

# **Matrox Mura DVW**

# **Installation and User Guide**

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# CHAPTER 1

# Introduction

This chapter includes the following topics:

- About Matrox Mura DVW
- Supported web browsers
- About the Matrox Mura DVW user documentation

# About Matrox Mura DVW

Matrox Mura DVW is a high-performance IP-based 4K distributed video wall appliance that enables you to combine multiple units in various arrangements to easily create a fully synchronized video surface of any size and rectangular arrangement.

Mura DVW integrates advanced computing, networking, video decoding, and graphical processing capabilities to deliver seamless visual experiences with maximum security. Mura DVW video walls are flexible and scalable, enabling you to build fully distributed video walls with performance that improves as you add more appliances. Each Mura DVW appliance supports incredibly high-density and flexible decoding—up to one 8K60, four 4K60, eight 4K30, sixteen 1080p60 streams—all in H.265 (HEVC) or H.264 (AVC).

Go to our *website* for the latest updates, documentation, and utilities.

# Supported web browsers

Matrox Mura DVW currently supports Microsoft Edge and Google Chrome (on Windows and macOS).

Other web browsers may work but have not been fully validated by Matrox Video.

# About the Matrox Mura DVW user documentation

The Matrox Mura DVW user documentation consists of the following:

- **Matrox Mura DVW Device Setup sheet:** This is a printed quick start sheet included with your Mura DVW device. It describes the hardware connections and basic setup required to get you started. This document is also available on our website.
- **Matrox Mura DVW Installation and User Guide:** This is the main documentation for the Mura DVW and is accessible from the Mura DVW user interface at any time.

Please note that the version of the user guide included with the software is only current at the time of the official release. The most up-to-date version of the user guide can always be found on our *website*.

# CHAPTER 2

# Getting started with Matrox Mura DVW

This chapter includes the following topics:

- Initial setup overview
- Device connections and button functions
- Discovering your device on the network
- Logging in to the user interface
- Updating your device firmware

# Initial setup overview

The following list is an overview of the tasks you'll need to perform to get started with Matrox Mura DVW. When needed, links to other topics are provided or more information.

To get started with Matrox Mura DVW:

**Step 1. Connect the Matrox Mura DVW to a power source:** Matrox Mura DVW can be powered by the included 19 v d.c. power supply or by a 12 v d.c. power supply (sold separately).

More info: see Device connections and button functions.

- Step 2.Connect Matrox Mura DVW to your network.More info: see Device connections and button functions.
- **Step 3.** Access the Web interface: When Mura DVW is connected to your network, it will boot in DHCP. This allows you to connect to the Mura DVW application with your web browser (Google Chrome is recommended).

More info: see Discovering your device on the network.

Step 4.Log in and create a device account: When you first log in to the Mura DVW<br/>application, you will be prompted to create the device password.

More info: see Logging in to the user interface.

**Step 5. Update Matrox Mura DVW:** There may be a more recent firmware version available for your Mura DVW from the Matrox Video *website*. It is recommended to always use the latest version.

*More info: see Updating your device firmware.* 

Result of this task: You are now ready to design your video wall.

# Device connections and button functions

The information in this section is also provided on the printed sheet available in the box with your Mura DVW device.

**NOTE** Device images have been intentionally simplified for illustration purposes.

Matrox Mura DVW (Front)



Button/Connector/LED	Description
(1) - Power button	Power the device on or off. The button is green when the device is powered.
(2) - Status LED	Blinks red for storage reading or writing.
(3) - USB Type-C	USB power and support for external connection (e.g. keyboard, mouse, etc). Can be used for the fac- tory reset process if needed. Additional support to be added in a future release.
(4) - USB 3.0	USB power and support for external connection (e.g. keyboard, mouse, etc). Can be used for the fac- tory reset process if needed. Additional support to be added in a future release.

Button/Connector/LED	Description
	Standard 3.5 mm stereo output.
(5) - Audio out	Additional support to be added in a future release.
(6) Missonhone	Microphone-level audio input.
(6) - Microphone	Additional support to be added in a future release.
(7) - HDMI outputs 1, 2, 3, and 4	Connect monitors for display wall configuration. Connect at least one monitor to the first HDMI out- put when powering on the Mura DVW.
(8) - USB 3.0	USB power and support for external connection (e.g. keyboard, mouse, etc). Can be used for the fac- tory reset process if needed.
	Additional support to be added in a future release.
(9) - LAN1 and LAN2	LAN 1 1 / 2.5 GbE. Connect to your network for media and control.
	LAN 2 To be supported in a future release.
(10) - Power	Connect to 12v d.c. or 19v d.c.power (19v d.c. power supply is included).
(11) - Reset (not shown in image)	Use a paperclip or similar object to reboot the device.

# Discovering your device on the network

To use the Matrox Mura DVW software, you must connect at least one HDMI monitor before powering on the device. During startup, the device will receive a dynamically assigned IP address from your DHCP network, which will be displayed on the monitor via the On-Screen Display (OSD).

If you need to connect remotely or discover the IP address without relying on the OSD, use one of the following methods from a computer on the same network subnet:

• Using the Mura DVW serial number: Open your web browser (Google Chrome is recommended) and navigate to *https://<DVW serial number>/.* 

Replace *<DVW serial number>* with the serial number located on the sticker on the Mura DVW device. This will allow you to access the device and view its IP address.

- Using the initial Mura DVW device: The first Mura DVW device gives you access to the others. Log in to this initial device to discover and manage all other Mura DVW devices on the same subnet.
- Using the Matrox Unified Utility: Download the Matrox Unified Utility from our *website*. This tool can locate the IP addresses of all Mura DVW devices on the subnet and assist with firmware updates. The utility includes step-by-step instructions for discovering and updating devices.

# Logging in to the user interface

After your have discovered your Matrox Mura DVW device on the network and know its IP address, you can log in to the web-based Mura DVW application for configuration.

- **Step 1.** Discover the Mura DVW devices on your network (see *Discovering your device on the network*).
- **Step 2.** Connect to your Mura DVW.
  - Open your web browser and go to the IP address of your Mura DVW (e.g. https://123.123.123.123). You must use "https" to connect to the application, or
  - Open your web browser and navigate to https://<DVW serial number>/. Replace <DVW serial number> with the serial number located on the sticker on your Mura DVW device.
- **Step 3.** Enter the **Password**, then click **Sign in**.

*More info*: If this is the first time you are logging in, you must create the username and password. The information you enter becomes the device administrator account.

Result of this task: You are logged in to the Mura DVW.

*When done, remember:* It is recommended to update your device firmware if you are not using the latest version. Check our *website* to see if there is a newer version available.

# Updating your device firmware

It is recommended to use the latest device firmware, especially if you are logging in to Mura DVW for the first time. It is also important that all your Mura DVW devices are operating on the same firmware. Before you begin configuring your video wall, update any devices that are not using the latest version.

Check our *website* to see if there is a newer version available.

**NOTE** You can also use the Matrox Unified Utility to update all your Mura DVW devices at once. For more information, refer to the Matrox Unified Utility documentation.

To update the firmware:

- Step 1. Download the update package from our *website*.
- **Step 2.** From the Mura DVW application main menu (*m*), select **Firmware update**.
- Step 3. Click Choose file.
- **Step 4.** Select the update package (*dvw-[firmware\_version].pkg*) file and click **Open**.
- Step 5. Click Next.
- **Step 6.** Click **Select All** or select the device(s) to be updated.

*More info:* You should select all devices when updating firmware to ensure that all devices use the same firmware version.

Step 7. Click Update.

*Result of this task:* The **Update firmware** window will show how many devices are being updated along with a progress bar. Once the update is complete, the devices will reboot and the **Update firmware** window will show which device updates were successful (in green) and which failed (in red).

*When done, remember:* Secondary devices are updated before the primary device. Therefore the primary device will be the last to reboot. If an update fails, restart the firmware update process and select only the device(s) that failed to update.

# CHAPTER 3

# Using Matrox Mura DVW

This chapter includes the following topics:

- User interface overview
- Managing device credentials
- Adding and deleting devices
- Configuring properties
- Adjusting bezels

# User interface overview

When you log in to the Mura DVW application for the first time, a **Default Wall** is created for you, with the device you used to connect to the application included as the **Primary device**.

**NOTE** You cannot change or delete the primary device.

You can click the arrow buttons (  $\checkmark \lor \lor \Rightarrow$ ) to collapse or expand sections of the interface or the chevrons (  $\checkmark \Rightarrow$  ) to collapse or expand sections of the **Properties** panel.



Numbered area	Description
(1) - Devices list	Devices you add to the video wall will appear here and on the wall canvas. The Default Wall is identi- fied by a hash icon (#). The Primary device appears with a green star icon (*). Secondary devices appear with a purple monitor icon (*). The selected device will have a blue background.
(2) - Wall canvas	The wall canvas represents the physical layout of your video wall. As you modify the wall configuration, the changes will be reflected on the canvas. Click ( $(+)$ ) to toggle the gridlines off and on. Click ( $(+)$ ) to recenter the canvas. With your mouse pointer on the canvas, use the mouse scroll wheel to zoom in and out.
(3) - Device bin	These are all the Mura DVW devices that were dis- covered on the same network subnet as the primary device, and that can be added to the wall design (see <i>Adding devices</i> . Each device represents up to four monitors.

Numbered area	Description
(4) - Properties panel	The <b>Properties</b> panel is where you configure the video wall and the devices used in its design (see <i>Configuring properties</i> ). The configuration is done in <b>Offline</b> mode and additional adjustments can be made in <b>Live</b> mode.
(5) - Save/Cancel buttons	The <b>Save</b> button appears each time you make a change to the Mura DVW configuration or settings. Changes will only be applied to the video wall when you save. The application will flash green when a save is successful or red if there is an error.
(6) - Notifications and preferences	You can find information about the status of your Mura DVW and set your application preferences by clicking the icons at the top-right of the application (see <i>Configuring properties</i> ).

## Setting user interface preferences

Click the menu button ( ) and select **Preferences** to modify the general application settings. Once you've changed a preference, click **Save**.

**NOTE** Preferences are applied to the application only when used in this browser and until the browser history is cleared. If you switch to a different browser or clear your browser history, you may need to readjust the settings.

#### App settings

You can choose to display a warning when deleting devices, and choose whether to display small or large device tiles by default.

## More information

You can find information about the status of your Mura DVW from the menus at the top-right of the interface.

#### Notifications

Click the notifications icon ( $\blacksquare$ ) to open the Notifications panel. This panel logs all events that occur. Events that were logged since the last time the panel was opened are in bold with **NEW** added to the event icons.

Click the **Mark all as read** button to change the read status of all notifications in the panel.

#### Logs

To download logs, click the menu button ((w)) and hover over **Troubleshooting**, then select one of the options:

- **Download logs:** Downloads all system/software-related logs from all devices used in the video wall.
- **Download update logs:** Downloads only logs related to updates from all devices used in the video wall.

#### Version and license

Click the menu button ( ) and select **About** to see the current version of the application. From here you can also view the Matrox license agreement.

#### Restart

If needed, you can click the menu button ((...)) and select **Restart** to restart all the devices that are used in the video wall.

#### Help

To access this user guide from the application, click the menu button (w) and select **Help**.

#### Logout

To log out of the application, click the menu button (w) and select **Logout**.

# Managing device credentials

When you access a Mura DVW device for the first time, you will be prompted to sign up and create a device password. The icon in the upper-left corner of each tile in the device bin indicates the device's account status:

Icon	Description
<b>•</b> +	There is no account for this device. You must create one before you can sign in to the device.
•	You are signed in to the device.
•×	You are not signed in to the device. If the log in attempt fails, this icon turns red. Refer to the notifications for further details.

You must be signed in to a device to add it to the video wall. When you sign in to the Primary device, you will be automatically signed in to all other devices that use the same password.

## Creating a device password

You can create a password for a single device or create one password for multiple devices.

**IMPORTANT** We recommend using the same password for all devices that will be used in a video wall. We also recommend using a different password for each video wall on the same network.

To create a password for a device:

- **Step 1.** Select the device(s) in the device bin:
  - Select a single device.
  - Select multiple consecutive devices by holding down the **Shift** key and selecting the first and last device in the series.
  - Select multiple non-consecutive devices by holding down the **Ctrl** key and selecting the devices.
- **Step 2.** In the **Properties** panel, enter a password for the device(s).

#### Step 3. Click Create.

Result of this task: You are signed in to all your devices.

### Signing in to a device

You can sign in to a single device or to multiple devices simultaneously if they use the same password.

To sign in to a device:

**Step 1.** Select the device(s) in the device bin:

- Select a single device.
- Select multiple consecutive devices by holding down the **Shift** key and selecting the first and last device in the series.
- Select multiple non-consecutive devices by holding down the **Ctrl** key and selecting the devices.

More info: All selected devices must use the same password.

- **Step 2.** In the **Properties** panel, enter the device password.
- Step 3. Click Sign in.

*Result of this task:* You are signed in to the device.

### Changing a device password

You can change the password for a single device or simultaneously for multiple devices that use the same password.

**IMPORTANT** We recommend using the same password for all devices that will be used in a video wall. We also recommend using a different password for each video wall on the same network.

To change a device password:

- **Step 1.** Select the device(s) in the device bin:
  - Select a single device.
  - Select multiple consecutive devices by holding down the **Shift** key and selecting the first and last device in the series.
  - Select multiple non-consecutive devices by holding down the **Ctrl** key and selecting the devices.

More info: All selected devices must have the same current password.

**Step 2.** In the **Properties** panel, enter the current device password and a new password.

#### Step 3. Click Submit.

Result of this task: You have changed the device password.

# Adding and deleting devices

The device bin lists Mura DVW devices that were discovered on the same subnet as the primary device. These can be added to the video wall design as secondary devices. Each device represents up to four monitors.

You can switch between the small tile view  $(\blacksquare)$  and the large tile  $(\blacksquare)$  view using the buttons in the upper-left of the device bin. All tiles display the device name and its IP address. Large tiles also display the device connector count, connector type, and firmware version.

**NOTE** If a device appears in red, the device was found on the network but there was a problem getting its information. If this happens, an error message will appear in the Notifications.

## Adding devices

To add a device to the wall:

**Step 1.** You must first be signed in to a device to add it to the wall (see *Signing in to a device*).

*More info:* We strongly recommend a rectangular wall design.

Scroll through the device bin to find the device to add or open the search function (+) to find a device using its IP address. The tile for a device found with the search will blink in the device bin.

*More info*: When performing a search, you must enter the full, properly formatted IP address (e.g. 123.123.123.123).

- **Step 3.** Add a device one of three ways:
  - Double-click the device tile.
    - Drag-and-drop the device tile onto the wall canvas.
    - Right-click the device tile and click **Add**.
- Step 4. Click Save.

*More info:* A device can only be added to one Default Wall. If a device you added is part of another Default Wall on the same network, you will get an error when you save the new configuration.

Result of this task: The device has been added to the wall.

*When done, remember:* Once a device is added to the design, **ADDED** appears on the device tile in the device bin and you can click and drag the device on the wall canvas to position it.

## Adding devices from outside your subnet

Devices that are not on the same network subnet as the Primary device will not appear in the device bin, but they can still be added to the video wall.

To add a device from outside your subnet:

- **Step 1.** Click (+) in the upper-right of the device bin to open the search function.
- **Step 2.** Enter the IP address of the device to add.

*More info*: When performing a search, you must enter the full, properly formatted IP address (e.g. 123.123.123.123).

- **Step 3.** Click **Search**. When the device is found, it will be added to the device bin and blink.
- **Step 4.** Add a host mapping to the primary device and save it (see *Network tab*).
- **Step 5.** Once the host mapping is complete, add the device to the video wall and save the configuration (see *Adding devices*).

*More info:* When a device from outside the network subnet is added to the video wall, it MUST be mapped to the primary device to establish communication between the devices. The outside device cannot be saved to the video wall if the host mapping is not complete and saved.

Result of this task: The device has been added to the wall.

## Deleting devices

To remove a device from the wall canvas:

Scroll through the device bin to find the device to remove or open the search function (+) to find a device using its IP address. The tile for a device found with the search will blink in the device bin.

#### **Step 2.** Remove the device one of three ways:

- Double-click on the device tile in the device bin.
- Right-click the device tile in the device bin and click **Delete**.
- Right-click the device in the devices list and click **Delete**.
- **Step 3.** If *Show warnings when deleting devices* is enabled (see *Setting user interface preferences*), a confirmation message will be displayed.

*More info*: If you select **Don't ask again** when confirming a device deletion, it will disable the *Show warnings when deleting devices* preference.

#### Step 4. Click Save.

Result of this task: The device has been deleted from the wall.

# Configuring properties

By default, the wall setup is in **Offline** mode. You must configure properties while in this mode. The Properties panel is divided into three sections: Wall, Device, and Time.

## Wall properties

Settings in the **Default Wall** properties are applied to the entire video wall.

Select the **Display mode** from the drop-down list.

The **Vertical adjustment** and **Horizontal adjustment** are used to adjust the bezel of your monitors. For a detailed explanation of bezel adjustments, see *Adjusting bezels*.

Click **Save** after making changes to the Default Wall properties.

## **Device properties**

Settings in the **Device** properties affect only the selected device. There are three tabs for the device properties: Arrange, Info, and Network.

#### Arrange tab

Each device in your video wall design can represent up to four monitors. The properties under the **Arrange** tab let you adjust the arrangement of the device outputs.

By default when a device is added to the wall design, it will have a 1x1 layout. You can choose a different **Layout** from the drop-down list.

**NOTE** Only options that are available for the selected device will appear in the list. That is, a device with only two outputs will not show layouts for three or four outputs.

On the wall canvas, each monitor will be identified with the name of the device it's connected to and a letter representing the order of its connection to the device. A device's outputs will always be arranged from left to right and from top to bottom, as follows:



**IMPORTANT** Individual outputs cannot be assigned a position, therefore monitors must be connected to the Mura DVW device in the correct order from left to right (A to D).

You can click and drag a device on the wall canvas to reposition it and all its connected outputs. You can also specify the position of a selected device using the **Position X** and **Position Y** fields as follows:

- Type a number in the field and press Enter.
- Press the up or down arrow key to increase or decrease the number by 1.
- Press the Shift key + the up or down arrow key to increase or decrease the number by increments of 10.

When changing the position, you can press and hold the arrow key, whether you're also pressing the Shift key or not. The position will be reflected when the arrow key is released.

A rectangular arrangement is recommended for best results. A device's individual monitors cannot be repositioned on the canvas.

Click **Save** after making changes to the device's **Arrange** tab.

The Info tab displays read-only details about the selected device, including:

- Hostname.
- Connector type and count.
- Used, total and available memory, as well as the percent of memory usage.
- CPU and GPU usage.
- System time.
- Firmware version.

#### Network tab

You can change network settings in the **Network** tab. This tab is divided into three sections: General, IPv4, and Host Mapping.

**IMPORTANT** The Network tab has its own Save () and Cancel () buttons that appear beside the device name at the top of the Device properties section when you modify the Network settings. When there are unsaved changes to the network settings, a save icon also appears beside the device name in the device list on the left. If you click the main **Save** button, it will not save changes you made in the Network tab.

#### General

In the **General** section, you will find the **Mac address** and **Hostname** of the device.

#### IPv4

In the IPv4 section, you can change your IP settings, DNS servers and domain. Both DHCP and DNS are enabled by default.

To edit a field:

- Step 1.Disable DHCP and/or DNS. The corresponding fields will then be modifiable.More info:If both DHCP and DNS are enabled and you disable DHCP, DNSwill be disabled automatically. You can then re-enable DNS and/or DHCP.
- **Step 2.** Select a field and click the X that appears in it to clear the content.
- **Step 3.** Enter the new content.
- Step 4. Click Network save ().
- **Step 5.** Re-enable DHCP and/or DNS.

Result of this task: The field has been edited.

*When done, remember:* Whether you are connected by IP address or Hostname, if you change any of the Primary device's IP settings and save the network properties, you will be redirected to the new IP address. A warning will prompt you to save any changes to the Default Wall before the page reloads.

When you add a device Host mapping from outside your network subnet to your video wall, you must map it to the primary device for the two to communicate with each other.

To add a host mapping:

- **Step 1.** Select the primary device from the list or on the wall canvas.
- Step 2. In the Host Mapping section of the Network settings, click Add (+).
- Step 3.Enter the Hostname and IP address of the device from outside your subnet.More info: You must enter these exactly as they appear in the Mura DVW

application. If the field is outlined in red, it means the entry is invalid and you will not be able to save the network settings.

#### **Step 4.** Click **Network save** (**P**).

*Result of this task:* The host has been mapped.

*When done, remember:* To remove the content of a host mapping field, select the field and click the X. To remove a host mapping, click (

### Time properties

Time properties are specific to each Mura DVW device.

#### PTP time

You can enable or disable **PTP time** by clicking the toggle switch.

**IMPORTANT** PTP time is enabled by default. Disabling PTP time may affect the performance of the wall.

There are two settings options for PTP time: Basic and Advanced.

Both options include the **Status** panel that shows the **Port state** (leader or follower) of the selected device, as well as the IP address of the leader for the PTP network (**Best leader IP**). Click ((**C**)) to refresh the Status panel.

**NOTE** The Status panel is only visible when PTP is enabled.

#### Basic

When using **Basic** PTP time, all of the settings are set to the default values. You can only set the **Follow mode** for the device (Default, Leader, Follower, or Leader Follower).

**IMPORTANT** When you select Basic and save, any values that were entered in the Advanced settings will reset to the default, except the Follow mode.

#### Advanced

From the **Advanced** settings option, you can set the **Follow mode** for the device as well as the **Domain**, **Delay request interval**, **Announce interval**, and **Sync interval**. Enter a value for each and click **Save**, or leave fields empty to use the *Default value* that the Network API chooses.

**NOTE** When fields with invalid values are outlined in red, you will not be able to save your settings. To remove content from a field, select it and click the X that appears.

From here, you can also choose to **Sync** the PTP time settings across all devices that are added to the wall. For more, see *PTP time sync*.

#### PTP time sync

The **Sync settings across all devices** function allows you to set the same PTP settings for all your devices without having to set them on each device. You can sync from any device.

When you click **Sync**, you can choose to enable/disable PTP for all devices. You can also select which PTP settings to sync and change their values. Once done, click the **Sync** button at the bottom of the pop-up, then click **Save**. All devices will be synchronized to the selected device.

**CAUTION** PTP time is enabled by default on all devices. Once the devices are synchronized, if you disable PTP time for a single device and save the setting, it may affect the synchronization.

# Adjusting bezels

Once you have added your devices to the wall, configured your settings, and saved, switch to **Live** mode to make final adjustments to the monitor bezels.

**NOTE** All configurations done Offline must be saved before switching to Live mode.

Once in **Live** mode, a pattern of lines appears on the monitors connected to the Mura DVW devices that were added to the Default Wall. Use the lines to help you align the outputs.

Bezel adjustments only apply to the edges of an output that are adjacent to another output of a device. There is no bezel adjustment for the outside edges of the video wall or between devices. As you adjust the bezels, you will see the pattern move on the monitors.

Vertical adjustment moves the output vertically, affecting the upper and lower (horizontal) bezels. When the vertical adjustment is 0, there is no horizontal space between the outputs.

Horizontal adjustment moves the output horizontally and affects the left and right (vertical) bezels. When the horizontal adjustment is 0, there is no vertical space between the outputs.

To change the Vertical and Horizontal adjustments:

- Type a number in the field and press Enter.
- Press the up or down arrow key to increase or decrease the number by 1.
- Press the Shift key + the up or down arrow key to increase or decrease the number by increments of 10.

When changing the position, you can press and hold the arrow key, whether you're also pressing the Shift key or not. The position will be reflected when the arrow key is released.

## Best practices when adjusting bezels

When adjusting bezels, remember:

- Only the Vertical adjustment and Horizontal adjustment settings of the Default Wall are available in Live mode.
- If you change the Vertical or Horizontal adjustment while in Offline mode, you will see the adjustments on the wall canvas only.
- It may take a few seconds for the alignment pattern to appear on the monitors.
- A bezel can be no more than 25% of a monitor's width or height.

# APPENDIX A

# Hardware specifications and factory reset

This appendix includes the following topics:

- Matrox Mura DVW hardware specifications
- Restoring factory default settings

# Matrox Mura DVW hardware specifications

These are the hardware technical specifications for the Matrox Mura DVW.

Matrox Mura DVW	
Product	
Part number	DVW-Q4KY-NA (Canada/US power cord) DVW-Q4KY-EU (European Union power cord) DVW-Q4KY-NA (UK and Au/Nz power cord)
Cooling	Low-noise dual ball bearing fan
Connectors	Four HDMI outputs with locking mechanism, 2.5 and 1GbE RJ45 ethernet
Maximum output resolutions	Max. 4096x2160 @ 60Hz
Form factor	Standalone appliance, 1U, ½ rack (horizontal)
Network interface	
Standard	Ethernet 10/100/1000/2.5G base-T, auto-detect, half/full-duplex
Connector	RJ45
IP version	IPv4
Distributed method	Unicast, multicast and multiple unicast
IP addressing	DHCP (default) and Static IP
Streaming & Control Protocols	
Streaming protocols	RTSP, SRT
Command & control protocols	Telnet and HTTPS
Color Space	
Pixel formats	RGB: 8:8:8 (24/32 bits per pixel) YUV: 4:4:4, 4:2:0 (8 bits per component), color space conversion support

Matrice Maria DVM		
Matrox Mura DVW		
Video & Audio Processing		
Video compositing	Multi-channel video composite/key/blend/crop/ mirror/flip	
Audio	Future software feature	
HDCP compliance	Yes <sup>1</sup>	
Video Decoding		
Codec engine	H.264/MPEG-4 Part 10 (AVC), up to level 5.2 H.265 (HEVC), up to level 6.2	
H.264 and H.265 decode	For both H.264 and H.265: 1x 8K60, 2x 8K30, 4x 4K60, 8x 4K30, 16x 1080p60	
Rate control	Constant bitrate (CBR), variable bitrate (VBR), VBR with constraints, configurable GOP (group of pictures) structure	
Environmental & Power Conditions		
Operating conditions	<b>Temperature:</b> 0 to 40 <sup>2</sup> degrees Celsius <b>Humidity:</b> 10% to 90% non-condensing	
Storage conditions	Temperature: -20 to 70 degrees Celsius Humidity: 20% to 80% non-condensing	
Typical power consumption	45W (12-19V)	
Power supply	19V, 90 Watt PSU with locking mechanism	
General Specifications		
Dimensions	Length: 19 cm (7.48") Width: 14.8 cm (5.83") Height: 3 cm (1.18")	
Rackmount	Vesamount bracket included, rackmount compati- ble	
Regulatory compliance	Class A: FCC, CE, RCM, UKCA, ICES-003	
Environment compliance	EU RoHS	
Warranty <sup>3</sup>	2 years <sup>4</sup>	

1. To be supported in a future release.

2. Units mounted side-by-side in a rack require proper ventilation and a maximum ambient temperature of 30 degrees Celsius for optimal performance.

- 3. The battery is non-replaceable and non-serviceable. Additionally, there are no user-serviceable parts within the device. Opening the chassis will void the warranty.
- 4. Extended warranty available.

# Restoring factory default settings

To restore your Matrox Mura DVW to its factory default settings, or to purge the device of all configuration settings, you will need to connect to it using a keyboard and monitor and access the boot menu.

To access the boot menu:

- **Step 1.** Power off the Matrox Mura DVW,
- **Step 2.** Connect a keyboard to any of the USB ports.
- **Step 3.** Connect a monitor to any of the HDMI ports.
- **Step 4.** Power on the Matrox Mura DVW while simultaneously holding down the **Esc** button on your keyboard.

The Mura DVW will boot into the blue screen boot menu.

- **Step 5.** You will see three options:
  - (1) Restore factory image This will reset the Mura DVW to the factory default firmware/image. All files, settings, user credentials, and firmware updates will be lost. You will need to create a new admin password and update your firmware. Type 1 to proceed, then type y when prompted.
  - (2) **Reboot** This will perform a simple reboot of the device. Type 2 to proceed.
  - (3) Reset configuration settings This will reset all configuration settings to their default values. You will need to create a new admin password. Type 3 to proceed, then type y when prompted.

*Result of this task:* The Mura DVW will restart in the state you selected.

# APPENDIX B

# Legal and compliance

This appendix includes the following topics:

- Disclaimers
- Compliance statements

# Disclaimers

#### (English) Disclaimer

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# Compliance statements

#### **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 A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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. The use of shielded cables for connection of the monitor to the card is required to meet FCC requirements.

#### CANADA

USA

#### (English) Innovation, Science and Economic Development Canada

Remark for the Matrox hardware products supported by this guide These digital apparatus does not exceed the Class A limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Innovation, Science and Economic Development Canada.

#### (Français) Innovation, Sciences et Développement économique Canada

Remarque sur les produits matériels Matrox couverts par ce guide Ce present appareil numérique n'émet aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par Innovation, Sciences et Développement économique Canada.

#### UNITED KINGDOM

#### United Kingdom user's information – Declaration of Conformity

Remark for the Matrox hardware products supported by this guide These devices comply with Directive UK SI 2016 No. 1091 relating to electromagnetic compatibility for a Class A digital device. They have been tested and found to comply with EN55032/ CISPR32 and EN55035/CISPR35. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet UK requirements, shielded cables must be used to connect the monitor and other peripherals to the card. These products have been tested in a typical class A compliant host system. It is assumed that these products will also achieve compliance in any class A compliant system.

#### EUROPE

#### (English) European user's information – Declaration of Conformity

( F Remark for the Matrox hardware products supported by this guide These devices comply with EC Directive 2014/ 30/EU for a Class A digital device. They have been tested and found to comply with EN55032/CISPR32 and EN55035/ CISPR35. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet EC requirements, shielded cables must be used to connect the monitor and other peripherals to the card. These products have been tested in a typical class A compliant host system. It is assumed that these products will also achieve compliance in any class A compliant system.

#### (Français) Informations aux utilisateurs Européens – Déclaration de conformité

Remarque sur les produits matériels Matrox couverts par ce guide Ces unités sont conformes à la directive communautaire 2014/30/EU pour les unités numériques de classe A. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55032/ CISPR32 et EN55035/CISPR35. 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. Pour respecter les impératifs communautaires, les câbles de connexion entre le moniteur ou autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe A. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe A

#### (Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch Diese Geräte entsprechen EC Direktive 2014/30/EU für ein digitales Gerät Klasse A. Sie wurden getestet und entsprechen demnach EN55032/CISPR32 und EN55035/ CISPR35. In einer Wohnumgebung können diese Produkte Funkinterferenzen erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Um EG-Anforderungen zu entsprechen, müssen zum Anschließen des Monitors und anderer Peripheriegeräte an die Karte abgeschirmte Kabel verwendet werden. Diese Produkt wurden in einem typischen, der Klasse A entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte auch in jedem Klasse A entsprechenden System entsprechend funktionieren.

#### (Italiano) Informazioni per gli utenti europei - Dichiarazione di conformità

Nota per i prodotti hardware Matrox supportati da questa guida Questi dispositivi sono conformi alla direttiva CEE 2014/30/EU elativamente ai dispositivi digitali di Classe A. Sono stati provati e sono risultati conformi alle norme EN55032/CISPR32 e EN55035/

CISPR35. In un ambiente domestico, questi prodotti possono causare radiointerferenze, nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Per soddisfare i requisiti CEE, il monitor e le altre periferiche vanno collegati alla scheda grafica con cavi schermati. Questi prodotti sono stati provati in un tipico sistema host conforme alla classe A. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in qualsiasi sistema conforme alla classe A.

#### (Español) Información para usuarios europeos – Declaración de conformidad

**Observación referente a los productos de hardware de Matrox apoyados por este manual** Estos dispositivos cumplen con la directiva de la CE 2014/30/EU para dispositivos digitales de Clase A. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55032/CISPR32 y EN55035/CISPR35. En entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el usuario deberá adoptar las medidas adecuadas. Para satisfacer las disposiciones de la CE, deberán utilizarse cables apantallados para conectar el monitor y demás periféricos a la tarjeta. Estos productos han sido sometidos a prueba en un típico sistema anfitrión que responde a los requisitos de la clase A. Se supone que estos productos cumplirán también con las normas en cualquier sistema que responda a los requisitos de la clase A.

#### EUROPE

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

Please refer to the Matrox Web site (<u>https://video.matrox.com/en/environment/product-waste-management</u>) for recycling information.

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

Se référer au site Web de Matrox (<u>https://video.matrox.com/en/environment/product-waste-management</u>) 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 (https://video.matrox.com/en/environment/product-waste-management) 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 (<u>https://video.matrox.com/en/environment/product-waste-management</u>) per le informazioni di riciclaggio.

#### FRANCE

#### Avertissement sur l'épilepsie

À lire avant toute utilisation d'un jeu vidéo par vous-même ou votre enfant Certaines personnes sont susceptibles de faire des crises d'épilepsie ou d'avoir des pertes de conscience à la vue de certains types de lumières clignotantes ou d'éléments fréquents dans notre environnement quotidien. Ces personnes s'exposent à des crises lorsqu'elles regardent certaines images télévisées ou qu'elles jouent à certains jeux vidéo. Ces phénomènes peuvent apparaître alors même que le sujet n'a pas d'antécédent médical ou n'a jamais été confronté à une crise d'épilepsie.

Si vous-même ou un membre de votre famille avez déjà présenté des symptômes liés à l'épilepsie (crise ou perte de conscience) en présence de stimulations lumineuses, veuillez consulter votre médecin avant toute utilisation.

Nous conseillons aux parents d'être attentifs à leurs enfants lorsqu'ils jouent avec des jeux vidéo. Si vous-même ou votre enfant présentez un des symptômes suivants: vertige, trouble de la vision, contraction des yeux ou des muscles, perte de conscience, trouble de l'orientation, mouvement involontaire ou convulsion, veuillez immédiatement cesser de jouer et consultez un médecin.

Précautions à prendre dans tous les cas pour l'utilisation d'un jeu vidéo Ne vous tenez pas trop près de l'écran. • Jouez à bonne distance de l'écran de TV et aussi loin que le permet le cordon de raccordement. • Utilisez de préférence les jeux de vidéo sur un écran de petite taille. • Évitez de jouer si vous êtes fatigué ou si vous manquez de sommeil. • Assurez-vous que vous jouez dans une pièce bien éclairée. • En cours d'utilisation, faites des pauses de dix à quinze minutes toutes les heures.

