Matrox® **MuraControl™ for Windows®**

User Guide (for software version 8.00)

20179-301-0800
2019.03.27

www.matrox.com/graphics

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Graphics for Professionals

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1 About this user guide

Your Matrox user guide provides information on installing and using Matrox MuraControl for Windows software. This guide also provides information on MuraControl features and options.

Note: This guide has references specific to version 3.03.00 of the Matrox Display Wall driver and version 8.00 of Matrox MuraControl for Windows. If you're using a previous version of the Matrox driver or of MuraControl software, certain references in this guide may not reflect the software you have.

Note: Depending on your Matrox hardware and the source type you're using, certain options documented may not be available.

1.1 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.

1.2 More information

This guide assumes your Matrox product is properly connected. For more information on the connection setup of your product, see the user guide for your Matrox hardware.

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.

2 Overview

Matrox MuraControl for Windows is a program that enables you to manage your Matrox display wall. You can use MuraControl software to create, save, and edit layouts so your source content appears where and how you want it.

2.1 Supported Matrox hardware

Matrox MuraControl for Windows supports the following Matrox hardware:

- Matrox Mura IPX Series
- Matrox Mura MPX Series
- Matrox C-Series (C900 and C680 only)

2.2 Supported operating systems

Matrox MuraControl for Windows supports Microsoft® Windows® 10 (64-bit), Windows® Server® 2016, Windows® Server® 2008 R2, or Windows® 7 (64-bit).

2.3 Required hardware

To run Matrox MuraControl for Windows, the following hardware is required:

- USB dongle (hardware lock)

2.3.1 USB dongle

A 21-day free trial of Matrox MuraControl for Windows is available for download. Following the expiry of the 21-day free trial, you must purchase a software license in the form of a USB dongle to continue using MuraControl for Windows software.

To purchase a software license, contact your Matrox representative.

3 Installing MuraControl software

This section describes how to install Matrox MuraControl for Windows.

3.1 Before you begin

- Make sure Microsoft .NET Framework 4.5.2 is installed on your system.
- You may need administrator rights to install or uninstall certain software. For more information, see Windows documentation.

3.2 Obtaining MuraControl software

Matrox MuraControl for Windows software is available for download on the Matrox Web site (www.matrox.com/graphics/en/products/video-wall/muracontrol).

3.3 Installing MuraControl software

Depending on the hardware installed, launch the *MuraControlSetup.msi* program, then follow the on-screen instructions.

4 Overview

This section describes how to access MuraControl software and provides an overview of the main interface.

4.1 Accessing MuraControl

To access Matrox MuraControl, double-click the **MuraControl** icon ( ) on your desktop.

4.2 Understanding the main interface

MuraControl features and controls are divided into categories on the main interface of Matrox MuraControl.

The available categories are:

- **MuraControl** – Connect to a controller and specify the settings for your MuraControl software (see "MuraControl", page 12).
- **Layouts** – Configure and manage your layout, specify the settings of your layout, and make your layout active on the Matrox display wall (see "Layouts", page 17).
- **Windows** – Manage your stream windows and modify the properties of your windows (see "Windows", page 24).
- **Sources** – Create sources and modify the settings for your sources (see "Sources", page 34).
- **Encodings** – Add, view, and modify the settings used to encode, stream, or record the desktop or sources available to your display wall (see "Encodings", page 47).
- **View** – Create grids and grid lines and preview your sources (see "View", page 59).
- **Schedules** – Schedule your layouts to change at specified times (see "Schedules", page 61).

4.3 Understanding the canvas

The MuraControl canvas enables you to manually create your layout and to preview it before making the layout active on your Matrox display wall. That is, you can use the canvas to manipulate the layout of your displays and to visualize how your displays appear on your display wall.

4.3.1 Adjusting the settings of your layout

The area in the bottom right-hand corner of the canvas enables you to adjust the zoom level.

You can also view the display resolution and position of your window. To change the display resolution and position of your window, see "Settings", page 25.

4.4 Using the canvas

This section describes how to use your canvas to manually configure your display wall layout. By dragging your windows, you can rearrange your canvas to more closely match the physical arrangement of your monitors.

4.4.1 Shortcut menu

Note: Depending on your Matrox hardware and the source type you're using, certain options documented may not be available.

Use the shortcut menu to quickly modify your display wall layout.

To access the shortcut menu, right-click the windows on your layout. The menu items include:

Delete	Delete a window from your layout. This option also deletes the marquee text from your layout.
Marquee	Add a marquee to your display wall.
Play	Play an application source.
Pause	Pause an application source that's playing.
Size	Select a predefined size or specify a custom size for your window, or choose to have your window fit your display wall.
Source	Select a source.
Source settings	Create, view, and modify the settings of your input stream.
Window settings	View and modify the settings of your window.
Z-order	Select which windows are in the foreground and which are in the background.

5 MuraControl

This section provides information on your MuraControl settings and explains how to connect to a controller.

5.1 Connecting to the controller

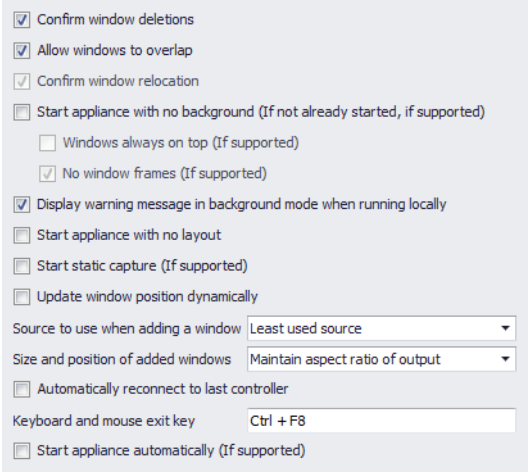
IP address	When you start MuraControl for the first time, you'll be prompted to manually enter the IP address of the controller you want to connect to. If you don't enter an IP address, you'll be prompted each time you start the application until you enter a valid IP address. Once a valid IP address is entered, the IP address is automatically saved. If UPnP is enabled, the controllers currently on the same subnet as your MuraControl system will be automatically discovered. To connect to a controller, select the controller from the drop-down list that appears. If you want to run MuraControl on the controller, enter *localhost* as your IP address.
Port	Enter the port address of the controller. If you never changed the port on your controller, we recommend leaving it at 23.
Use HTTPS connection	Enable this option to use an HTTPS connection. If you use an HTTPS connection, we recommend changing the port address of the controller to 46272. Unsupported on controllers with a Mura IPX Series display card or using a Linux operating system.
Password	If the controller you want to connect to is password protected, MuraControl will use the password entered, if one was specified. If the password specified is invalid, you'll be prompted to specify a new password.

5.1.1 Recent controllers

This lists the most recently used controllers. To connect to a recently used controller, click the controller you want to open.

5.2 MuraControl settings

MuraControl settings enable you to manage your windows and controllers.



Confirm window deletions	This prompts for confirmation every time a window is deleted from the layout.
Allow windows to overlap	This enables windows to overlap one another.
Confirm window relocation	This option is only available if **Allow windows to overlap** is disabled. When this option is enabled, you're prompted to confirm the operation to perform when an action (such as moving or resizing a window) creates a window overlap. When this option is disabled, any action that creates a window overlap relocates the bottom window to the first location in your layout where no overlap will occur. If that window is too large to fit in the current layout, the window is relocated to the last location available and resized to fit the available area.
Start appliance with no background (If not already started)	If the appliance isn't already started, enable this option to start the appliance without a background. Otherwise, the appliance starts with the default black background. ▪ **Windows always on top (If supported)** – Enable this to have your MuraControl windows (your stream windows) always stay on top of other windows. This option is supported only if **Start appliance with no background** is enabled. ▪ **No window frames (If supported)** – Enable this to remove the window frames. This option is supported only if **Start appliance with no background** is enabled.

Display warning message in background mode when running locally	Enable this to confirm that you want to start the appliance with a background. This option is only valid when you are running MuraControl on the appliance and **Start appliance with no background** is disabled. When running MuraControl with a background on an appliance, the interface is only visible on a console display.
Start appliance with no layout	Enable this to access your display wall without first loading the layout.
Static static capture (If supported)	Enable this to prevent the automatic reconfiguration of streams. Enabling this optimizes the capture process, but may affect rendering performance.
Update window position dynamically	This enables you to instantly see where the window is being moved on the Matrox display wall.
Source to use when adding a window	You can select one of the following options: ▪ **No source** – No source used. A window is added and labeled **None**. ▪ **Least used source** – Use the least used source to the window added. ▪ **Prompt** – Prompt to select the source to use from a list of sources.
Size and position of added windows	Select how windows are scaled when they're added to your layout. You can select one of the following options: ▪ **Maintain aspect ratio of source** – Use the aspect ratio of the source for the window. This option isn't supported if **No source** is selected. ▪ **Maintain aspect ratio of output** – Use the aspect ratio of the output for the window. ▪ **Use mouse** – Use your mouse cursor to manually size and position the window.
Automatically reconnect to last controller	This enables you to automatically reconnect to the most recently used controller every time you start MuraControl.
Keyboard and mouse exit key	Define a key combination to exit the virtual keyboard and mouse on your display wall when playing an application source.
Start appliance automatically (If supported)	**Mura IPX Series display card** – Enable this to start your display wall automatically when your system is powered on.

5.3 Output layout settings

Mura IPX Series display card only – Sets the multi-display setup of your display wall.

Output layout	The number of displays (horizontal and vertical) in your display wall.

Horizontal bezel	The number of pixels added between displays that are next to each other in your display wall. A bezel area can be occupied by a window but won't be shown on your monitors. The maximum bezel is 25% of the width of your display resolution. A negative value creates a display overlap. An overlapping area in your display wall is visible on both adjoining monitors. The maximum overlap is 100% of the width of your display resolution.
Vertical bezel	The number of pixels added between displays that are one above the other in your display wall. A bezel area can be occupied by a window but won't be shown on your monitors. The maximum bezel is 25% of the height of your display resolution. A negative value creates a display overlap. An overlapping area in your display wall is visible on both adjoining monitors. The maximum overlap is 100% of the height of your display resolution.
Display mode	The display resolution and refresh rate for each display in your display wall.
Color decimation	The highest YUV color space available for the videos shown. If a video is using a higher color space than the one selected, the video is shown at the selected color space. Using a lower color space (YUV 4:2:0) may improve performance.
10-bit mode	Enable this to use a display mode with a color depth of 10 bits per pixel instead of 8 bits per pixel.

5.4 Stopping the appliance

To stop your appliance, click **Stop the appliance**. You'll be prompted to confirm your selection.

5.4.1 Starting the current appliance again

Once your appliance has stopped, the software will be locked until you start the appliance again. To start your appliance again, click **Start the current appliance again**.

5.4.2 Connecting to a different appliance

If you want to connect to a different appliance, click **Connect to a different appliance**. You'll be prompted to enter an IP address and a port address for the new appliance you want to connect to. You may also be prompted to enter a password, if one was specified.

5.4.3 Stopping MuraControl

Click **Stop MuraControl** to stop and exit MuraControl software. Stopping MuraControl for Windows doesn't stop the controller.

5.5 About

Provides information specific to your MuraControl software (such as the version).

5.6 Exit

Click **Exit** to exit and close MuraControl. Exiting MuraControl doesn't stop the controller.

6 Layouts

This enables you to configure and manage your layout, specify the settings of your layout, and make your layout active on the Matrox display wall.

6.1 Layout management options

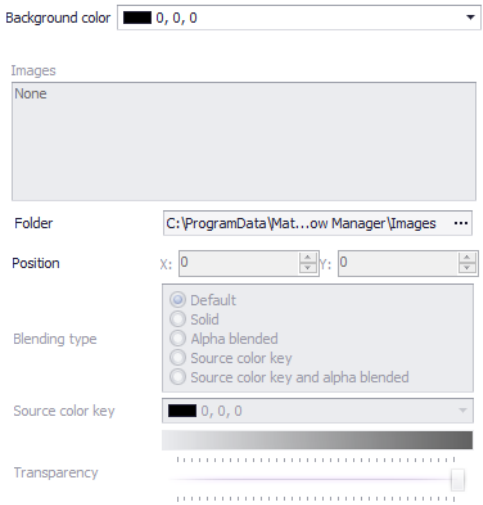
The following describes the basic functions of managing your layouts.

Creating	Click the **New** ( ) icon, enter a name for your new layout, then click **OK**. The name field can't be left blank.
Renaming	Click the **Rename** ( ) icon, enter a new name for your layout, then click **OK**.
Copying	Click the **Copy** ( ) icon, enter a name for the layout you want to copy, then click **OK**.
Deleting	Click the **Delete** ( ) icon, then click **Yes** to delete the layout.
Clearing	Click the **Clear** ( ) icon, then click **Yes** to clear the windows from a layout.

6.2 Settings

The settings enable you to change the appearance of your layout. To view these settings, click the **Settings** ( ) icon.

6.2.1 Background



Note: Depending on the driver you're using, certain options may not be available.

This option is only available if **Start appliance with no background (If not already started)** in the MuraControl **Settings** dialog box is disabled.

Background color	The background color of your layout. Click a color swatch to select that color. You can add a custom color by right clicking one of the color swatches on the bottom two rows.
Images	The background image of your layout. Background images are used at their original resolution and are neither scaled nor tiled on your layout.
Folder	The folder on your controller where your images are located. The default folder referenced for images is *C:\ProgramData\Matrox Graphics Inc\Window Manager\Images*. (If this folder is hidden, see your Windows documentation for information on how to show hidden folders and files.)
Position	The horizontal (**X**) and vertical (**Y**) position of the image on your display wall starting from the upper left corner of the display wall.

Blending type	Select one of the following blending types: ▪ **Default** – The image is solid (opaque). This is the default setting. ▪ **Solid** – The image is opaque. ▪ **Alpha blended** – The image is blended with the source content. ▪ **Source color key** – The image is opaque. The image content that matches the source color key is transparent. ▪ **Source color key and alpha blended** – The image is blended with the source content. The image content that matches the source color key is transparent. ▪ **Destination color key** – The content that matches the color key is replaced with the corresponding pixels from the source content.
Source color key / Destination color key	Determines what is transparent according to the blending type.
Transparency	Select the transparency level for your image.

6.2.2 Border

You can change the appearance of your window borders depending on your needs.

Style	The border style for the windows in your layout. You can select one of the following options: ▪ **None** – No border is applied. ▪ **Solid** – A solid border is applied. ▪ **Bumped** – A rounded border is applied.
Color	The RGB color of the window border. To select a color, click the color button. This setting has no effect if **Style** is set to **None**.
Size	The width, in pixels, of your window border. Some controllers support a negative border size. A negative border is visible inside the window and doesn't increase the window size. This setting has no effect if **Style** is set to **None**.

6.2.3 Date and Time

Mura IPX Series display card only – You can change the date, time, and time zone for your controller. Also, you can select if and how the date and time are shown in your layout.

Date and time	The date and time for your controller.
Time zone	The time zone for your controller.

To customize the appearance of the date and time, you can adjust the following settings:

Date format	The format for the date.
Time format	The format for the time.
Font name	The font for the date and time.
Font size	The font size for the date and time. The default is **24**.
Alignment	The alignment of the date and time. Possible values are: ▪ **Top left** ▪ **Top center** ▪ **Top right** ▪ **Middle left** ▪ **Middle center** ▪ **Middle right** ▪ **Bottom left** ▪ **Bottom center** ▪ **Bottom right**
Background mode	The background mode for the date and time. You can select one of the following options: ▪ **Transparent** – No background. ▪ **Opaque** – Background is limited to behind the text. ▪ **Opaque full width** – Background covers the entire width of the window.
Background color	The RGB color used with an opaque background. If a transparent background is used, this setting is disabled. To select a color, click the color button.
Text color	The RGB color of the text. To select a color, click the color button.
Show/Hide	Click to show or hide the date and time.

A preview of the date and time is shown at the bottom of the dialog box.

6.3 Changing the layout

MuraControl allows you to create and preview new layouts, and make them active only when you're ready to go live with your display wall layout.

6.3.1 Preview layout

The MuraControl canvas shows a preview of the layout you're currently configuring. This may not be the active layout. The preview shows the dimensions of each output, the setup of your layout, and the windows in your layout.

6.3.2 Active layout

The active layout is the layout currently in use on the Matrox display wall.

6.3.3 Make preview layout active

Click the green check mark ( ) icon to set the preview layout as the active layout on the display wall. While a layout is active, the check mark icon turns gray.

6.3.4 Show side panel

With this feature, you can quickly switch between layouts already created. Click the **Show side panel** ( ) icon to view a list of your current layouts on the left-hand side of the screen. When you select a layout from the side panel, the layout is automatically made active.

6.4 Locking the layout

Click the green lock ( ) icon to lock your layout. When a layout is locked, a red lock ( ) appears. While a layout is locked, you can't add, delete, resize, or move your windows. You can only select a different source for your window.

6.5 Managing multiple layouts

This enables you to quickly copy or delete multiple layouts at a time.

6.6 Importing and exporting a layout

Use this option to import or export an existing layout, and apply those settings to another setup.

6.6.1 Exporting

To export an existing layout:

1. Click the **Export** ( ) icon.
2. Browse to the destination folder where you want to save your layout.
3. Enter a name for the layout file you want to export, then click **Save**.

6.6.2 Importing

To import an existing layout:

1. Click the **Import** ( ) icon.
2. Browse to the folder that contains the layout file.
3. Select the layout file you want to import, then click **Open**.

6.7 Marquee

Use this to add, edit, and manage scrolling text (marquee) across your Matrox display wall.

6.7.1 Adding and deleting a marquee

To add a marquee:

1. Click the **Marquee** icon ( ).
2. Specify the options for your marquee.
3. When you're done, click **OK**.

To delete a marquee:

1. Select the marquee window in your preview layout.
2. Right-click the window, then click **Delete**. You may be prompted to confirm your change.

6.7.2 Marquee options

This enables you to create a marquee across the entire display wall.

To customize the look of your marquee, you can adjust the following settings:

Marquee text	Type the text for your marquee.
Alignment	The **Top**, **Middle**, or **Bottom** alignment of your marquee text. The default is **Top**.
Height	The height of the marquee text. The default is set to 10% of the vertical resolution of the display wall.
Text color	The RGB color used for the marquee. The default is white.
Transparent	This enables the transparency for the marquee text.
Background color	The RGB color used for the background. To select a color, click the color button. The default is black.

Font name	The font used for the marquee text. The default is **Arial**.
Scroll speed	The scrolling speed of your marquee text. The default is **1**.
Blink	This enables your marquee text to blink.
Blink on and off	This sets the blinking rate (on and off) for the marquee text.

7 Windows

This section describes how to manage your windows and modify the properties of your windows.

7.1 Window management options

The following describes the basic functions of managing your windows.

Adding	Click the **Add** ( ) icon. If no free space is available on the wall, other windows will be resized and moved to make room for the new window. If the **Use mouse** option was selected, you can use your mouse to add a window. For more information, see "MuraControl settings", page 13.
Deleting	Select the window you want to delete, then click the **Delete** ( ) icon.

7.2 Defining the Z-order of a window

If windows are overlapping, you may need to control which windows are in the foreground and which are in the background.

Note: This option is available only if windows have been added to the layout.

Note: This option is also only available if the windows are overlapping. To enable window overlapping, enable the **Allow windows to overlap** option. For more information, see "MuraControl settings", page 13.

The options available in this menu vary depending on whether windows are over or under the selected window.

Send to back	Send the windows to the back layer of the windows.
Send backward	Send the windows backward one layer of windows at a time.
Bring to front	Bring the windows to the front layer of the windows.
Bring forward	Bring the windows forward one layer of windows at a time.

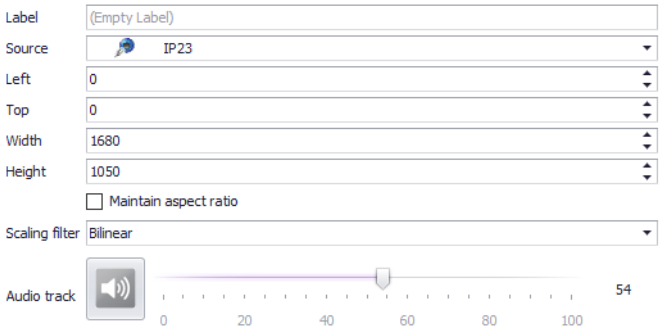
7.3 Settings

The properties enable you to change the appearance of your windows. To view these settings, click the **Settings** ( ) icon.

7.3.1 General

> **Note:** Depending on the driver and product you're using, certain options may not be available.

This enables you to adjust the general settings for your windows.



Label	The name of your window.
Source	The source for the stream in the window.
Left, Top	Enter the position (**Left**, **Top**) of the window. Depending on the source type, these settings may have no effect. For more information, see "Adding a source".
Width, Height	Enter the display resolution (**Width**, **Height**) for your window.
Maintain aspect ratio	Enable this option to maintain the aspect ratio of your window.
Scaling filter	Choose a scaling filter for your window: ▪ **Anisotropic** ▪ **Bilinear** (default) ▪ **Constant** ▪ **Gaussian** ▪ **Nearest** ▪ **Pyramidal**

Audio track	The volume of the audio of this window. Clicking **Audio** disables the audio of this window. Audio is available only for physical inputs and IP sources.

7.3.2 Border

To customize the look of your window border, you can adjust the following settings:

Style	The border for your window. Possible choices are: ▪ **Default** – The border that was defined for your layout is applied. ▪ **None** – No border is applied. ▪ **Solid** – A solid border is applied. ▪ **Bumped** – A rounded border is applied.
Color	The RGB color of your window border. To select a color, click the color button. This setting has no effect if **Style** is set to **None**.
Size	The width, in pixels, of your window border. Some controllers support a negative border size. A negative border is visible inside the window and doesn't increase the window size. This setting has no effect if **Style** is set to **None**.

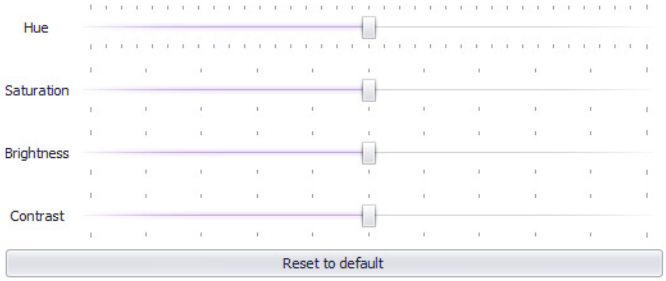
7.3.3 Cropping

Use this to crop the content of your window. Enter the values, in pixels, to crop the **Left**, **Right**, **Top**, and **Bottom** sides of the content of your window. The values listed are based on the original size of the content and may be different than the size of the window.

Click **Reset** to restore window cropping settings to their default values.

7.3.4 Color correction

This enables you to adjust the color settings of your window.



To reset the values to their original levels, click **Reset to default**.

Hue	Increase or decrease the tint or tone of the colors.
Saturation	Increase or decrease the depth of the colors.
Brightness	Increase or decrease how light or dark the colors appear.
Contrast	Change the difference in brightness between the lightest and darkest colors.

7.3.5 Blending

Note: Depending on the driver version and on the product you're using, certain options may not be available.

Note: Depending on the blending type selected, not all options may be available.

7.3.5.1 Blending type

Select one of the following blending types:

Default	The image is solid (opaque). This is the default setting.
Solid	The image is solid (opaque).
Alpha blended	The image is blended with the source content.
Source color key	The image is opaque. The image content that matches the source color key is transparent.
Source color key and alpha blended	The image is blended with the source content. The image content that matches the source color key is transparent.
Destination color key	The content that matches the color key is replaced with the corresponding pixels from the source content.

7.3.5.2 Color key

This can be either **Source color key** or **Destination color key**, depending on the blending type selected.

7.3.5.3 Transparency

Select the transparency level for your window.

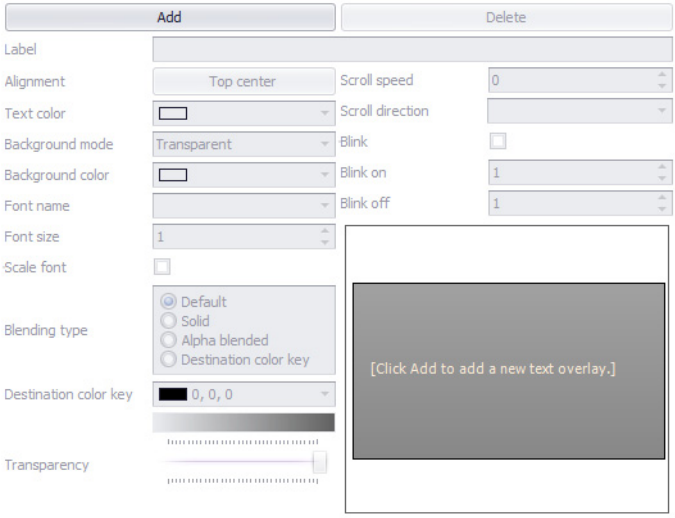
7.3.6 Text overlay

> **Note:** Depending on the driver version you're using, certain options may not be available.

Provides full control of your text overlays by enabling you to adjust such settings as the color of the text, the name and size of the font, the placement of the text, and the scroll speed.

7.3.6.1 Text overlay options

To customize the look of your text overlay, you can adjust the following settings:



Add, Delete	To add a text overlay, click **Add**, then enter your text next to **Label**. To edit the properties of a text overlay, select the text in the preview window, then modify its settings. To delete a text overlay, select the text you want to delete in the preview window, then click **Delete**.
Label	The text of the selected overlay.

Alignment	The placement of the text overlay. Possible values are: ▪ **Top left** ▪ **Top center** ▪ **Top right** ▪ **Middle left** ▪ **Middle center** ▪ **Middle right** ▪ **Bottom left** ▪ **Bottom center** ▪ **Bottom right**
Text color	The RGB color of the text overlay. To select a color, click the color button.
Background mode	The background mode for the text overlay. You can select one of the following options: ▪ **Transparent** – No background. ▪ **Opaque** – Background is limited to behind the text. ▪ **Opaque full width** – Background covers the entire width of the window.
Background color	The RGB color used with an opaque background. If a transparent background is used, this setting is disabled. To select a color, click the color button.
Font name	The font used for the text overlay. The fonts listed are the ones available on the controller.
Font size	The size of the font used for the text overlay. The default is **24**.
Scale font	Enable this option if you want to scale the font proportionally to the size of the window.
Blending type	Select one of the following blending types: ▪ **Default** – The text overlay is solid (opaque). This is the default setting. ▪ **Solid** – The text overlay is opaque. ▪ **Alpha blended** – The text overlay is blended with the source content. ▪ **Source color key** – The text overlay is opaque. The text overlay content that matches the source color key is transparent. ▪ **Source color key and alpha blended** – The text overlay is blended with the source content. The text overlay content that matches the source color key is transparent. ▪ **Destination color key** – The content that matches the color key is replaced with the corresponding pixels from the source content.

Source color key / Destination color key	Determines what is transparent according to the blending type.
Transparency	Select the transparency level for your text overlay.
Scroll speed	The scroll speed for the text overlay, in the number of pixels the text overlay is moved per frame per second. The default is **0**.
Scroll direction	The scroll direction for the text overlay (**Left to right** or **Right to left**).
Blink	Enable this option if you want your text overlay to blink.
Blink on and off	This sets the blinking rate (on and off) for the text overlay.

7.3.7 Image overlay

You can use an image as an overlay over the video input. The image overlay is used over the video input at its original resolution.

7.3.8 Image overlay options

To customize the appearance of your image overlay, you can adjust the following settings:

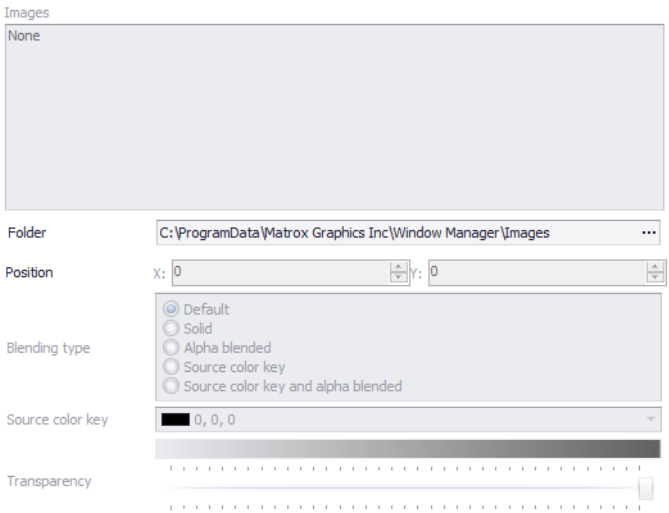


Image	The image overlaid over your window. Overlay images are used at their original resolution and are neither scaled nor tiled in your window.

Folder	The folder on your controller where your images are located. The default folder referenced for images is *C:\ProgramData\Matrox Graphics Inc\Window Manager\Images*. (If this folder is hidden, see your Windows documentation for information on how to show hidden folders and files.)
Position	The horizontal (**X**) and vertical (**Y**) position of the image in your video window starting from the upper left corner of the window.
Blending type	Select one of the following blending types: ▪ **Default** – The image is solid (opaque). This is the default setting. ▪ **Solid** – The image is opaque. ▪ **Alpha blended** – The image is blended with the source content. ▪ **Source color key** – The image is opaque. The image content that matches the source color key is transparent. ▪ **Source color key and alpha blended** – The image is blended with the source content. The image content that matches the source color key is transparent. ▪ **Destination color key** – The content that matches the color key is replaced with the corresponding pixels from the source content.
Source color key / Destination color key	Determines what is transparent according to the blending type.
Transparency	Select the transparency level for your image.

7.4 Show side panel

Click the **Show side panel** ( ) icon to view a list of your windows on the left-hand side of the screen.

Windows are listed according to their Z-order. The first window in the list is the top window on the canvas, and all other windows are underneath it. Selecting a window in the list makes that window the active window on the canvas.

From the side panel, you can also change the Z-order of a window by dragging it to its new position in the list. For more information, see "Defining the Z-order of a window".

While the side panel is visible, the number of a window appears in the upper right corner of the window.

7.5 Pinning a window

When the window is pinned, the content of the window remains at the same size when the window is resized. Resizing the window crops the content of the window.

When the window isn't pinned, the content of the window scales to the size of the window. Resizing the window doesn't crop the content of the window.

7.6 Size

Use this to select a predefined or a custom size for your window.

Predefined size	This enables you to select a predefined size for your window.
Custom size	This enables you to specify the size of your window. When you're done, click **OK**.
Fit wall size	This enables you to resize the window to fit your wall.

7.7 Sources

This shows the list of sources available to the window. The selected source is the source used by the active window.

7.7.1 Source control icons

Depending on your source, the following controls are available by hovering over the window:

- **Keyboard** ( ) – Click this button to use your keyboard and mouse for the application in your video window. To re-enable the use of your keyboard and mouse for your system, use the key combination listed in the lower left corner of your MuraControl application window.

  These controls are available for windows with the following sources:

  - **Third party application** ( )
  - **VNC viewer** ( )
  - **Web page** ( )

- **Next** ( )/ **Play-Pause** ( )/ **Previous** ( ) – Use these buttons to pause, resume, and move through the pages of your presentation.

  These controls are available for windows with a **PowerPoint presentation** ( ) source.

- **Play/Pause** (/) – Click this button to start or pause your stream.

These controls are available for windows with a **VLC stream** ( ) source.

- **Volume** ( ) – Click this button to adjust the volume of the audio source for this window. Only one audio source can be playing at one time.

  If a stream has an audio source, the volume button has a green check mark ( ) in its lower left corner. If no audio source is present, the volume button has a red no-signal mark ( ) in its lower left corner.

  These controls are available for windows with the following sources:

  - **Component** ( )
  - **Composite** ( )
  - **DVI** ( )
  - **SDI** ( )
  - **S-Video** ( )
  - **VGA** ( )
  - **HDMI** ( )
  - **DisplayPort** ( )
  - **IP source** ( )

- **Zoom In** ( )/ **Reset Zoom** ( )/ **Zoom Out** ( ) – Use these buttons to change the size of the content inside your video window.

  These controls are available for windows with a **Web page** ( ) source.

8 Sources

This section describes how to add, view, and modify the settings for your sources.

8.1 Source management options

The following describes the basic functions of managing your sources.

Selecting a source	Select a source from the drop down menu.
Adding	To add a source, see "Adding a source", page 35.
Renaming	To rename a source, click **Rename**, enter a new name for your source, then click **OK**.
Deleting	To delete a source, select the source you want to delete, then click **Delete**. Not all source types can be deleted.
Playing	If a source is added to a window, that window is labeled with an icon to identify the type of source. Depending on your source, the following icons may appear: ▪ **Component** ( ) ▪ **Composite** ( ) ▪ **DisplayPort** ( ) ▪ **DVI** ( ) ▪ **HDMI** ( ) ▪ **HTML5** ( ) ▪ **Image** ( ) ▪ **IP source** ( ) ▪ **PowerPoint presentation** ( ) ▪ **SDI** ( ) ▪ **Source touring** ( ) ▪ **S-Video** ( ) ▪ **Third party application** ( ) ▪ **VGA** ( ) ▪ **VLC stream** ( ) ▪ **VNC viewer** ( ) ▪ **Web page** ( )

8.2 Adding a source

> **Note:** Depending on the driver version or the source you're using, certain options may not be available.

> **Note:** While using ***only*** an Matrox C-Series product, IP sources aren't supported.

The following provides information on how to add a source to MuraControl.

8.2.1 HTML5

1. Click **Add**, then enter a name for your source.
2. Select **HTML5** for the type of source you want to add, then click **OK**.
3. If necessary, adjust the settings, enter the **URI**, and modify the **Render mode** for your source.
4. When you're done, click **OK**.

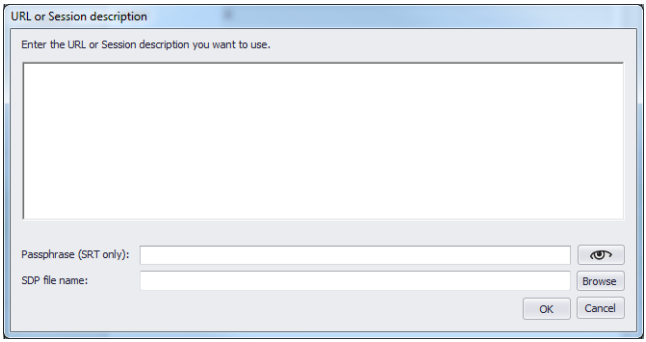
8.2.2 Image file

1. Click **Add**, then enter a name for your source.
2. Select **Image** for the type of source you want to add, then click **OK**.
3. If necessary, adjust the settings for your image.
4. Browse to the location of your file.
5. When you're done, click **OK**.

8.2.3 IP source

1. Click **Add**, then enter a name for your source.
2. Select **IP source** for the type of source you want to add, then click **OK**.
3. If necessary, adjust the settings for your IP source:
   a. Set the **Rotation**.

b Click **Browse** (···) to enter the **URL** or the session description for your source. Enter a URL for a stream using RTSP, MPEG-2 TS, or SRT. For a stream using RTP, you can enter a URL or a session description (SDP) in the URL edit box.



For a stream using SRT, you can enter the passphrase in the URL ***or*** in the passphrase edit box. Click **Show passphrase** ( ) to view the passphrase.

If your session description is saved in a text file, enter the file name in the **SDP file name** edit box or click **Browse** to locate the file. MuraControl fills the session description with the file content. The file is used only when configuring the session description. The session description isn't updated automatically.

Note: To use streams from a Matrox Extio 3 Series transmitter in your Matrox display wall product, you need to enter the source URL of your Extio stream. You can copy the source URL from the text file exported using Extio Central Manager software.

For more information on exporting your Extio stream addresses, see your Matrox Extio Central Manager User Guide.

After entering the URL or session description, click **OK**.

c Enable the **Enable auto recovery** option. This enables you to automatically restore a lost connection to an IP source. You can also set the number of auto-recovery attempts and the delay between attempts. To use the default settings, enable **Use auto recovery default settings**.

d Enable the following advanced options:

- **Connect using multicast first** – This option enables your controller to connect to the IP source using IP multicast. If it's unable to connect using multicast, all other connection attempts will use unicast.
- **Low latency** – This option enables your controller to reduce the delay between the reception of the stream and its display in the window.

4 When you're done, click **OK**.

8.2.4 PowerPoint presentation

1 Click **Add**, then enter a name for your source.

2 Select **PowerPoint presentation** for the type of source you want to add, then click **OK**.

3 Browse to the location of your file.

4 When you're done, click **OK**.

8.2.5 Source touring

1 This feature enables you to quickly and efficiently cycle through multiple sources.

2 Click **Add**, then enter a name for your source.

3 Select **Source touring** for the type of source you want to add, then click **OK**.

4 A new dialog box will open. Set the **Interval** speed, in seconds, to determine how fast you want your sources to cycle.

5 Select the **Sources** you want to use, then move them to the **Selected sources** list.

6 Set the order in which you want to view the sources in the **Selected sources** list.

7 When you're done, click **OK**.

8.2.6 Third party application

1 Click **Add**, then enter a name for your source.

2 Enter the command executable path for your application.

3 When you're done, click **OK**.

Note: When using a third party application as a source, a window may not respect the top and left position set by MuraControl. Also, some applications may open secondary windows that are undetected by MuraControl.

8.2.7 VLC stream

1 Click **Add**, then enter a name for your source.

2 Select **VLC stream** for the type of source you want to add, then click **OK**.

3 Browse to the URI protocol where the VLC stream is located.

4 Adjust the volume for the file.

5 When you're done, click **OK**.

8.2.8 VNC viewer

1 Click **Add**, then enter a name for your source.

2 Select **VNC viewer** for the type of source you want to add, then click **OK**.

3 Select either **VNC configuration file** or **VNC server**. If you select **VNC configuration file**, choose the proper file. If you select **VNC server**, enter the name of the server.

4 When you're done, click **OK**.

8.2.9 Web page

1 Click **Add**, then enter a name for your source.

2 Select **Web page** for the type of source you want to add, then click **OK**.

3 Enter the URL for the page you want to view.

4 When you're done, click **OK**.

8.3 Settings

The properties enable you to change the settings for your sources. To view these settings, click the **Settings** ( ) icon.

8.3.1 General

This provides the general settings for your sources.

Note: Depending on the driver version and on the product you're using, certain options may not be available.

Note: Depending on the blending type and the source selected, not all options may be available.

Width and Height	Specifies the width and height, in pixels, of your source. These fields can only be modified if you're using an **HTML5** source.
Type	Specifies the type of connection or source file used by the stream. The possible types are: ▪ **Component** ( ) ▪ **Composite** ( ) ▪ **DisplayPort** ( ) ▪ **DVI** ( ) ▪ **HDMI** ( ) ▪ **HTML5** ( ) ▪ **Image** ( ) ▪ **IP** ( ) ▪ **PowerPoint** ( ) ▪ **SDI** ( ) ▪ **Source touring** ( ) ▪ **S-Video** ( ) ▪ **Third party application** ( ) ▪ **VGA** ( ) ▪ **VLC** ( ) ▪ **VNC** ( ) ▪ **Web page** ( ) ▪ **No source** ( ) Also, it specifies if the stream is interlaced or de-interlaced.
Rotation	Change the orientation of your source. You can select one of the following options: ▪ **0 degrees** ▪ **90 degrees clockwise** ▪ **180 degrees** ▪ **90 degrees counterclockwise**
Stream filtering	Indicates the de-interlacing option used for the input source. The possible options are: ▪ **Bob** ▪ **Weave** ▪ **Single field (Top, Bottom)** ▪ **Adaptive** (not supported while using an SDI connection type) Stream filtering options have no effect while a progressive input signal is detected.
Color decimation	When enabled, this reduces the colors of the stream from RGB to YUV, and improves performance.
File	Browse to the proper folder.

URL	Browse to the proper folder or URL path of your source.
URI	Browse to the proper folder or URI path of your source.
Enable auto recovery	Enable this to automatically restore the connection to an IP source that was lost.
Auto recovery attempts	Set the number of auto recovery attempts.
Auto recovery attempt delay	Set the delay, in seconds, between the auto recovery attempts.
Use auto recovery default settings	Use the default settings.
Detection filter	Detect according to the type of connection: ▪ **Composite** ▪ **S-Video** ▪ **Component SD** ▪ **Component HD** ▪ **VGA** ▪ **DVI or HDMI** ▪ **DisplayPort** ▪ **SDI**
Phase adjustment	This is the input phase adjustment for the selected stream. Values range between 0 and 31.
Capture offsets	Set the **X** or **Y** position of your capture.
Connect using multicast first	Try first connecting to the source using IP multicast. If it's unable to connect using multicast, all other connection attempts will use unicast.
Enable low latency	Reduce the delay between the reception of the stream and its display in the window.
Render mode	Select if the background of your source is rendered as **Opaque** or as **Transparent**. Setting this option to **Opaque** ignores any alpha channels on your source.
Audio track	Set the volume level of the audio track.
VNC configuration file / VNC server	Select either **VNC configuration file** or **VNC server**. If you select **VNC configuration file**, choose the proper file. If you select **VNC server**, enter the name of the server.

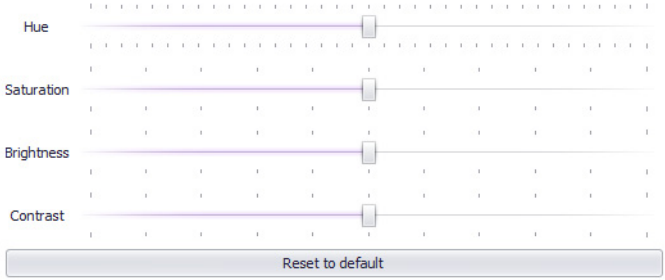
8.3.2 Cropping

Use this to adjust the size of your source. Enter the values, in pixels, to crop the **Left**, **Right**, **Top**, and **Bottom** sides of your source.

Click **Reset** to restore window cropping settings to their default values.

8.3.3 Color correction

This enables you to adjust the color settings of your source.



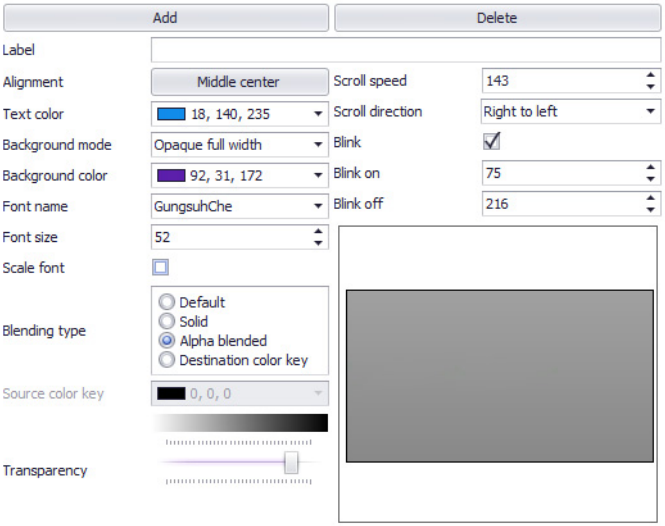
To reset the values to their original levels, click **Reset to default**.

Hue	Increase or decrease the tint or tone of the colors.
Saturation	Increase or decrease the depth of the colors.
Brightness	Increase or decrease how light or dark the colors appear.
Contrast	Change the difference in brightness between the lightest and darkest colors.

8.3.4 Text overlay

Note: Depending on the driver version and on the product you're using, certain options may not be available.

Provides full control of your text overlays by enabling you to adjust settings such as the color of the text, the name and size of the font, the placement of the text, and the scroll speed.



To customize the look of your text overlay, you can adjust the following settings:

Add, Delete	To add a text overlay, click **Add**, then enter your text next to **Label**. To edit the properties of a text overlay, select the text in the preview window, then modify its settings. To delete a text overlay, select the text you want to delete in the preview window, then click **Delete**.
Label	The text of the selected overlay.

Alignment	The placement of the text overlay relative to the window. The possible values are: ▪ **Top left** ▪ **Top center** ▪ **Top right** ▪ **Middle left** ▪ **Middle center** ▪ **Middle right** ▪ **Bottom left** ▪ **Bottom center** ▪ **Bottom right**
Text color	The RGB color of the text overlay. To select a color, click the color button.
Background mode	The background mode for the text overlay. The default is **Transparent**. Select one of the following options: ▪ **Transparent** – No background. ▪ **Opaque** – Background is limited to behind the text. ▪ **Opaque full width** – Background covers the entire width of the video output.
Background color	The RGB color used with an opaque background. If a transparent background is used, this value has no effect. To select a color, click the color button.
Font name	The font used for the text overlay. You can only select a font installed on the controller.
Font size	The size of the font used for the text overlay. The default is **24**.
Scale font	Enable this option if you want to scale the font proportionally to the size of the window.
Blending type	Select one of the following blending types: ▪ **Default** – The text overlay is solid (opaque). This is the default setting. ▪ **Solid** – The text overlay is opaque. ▪ **Alpha blended** – The text overlay is blended with the source content. ▪ **Source color key** – The text overlay is opaque. The text overlay content that matches the source color key is transparent. ▪ **Source color key and alpha blended** – The text overlay is blended with the source content. The text overlay content that matches the source color key is transparent. ▪ **Destination color key** – The content that matches the color key is replaced with the corresponding pixels from the source content.

Source color key / Destination color key	Determines what is transparent according to the blending type.
Transparency	Select the transparency level for your text overlay.
Scroll speed	The scroll speed for the text overlay, in the number of pixels the text overlay is moved per frame per second. The default is **0**.
Scroll direction	The scroll direction for the text overlay (**Left to right** or **Right to left**).
Blink	Enable this option if you want your text overlay to blink.
Blink on and off	Set the blinking rate (on and off) for the text overlay.

8.3.5 Image overlay

You can use an image as an overlay over the video input. The image overlay is used over the video input at its original resolution.

8.3.6 Image overlay options

To customize the look of your image overlay, you can adjust the following settings:

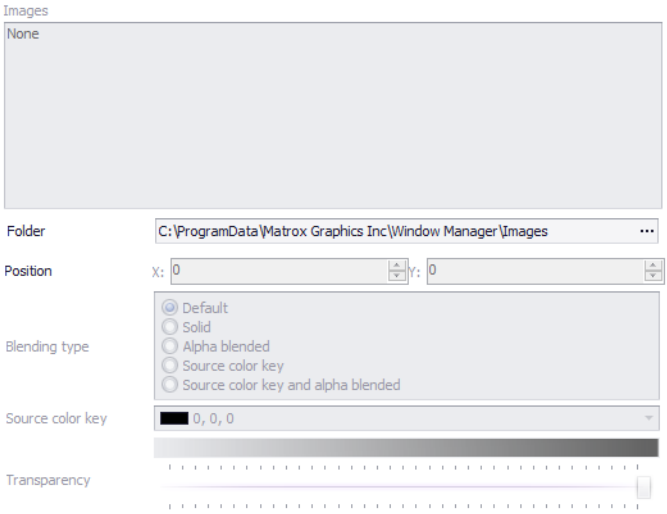


Image	The image overlaid over your source. Overlay images are used at their original resolution and are neither scaled nor tiled.
Folder	The folder on your controller where your images are located. The default folder referenced for images is *C:\ProgramData\Matrox Graphics Inc\Window Manager\Images*. (If this folder is hidden, see your Windows documentation for information on how to show hidden folders and files.)
Position	The horizontal (**X**) and vertical (**Y**) position of the image in your video source starting from the upper left corner of the window.

Blending type	Select one of the following blending types: ▪ **Default** – The image is solid (opaque). This is the default setting. ▪ **Solid** – The image is opaque. ▪ **Alpha blended** – The image is blended with the source content. ▪ **Source color key** – The image is opaque. The image content that matches the source color key is transparent. ▪ **Source color key and alpha blended** – The image is blended with the source content. The image content that matches the source color key is transparent. ▪ **Destination color key** – The content that matches the color key is replaced with the corresponding pixels from the source content.
Source color key / Destination color key	Determines what is transparent according to the blending type.
Transparency	Select the transparency level for your image.

8.4 Inactive stream

This option lets you determine how an input source will behave if a connection is lost.

Action type	▪ **Default** – Displays a solid color (black). ▪ **Color fill** – Displays a solid custom color. ▪ **Default image** – Displays the default image. ▪ **Custom image** – Displays a custom image. ▪ **None** – No action occurs when the stream is inactive.
Action trigger	▪ **Detection** – When the stream is detected as being inactive. ▪ **Inactivity** – When the stream is redetected.

8.5 Show side panel

With this feature, you can quickly switch between sources already created. Click the **Show side panel** ( ) icon to view a list of your sources on the left-hand side of the screen. Selecting a source from the list automatically applies it to the active window. You can also drag a source from the list to a window to apply that source.

9 Encodings

This section describes how to add, view, and modify the settings used to encode, stream, or record available sources or a desktop region of your display wall.

9.1 Manage

This provides information (such as type, name, and status) for your recordings, RTSP streams and SRT streams. It also provides options to start/stop, rename, copy, and delete a recording, an RTSP stream, or an SRT stream.

Type	**Recording**, **RTSP stream**, or **SRT stream.**
Name	The name of the **Recording**, **RTSP stream**, or **SRT stream**.
Source	The source used for the **Recording**, **RTSP stream**, or **SRT stream**.
Path / URL	The network path of a **Recording** or the URL of an **RTSP stream** or an **SRT stream**. The URL of an **RTSP stream** or an **SRT stream** is only available if the stream is active.
Encoding	The encoding used to create the **Recording**, **RTSP stream**, or **SRT stream**.
Status	**RTSP stream** or **SRT stream** – This indicates if the stream is transmitted to the network (**Active**) or not (**Inactive**). **Recording** – This indicates if the recording is recorded on the network path (**Active**) or not (**Inactive**).
Start / Stop	Click this to start a **Recording**, an **RTSP stream**, or an **SRT stream**.
Copy	Click this to copy a **Recording** or an **RTSP stream**. It's not possible to copy an SRT stream.
Rename	Click this to rename a **Recording**, an **RTSP stream**, or an **SRT stream.**
Delete	Click this to delete a **Recording**, an **RTSP stream**, or an **SRT stream.**

9.2 Encodings

The following describes the basic functions of managing the encoding of a source. That encoding can then be used to create an SRT stream, an RTSP stream, or a recording.

Selecting an encoding	Select an encoding from the drop down menu.

Adding	To add an encoding, see "Adding an encoding", page 48.
Renaming	To rename an encoding, click **Rename**, enter a new name for your encoding, then click **OK**.
Copying	To copy an encoding, click **Copy**, enter a new name for your encoder, then click **OK**.
Deleting	To delete an encoding, select the encoding you want to delete, then click **Delete**.

9.2.1 Adding an encoding

Note: Depending on the driver version or the encoding you're using, certain options may not be available.

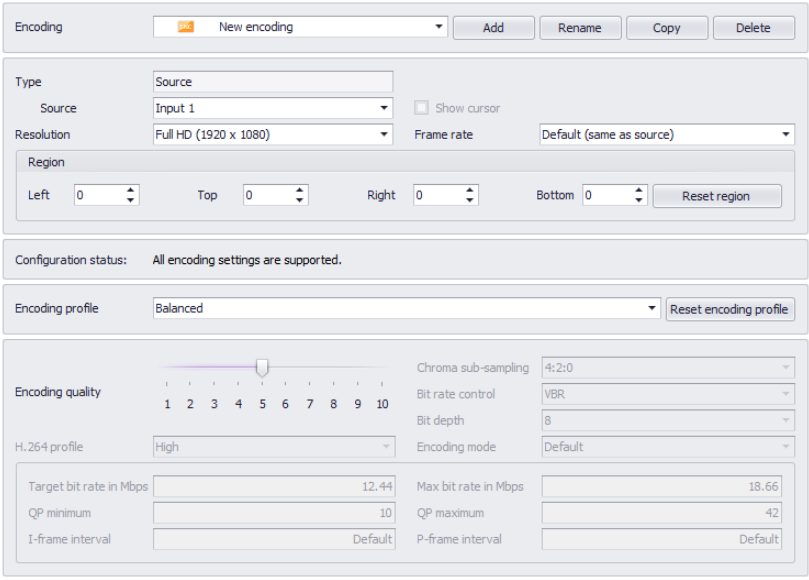
Note: O*nly* Matrox IPX Series encode cards (MURAIPXI-E4SF, MURAIPXI-E4SHF, MURAIPXI-E2MF, MURAIPXI-E2MHF, MURAIPXI-E4JF, MURAIPXI-E4JHF) products support encodings.

The following provides information on how to add an encoding.

1. Click **Add**, then enter a name for your encoding.
2. Select **Source** or **Desktop** as the type of encoding you want to add. If you select **Source** as the encoding type, select the **Source** used for your encoding.
3. When you're done, click **OK**.

9.2.2 Settings

This enables you to adjust the settings of your encodings.



Type	▪ **Source** – Encodes from a source of your display wall. ▪ **Desktop** – Encodes a region of your desktop.
Source	The physical source or IP source used to encode. This is only available if **Type** is **Source**.
Show cursor	Enable this to view the cursor for desktop encodings.
Resolution	The resolution of the encoding. The following resolutions are available: ▪ **Default** ▪ **QCIF (176 × 144)** ▪ **CIF (352 × 288)** ▪ **4CIF (704 × 576)** ▪ **D1 PAL (720 × 576)** ▪ **D1 NTSC (720 × 480)** ▪ **HD Ready (1280 × 720)** ▪ **Full HD (1920 x 1080)** ▪ **Quad HD (2560 x 1440)** ▪ **4k/UHD (3840 × 2160)** By default, an encoding uses the same resolution as the source.

Frame rate	The number of frames per second used to encode. The maximum supported frame rate is equal to the default frame rate of the encoding type. For a desktop encoding, the default frame rate is set to the refresh rate of the graphics hardware. For a source encoding, the default frame rate is set to the frame rate of the source.
Region	The region of your **Source** or **Desktop** used to encode. You need to specify the coordinates of a **Source** or region of the **Desktop** to encode.
Encoding profile	The set of parameters used to encode. The following profiles are available: ▪ **Default** – For most streams. ▪ **Unknown** – Profiles different from the ones predefined in MuraControl. An **Unknown** profile was defined using the Matrox Network API. ▪ **Balanced** – Provides a good image quality for most images. ▪ **Low motion** – Provides a better image quality for static images (such as a computer desktop). ▪ **High motion** – Provides a better image quality for fast moving images (such as a video). ▪ **Low latency** – Reduces the delay between the time the video is captured and the time it's available as an encoding.
Reset encoding profile	Resets the settings of the current encoding profile to their default values.
Encoding quality	Select the level of quality for the encoding profile selected. Modifying this value affects other encoding profile settings.
Chroma sub-sampling	Possible values are: ▪ **4:2:0** ▪ **4:2:2** ▪ **4:4:4**
Bit rate control	▪ **VBR** – Variable Bit Rate ▪ **CBR** – Constant Bit Rate
Bit depth	The number of bits for each color pixel.
H.264 profile	The H.264 profile of the encoding. The profile affects the availability of certain features.

Encoding mode	The mode used to encode the video. ▪ **Default** – The mode best suited for the video capture detected. ▪ **High quality** – Favors image quality over latency, but may require more delay. ▪ **Low latency** – Reduces the delay between the time the video is captured on the encoder and the time it's shown on a monitor connected to a decoder. ▪ **Desktop** – Provides a better image quality for static images (such as a computer desktop).
Target bit rate in Mbps	The target bit rate, in Mbps(megabits per second), for encoding. The actual bandwidth used for your encoding varies according to your source and encoding method. The default is 15.00 Mbps. A lower target bit rate may result in lower image quality. A higher target bit rate may result in lower performance, a higher bandwidth when streamed, and a larger file size when recorded.
Max. bit rate in Mbps	The maximum bit rate for encoding. When encoding, the processor attempts to use the target bit rate but may use up to the maximum bit rate specified. The default is 22.50 Mbps. The maximum bit rate is 200.00 Mbps.
QP minimum	The lowest value for the range of quantization parameters used to compress the various frames.
QP maximum	The highest value for the range of quantization parameters used to compress the various frames. A high maximum increases the level of compression of the frame and should decrease the bit rate but may decrease the image quality.
I-frame interval	A low I-frame interval increases image quality and bandwidth requirements. A high I-frame interval increases image compression and lowers bandwidth requirements.
P-frame interval	A low P-frame interval increases image quality and bandwidth requirements. A high P-frame interval increases image compression and lowers bandwidth requirements.

9.3 RTSP streams

The following describes the basic functions of creating and managing an RTSP stream created from an encoding.

Selecting an RTSP stream	Select an RTSP stream from the drop down menu.
Adding	To add an RTSP stream, see "Adding an RTSP stream", page 52.
Renaming	To rename an RTSP stream, click **Rename**, enter a new name for your stream, then click **OK**.
Copying	To copy an RTSP stream, click **Copy**, enter a new name for your stream, then click **OK**.
Deleting	To delete an RTSP stream, select the stream you want to delete, then click **Delete**.

9.3.1 Adding an RTSP stream

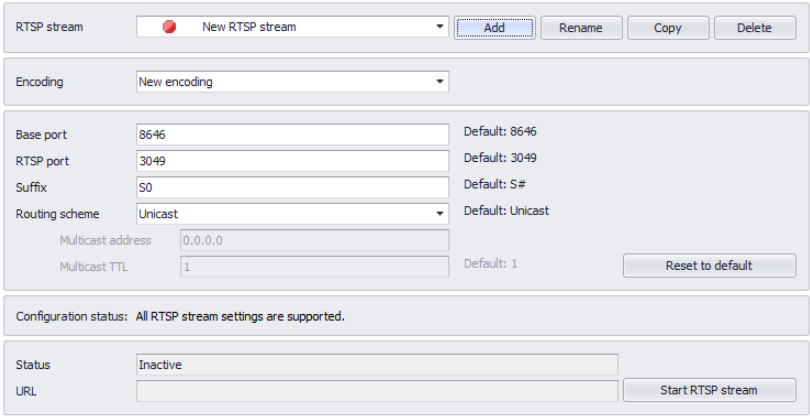
Note: Depending on the driver version or the encoding you're using, certain options may not be available.

The following provides information on how to add an RTSP stream.

1. Click **Add**, then enter a name for your RTSP stream.
2. Select the encoding you want your RTSP stream to use.
3. When you're done, click **OK**.

9.3.2 Settings

This enables you to adjust the settings for your RTSP streams.



RTSP stream	The name of the stream.
Encoding	The encoding used to create your RTSP stream.
Base port	The port number used to transmit your stream. The port number must be a multiple of 6.
RTSP port	The RTSP port number used to transmit your stream.
Suffix	Enter a suffix as part of your stream address. If you're using a media player to decode your stream, the media player may require this as part of the stream address to connect to a stream.
Routing scheme	▪ **Unicast** – A stream is created for each connection. No additional network configuration is required, because unicast establishes a direct connection between your encoder card and the media player receiving the stream. Since each connection to the stream increases the bandwidth used for that stream, unicast may use more bandwidth. This is the default. ▪ **Multicast** – A single stream is created for all media players connected to the same multicast address. A stream with a unique multicast address uses less bandwidth. Using multicast may require additional network configuration to support the transmission protocol (some network switches and routers can block multicast signals). For more information, contact your network administrator.

Multicast address	Enter a unique multicast IP address for each stream. Addresses may range from 224.0.0.0 to 239.255.255.255. We recommend using an IP address between 224.2.0.1 and 224.2.255.255. The default is 224.2.0.1.
Multicast TTL	The number of hops or network nodes (such as network switches or routers) through which a multicast signal can travel. Once the TTL (time to live) number is reached, the receiving network node prevents the signal broadcast further down the network. The value ranges from 1 to 255. The default is 1.
Reset to default	Click this to reset all encoding settings to their default values.
Status	This indicates if the stream is transmitted to the network (**Active**) or not (**Inactive**).
URL	The URL address used by an RTSP client to connect to this stream. The URL is only available while the stream is **Active**. The URL consists of the internet protocol (***rtsp***), the IP of your encoder card, the RTSP port, and the RTSP suffix.
Start/Stop RTSP stream	Click this to start or stop transmitting the RTSP stream.

9.4 SRT streams

The following describes the basic functions of creating and managing an SRT (Secure Reliable Transport) stream created from an encoding.

Selecting an SRT stream	Select an SRT stream from the drop down menu.
Adding	To add an SRT stream, see "Adding an SRT stream", page 54.
Renaming	To rename an SRT stream, click **Rename**, enter a new name for your stream, then click **OK**.
Deleting	To delete an SRT stream, select the stream you want to delete, then click **Delete**.

9.4.1 Adding an SRT stream

Note: Depending on the driver version or the encoding you're using, certain options may not be available.

The following provides information on how to add an SRT stream.

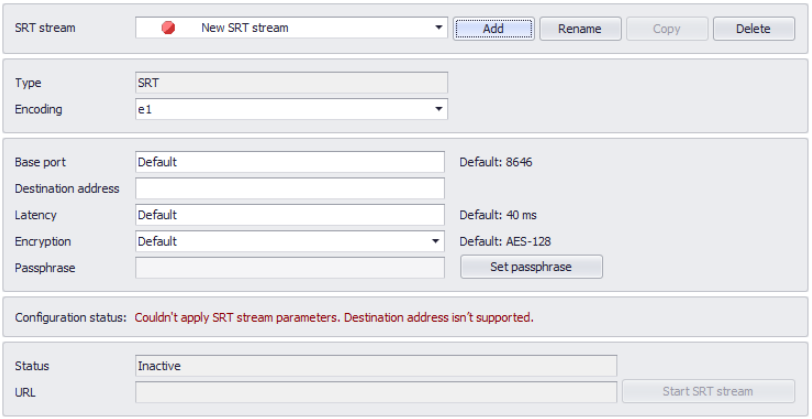
1 Click **Add**, then enter a name for your SRT stream.

2 Select the encoding you want your SRT stream to use.

3 When you're done, click **OK**.

9.4.2 Settings

This enables you to adjust the settings for your SRT streams.



SRT stream	The name of the stream.
Encoding	The encoding used to create your SRT stream.
Base port	The port number used to transmit your stream. The combination of base port and destination address must be unique when transmitting an SRT stream.
Destination address	The IP address of the SRT client receiving the SRT stream. The combination of base port and destination address must be unique when transmitting an SRT stream.
Latency	The maximum buffer size available for managing SRT packets. Default value is 40 ms.
Encryption	The AES encryption level to secure your stream. Possible values are Unencrypted, AES-128, AES-192, or AES-256. The default value is AES-128
Passphrase	The passphrase used to generate the encryption key. To change the passphrase, click **Set passphrase** and then enter the new passphrase. The passphrase can use any printable character and can be between 10 and 78 characters long.

Status	This indicates if the stream is transmitted to the network (**Active**) or not (**Inactive**).
URL	The URL address used by an SRT client to connect to this stream. The URL is only available while the stream is **Active**. The URL consists of the internet protocol (***srt***), the destination address, and the base port. It may also include the latency value, the key length, and the passphrase.
Start/Stop SRT stream	Click this to start or stop transmitting the SRT stream.

9.5 Recordings

The following describes the basic functions of creating and managing a recording created from an encoding. The video files created are encoded with an H.264 video and AAC audio codec in MP4 container format.

Selecting a recording	Select a recording from the drop down menu.
Adding	To add a recording, see "Adding a recording", page 56.
Renaming	To rename a recording, click **Rename**, enter a new name for your recording, then click **OK**.
Copying	To copy recording settings to a new recording, click **Copy**, enter a new name for your recording, then click **OK**.
Deleting	To delete a recording, select the recording you want to delete, then click **Delete**.

9.5.1 Adding a recording

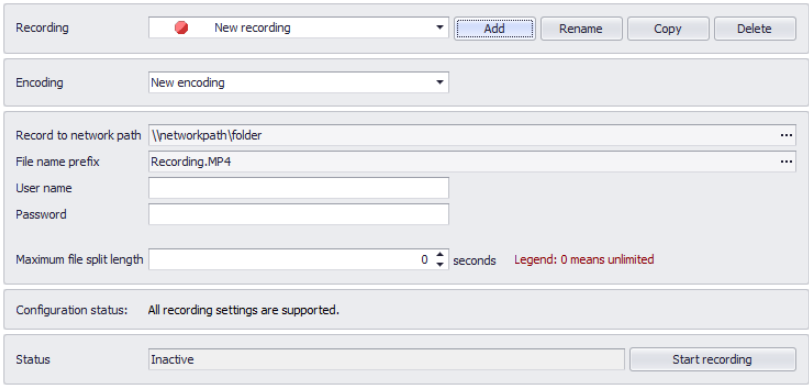
> **Note:** Depending on the driver version or the encoding you're using, certain options may not be available.

The following provides information on how to add a recording.

1. Click **Add**, then enter a name for your recording.
2. Select the encoding you want your recording to use.
3. Enter a network path including the file name for your recording.
4. If credentials are required to access the network path, enter the user name and password to use.
5. When you're done, click **OK**.

9.5.2 Settings

This provides the settings for recordings.



Recording	The name of the recording.
Encoding	The encoding used the create your recording.
Record to network path	The file path where your recording is stored on a network device.
File name prefix	The first part of the file name for your recording. If **Maximum file split length** is other than 0, MuraControl adds a timestamp suffix to the file name prefix to define the file name of your recording. The file type extension (*.mp4*) is automatically added to the file name when the file is created.
User name / Password	The user name and password to use if your network drive requires user identification.
Maximum file split length (seconds)	Maximum number of seconds of a recording before a new file is created. When set to **0**, a single file with no time limit is created. The length of the file may vary by one or two seconds from the specified time. When using multiple files, MuraControl adds a timestamp suffix to the **File name prefix** to define the file name of your recording.
Status	This indicates if the recording is recorded on the network path (**Active**) or not (**Inactive**).
Start/Stop recording	Click this to start or stop recording.

9.6 Show side panel

With this feature, you can quickly access the settings and controls for streams and recordings. Enable the corresponding **Show side panel** option to view a list of your streams or encodings on the left-hand side of the screen.

10 View

This section explains how to create grids and grid lines to help you better position your windows and configure your layout.

10.1 Show or hide

This enables you to show or hide various elements (for example, the source logo, output lines, grid lines, Window labels, and source names) on your canvas.

10.2 Snap to

When you create a layout, this feature enables your windows to snap to an object in your layout when you move your windows.

Windows	This snaps the windows to one another.
Output lines	This snaps the window to the lines of the output.
Center of output	This snaps the window to the center of the output. The window must be smaller than the output window.
Center of display wall	This snaps the window to the center of the display wall.
Grid	This snaps the window to the grid lines.
Custom grid lines	This snaps the window to the grid lines you specified. For more information, see "Grid lines", page 59.

10.3 Grid

This enables you to add vertical and horizontal lines to your grid.

10.4 Grid lines

This option enables you to specify the exact position for your grid line.

To add a vertical or horizontal position for your grid line, click the **Add** () icon, then enter the position (in pixels).

To delete a custom grid line, click the **Delete** () icon next to the grid line you want to delete.

10.5 Output labels

This option allows you to show or edit the labels of your outputs.

Show labels	Enable the **Show labels** option to show the labels of your outputs.
Edit labels	Click **Edit labels**, enter a new name for the output you want to edit, then click **OK**.

10.6 Source preview

This option allows you to preview the sources in your canvas. For source preview to work properly, your preview and active layouts must be the same. Otherwise, the windows on your canvas remain gray.

Preview source	Enable the **Preview source** option to preview your sources.
Frame rate	Adjust the frame rate your for source preview.
Source quality	Adjust the image quality of your source preview.

11 Schedules

Note: Depending on the driver version you're using, certain options may not be available.

This option enables you to schedule your layouts to automatically change at specified times.

From the **Schedule** list, select the schedule you want to use. If you don't want to use a schedule, select **None**.

11.1 Recurring layouts

11.1.1 Interval

Choose this to have selected layouts change at regular intervals.

1. Choose an existing schedule or click **Add** to create a new schedule.
2. Select **Interval**.
3. Set the **Interval** speed, in seconds, to determine how fast you want your layouts to change.
4. From the list of **Layouts**, select the layouts you want to use, then move them to the **Selected layout** list.
5. When you're done, click **OK**.

11.1.2 Weekly

Choose this to have selected layouts change on scheduled days and times.

11.1.2.1 Adding a new item to the schedule

1. Click the **Add** ( ) icon.
2. Set the **Layout**, **Day**, and **Time**. To change these settings, you can also click the **Settings** ( ) icon next to the item.
3. When you're done, click **OK**.

11.1.2.2 Removing an item

To remove an item, click the **Delete** ( ) icon next to the item.

11.1.2.3 Renaming an item

To rename an item, click **Rename**, enter a new name for your item, then click **OK**.

11.2 Scheduled layouts

The **Calendar** feature enables you to create a list of scheduled layouts.

11.2.1 Adding a new item to the calendar

1. Click the **Add** ( ) icon.
2. Set the **Layout**, **Day**, and **Time**. To change these settings, you can also click the **Settings** ( ) icon next to the item.
3. When you're done, click **OK**.

11.2.2 Deleting an item

To delete an item, click the **Delete** ( ) icon next to the item.

11.2.3 Renaming an item

To rename an item, click **Rename**, enter a new name for your item, then click **OK**.

12 Troubleshooting

12.1 Common problems and solutions

This section addresses common problems that could prevent you from using your system or product.

Problem Unable to connect to a controller

Cause Communication to the controller isn't being properly established.

Solution Your Matrox MuraControl software communicates through the telnet port of the controller via TCP-IP. This means that an IP connection from the client needs to be established with port 23 of the controller.

To ensure proper communication, we recommend you do the following:

- Make sure the firewall on both your local and remote systems is properly configured.
- Check the IP configuration of both your local and remote systems.
- Check the physical or wireless network connection.
- Check the configuration of the routers and switches between your local and remote systems.

If problems persist, contact your network administrator.

13 Appendix – Creating a display wall layout

Creating a display wall layout involves adding a new layout, adding one or more windows to your layout, selecting a source for your windows, and making your layout active.

13.1 Step-by-step configuration

This section takes you through the step-by-step configuration of your display wall layout.

13.1.1 Create a new layout

When you start MuraControl for the first time, you'll be prompted to create a new layout. To be able to use MuraControl, at least one layout is required.

To create a new layout:

1. Under **Layouts**, click the **New** ( ) icon.
2. When prompted, enter a name for your new layout.
3. When you're done, click **OK**.

Note: If you don't enter a name for the layout, a default name is assigned. The default name assigned to a layout is **New layout**. The name field can't be left blank.

For specific information about layout settings and options, see "Layouts", page 17.

13.1.2 Add a window

To add a new window to your layout:

1. Under **Windows**, click the **Add** ( ) icon. If no free space is available on the display wall, other windows will be resized and moved to make room for the new window.
2. Repeat for every window you want to add.

For specific information about window settings and options, see "Windows", page 24.

13.1.3 Select your source

To select a source for your windows:

1. Select a window from your layout.
2. Under **Windows**, go to the **Sources** drop-down menu.
3. From the drop-down menu, select a source for your window.

For specific information about source settings and options, see “Sources”, page 34.

13.1.4 Make your preview layout active

When you’re done, click the green check mark ( ) icon to set the preview layout as the active layout on the display wall.

14 Notes

14.1 General

This section provides more information on issues related to your software.

- Universal Plug and Play (UPnP) is supported with Matrox driver version 2.03 or later.
- Audio output is supported only on C-Series based controllers and Mura IPX Series display cards. For more information on connection requirements, see your Mura user guide.

14.2 Sources

This section provides more information on issues related to sources.

14.2.1 Microsoft PowerPoint

- MuraControl supports Microsoft PowerPoint Viewer 2010 with Service Pack 1 only.

14.2.2 VNC

- MuraControl supports RealVNC viewer version 5.0.3 or later.
- If you specify only a server name, the window automatically scales to fit the wall, regardless of the aspect ratio of the VNC session.

15 Customer support

15.1 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.

15.2 Technical support

Matrox values your business and offers professional support for your Matrox product. If you have a problem, we recommend you follow the procedure below for the quickest results.

1. **Contact your integrator** – This is usually the quickest and most effective method of technical assistance. Your integrator is familiar with your complete system. In the case of hardware warranty assistance, the product must be returned to the integrator, who will return it to Matrox.
2. If your Matrox product was provided by your computer manufacturer, contact this manufacturer. For contact information, see your computer documentation or contact the vendor.
3. **Direct Matrox technical support** – If you still can't resolve a problem (and your Matrox product wasn't provided by your computer manufacturer), you can get technical assistance by contacting Matrox technical support at dwcsupport@matrox.com.

15.2.1 Information we need

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

- Matrox card serial number, model number, revision number, BIOS number, driver type and version, and memory address at which the Matrox card is installed.
- Computer brand and model name.
- Monitor brand and model name.
- Operating system, version, and service pack.
- Brand and model of any other cards and devices installed on your system.

15.2.2 Program specific problems

If a problem appears with a specific program, please give us the following information:

- Display settings (color palette, display resolution, and so on) applied when the problem occurs.
- If possible, take note of the file and segment address that caused the problem.
- Detailed steps known to cause the bug, so we can reproduce it.

15.3 Driver and software download

From your integrator or manufacturer – If your product was purchased through an integrator or a manufacturer, contact them for the latest display driver, software, and system utilities as they're familiar with your complete system. An integrator or a manufacturer may also have directives regarding software updates.

Directly from Matrox – A more recent display driver may support more features and may offer increased capabilities (such as higher display resolutions). Matrox makes the latest display drivers, software, and system utilities available on the Matrox Technical Support Web site (www.matrox.com/graphics/en/support/drivers).

15.4 View your warranty information

Matrox makes warranty information available on the Matrox site (http://www.matrox.com/graphics/en/support/warranty/).

15.5 View the third party software notices

Matrox makes third party software notices and/or additional terms and conditions available on the Matrox site (https://thirdpartylicenses.matrox.com).

15.6 Register your Matrox product

Please register online (www.matrox.com/graphics/en/registration) to receive new product announcements and information on special offers and upcoming events.

The USB dongle used for Matrox MuraControl for Windows has the following regulatory certifications:

USA

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, 2002 Ridge Road, Champlain, NY 12919 • 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.

CANADA

(English) Innovation, Science and Economic Development Canada

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) Innovation, Sciences et Développement économique 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.

AUSTRALIA

ACMA (Autralian Communications and Media Authority)

Due to the physical restrictions of the device, evidence of conformity is demonstrated in the present document and on the product packaging.

JAPAN

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

KOREA

이 기기는 업무용(A 급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 이외의 지역에서 사용할 수 있습니다..

XWK-1001-02-160

MSIP-REM-XWK-1001-03-160

EUROPE

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

Remark for the Matrox hardware products supported by this guide These devices comply with EC Directive 2014/30/EU for a Class B digital device. They have been tested and found to comply with EN55032/CISPR32 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 2014/30/EU pour les unités numériques de classe B. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55032/CISPR32 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 2014/30/EU für ein digitales Gerät Klasse B. Sie wurden getestet und entsprechen demnach EN55032/CISPR32 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 2014/30/EU relativamente ai dispositivi digitali di Classe B. Sono stati provati e sono risultati conformi alle norme EN55032/CISPR32 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 2014/30/EU para dispositivos digitales de Clase B. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55032/CISPR32 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)

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