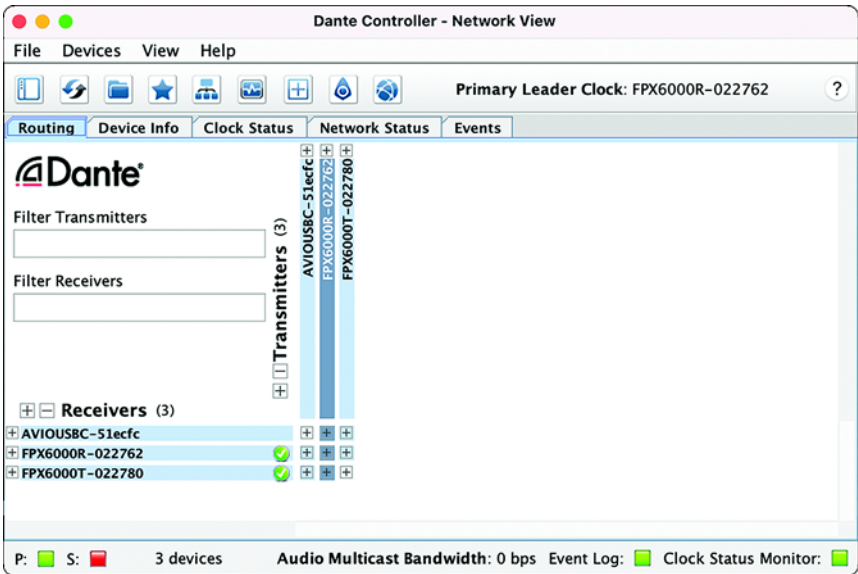


**Figure 12.** Dante Controller Transmitter and Receiver channels

Transmit channels are advertised on the network. A receiver uses this advertisement to establish a subscription to the channel. A transmit channel can be sent to multiple receivers using unicast or multicast.

Receive channels are connected to transmit channels via a subscription. Each receive channel will receive audio over the network from at most one transmit channel.

When you click a blue square at the intersection between a transmit channel and a receive channel, a subscription will be created, and a green check symbol ✅ will appear in the matrix intersection. You may initially see a gray hourglass symbol ⌛ (usually very briefly) to indicate that the subscription is in process.

If there is a problem with the subscription, a warning ⚠ or an error symbol 🚫 may appear. If many devices have been subscribed at the same time, a yellow pending 🟡 symbol may appear temporarily.

## 11.1  Routing video and audio signals

To route the video and audio signals from the FPX6000 Transmitter to the FPX6000 Receiver, do the following:

1. Launch Dante Controller software.

2. Choose an Ethernet Interface (see **figure 13**). If your computer has multiple Ethernet interfaces or Network Interface Cards, Dante Controller will ask you to choose the Primary Interface for its use.
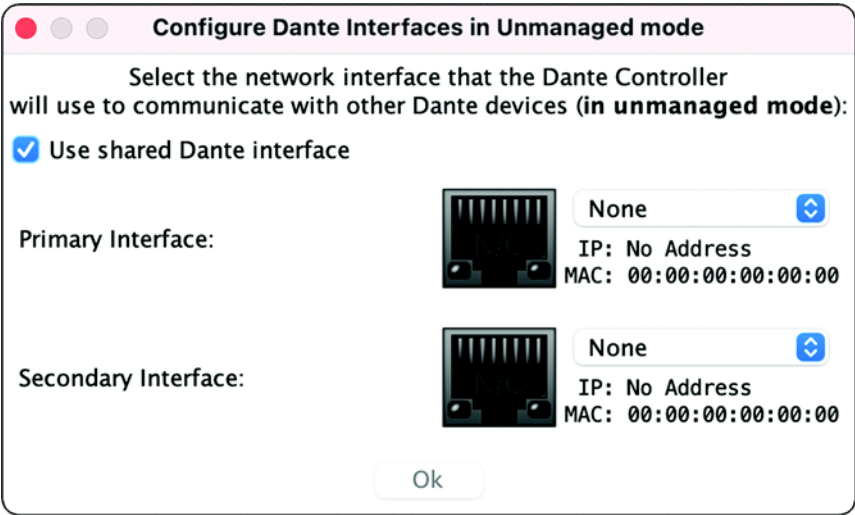


**Figure 13.** Select the network interface

3. After launching the Dante Controller Software, the FPX6000T and FPX6000R will automatically be discovered.

> ⓘ If you do not already have a designated Dante Network Clock, Dante Controller will choose one from the available Dante devices. This process is automatic.

4.  Locate the desired FPX6000T Unit Name in the transmit channel at the top of Dante Controller grid, then click the "+" sign next to the Unit Name. The "+" changes to a "–" as it displays the transmitter's signal receiving capabilities (see **figure 14** for examples highlighted in red squares).
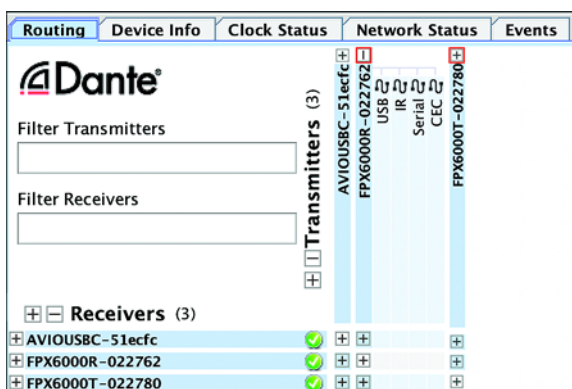


**Figure 14.** Displaying FPX6000T signal sending capabilities

5.  Locate the FPX6000R in the receive channel on the left-hand side of the Dante Controller, then click the "+" sign next to the Unit Name to display the receiver's signal receiving capabilities (see **figure 15**).
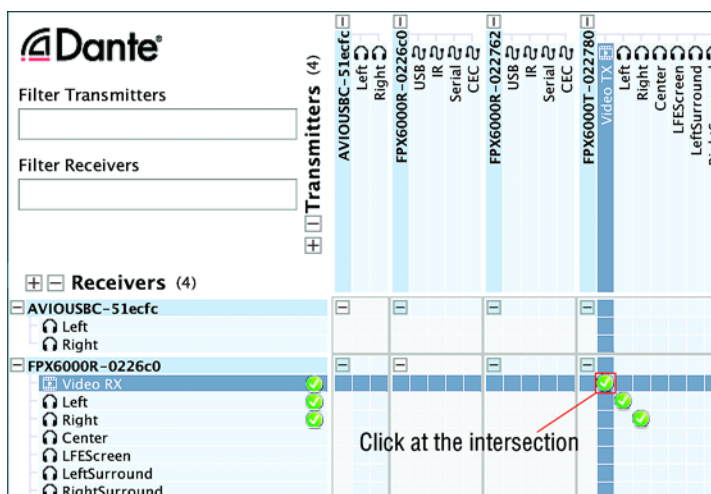


**Figure 15.** Displaying FPX6000R signal receiving capabilities

6. Click at the intersection of the two units (see **figure 15** on page 17) to create a video ▣ subscription, an audio 🎧 subscription, or both.

> 🛈 To subscribe to multiple channels at the same time, hold down the Ctrl key and click the [-] symbol at the top left corner of the intersection between the two devices. All possible channels will be subscribed at the same time.

That's it! Your FPX6000s are now passing high-quality video and perfectly timed audio across your network.

> 🛈 Additional sources (Serial and IR) are routed the same way.

## 11.2  Connecting the USB keyboard and mouse to the PC host

1. Using the Dante Controller, subscribe the USB receive on the FPX6000T to the USB transmit on the FPX6000R.

2. Verify that the mouse and/or keyboard connected to the FPX6000R Receiver can be used to control the PC host connected to the FPX6000T Transmitter.

## A.0  Customer and Technical Support

Patton Electronics offers a wide array of free technical services. If you have technical questions about the FPX6000, begin your search for answers by using our Knowledge-base at https://www.patton.com/support/kb.asp.

| Region | North America | Western Europe | Central & Eastern Europe |
|---|---|---|---|
| Location | Maryland, USA | Bern, Switzerland | Budapest, Hungary |
| Time Zone | EST/EDT, UTC/GMT - 4/5 hours | CET/CEDT, UTC/GMT + 1/2 hours | CET/CEDT, UTC/GMT + 1/2 hours |
| Business Hours | Monday–Friday 8:00 to 17:00 | Monday–Friday 09:00 to 12:00 13:30 to 17:30 | Monday–Friday 8:30 to 17:00 |
| Email | support@patton.com | | |
| Phone | + 1 301 975 1007 | +41 31 985 25 55 | +36 439 3835 |
| Fax | +1 301 869 9293 | +41 31 985 2526 | |

# B.0  Compliance Information

## B.1  Compliance

EMC Directive:
- EMC: EN 55032
- EMI: EN 55024

FCC Part 15 Class B

Low Voltage Directive
- Safety: EN 62368-1

## B.2  Radio and TV Interference (FCC Part 15)

This device generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. The device has been tested and found to comply with the limits for a Class B computing device in accordance with specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If the device does cause interference to radio or television reception, which can be determined by disconnecting the unit, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

## B.3  CE Declaration of Conformity

This device is in compliance with the essential requirements and other relevant provisions of Directive 2004/ 30/EC relating to electromagnetic compatibility. Council Directive 2014/35/EU on the approximation of the laws of the member states relating to electrical equipment designed for use within certain voltage limits. The Declaration of Conformity may be obtained from Patton Electronics, Inc at www.patton.com/certifications.

The safety advice in the documentation accompanying this device shall be obeyed. The conformity to the above directive is indicated by CE mark on the device.

## B.4  Authorized European Representative

Martin Green
**Eurolink Europe Compliance Limited**
25 Herbert Place
Dublin D02 AY86
Republic of Ireland

### *Copyright statement*

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### *Warranty Information*

For warranty information, download the *FiberPlex FPX6000 Series User Manual* (document #50000137) at https://www.patton.com/manuals/50000137_fpx6000-um.pdf.