Matrox® Maevex™ 5100 Series

Maevex 5150 Encoder • Maevex 5150 Decoder

User Guide

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Graphics for Professionals

Contents

About this user guide

Your Matrox user guide provides information on connecting and using your Matrox hardware. For information on Matrox PowerStream software features and options, see the help file included with your PowerStream software.

Using this guide

This guide assumes you're familiar with basic functions like click, right-click and double-click, and that you're familiar with the basics of the operating system you're using. Also, we use the following conventions:

- **Bold** for headings and for references to text that appears on-screen.
- *Italics* for file names, paths, publication titles, and new terms.
- ***Bold Italics*** for emphasis.
- Keyboard keys in square brackets, with a plus sign separating keys that you press simultaneously. For example: press [Ctrl]+[Alt]+[Del] to start Windows Task Manager.
- Arrows ("→") to separate ordered directions. For example, "click **OK → Close → OK**" is the same as "click **OK**, then click **Close,** then click **OK**".
- Green for cross-references. If you're viewing online, click green text to jump to what's being referenced.

More information

We provide additional information in help and *Readme* files. Be sure to check for any last-minute release notes included with your product. Also, check the Matrox Web site (www.matrox.com/graphics) for the latest Matrox software, technical support, and product information.

Overview

Thank you for purchasing a Matrox Maevex Series product. Matrox Maevex is a video distribution over IP solution that consists of one or more encoder units and one or more decoder units capable of recording and extending video and audio over a standard IP network.

Features

Your Matrox Maevex products support the following features:

- MPEG-4 AVC support using H.264 and AAC codecs
- Downscale streams locally before distributing them over the network to lower bandwidth consumption
- Scaling and cropping features enable flexible display of source content on the decoder output
- Open encoding to enable non-Maevex software decoding through VLC® player software
- Standard 100/1000Mb Ethernet networks
- Decoder integrated network switch allows for Maevex daisy chaining and network extension
- Matrox PowerStream software allows for multiple instances and remote management of the Maevex network
- HDMI®/DVI video support
- HDMI or analog audio support
- Unicast and multicast streaming support through RTSP (Real Time Streaming Protocol)
- Constant Bit Rate (CBR) and Variable Bit Rate (VBR) support
- Manual and scheduled recording to network storage option on encoders
- Failsafe video playback or image shown when a decoder loses its connection to an encoder
- PowerStream auto-detection and discovery of Maevex units on subnet (DHCP server required)
- RS232 virtualization from encoder to decoder (point-to-point) or directly to encoder or decoder

For more information on PowerStream controls and options, see Matrox PowerStream help.

Hardware supplied*

- **Maevex 5150 Encoder** – Encoder unit, 1 power supply, 1 DVI to HDMI adapter, 1 CAT 5e network cable (6 ft/1.8 m), 1 analog audio cable.

- **Maevex 5150 Decoder** – Decoder unit, 1 power supply.

Software available

- **Matrox PowerStream** – to use your Matrox graphics hardware. Matrox provides 32-bit and 64-bit versions of the software. Matrox PowerDesk software supports Windows ® 10, Windows® 8.1, Windows® Server® 2012, Windows® Server® 2012 R2, Windows® 7, and Windows® Server® 2008 R2.

Hardware required (sold separately)

Maevex 5150 Encoder –

- Shielded HDMI cable (Source to encoder unit)

Maevex 5150 Decoder –

- Network cable (CAT 5, 5e, 6, or 7)
- Shielded HDMI cable

Optional hardware (sold separately)

Depending on your connection setup, you may also need any of the following hardware:

Maevex 5150 Encoder –

- Network cable (CAT 5, 5e, 6, or 7)
- Shielded HDMI cable (Encoder unit to monitor)
- VGA cable
- Analog audio cable (Audio out)

Maevex 5150 Decoder –

- Analog audio cable (Audio out)
- DVI to HDMI adapter

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* The hardware supplied with your Matrox product may vary depending on the SKU or part number of your product. For more information, contact your Matrox representative.

Installation overview

To install your Matrox product:

1 Connect your product – see "Connecting your Maevex Encoder and Decoder units", page 8.

2 Validate your setup – see "Validating your Maevex setup", page 22.

3 Install the software – see "Installing Matrox PowerStream", page 26.

Connecting your Maevex Encoder and Decoder units

How it works

Matrox Maevex Encoder and Decoder units work in conjunction to provide unicast (one-to-one) or multicast (one-to-many) streaming over an IP network. Using Matrox PowerStream software, you can manage your entire Maevex network from a single system.

A Matrox Maevex environment is made up of four (4) elements connected to a network:
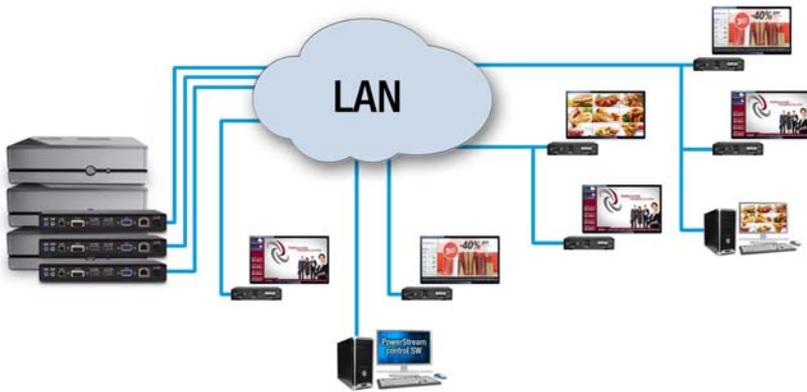
- **Source** – A video source connected to an encoder. For example, a source can be a media player, a computer system, a camera, or an encoder.

- **Maevex Encoder** – An encoder is needed for each source in your Maevex environment. An encoder can transmit to a single decoder or to multiple decoders. An IP camera supporting RTSP transmissions can also be used to encode and transmit a stream.

- **Maevex Decoder** – A decoder is needed for each output in your environment. A computer system using VideoLAN® VLC media player as a video player can also be used to decode the signal from an encoder.

- **Controller system** – A system connected to the network and running Matrox PowerStream. A controller system can also be a source.

Setting up your Maevex environment

Before connecting your units, we recommend you:

- Have a DHCP (Dynamic Host Configuration Protocol) server

- Have a DNS (Domain Name System) server

- Have a controller system

- Use at least one output device (monitor or HDTV) to preview your video sources

- Make sure all devices (Maevex units and controller system) are on the same subnet

- Have at least one video source

Adding an encoder or a decoder unit to your environment

To avoid potential problems, *before* you add a decoder or an encoder unit to your Maevex environment, perform a factory reset of your unit to reset the IP address, and any other settings that may prevent you from using the unit in your environment. For more information, see "Resetting your unit", page 21.

Managing your passwords

Your PowerStream software, Maevex Encoder unit, and Maevex Decoder unit use passwords for secure communication. PowerStream uses two types of passwords: the environment password and the unit password.

Environment password

When you start PowerStream for the first time, you need to provide your environment password.

A Maevex environment has a single password that allows PowerStream to access the units in that environment. An environment password is *case sensitive*. It can be between 6 and 8 alphanumeric characters long.

- In a *new environment*, you can provide any environment password. Any detected unit with no password will have its password updated to use the new environment password.

- In an *established environment*, use the password already entered for that environment.

Unit password

Each unit has a password. To access a unit, that unit password must match the environment password.

When a new unit is added to the environment, it has no password. You need to manually update that unit password.

If a unit has no password, or if a unit password doesn't match the environment password, that unit is listed as **Access denied**. You can see the properties of a unit listed as **Access denied**, but you can't change them.

Updating your unit password

If a unit is listed as **Access denied** you need to update its password to match the environment password.

To update a unit password, select the unit tile and click the **Change password** ( ) icon of the tile. If a unit doesn't have a password (for example, new units or units reset to factory default), you must enable **Update units that have no password**. If a unit has a password, you need to enable **Update units that have an existing password** and provide the current unit password for the update to take effect.

After the unit password is updated, the unit is no longer listed as **Access denied**.

Connection overview

Maevex 5150 Encoder – Back

5 VDC

5.0A MAX   LAN1   VGA   HDMI OUT   RS232   HDMI IN

| 5V DC power | LAN1 (network) | VGA (monitor) | HDMI Out (monitor) | RS232 (RS232 control device) | HDMI In (source) | Line Out | |
| USB (controller system) | Line In (source) |
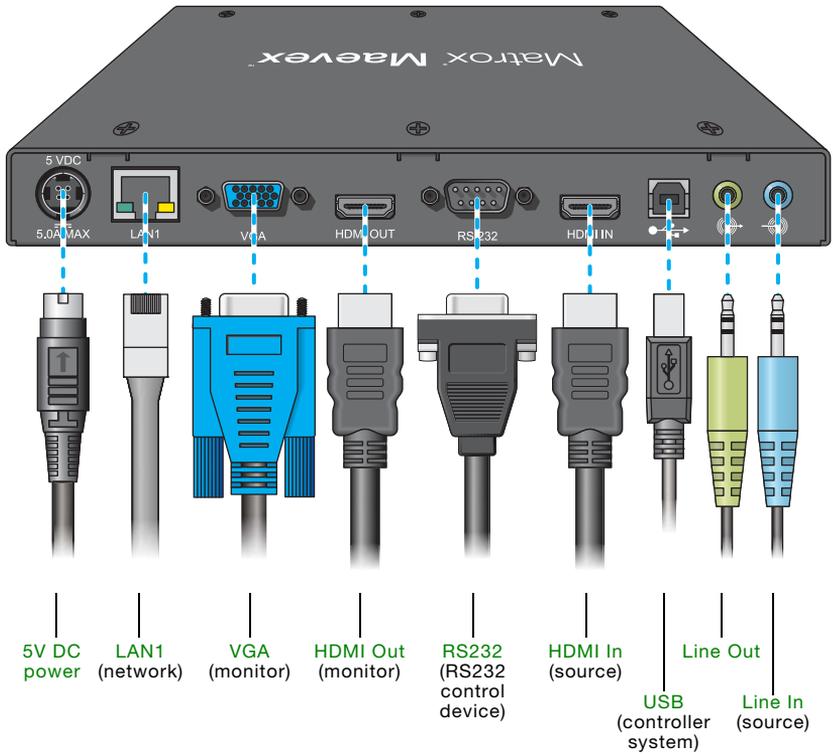
Maevex 5150 Decoder – Front

RS232
(RS232 device)

USB

Maevex 5150 Decoder – Back

5V DC
power

LAN1/LAN2
(network or
decoder unit)

Line Out

HDMI
(monitor)
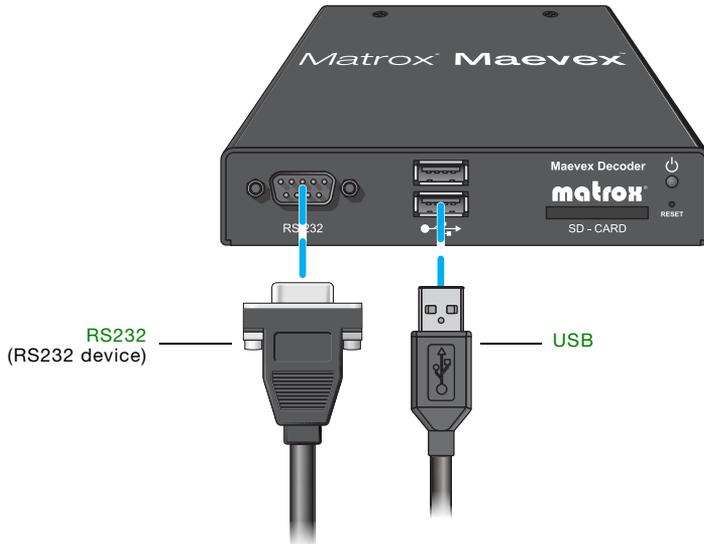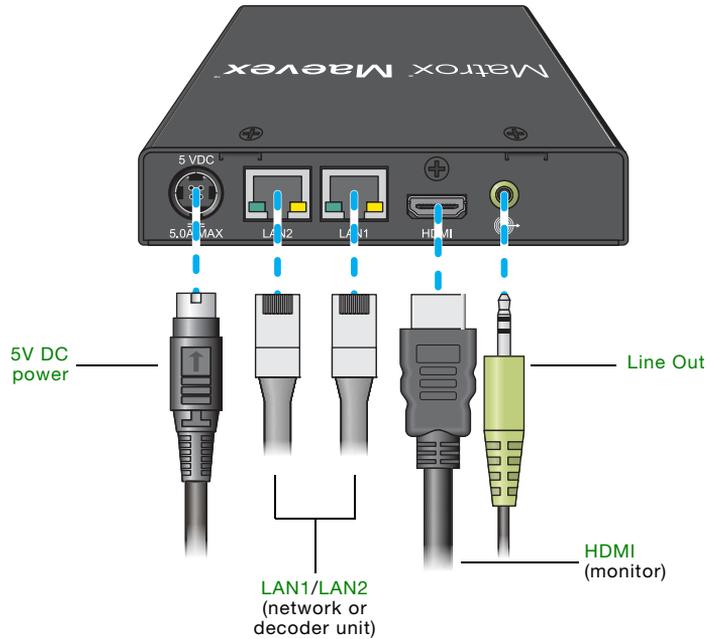
Connector descriptions

Connector	Encoder	Decoder	Description	Required encoder connection
5V DC power	✓	✓	Connect the 5V DC power supply included with your product to this connector. While the 5V DC power supply is connected to the unit and electrical socket, the power LED (⏻) is active (not black). For more information on LEDs, see "Description of LEDs", page 22.	
HDMI		✓	Connect a digital monitor to this connector. If your digital monitor has a DVI connector, you need an HDMI to DVI-D adapter to connect your monitor to this connector. **Note:** To connect to this connector, you need a shielded HDMI cable.	
HDMI In	✓		Connect your video source to this connector. If your video source doesn't support HDMI output, use an HDMI adapter to connect it to your encoder unit. If your video source has a DVI connector, use the DVI to HDMI adapter included with your Maevex product to connect it to your encoder unit. **Note:** To connect to this connector, you need a shielded HDMI cable.	
HDMI Out	✓		**Optional** – Connect a digital monitor to this connector. If your digital monitor has a DVI connector, you need an HDMI to DVI-D adapter to connect your monitor to this connector. **Note:** To connect to this connector, you need a shielded HDMI cable.	
LAN1	✓	✓	Connect a network cable to this connector. **Note:** You can *only* use the second network connector on the decoder to daisy chain decoder units.	
LAN2		✓		
Line In	✓		**Optional** – Connect the analog audio output of your video source to this connector. If you're using HDMI audio input, this connector is disabled.	
Line Out	✓	✓	**Optional** – Connect your analog audio output device (such as speakers) to this connector.	Line In or HDMI In with audio

Connector	Encoder	Decoder	Description	Required encoder connection
RS232	✓	✓	**Optional** – To control an RS232 device (such as a monitor) on one of your decoder units with an RS232 controller connected to an encoder or with an RS232 controller sending commands over the network. ▪ **Encoder unit** – You need to connect an RS232 serial cable from your RS232 device to this connector. 　▪ If your encoder is using the **Relayed serial over IP** feature in PowerStream, use a straight through serial cable to connect your RS232 controller to your encoder. 　▪ If your encoder is using the **Direct serial over IP** feature in PowerStream, use the opposite of the serial cable required by your RS232 device. This cable may be a null modem or a straight through cable. ▪ **Decoder unit** – You need to connect an RS232 serial cable from your decoder to your RS232 device. For this connection, use the serial cable required by your RS232 device. This cable may be a null modem or straight through cable. If your RS232 device has a DB25 connector, use a DE9 (also known as a DB9) to DB25 converter to connect your device to this connector.	RS232
SD™ Card		✓	*Currently unsupported.*	
USB	✓	✓	*Currently unsupported.*	
VGA	✓		**Optional** – Connect an analog monitor to this connector. For local viewing of uncompressed video from your video source.	

Step-by-step connection setup

This section guides you through the step-by-step connection setup of your Maevex 5150 Encoder and Decoder units.

Maevex 5150 Encoder

1 Connect your video input

Connect your video source to the **HDMI In** connector on your encoder unit.

If your video source doesn't support HDMI output, use an HDMI adapter to connect your video source to your encoder unit.

If your video source has a DVI connector, use the DVI to HDMI adapter included with your Maevex product to connect your video source to your encoder unit.

HDMI monitor cable
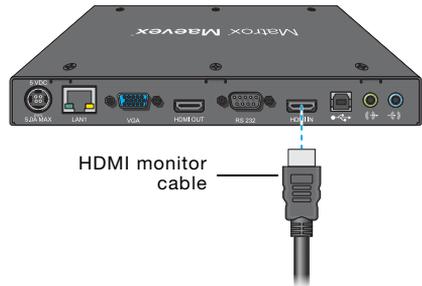
> **i** **Note:** To connect a source to this connector, you need a shielded HDMI cable.
>
> If your video source uses a display resolution higher than 720p60, we recommend you use a certified high-speed HDMI cable.

2 Connect to your network

Connect a network cable to the **LAN 1** connector on your encoder unit.

Network cable
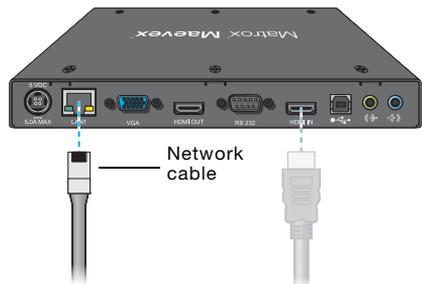
3 Connect your analog audio input (optional)

Connect the analog audio output of your video source to the **Line In** (◀━▶) connector on your encoder unit.

Audio cable

4 Connect your video output (optional)

If you're connecting a digital monitor to your unit, connect the monitor cable to the **HDMI Out** connector on your encoder unit.

If your monitor doesn't support HDMI output, use an HDMI adapter to connect it to your encoder unit.

HDMI monitor cable
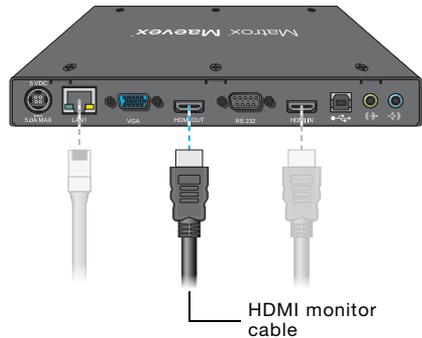
ⓘ **Note:** To connect your monitor to this connector, you need a shielded HDMI cable.

If the video output of your unit uses a display resolution higher than 720p60, we recommend using a certified high-speed HDMI cable.

If you're connecting an analog monitor to your unit, connect your monitor cable to the **VGA** connector on your encoder unit.

ⓘ **Note:** In PowerStream, while your encoder is set to **Pass through** as the local output method, the VGA connector is disabled.

VGA cable
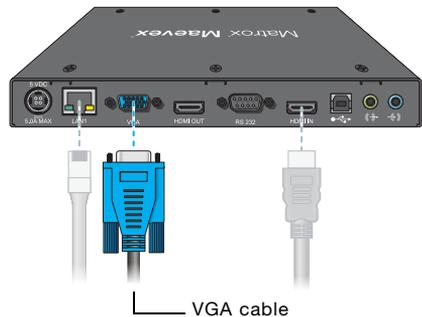
5 Connect your analog audio output (optional)

Connect your analog audio output device (such as speakers) to the **Line Out** (⟨⟩) connector on your encoder unit.

ℹ️ **Note:** While your encoder is set to **Pass through** in PowerStream, this connector only outputs audio received by the **Line In** connector.

Audio cable
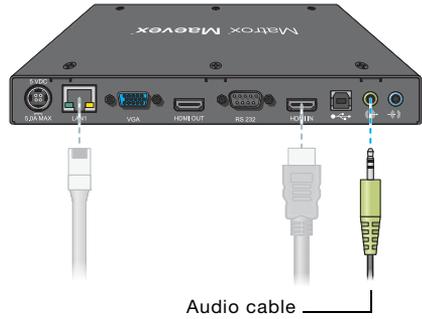
6 Connect your RS232 device (optional)

Connect the cable from your RS232 control device to the **RS232** connector (female DE9) on your encoder unit. If your encoder is using the **Relayed serial over IP** feature in PowerStream, use a straight through serial cable to connect your RS232 control device to your encoder. If your encoder is using the **Direct serial over IP** feature in PowerStream, use the opposite of the serial cable required by your RS232 device. This cable may be a null modem or a straight through cable.

RS232 cable
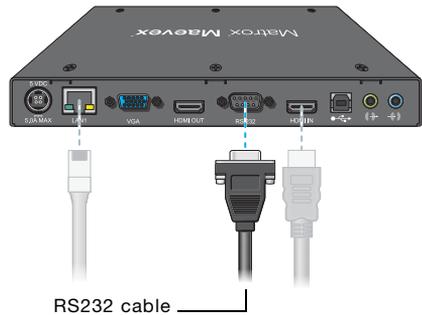
If your RS232 control device has a DB25 connector, use a DE9 (also known to as a DB9) to DB25 converter (sold separately) to connect it to your encoder.

7 Connect your power supply

Connect your power supply included with your product to the **5VDC** connector on your encoder unit. While the 5V DC power supply is connected to the unit and electrical socket, the power LED (⏻) is active (not black).

For more information on LEDs, see "Description of LEDs", page 22.

Power cable
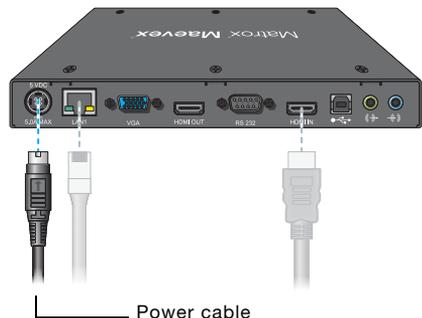
After connecting your Maevex encoder unit, we recommend you validate your connection setup before you continue (see "Validating your Maevex setup", page 22). After you validate your setup, install your Matrox software (see "Installing Matrox PowerStream", page 26).

WARNING: To avoid damaging the power connector on your unit or on your power cable when unplugging a unit, firmly hold the power connector, pull back the connector on the cable, then carefully remove the power cable.
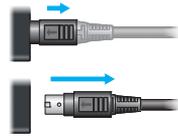
Maevex 5150 Decoder

1   Connect your video output

Connect a digital monitor to the **HDMI** connector on your decoder unit.

If your digital monitor doesn't support HDMI output, use an HDMI adapter to connect it to your decoder unit.

Note: To use this connector, you need a shielded HDMI cable.

If the video output of your unit uses a display resolution higher than 720p60, we recommend using a certified high-speed HDMI cable.
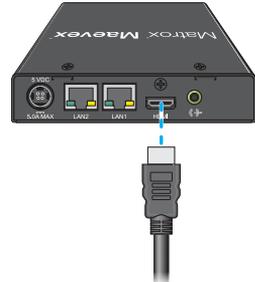
HDMI monitor cable

2   Connect to your network

Connect a network cable to either the **LAN 1** or **LAN 2** connector on your decoder unit.

Note: You can *only* use the other network connector on your decoder to daisy chain decoder units. For more information, see "Daisy chaining your decoder units", page 20.
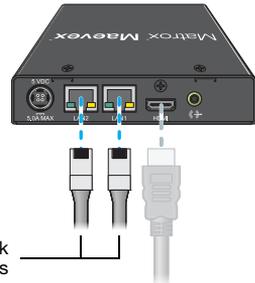
Network cables

3 Connect your analog audio output (optional)

Connect your analog audio output device (such as speakers) to the **Line Out** ( ) connector on your decoder unit.

Audio cable
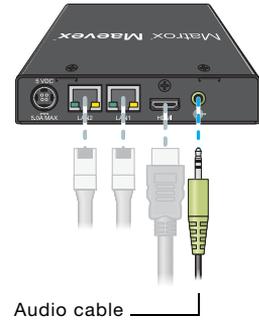
4 Connect your RS232 device (optional)

Connect the cable from your RS232 device to the RS232 connector (male DE9) on your decoder unit. For this connection, use the serial cable required by your RS232 device. This cable may be a null modem or straight through cable.

If your RS232 device has a DB25 connector, use a DE9 (also known as a DB9) to DB25 converter (sold separately) to connect it to your decoder.

RS232 cable
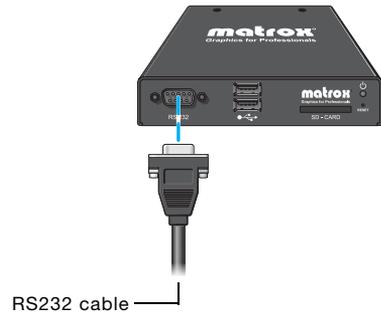
5 Connect your power supply

Connect your power supply included with your product to the **5VDC** connector on your decoder unit. While the 5V DC power supply is connected to the unit and electrical socket, the power LED ( ) is active (not black).

For more information on LEDs, see "Description of LEDs", page 22.
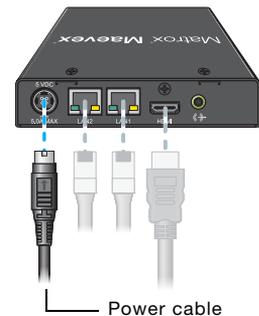
Power cable

WARNING: To avoid damaging the power connector on your unit or on your power cable when unplugging a unit, firmly hold the power connector, pull back the connector on the cable, then carefully remove the power cable.
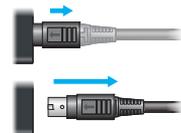
After connecting your Maevex decoder unit, we recommend you validate your connection setup before you continue (see "Validating your Maevex setup", page 22). After you validate your setup, install your Matrox software (see "Installing Matrox PowerStream", page 26).

Daisy chaining your decoder units

You can daisy chain the network connections for your decoder units by connecting one decoder to another.
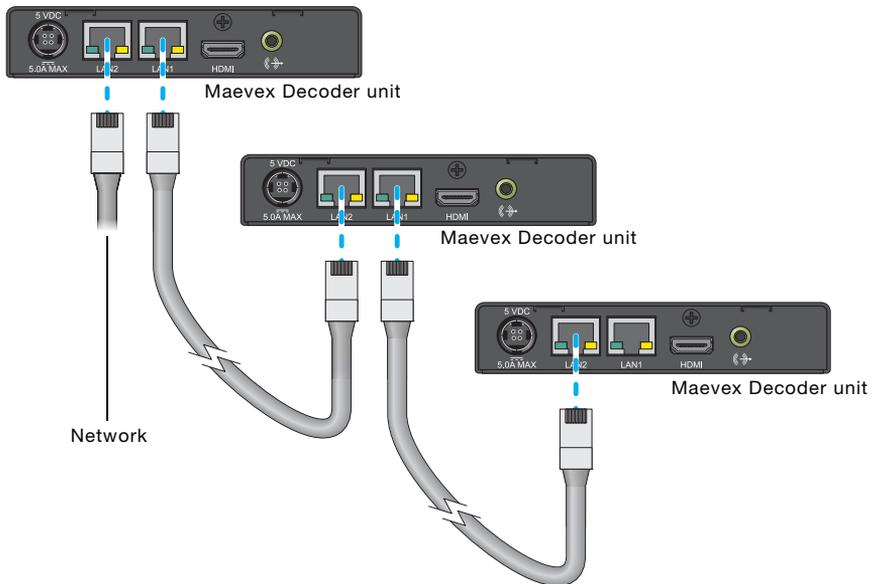
When daisy chaining decoders, consider the following:

- For daisy chaining to work from one decoder to another, a decoder must be powered. If power is lost, the connection to the next decoder is also lost.

- When daisy chaining network connections, the maximum number of decoders connected together is ten (10). Depending on your hardware and network settings, the number of decoders you can daisy chain on the same network jack may be lower.

Resetting your unit

To reset a Decoder or Encoder unit, press and hold the **Reset** button on your unit with the tip of a paper clip:

- **Reboot** – Holding for *less than 2 seconds* reboots your unit and keeps your settings. This *keeps all* your unit settings, including the IP address and password.

- **Factory reset** – Holding for *more than 5 seconds* (until the LED turns amber) reboots your unit and restores the factory settings. This *resets all* unit settings, including the IP address and password.

Validating your Maevex setup

After connecting your Maevex units, we recommend you validate your connection setup, network discovery, and the quality of your audio and video sources before you continue.

Description of LEDs

The network connector LEDs and power LED (⏻) on your Maevex units provide information that can help you troubleshoot your Matrox product.

Network connector

The network connectors on your Matrox Encoder and Decoder unit use indicator lights (LEDs) to provide information on the network activity and presence. The following describes the different network connector LEDs.
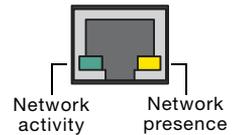
LED color	Network activity	Network presence
No LED (black)	No data transfer in progress or no network detected.	No communication established.
Green (flashing)	Data transfer in progress.	—
Orange	—	Network communication established.

Encoder/Decoder

The power LED (⏻) on your Matrox Encoder or Decoder unit provides information on the status of your unit. The following describes the power LED on your Maevex unit.

LED color	Encoder	Decoder
No LED (black)	Unit isn't powered.	Unit isn't powered.
Green/Red (flashing)	Unit is initializing.	Unit is initializing.
Green	Unit is ready.	Unit is ready.
Green (flashing)	Encoding and streaming.	Decoding network stream.
Red (flashing)	No valid audio/video input signal detected.	Unit isn't in use.
Red	Fatal error detected.	Fatal error detected.
Amber	Unit reset to factory default. Unit requires maintenance.	Unit reset to factory default. Unit requires maintenance.
Amber (flashing)	Configuring or updating firmware.	Configuring or updating firmware.

Validating network discovery

Maevex units are initially assigned their IP addresses through DHCP (Dynamic Host Control Protocol). After connecting your devices, we recommend verifying that all your devices are discovered by the network.

Windows 10/8.1/7 – To make sure all your units are discovered by the network:

- **Windows 10** – Click **Start → File Explorer → Network**. Under **Other Devices**, make sure all the Maevex units connected are listed.

- **Windows 8.1** – From the **Start** screen, go to **All Apps → Windows System → File Explorer → Network**. Under **Other Devices**, make sure all the Maevex units connected are listed.

- **Windows 7** – Click **Start → Acessories → Windows Explorer → Network**. Under **Other Devices**, make sure all the Maevex units connected are listed.

If prompted to enable network discovery and file sharing on your network when validating network discovery, enable these two features by clicking on the prompt at the top of your Windows Explorer window. These two features must be enabled for PowerStream to detect Maevex units on your subnet.

After validating your connection setup, install Matrox PowerStream software (see "Installing Matrox PowerStream", page 26).

Multiple subnet support

Controller systems and computers can detect Maevex units in the same subnet through the UPnP (Universal Plug and Play) protocol. If you have units in different subnets of your network, you need to validate network discovery in each subnet separately. For more information on using Maevex units in different subnets in the same Maevex environment, see "Using multiple subnets" in Matrox PowerStream help.

Validating video and audio quality

Your decoder unit can only output video and audio as good as the quality received by your encoder.

To validate the video and audio quality of your source and content:

- Connect the source directly to the monitor and audio output device that will be used by your decoder.

- Use a different source to preview your content.

- Use PowerStream to change the local output method on your encoder to **Use pass through** while a monitor is connected to your encoder.

To validate the source capture by your encoder and your local output settings:

- Use PowerStream to change the local output method on your encoder to **Use confidence preview**.

Using pass through or confidence preview

For your encoder, PowerStream has two local output options:

- **Pass through –** When using pass through, your encoder outputs the video and audio signals of your source directly to your monitor and audio output device. While this is enabled, the local output settings of your encoder are disabled.

  Because the signal is direct from the source to the output devices:

  - The source uses the EDID of the DVI or HDMI digital monitor connected to the HDMI OUT connector of your encoder to determine which display mode to use. If no EDID is detected, the source may disable its video output and capture is impossible.

  - The encoder must support the display mode used by the source for capture, encoding, streaming, or recording to work.

  - The output settings (such as **Size and transformations** and **Image appearance**) for your encoder have no effect and are disabled.

  - If capture isn't working on your encoder, the source video still plays on your monitor.

  - No analog video signal is received, so there's no video output on the VGA connector (analog video output).

  - If the HDMI output device connected to your encoder doesn't support audio output, your HDMI source may disable its audio output. Because no audio is received at input, there's no audio for the encoder and all decoders connected to this encoder.

- **Confidence preview –** When using confidence preview, your encoder uses the PowerStream video and audio local output and capture settings for your encoder to output to your video and audio output devices.

  While this is enabled:

  - No monitor needs to be connected to your encoder. The source uses the EDID of the encoder to determine which display mode to use. The preferred display mode of the encoder is 1920×1080 @ 60Hz.

  - The output settings (such as **Size and transformation** and **Image appearance**) are used to output the video to the monitors.

- The transformations are done directly to the display mode received from the source, which may be different from the display mode of the encoded stream. For more information, see Encoding.

- Your encoder can output to a DVI or HDMI digital monitor connected to the HDMI Out connector, to an analog monitor connected to the VGA connector, or to both.

- Your encoder outputs the same display mode to both the HDMI Out and VGA connector.

- For its output display mode, you can force a display mode, or you can let the encoder use the EDID of the monitor detected to determine which display mode to use.

The local output of an encoder isn't the result of decoding its own encoded video and audio stream.

Installing Matrox PowerStream

This section describes how to install Matrox PowerStream software for *Windows® 10, Windows® 8.1*, *Windows® Server® 2012*, *Windows® Server® 2012 R2*, *Windows® 7*, and *Windows® Server® 2008 R2*.

Before you begin

■ You may need administrator rights to install or uninstall certain software. For more information, see Windows documentation or contact your system administrator.

■ **Windows Server 2012, Windows Server 2012 R2, and Server 2008 R2** – Make sure the SSDP Discovery service, network discovery, and file sharing options are enabled. For more information, see .

Obtaining Matrox PowerStream

Matrox makes the latest PowerStream software available on the Matrox Technical Support Web site (www.matrox.com/maevexsw). Matrox provides 32-bit and 64-bit versions of the software. The installation is the same for the 32-bit and 64-bit versions.

Installing your software

To install the software for your Maevex product, run the installation program for your software package. Follow the on-screen instructions.

Matrox PowerStream software

Matrox PowerStream software enables you to remotely control, manage, and configure your Maevex units from a controller system in your Maevex environment.

> ⓘ **Note:** To assign an initial IP address to your units, a DHCP (Dynamic Host Configuration Protocol) server is required.

Accessing Matrox PowerStream

Windows 10/8.1/7 – To access the main interface of PowerStream:

- **Windows 10** – Click Start → **All apps*** → **Matrox PowerStream*** → **Matrox PowerStream**. (* Depending on your configuration of Windows, this part may not be necessary.)

- **Windows 8**.1 – From the **Start** screen, click **Matrox PowerStream**.

- **Windows 7** – Click **Start** → **All Programs** (or **Programs**) → **Matrox PowerStream** * → **Matrox PowerStream**. (* Depending on your version and configuration of Windows, this part may not be necessary.)

Accessing Matrox PowerStream help

For information on Matrox PowerStream features and options, see the help files included with your PowerStream software.

Windows 10/8.1/7 – To access the Matrox PowerStream help:

- **Windows 10** – Click **Start** → **All apps** → **Matrox PowerStream** → **Matrox PowerStream Help**.

- **Windows 8.1** – From the **Start** screen, click **Matrox PowerStream Help**.

- **Windows 7** – Click **Start** → **All Programs** (or **Programs**) → **Matrox PowerStream** → **Matrox PowerStream Help**.

Troubleshooting

What to do if you have a problem

If you experience problems with your Matrox product:

- Make sure you're using the correct connectors, and that all connectors are properly fastened. For more information, see "Connecting your Maevex Encoder and Decoder units", page 8.

- Review the documentation provided with your Matrox product, including the information in this section, to see if your problem is already addressed. For information on Matrox PowerStream software features and options, see the help file included with your PowerStream software.

If your problem persists, contact Matrox. For more information, see "Customer support", page 54.

Common problems and solutions

This section addresses common problems that could prevent you from using your units.

Problem **Maevex unit not discovered on the network**

Cause Your Matrox product may not be properly connected or may be on a different subnet.

Solution Verify the connection and status LEDs on your Matrox product (see "Description of LEDs", page 22). Also, make sure your Matrox product is properly connected and that all connectors are properly fastened.

Cause Your unit may be on an external network or on a different subnet.

Solution Make sure your units and controller system are on the same subnet (see "Validating network discovery", page 23). For more information, contact your network administrator.

Solution If your unit is on a different subnet than your controller system, you must manually add the unit in your PowerStream interface. For more information on manually adding units, see PowerStream help. To obtain the IP address of your unit, see "Validating network discovery", page 23.

Cause **Windows Server 2012 R2/2012/2008 R2 only** – The Windows SSDP Discovery service may be disabled on your system.

Solution Make sure the SSDP Discovery service is enabled on your system.

1 **Windows Server 2012/2008 R2** – From the **Start** screen, click **All Programs → Administrative Tools → Services** *. (* You may need administrator rights to access Windows services.)

Windows Server 2012 R2 – Click **Start → Administrative tools → Services** *. (* You may need administrator rights to access Windows services.)

2 Double-click **SSDP Discovery**.

3 Next to **Startup type**, select **Manual** or **Automatic**.

4 Click **OK**.

Cause Network discovery and file sharing may not be enabled on your system.

Solution Enable network discovery and file sharing on your system.

Windows 10/8.1/7 –

1 **Windows 10** – Click **Start → Settings → Network & Internet → Ethernet**.

Windows 8.1 – From the **Start** screen, go to **All Apps → Windows System → Control Panel → Network and Internet** *. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

Windows 7 – Click **Start → Settings** * **→ Control Panel → Network and Internet** *. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

2 Click **Network and Sharing Center → Change advanced sharing settings**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

3 Under your current profile, make sure the following options are selected:

- **Turn on network discovery**
- **Turn on file and printer sharing**

4 If you make changes to your current profile settings, click **Save changes**.

Cause You may not be using the latest version of Matrox PowerStream software or your Matrox firmware may be out of date.

Solution Make sure all Matrox software is up to date.

Cause   The firewall for your controller system or for your network may be enabled and may prevent communication with your Maevex units.

Solution   Make sure your firewall is properly configured to allow the necessary communication between your controller system and your Maevex units. For more information, see "Appendix A – Firewall requirements".

Problem   **Can't access Maevex unit through PowerStream (listed as 'Access Denied')**

Cause   The unit may be a recent addition to your environment and has no password.

Solution   Try updating the password for that unit (see "Updating your unit password", page 10).

Cause   The unit password doesn't match your environment password.

Solution   Try a factory reset of your unit (see "Resetting your unit", page 21).

Solution   Contact your Maevex environment administrator to obtain your unit password, then update the unit password to match your environment password in PowerStream. For more information, see "Managing your passwords", page 9.

Cause   Two instances of PowerStream may be running on different controller systems, using different environment passwords.

Solution   Change your password so that both instances of PowerStream are using the same environment password. Using different passwords in the same environment isn't supported. For more information, see "Managing your passwords", page 9.

Solution   If one of the passwords is unknown, uninstall PowerStream from one of the controller systems, and then reinstall it. When prompted, enter your existing environment password. You also need to perform a factory reset on all inaccessible units.

Problem   **Power indicator light is red (solid)**

Cause   Your Matrox product encountered an error.

Solution   Try a factory reset of your unit (see "Resetting your unit", page 21). If the power indicator light on your unit is still red after you reset your unit, contact Matrox Technical Support (see "Customer support", page 54).

Problem **No picture or output at all**

Cause The unit may not have started encoding or decoding.

Solution In PowerStream, make sure the encoding or decoding process has started:

- **Encoder** – Listed as **Awaiting connection** or **Encoding**.

- **Decoder** – Listed as **Decoding**. If the decoder isn't decoding, verify that the correct URL is being used in the **Stream address** box. If the URL in **Stream address** doesn't correspond to the URL of an encoder or if the encoder isn't encoding, attempting to start decoding results in an error.

For more information on the status of your units, see Matrox PowerStream help.

Cause **Encoder only** – The **Use pass through** option is enabled, but your monitor is connected to the **VGA** connector on your encoder.

Solution If the **Use pass through** option is enabled, make sure your monitor is connected to the **HDMI Out** connector.

Solution In PowerStream, change the local output of your encoder to **Use confidence preview.**

Cause The local output settings of your unit may be improperly set.

Solution **Encoder** – If the **Use confidence preview** option is enabled, adjust the following settings under the **Output** tab in PowerStream:

- Make sure the video output type selected is valid (**HDMI + VGA**, **HDMI**, or **VGA**).

- Disable the **Force display mode** option.

- Check your **Image appearance** settings (brightness, contrast, and so on). Image appearance values that are too high or too low may cause the image to disappear.

Solution **Decoder** – In PowerStream, adjust your local output settings:

- Disable the **Force display mode** option.

- Check your **Image appearance** settings (brightness, contrast, and so on). Image appearance values that are too high or too low may cause the image to disappear.

Cause Your monitor video controls may be improperly set.

Solution Adjust your monitor controls (brightness, contrast, and so on). For more information, see your monitor manual.

Cause Your monitor may not be properly connected (the connectors aren't properly fastened or the monitor power cable isn't firmly in place) or may have been disconnected.

Solution Make sure you're using the correct connectors, that all connectors are properly fastened, and that all power cables are firmly in place.

Cause If your monitor supports multiple input sources (analog/digital), it may be configured to use the wrong source.

Solution Make sure your monitor is using the correct input source. For more information on selecting the input source for your monitor, see your monitor documentation.

Cause The HDMI cable may have been connected to your encoder or decoder output *after* the encoding or decoding process started.

Solution In PowerStream, stop, then start the encoding or decoding process again.

Problem Encoder only – Storage path error message when specifying a network shared folder for recording

Cause The path for the network shared folder may be incorrect.

Solution Make sure you're using the full computer name of the system where the shared folder is located. The full computer name is part of the Windows properties of the system. For example, the full computer name of *networkserver* may be *networkserver.domain.com*. For more information, contact your network administrator.

Cause The file sharing configuration for the system hosting the shared folder may prevent writing operations.

Solution Make sure file sharing is enabled on your host system and that writing is permitted on that folder.

Cause The credentials provided to your encoder may not have writing permissions on the system hosting the shared folder.

Solution Make sure you're using the proper user credentials (user name and password) for your encoder.

Solution Make sure the permissions of the shared folder allow writing.

Cause The firewall may be enabled on the system hosting the shared folder.

Solution Add the following rules to your Windows Firewall settings.

> ℹ️ **Note:** You may need administrator rights to modify your Windows Firewall settings. For more information, see Windows documentation or contact your system administrator.

Windows 10/8.1/7 –

1 Windows 10 – Click **Start → Settings → Network & Internet → Ethernet → Windows Firewall**.

Windows 8.1 – From the **Start** screen, go to **All Apps → Windows System → Control Panel → Network and Internet** * → **Network and Sharing Center** *. (* Depending on your configuration, these steps may be unnecessary.)

Windows 7 – Click **Control Panel → Network and Internet** * → **Network and Sharing Center** *. (* Depending on your configuration, these steps may be unnecessary.)

2 Windows 10 – In the left panel, click **Advanced Settings**.

Windows 8.1/7 – In the left panel, click **Windows Firewall → Advanced Settings**.

3 Click **Inbound Rules**.

4 In the **Actions** panel, click **New Rule**. Configure the new rule with the following settings:

- Rule – Select **Custom**.

- Program – Select **All programs**.

- Protocol and Ports – Next to **Protocol**, select **TCP**. Next to **Local port**, select **Specific ports**. For the port number, enter **445**. Next to **Remote port**, select **All Ports**.

- Scope – Under the remote IP address, add the IP range you want to use for your encoders. You can use a range (such as *192.168.1.0/24*) or a single IP address (such as *192.152.168.62*).

- Action – Select **Allow the connection**.

- Profile – Select the network location of your system (**Domain**, **Private**, or **Public**).

- Name – Enter the name for your rule (such as *Maevex Encoder Recording - TCP rule*).

5 In the **Actions** panel, click **New Rule**. Configure the new rule with the following settings:

- Rule type – Select **Custom**.

- Program – Select **All programs**.

- Protocol and Ports – Under **Protocol type**, select **ICMPv4**.

- **Scope** – Under the remote IP address, add the IP range you want to use for your encoders. You can use a range (such as *192.168.1.0/24*) or a single IP address (such as *192.152.168.62*).

- **Action** – Select **Allow the connection**.

- **Profile** – Select the network location of your system (**Domain**, **Private**, or **Public**).

- **Name** – Enter the name for your rule (such as *Maevex Encoder Recording - ICMPv4 rule*).

For more information on configuring your Windows firewall, see your network administrator.

Problem	**Wrong color balance**
Cause	The local output settings of your encoder or decoder unit may be improperly set.
Solution	Adjust your PowerStream settings. Check your **Image appearance** settings (brightness, contrast, and so on).
Cause	Your monitor video controls may be improperly set.
Solution	Adjust your monitor controls (brightness, contrast, and so on). For more information, see your monitor manual.
Cause	Your monitor may not be properly connected (the connectors aren't properly fastened or the monitor power cable isn't firmly in place) or may have been disconnected.
Solution	Make sure you're using the correct connectors, that all connectors are properly fastened, and that all power cables are firmly in place.

Problem	**Screen image is cropped, appears off-center, or uses a portion of the screen**
Cause	You may be using a lower display resolution than what your monitor supports. If your monitor supports display scaling, the image on your screen may appear blurry. If display scaling isn't supported, the display may use only a portion of your screen.
Solution	In PowerStream, adjust **Force display mode** to use the highest display resolution available. This generally results in better image quality.

Cause	PowerStream may be configured to modify the size of the video source.
Solution	Adjust your PowerStream settings:

- **Encoder** – Click the **Processing** tab, enable the **Use specific video size** option, then specify the width and height of your video to match the aspect ratio of your source.
- **Decoder** – Make sure the settings for **Crop video** are set to properly show the video.

For more information, see Matrox PowerStream help.

Problem   Encoder only – Using 'pass through', the screen is unusable (blank or blinking screen)

Cause	Your monitor may be incompatible with the display mode used by your source.
Solution	Make sure your monitor and your source support similar display modes. To validate the quality of your source, see "Validating video and audio quality", page 23.
Solution	Change the display mode used by your source.
Solution	Try using a different monitor.

Cause	If your monitor and source aren't properly synching, your screen may go blank for a few seconds.
Solution	In PowerStream, change the local output of your encoder to **Use confidence preview**.
Solution	Try using a different monitor.
Solution	Make sure all Matrox software is up to date.

Problem   Decoder loses connection to the encoder

Cause	The encoder's settings may have changed (for example, the streaming address or IP address). A change may occur dynamically or after a power failure.
Solution	Adjust your PowerStream settings:

- **Encoder** – Manually change the IP address to the previous address used by your encoder.
- **Decoder** – Reselect the encoder in your **Source** box.
- **Decoder** – If **Source** is set to **Manual**, make sure the URL used in the **Stream address** box matches the stream address used by the encoder.

For more information, see Matrox PowerStream help.

Cause   The encoder may have stopped transmitting.

Solution   Make sure your encoder is transmitting.

Problem   **PowerStream may be slow to start (several minutes)**

Cause   Your controller system may not have access to a DNS (Domain Name System) server.

Solution   Configure your system to use a fixed IP address (such as local host – 127.0.0.1) as its DNS server.

Windows 10/8.1/7 –

1   Windows 10 – Click **Start → Settings → Network & Internet → Ethernet**.

Windows 8.1 – From the **Start** screen, go to **All Apps → Windows System → Control Panel → Network and Internet** * **→ Network and Sharing Center**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

Windows 7 – Click **Start → Settings** * **→ Control Panel → Network and Internet** * **→ Network and Sharing Center**. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

2   Click **Change adapter settings**.

3   Double-click the icon for your network adapter (such as **Local Area Connection** or **Ethernet**).

4   Click **Properties → Yes***. (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)

5   Double-click **Internet Protocol Version 4 (TCP/IPv4)**.

6   Select **Use the following DNS server addresses**.

7   Next to **Preferred DNS server**, enter **127.0.0.1**.

8   Click **OK → OK → Close**.

Problem   **PowerStream stops responding**

Cause   Your PowerStream software or unit may have encountered an error.

Solution   Try closing, then restarting Matrox PowerStream software.

Solution   Restart your controller system.

Problem   **In PowerStream, the Maevex unit tile is listed as initializing or present**

Cause   Your network may be slow, causing a delay in the response time from your unit.

Solution   Wait a few minutes, then make sure the status of the unit was properly updated.

Cause   Your PowerStream software or unit may have encountered an error.

Solution   Try closing, then restarting Matrox PowerStream software.

Solution   If your unit status is still listed as initializing, try rebooting your unit. Through the Encoder or Decoder settings panel in PowerStream, click **Reboot**. You can also reboot your unit by holding the **Reset** button with the tip of a paper clip for *less than 2 seconds*.

Solution   Try a factory reset of your unit (see "Resetting your unit", page 21).

Problem   **'Web services fails' message appears after attempting to change decoder settings**

Cause   The decoding process may take all the decoder's resources.

Solution   Stop the decoding process, make your changes, and restart the decoding process.

Solution   When making changes to multiple decoders connected to the same encoder, stop the encoder, make the changes on your decoders, then restart the encoder.

Problem   **Black border appears around the video**

Cause   The aspect ratio of your video source may not match the aspect ratio of your monitor.

Solution   Use PowerStream software to adjust your **Video** settings (such as enabling **Force display mode** and selecting a **Scaling** option). For more information, see Matrox PowerStream help.

Cause   There may be a problem with your video source.

Solution   Verify the video from your source. For more information, see "Validating video and audio quality", page 23.

Cause   The border may be part of your video.

Solution   Crop your video source:

1   Access the PowerStream main interface.

2   Under your decoder settings, enable the **Crop video** option.

3   Enter values to remove the borders.

4   Click **Apply** for your changes to take effect.

Cause   Your source uses a display resolution bigger than the resolution used to show the video.

Solution   Try configuring your source to use a different display resolution.

Cause   Your monitor doesn't support display scaling.

Solution   Adjust your video settings:

1   Access the PowerStream main interface.

2   Under **Size and Transformation** of the local output settings of your unit, try selecting **Stretch to display** for scaling.

3   Click **Apply** for your changes to take effect.

Problem   Video appears stretched or squished

Cause   There may be a problem with your video source.

Solution   Verify the quality of your source. For more information, see "Validating video and audio quality", page 23.

Cause   You may be encoding at a resolution that has a different aspect ratio than what your source or output is using.

Solution   Try selecting a video size with the same aspect ratio as your source.

Solution   Make sure **Use specific video size** is disabled.

Cause   The aspect ratio of your source may not match the aspect ratio of your monitor.

Solution   Adjust your video settings:

1   Access the PowerStream main interface.

2   Under **Size and Transformation** of the local output settings of your unit, try selecting **Stretch to display** for scaling.

3   Click **Apply** for your changes to take effect.

Solution   If possible, set the display resolution of your source to match the aspect ratio of your monitor.

Cause   You may be using a lower display resolution than what your monitor supports.

Solution   In PowerStream, make sure **Force display mode** is disabled to use the highest display resolution supported by your monitor. This generally results in better image quality.

Cause   PowerStream may be configured to modify the size of the video source.

Solution   Adjust your PowerStream settings:

- **Encoder** – Enable the **Use specific video size** option, then specify the width and height of your video to match the aspect ratio of your source.

- **Decoder** – Make sure the settings for **Crop video** are set to properly show the video.

For more information, see Matrox PowerStream help.

Problem   Image appears blurry

Cause   You may be encoding at a different resolution than what your source is using.

Solution   Try selecting a video size with the same aspect ratio as your source.

Solution   If **Use specific video size** is enabled, try disabling it to avoid scaling by the encoder.

Cause   You may be using a lower display resolution than what your monitor supports, or your monitor supports display scaling.

Solution   In PowerStream, adjust **Force display mode** to use the highest display resolution available. This generally results in better image quality.

Problem   Poor video quality or video is jerky
(skipping or dropping frames)

Note: Jerky video may be the result of slow recording. Slow recording causes frames to be dropped (frames aren't recorded). If jerky video is caused by frames that were dropped during recording, the problem can only be fixed by recapturing the video under better conditions or with different video settings.

To validate the quality of your source, see "Validating video and audio quality", page 23.

Cause   PowerStream may not be configured to optimize video or audio quality.

Solution   When adjusting your encoder or decoder settings, we recommend starting with the default values for all your settings and modifying the settings as necessary. For more information, see Matrox PowerStream help.

Cause   High network traffic may be degrading the quality of your stream.

Solution   Make sure your network equipment supports the bandwidth required.

Solution	Try using a dedicated network for your Maevex environment. For more information, contact your network administrator.
Solution	Try using Matrox PowerStream to increase the **Network latency** of your decoder unit.
Cause	There may be too many video devices between your video source and destination, or one or more of the video devices may be degrading the quality of the stream. Adapters, long cables, cable extensions, and improper connections can all affect video signal quality.
Solution	If possible, use fewer connections. For example, don't use cable extensions.

Problem	**No sound or sound is distorted or too loud**
Cause	Your capture settings may not match your audio input.
Solution	Make sure your capture settings are set to capture the proper audio source.
Cause	Audio cables may be loose, or the audio output device may not be properly connected.
Solution	Make sure you're using the correct connectors, all connectors are properly fastened, and that all power cables are firmly in place.
Cause	There may be a problem with your audio source.
Solution	Verify the quality of your source. For more information, see "Validating video and audio quality", page 23.
Cause	The PowerStream **Audio** setting of your unit may be too low, too high, or muted.
Solution	Adjust your audio settings for the best performance.
Cause	If you're using pass through, your HDMI source may disable its audio output if the HDMI output device connected to your encoder doesn't support audio output. This disables the audio output for the encoder and all decoders connected to this encoder.
Solution	Make sure the HDMI output device connected to your encoder supports audio output.
Solution	In PowerStream, change the local output of your encoder to **Use confidence preview**.
Cause	**Encoder only** – If you're using pass through, your audio output device may be connected to a connector that has no corresponding input.
Solution	Make sure your audio output device is connected to the proper corresponding audio input connector (for example, **HDMI** to **HDMI in**, and **Line out** to **Line in**).
Solution	In PowerStream, change the local output of your encoder to **Use confidence preview**.

Cause   **Encoder only** – Your source may disable its HDMI audio output when switching from confidence preview to pass through, or vice versa.

Solution   To re-enable the audio signal, try disconnecting and reconnecting your HDMI connector.

Problem   Using the Line In connector on an encoder unit, sound is distorted and generates noise

Cause   The volume level for the video source may be too high.

Solution   Lower the volume on the video source. If you can't control the volume level of your source, you may need to resample the original source to lower the audio output.

Solution   Make sure you're using the correct connectors, all connectors are properly fastened, and that all power cables are firmly in place.

Problem   Inconsistent sound quality between video files

Cause   The audio level for the original video sources differs.

Solution   Resample the original video sources to normalize the audio output between sources.

Solution   Your source may be able to normalize audio levels automatically. For more information, see your source documentation.

Product information

Specifications

Maevex Encoder

	Maevex 5150 Encoder
Video input connector	1× HDMI
Video output connectors	1× HD-15 (VGA) + 1× HDMI
Audio input connector	1× mini-stereo jack
Audio output connector	1× mini-stereo jack
Network connector	1× RJ45
RS232 connector	1× DE9 (also known as DB9) – female
Video stream output	MPEG-4 Part 10 / AVC (H.264)
Audio stream support	MPEG4-GENERIC (firmware version newer than 1.03.03), MPEG4-LATM (up to firmware version 1.03.03)
Supported resolutions *†‡ **(input)**	1920 × 1200, 1920 × 1080, 1680 × 1050, 1600 × 1200, 1600 × 900, 1440 × 900, 1400 × 1050, 1360 × 768, 1280 × 1024, 1280 × 960, 1280 × 720, 1024 × 768, 800 × 600, 720 × 576, 720 × 480, and 640 × 480
Supported resolutions (output)	1920 × 1200, 1920 × 1080, 1680 × 1050, 1600 × 1200, 1600 × 900, 1440 × 900, 1400 × 1050, 1366 × 768, 1360 × 768, 1280 × 1024, 1280 × 960, 1280 × 768, 1280 × 720, 1024 × 768, 852 × 480, 848 × 480, 800 × 600, 720 × 576, 720 × 480, and 640 × 480
Additional supported HDMI resolutions †	1080p50, 1080p30, 1080i60/50 §, 720p50, and 576p50
Maximum unicast connections ¶	8
Dimensions	21.59 cm × 2.59 cm × 10.16 cm / 8.50" × 1.02" × 4.00"
Certifications	Class B: ACMA, CE, FCC, VCCI, Korea

* All supported resolution have a vertical refresh rate of 60 Hz.

† When using a display resolution equal to or higher than 1280×720p60, we recommend you use certified high-speed HDMI cables.

‡ When pass through is enabled, only the resolutions supported by your monitor may be available.

§ Interlaced resolutions are only supported at input. When using interlaced resolutions, the capture rate selection is disabled and your encoder automatically captures all frames.

¶ With a resolution of 1080p at 15Mb/s.

Maevex Decoder

	Maevex 5150 Decoder
Video output connectors	1× HDMI
Audio output connector	1× mini-stereo jack
Network connectors	2× RJ45
RS232 connector	1× DE9 (also known as DB9) – male
Video stream support	MPEG-4 Part 10 / AVC (H.264)
Audio stream support	MPEG4-GENERIC (firmware version newer than 1.03.03), MPEG4-LATM
Supported resolutions *† (output)	1920 × 1200, 1920 × 1080, 1680 × 1050, 1600 × 1200, 1600 × 900, 1440 × 900, 1400 × 1050, 1366 × 768, 1360 × 768, 1280 × 1024, 1280 × 960, 1280 × 768, 1280 × 720, 1024 × 768, 852 × 480, 848 × 480, 800 × 600, 720 × 576, 720 × 480, and 640 × 480
Additional supported HDMI resolutions †	1080p50, 1080p30, 720p50, and 576p50
Dimensions	12.83 cm × 2.59 cm × 10.90 cm / 5.05" × 1.02" × 4.29"
Certifications	Class B: ACMA, CE, FCC, VCCI, Korea

* All supported resolution have a vertical refresh rate of 60 Hz.

† When using a display resolution equal to or higher than 1280×720p60, we recommend you use certified high-speed HDMI cables.

Power consumption and supply voltage

	Maevex 5150 Encoder
Power requirements	5V DC, maximum 5 A (5 A fuse for overcurrent protection)
Power connector	DIN 4 female (4-pin)
Power consumption	Maximum: 9 W * Minimum: 6 W

* With a stream of 1080p60 @25Mb/s.

	Maevex 5150 Decoder
Power requirements	5V DC, maximum 5 A (5 A fuse for overcurrent protection)
Power connector	DIN 4 female (4-pin)
Power consumption	Maximum: 6 W * Minimum: 4.5 W

* With a stream 1080p60 @25Mb/s.

	External power supply
Input AC voltage range	100 to 240 V AC
Input frequency	50-60 Hz
Input connector	IEC 60320-C8
Output voltage	+5 V DC
Output connector	DIN 4 male (4-pin) with lock
Maximum power consumption	15 W

Audio

HDMI	
Stereo audio	2 channel L-PCM
Bits per sample	16 or 24 bits per channel, 2 channel (Left and Right)
Sampling rates supported	32, 44.1, or 48 kHz

Analog	
Audio connector type	3.5 mm stereo audio jacks
Input sensitivity (L/R)	0.7 Vrms

Environmental

Temperature, operational	0 to 45 ℃ (32 to 113 ℉)
Temperature, non-operational storage and transportation	-40 to 55 ℃ (-40 to 131 ℉)
Humidity, operational (indoor)	20 to 80% (non-condensing)
Humidity, non-operational storage and transportation	5% to 95% (non-condensing)
Atmospheric pressure, operational	650hPa (3,580 meters / 11,745 feet) to 1013hPa (0 meters / 0 feet)
Atmospheric pressure, non-operational and transportation	192hPa (12,000 meters / 39,370 feet) to 1020hPa (-50 meters / -164 feet)
Estimated MTBF (Mean Time Between Failures)	Encoder unit: 130.00 years @ 40 ℃ (excluding power supply) Decoder unit: 149.38 years @ 40 ℃ (excluding power supply) Power supply: 11.45 years @ 25 ℃ (with full load)

Networking support

- IPv4 support

- 100/1000 Base-T Ethernet

- Streaming protocol: RTSP (RTP, RTCP, and UDP) unicast and multicast

- Required command and control network protocols: TCP/IP, UPnP, and HTTPS

- CAT 5, 5e, 6, and 7 cables

Notes

- Your Matrox product supports EDID v1.3 (monitor settings) and DDC-2B (Plug-and-Play monitor).

- The display resolutions available depend on your monitor and PowerStream settings. For information on the capabilities of your monitor, see your monitor documentation.

- If a decoder uses a stream from an encoder located on a different subnet, the quality of the video output from the decoder may be degraded.

- Playback of content with different audio sampling rates may cause issues with third-party players (such as VLC).

- Network performance and features may vary depending on your networking equipment. For more information, contact your networking equipment vendor.

- When transmitting in multicast on a large network, we recommend using a router with IPv4 multicast addressing support and switches with IGMP v2 support.

- Video capture and streaming of protected content isn't supported.

- Slow response from certain routers may cause a slow PowerStream startup.

Digital flat panel and source compatibility

- HDMI compatible

- DVI 1.0 compatible (using HDMI to DVI-D adapter)

Appendix A – Firewall requirements

The following are the firewall requirements for your controller system and for a network with a Maevex environment.

PowerStream

The following are the firewall requirements for your controller system.

Network Ports	Type	Inbound	Outbound	Functionality
20,21	TCP	—	✓	**FTP**: Failsafe file upload
53	TCP	—	✓	**DNS**: DNS requests
443[*]	TCP	—	✓	**HTTPS**: PowerStream commands
1900[*]	UDP	✓	✓	**UPnP**: Microsoft SSDP for discovery of UPnP devices
		✓	✓	**Note**: ICMP must be enabled (ping)

* Minimum requirements

Firmware updater

The following are the firewall requirement for a system running the Matrox Firmware Updater.

Network Ports	Type	Inbound	Outbound	Functionality
20,21	TCP	—	✓	**FTP**: Failsafe file upload
22[*]	TCP	✓	✓	**SSH**: Firmware update
443[*]	TCP	—	✓	**HTTPS**: Authentication
1900[*]	UDP	✓	✓	**UPnP**: Microsoft SSDP for discovery of UPnP devices

* Minimum requirements

Maevex units

The following are the requirements for a network firewall present on a network with a Maevex environment.

Network Ports	Type	Inbound	Outbound	Functionality
20,21	TCP	✓	—	**FTP**: Failsafe file upload
22*	TCP	✓	✓	**SSH**: Firmware update
69	UDP	—	✓	**DHCP**: DHCP client
123	UDP	✓	✓	**NTP**: Network Time Protocol
443*	TCP	✓	—	**HTTPS**: PowerStream commands and Firmware Updater Authentication
1900*	UDP	✓	✓	**UPnP**: Microsoft SSDP for discovery of UPnP devices
Ephemeral*	UDP	✓	✓	**RTP/RTCP**: Audio and video streams and control
8554*	TCP	✓	✓	**RTSP**: Streaming (configurable)†
12000‡	TCP	✓	✓	**RS232**: RS232 virtualization

* Minimum requirements

† For more information, see the encoder **Stream to network** settings in the Matrox PowerStream online help.

‡ Fixed value when using the **Relayed serial over IP** feature in PowerStream. User defined when using the **Direct serial over IP** feature in PowerStream.

Accessing your Windows Firewall settings

ℹ️ **Note:** You may need administrator rights to modify your Windows Firewall settings. For more information, see Windows documentation or contact your system administrator.

To access your Windows Firewall settings:

Windows 10/8.1/7 –

1 Windows 10 – Click **Start → Settings → Network & Internet → Ethernet → Windows Firewall**.

Windows 8.1– From the **Start** screen, go to **All Apps → Windows System → Control Panel → Network and Internet** * → **Network and Sharing Center** *. (* Depending on your configuration, these steps may be unnecessary.)

Windows 7 – Click **Control Panel → Network and Internet** * → **Network and Sharing Center** *. (* Depending on your configuration, these steps may be unnecessary.)

2 Windows 10 – In the left panel, click **Advanced Settings**.

Windows 8.1/7 – In the left panel, click **Windows Firewall → Advanced Settings**.

Appendix B – Providing adequate airflow

Because the body of your unit is used to disperse heat, it requires adequate airflow to ensure proper operation and to prevent damage. The following provides guidelines for effective airflow around your unit.

■ **Leave the proper amount of room around your unit** – To prevent airflow restriction, we recommend allowing *at least* 0.75 inches (1.91 cm) of clearance between the top of your unit and anything above it. More space may be required depending on your environment.

When your unit is resting on a plain surface, make sure your unit is resting on the original rubber feet.

■ **Operate your unit in a well ventilated location** – Don't operate your unit near a heat source or restrict airflow to your unit (for example, by operating your unit inside a desk cabinet).

■ **Monitor your ambient temperatures** – Make sure the ambient temperature doesn't exceed the maximum recommended temperatures.

For more information on supported operating temperatures, see "Environmental", page 44.

Appendix C – Mounting your units

This section provides guidelines for mounting your Maevex units in rack mounts or on VESA mounts using one or multiple mounting kits available from Matrox: the rack mounting kit and the angled bracket kit.

Mounting guidelines

To prevent damage to your Matrox hardware, read the following guidelines before mounting your Matrox hardware:

- **Mounting shelf only** – To install your mounting shelf, fasten it to the rack as per your rack's instructions. Head screws compatible with most rack mounts are provided.

- **Mounting shelf only** – The mounting shelf has existing holes for your Maevex unit that allow the shelf to be mounted facing forward or backward.

- Use a hand screwdriver to carefully tighten each screw. Make sure not to overtighten the screws.

- Don't stack anything directly over the unit.

- Make sure the cables connected to your unit are properly secured and that no tension is applied to them.

- Make sure the ambient temperature doesn't exceed the maximum recommended temperatures. For more information, .

Once your Maevex unit is mounted, you can connect your system, monitors, and devices to your unit.

Mounting your Maevex encoder or decoder units horizontally

Using the mounting shelf kit in a rack mount, you can mount two (2) Maevex encoder units or three (3) decoder units horizontally on a single shelf.

Maevex encoder
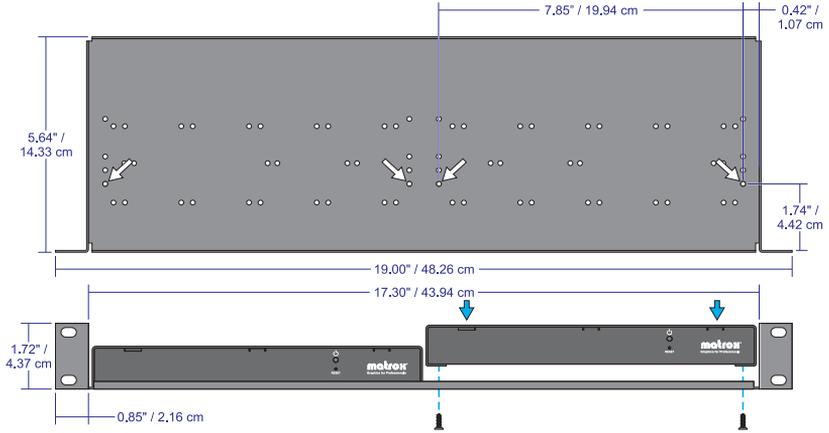
- Your Maevex encoder unit has two (2) mounting holes under its casing. Use two (2) 6 mm M3 flat-head screws (included with your mounting shelf) to secure each unit. You need to remove the four (4) rubber pads under your encoder unit before you can secure your unit to the shelf.

Maevex decoder
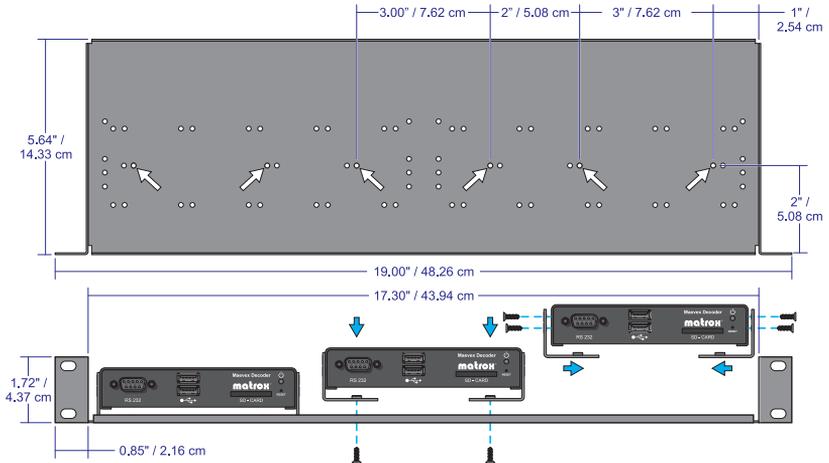
- Your decoder unit has two (2) mounting holes on each side. To mount your decoder horizontally, you need two (2) angled brackets (kit sold separately).

- To secure the angled brackets to your unit and to the shelf, use six (6) 6 mm M3 flat-head screws (included in your kit).

Mounting your Maevex decoder units vertically

Using the mounting shelf kit in a rack mount, you can mount ten (10) Maevex decoder units vertically on a single shelf.

■ Mounting Maevex decoder units vertically requires the height of a 3U shelf.

■ Your Maevex decoder unit has two (2) mounting holes on each side. Use two (2) 6 mm M3 flat-head screws (sold separately) to secure each unit to the mounting shelf. The holes used to secure the unit to the shelf differ depending on which side (left or right) the unit is mounted.

Left side mount
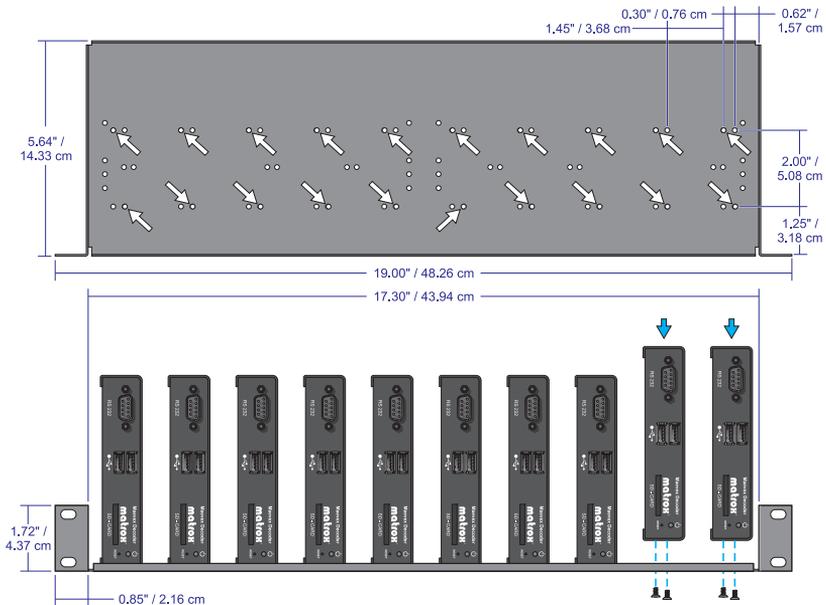
Right side mount
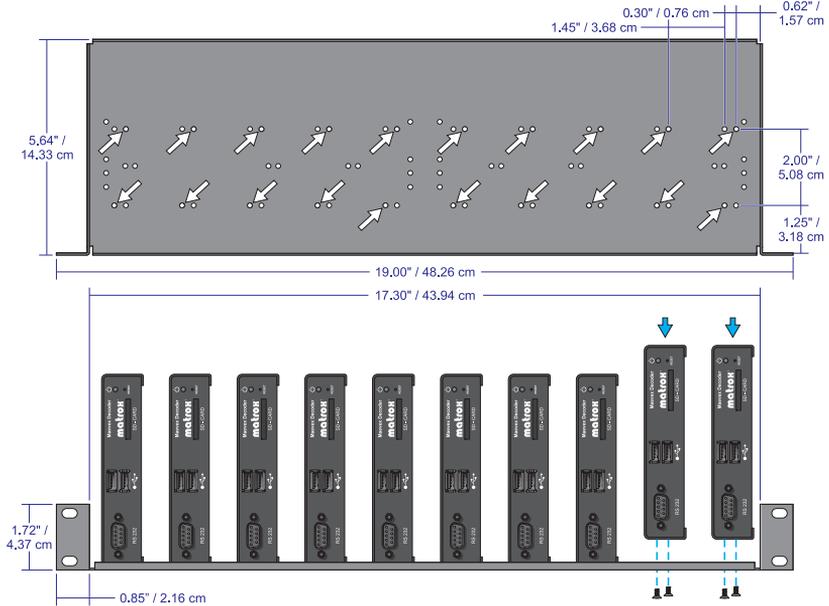
Mounting your Maevex decoder units on VESA mounts

You can mount your Maevex decoder units on VESA compliant mounts (75, 100, or 200 mm) or on the back of devices with VESA compliant mounting holes.

- To mount your decoder unit on a VESA mount, you need two (2) angled brackets (kit sold separately).

- Your Maevex decoder unit has two (2) mounting holes on each side. Use four (4) 6 mm M3 screws (included in your kit) to secure each unit to the angled brackets.

- If a decoder is attached to a VESA mount, no other device can use that VESA mount.

Mounting to a 75 or 100 mm mounting space

To mount your decoder on a 75 or 100 mm mounting space:

- Attach the brackets to your VESA mount before attaching your brackets to your unit.

- Use two (2) M4 screws (sold separately) to attach your brackets to the mount.

- Use four (4) 6 mm M3 flat-head screws (included in your kit) to attach your brackets to your unit.

* sold separately
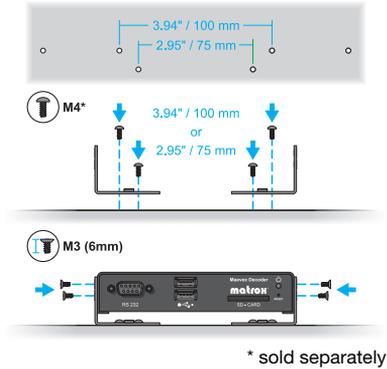
Mounting to a 200 mm mounting space

To mount your decoder to a 200 mm mounting space:

- Attach your brackets to your unit before attaching to your VESA mount.

- Use four (4) 6mm M3 pan-head screws (included in your kit) to attach your brackets to your unit.

- Use two (2) M4 screws (sold separately) to attach your brackets to the mount.

* sold separately
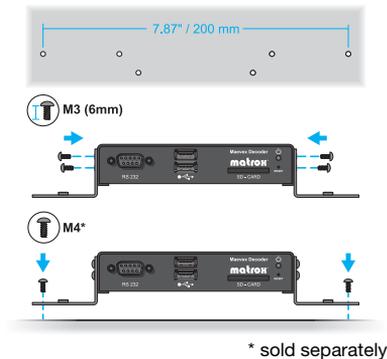
Customer support

Matrox Web

Our Web site has product literature, press releases, technical material, a sales office list, trade show information, and other relevant material. Visit the Matrox Graphics Web site at www.matrox.com/graphics.

Technical support

Matrox values your business and offers professional support for your Matrox product.

If your product was purchased through a Matrox dealer, contact your dealer for product support. This is the quickest and most effective method of technical assistance. Your dealer is familiar with your complete system.

If your product was purchased through Matrox, contact your Matrox representative or visit our technical support Web site at www.matrox.com/graphics/support.

Information we need

Please give a complete description of the problem, and include:

- Matrox product serial number, model number, revision number, and firmware number.
- Computer brand and model name.
- Graphics card manufacturer, model number, revision number, BIOS number, driver type and version.
- Monitors brand and model name.
- Operating system, version, and service pack.

Firmware package

A more recent firmware package may support more features and may offer increased capabilities. To obtain the latest firmware package, see the Matrox Web site (www.matrox.com/maevexsw).

View your warranty information

Matrox makes warranty information available on the Matrox site (http://www.matrox.com/hr/en/company/legal/en/warranty).

Register your Matrox product

Please register online (www.matrox.com/graphics/en/registration) to be eligible for customer support, new product announcements, and information on special offers and upcoming events.

Open source content and license notification*

Software	License	Version	License Agreement Link (template)	Software Package Link
Apache v2.2.22	Apache7	2.0	www.apache.org/licenses/LICENSE-2.0	archive.apache.org/dist/httpd
asoundlib (ALSA) v1.0.24.2	LGPL (Library General Public License)	2.1	opensource.org/licenses/LGPL-2.1	software-dl.ti.com/dsps/dsps_public_sw/ezsdk/latest/index_FDS.html
AutoMapper	MIT		github.com/AutoMapper/AutoMapper/blob/develop/LICENSE.txt	github.com/AutoMapper/AutoMapper/tree/v3.1.0
Avahi v0.6.31	LGPL	2.1	opensource.org/licenses/LGPL-2.1	www.avahi.org/download/
Busybox v1.20.2	GPL (General Public License)	2.0	www.gnu.org/licenses/old-licenses/gpl-2.0.html	www.busybox.net/downloads
Dropbear v0.51	MIT		secure.ucc.asn.au/hg/dropbear/raw-file/tip/LICENSE	matt.ucc.asn.au/dropbear/releases
Glib v2.24.2	LGPL	2.1	gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=AccessInfo	gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=browse&path=%2Ftrunk%2Fgstreamer_ti_dm81xx%2Fopensource_build%2Fdistfiles%2F
Granados v2.0.0	Apache	2.0	www.apache.org/licenses/LICENSE-2.0	sourceforge.net/projects/granados/files/granados/2.0.0/
GStreamer v0.10.32	LPGL	2.0	gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=browse&path=%2Ftrunk%2Fgstreamer_ti_dm81xx%2Fti_build%2Fgst-openmax%2FCOPYING&revision=971&view=markup	gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=AccessInfo • gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=browse&path=%2Ftrunk%2Fgstreamer_ti_dm81xx%2Fopensource_build%2Fdistfiles%2F

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* The information provided in this table is believed to be accurate and reliable at the time it is written.

Software	License	Version	License Agreement Link (template)	Software Package Link
Gstreamer OMX plug-in	LGPL	2.1	gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=browse&path=%2Ftrunk%2Fgstreamer_ti_dm81xx%2Fti_build%2Fgst-openmax%2FCOPYING&revision=971&view=markup	gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=AccessInfo • gstreamer.ti.com/gf/project/gstreamer_ti/scmsvn/?action=browse&path=%2Ftrunk%2Fgstreamer_ti_dm81xx%2Fti_build%2F
GStreamer RTSP server	LGPL	2.0	cgit.freedesktop.org/gstreamer/gst-rtsp-server/tree/COPYING)	cgit.freedesktop.org/gstreamer/gst-rtsp-server/tag/?id=RELEASE-0.10.8
Kernel	GPL	2.0	www.gnu.org/licenses/old-licenses/gpl-2.0.html	software-dl.ti.com/dsps/dsps_public_sw/ezsdk/latest/index_FDS.html
Log4net v1.2.11	Apache	2.0	logging.apache.org/log4net/license.html	archive.apache.org/dist/logging/log4net/binaries/log4net-1.2.11-bin-newkey.zip
Mono Class libraries	MIT	X11	opensource.org/licenses/mit-license.html	www.mono-project.com/
Mono Compiler	dual MIT / GNU GPL	X11 / 2.0 or 3.0	opensource.org/licenses/mit-license.html opensource.org/licenses/gpl-license.html	www.mono-project.com/
Mono Runtime v2.10.9	GNU LPGL	2.0	www.gnu.org/copyleft/library.html#TOC1	www.mono-project.com/
Nunit (used but not shipping) v2.5.10.11092	MIT	X11	opensource.org/licenses/mit-license.php	launchpad.net/nunitv2/2.5/2.5.10/+download/NUnit-2.5.10.11092.msi
Protobuf-Net	Apache	2.0	www.apache.org/licenses/LICENSE-2.0	www.nuget.org/packages/AutoMapper/3.1.0
ServiceStack v3 *	ServiceStack	3.0	github.com/ServiceStack/ServiceStack/blob/v3/LICENSE	www.nuget.org/packages/ServiceStack/
ServiceStack ProtoBufNet plugin	ServiceStack	3.0	www.apache.org/licenses/	www.nuget.org/packages/ServiceStack.Plugins.ProtoBuf/
Ti OMX	BSD		opensource.org/licenses/BSD-2-Clause	software-dl.ti.com/dsps/dsps_public_sw/ezsdk/latest/index_FDS.html
Uboot	GPL	2.0	www.denx.de/wiki/U-Boot/Licensing	software-dl.ti.com/dsps/dsps_public_sw/ezsdk/latest/index_FDS.html

* The ServiceStack 3 package used contains the following: ServiceStack.3.9.70, ServiceStack.Common.3.9.70, ServiceStack.OrmLite.SqlServer.3.9.70, ServiceStack.Redis.3.9.70, and ServiceStack.Text.3.9.70.

Software	License	Version	License Agreement Link (template)	Software Package Link
UPnP (OpenTools)	Apache	2.0	www.apache.org/licenses/LICENSE-2.0	opentools.homeip.net/dev-tools-for-upnp
7zip w/ unRAR restriction	LGPL	2.1	opensource.org/licenses/LGPL-2.1	www.7-zip.org

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide   This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna • Increase the separation between the equipment and receiver • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected • Consult the dealer or an experienced radio/TV technician for help.

WARNING   Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment.

Declaration of conformity of a Class B digital device according to the FCC rules

We, the Responsible Party   Matrox, 625 State Route 3, Unit B, Plattsburg, NY 12901 • Telephone: (514) 822-6000 (extension 2026) • Attention: Conformity Group Matrox

Declaration   The Matrox hardware products supported by this guide comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation. Any question regarding this declaration should be forwarded to the above coordinates.

(English) Industry Canada Compliance Statement

Remark for the Matrox hardware products supported by this guide   These digital devices do not exceed the Class B limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Industry Canada.

(Français) Conformité avec les exigences du ministère de l'Industrie Canada

Remarque sur les produits matériels Matrox couverts par ce guide   Ces appareils numériques n'émettent aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada.

VCCI Compliance Statement

Remark for the Matrox hardware products supported by this guide   This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用
することを目的としていますが、この装置がラジオやテレビジョン受信機に
近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　　ＶＣＣＩ－Ｂ

B 급 기기 (가정용 방송통신기자재)

이 기기는 가정용 (B 급) 전자파적합기기로서 주 로 가정에서 사용하는 것을 목적으로 하며 ,
모든 지역에서 사용할 수 있습니다 .

(English) European user's information – Information on Conformity

Remark for the Matrox hardware products supported by this guide These devices comply with EC
Directive 2004/108/EC for a Class B digital device. They have been tested and found to comply with
EN55022/CISPR22 and EN55024/CISPR24. In a domestic environment these products may cause radio interference in
which case the user may be required to take adequate measures. These products have been tested in a typical class B
compliant host system. It is assumed that these products will also achieve compliance in any class B compliant system.

(Français) Informations aux utilisateurs Européens – Informations sur la conformité

Remarque sur les produits matériels Matrox couverts par ce guide Ces unités sont conformes à la directive
communautaire 2004/108/EC pour les unités numériques de classe B. Les tests effectués ont prouvé qu'elles sont
conformes aux normes EN55022/CISPR22 et EN55024/CISPR24. Le fonctionnement de ces produits dans un
environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les
mesures appropriées. Ces produits ont été testés dans un système hôte typique compatible classe B. On suppose qu'ils
présenteront la même compatibilité dans tout système compatible classe B.

(Deutsch) Information für europäische Anwender – Konformitäts-Informationen

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch Diese Geräte entsprechen
EC Direktive 2004/108/EC für ein digitales Gerät Klasse B. Sie wurden getestet und entsprechen demnach
EN55022/CISPR22 und EN55024/CISPR24. In einer Wohnumgebung können diese Produkte Funkinterferenzen
erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Diese Produkt wurden in
einem typischen, der Klasse B entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte
auch in jedem Klasse B entsprechenden System entsprechend funktionieren.

(Italiano) Informazioni per gli utenti europei – Informazioni sulla conformità

Nota per i prodotti hardware Matrox supportati da questa guida Questi dispositivi sono conformi alla direttiva
CEE 2004/108/EC relativamente ai dispositivi digitali di Classe B. Sono stati provati e sono risultati conformi alle norme
EN55022/CISPR22 e EN55024/CISPR24. In un ambiente domestico, questi prodotti possono causare radiointerferenze,
nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Questi prodotti sono stati provati in un
tipico sistema host conforme alla classe B. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in
qualsiasi sistema conforme alla classe B.

(Español) Información para usuarios europeos – Información sobre la conformidad

Observación referente a los productos de hardware de Matrox apoyados por este manual Estos dispositivos
cumplen con la directiva de la CE 2004/108/EC para dispositivos digitales de Clase B. Dichos dispositivos han sido
sometidos a prueba y se ha comprobado que cumplen con las normas EN55022/CISPR22 y EN55024/CISPR24. En
entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el
usuario deberá adoptar las medidas adecuadas. Se supone que estos productos cumplirán también con las normas en
cualquier sistema que responda a los requisitos de la clase B.

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EUROPE

(English) European user's information – Directive on Waste Electrical and Electronic Equipment (WEEE)

Please refer to the Matrox Web site (www.matrox.com/environment/en/weee) for recycling information.

(Français) Informations aux utilisateurs Européens – Règlementation des déchets d'équipements électriques et électroniques (DEEE)

Se référer au site Web de Matrox (www.matrox.com/environment/en/weee) pour l'information concernant le recyclage.

(Deutsch) Information für europäische Anwender – Europäische Regelungen zu Elektro- und Elektronikaltgeräten (WEEE)

Bitte wenden Sie sich an der Matrox-Website (www.matrox.com/environment/en/weee) für Recycling-Informationen.

(Italiano) Informazioni per gli utenti europei – Direttiva sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)

Si prega di riferirsi al sito Web Matrox (www.matrox.com/environment/en/weee) per le informazioni di riciclaggio.

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Adobe Systems Inc.	Acrobat®, Reader®
Apple Computer, Inc.	App Store®, Apple®, iPad®, Mac®, Mac OS®
Belden Inc.	Belden®
Cisco Systems Inc.	iOS®
Dolby Laboratories, Inc.	Dolby®, Dolby Digital®
Intel Corporation	Intel®, Pentium®, Thunderbolt™s
Linus Torvalds	Linux®
Microsoft Corporation	Aero®, Direct3D®, DirectDraw®, DirectShow™, DirectX™, Microsoft®, MS-DOS®, PowerPoint®, Windows®, Windows NT®, Windows Server®, Windows Vista®
PCI-SIG	PCI™, PCI-X®, PCIe®, PCI Express®
Radio Corporation of America	RCA®
Rovi Corporation	Macrovision®
SD-3C, LLC	SD™, SDHC™, SDXC™
Silicon Graphics, Inc.	OpenGL®
Silicon Image, Inc.	PanelLink®, TMDS®
U.S. Environmental Protection Agency	ENERGY STAR®
Video Electronics Standards Association	DisplayPort™
VideoLAN	VideoLAN®, VLC®, VLC® media player, VNC®
Wibu-Systems	WIBU®

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SD™

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