

WindoWall Pro

Multi-Graphic Videowall Processors



Safety Instructions

Safety Instructions • English

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Korean

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NOTE: This unit was tested with shielded I/O cables on the peripheral devices. Shielded cables must be used to ensure compliance with FCC emissions limits.

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Conventions Used in this Guide

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The following notifications are used in this guide:

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene,,Op1 scene 1,1 ^B 51 ^W ^C  
[ 01 ] R 0004 00300 00400 00800 00600 [ 02 ] 35 [ 17 ] [ 03 ]
```

```
Esc [X1] * [X17] * [X20] * [X23] * [X21] CE ←
```

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character “0” is used for the number zero and “O” is the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32  
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t  
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

```
From the File menu, select New.  
Click the OK button.
```

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

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Introduction

This section provides an overview of the WindoWall Pro Multi-Graphic Processors, including information about the following:

- [About this Guide](#)
- [About the WindoWall Pro Series Multi-Graphic Processors](#)
- [Features](#)
- [Application Diagram](#)

About this Guide

This guide discusses how to install, configure, and operate the Extron WindoWall Pro Series multi-graphic processors.

Throughout this guide, the terms “WindoWall Pro” and “processor” are used interchangeably to see all models of the products.

About the WindoWall Pro Series Multi-Graphic Processors

The WindoWall Pro and WindoWall Pro DI are four-window RGB and video signal processors designed for videowall systems. Each WindoWall Pro can display up to four video sources on a single screen in picture-in-picture or picture-by-picture format. The WindoWall Pro accepts RGB, HDTV component, S-video, and composite video signals on four fully-configurable inputs and has one scaled output. The processors can switch among inputs, and provide a full range of picture controls for each window. Configurations can be saved as presets and recalled at need.

The WindoWall Pro DI is a WindoWall Pro with an HDMI input card installed, providing four HDMI input connectors.

WindoWall Pro uses a distributed video processing architecture that dedicates a separate processor to each output device (projector, video cube, or flat panel monitor) in the videowall system. Each of the windows can show video, HDTV, or high resolution computer video content. The WindoWall Pro is compatible with most available display devices and outputs video at resolutions up to 1920x1200 and 2K, and HDTV component up to 1080p. Because a discrete, real-time processor is dedicated to each display unit in the videowall, the WindoWall Pro system is fully scalable, supporting display layouts from 1x2 to 3x2 and larger.

WindoWall Pro systems are available in sets of two or three processors, for 1x2 or 3x2 arrays, with or without HDMI.

All HDMI inputs and outputs on these models support HDCP.

All models can be controlled remotely via the serial interfaces using the Extron Simple Instruction Set (SIS) commands or the WindoWall Console software, or via an Ethernet LAN using the WindoWall Pro embedded web pages, SIS commands, or the control software.

Features

- **Scalable videowall multi-display support** — Enables scalable videowall systems from 1x2 to 3x2 and larger, on two or more displays.
- **Four windows** — Up to four independent windows can be shown on a single display simultaneously, allowing up to four video, HDTV, and high-resolution computer video sources to be viewed at once on each WindoWall Pro.
- **Inputs** — Four fully configurable video inputs on BNC connectors accept RGBHV (up to 1920x1200 and 2K), HDTV component video (up to 1080p @ 60 Hz), S-video, and composite video signals. In addition, the WindoWall Pro DI has four HDMI inputs.
- **Live Background input** — An HDMI input is provided on all models as a means to display live, full-motion high-resolution computer or HDTV video from an HDMI or DVI source as a background. The Live Background input can be used for cascading two or three WindoWall Pro units to create large-scale displays with 6 to 12 windows.
- **Output** — Both WindoWall Pro models have one scaled output on the following:
 - A set of five BNC connectors for RGB (RGBHV, RGBS, RGsB) and HD component
 - An HDMI connector for HDMI and DVI
- **Graphical user interface** — The WindoWall Console application software is the user interface for the WindoWall Pro videowall system. It brings all of the WindoWall Pro processors together via TCP/IP and provides the tools and features to set up, create, and manage videowall presentations. You can create presentations with up to four windows per display or video cube unit (see [Setting Up the WindoWall Console Software](#) on page 11 for information on getting started with the software, which is provided with your processor. See the WindoWall Console software help file for detailed information on using this software).

The WindoWall Console software enables you to enable and configure the following:

- **Picture controls** — Picture controls allow you to adjust the size, position, brightness, contrast, color, tint, detail, and zoom for each window. The image within each window can be resized also, independently of its window.
- **Text labels** — Each picture-in-picture window can be labeled with up to 16 characters. These labels can be customized for positioning, text color, character size, background, and border.
- **Window and input presets** — Window presets save window sizing, positioning, and priority information. Input presets save input signal type information and picture control settings.
- **Freeze control** — Freeze control freezes (locks) a window to the current image.
- **Videowall virtual canvas** — Virtual canvas enables on-screen videowall visualization and dynamic window placement and sizing.
- **Background image management** — Image files can be uploaded and stored in memory on the WindoWall Pro. You can then browse to these image files and select them for use as the background image on the videowall canvas. The WindoWall Pro can store up to six high resolution images, enabling you to easily display frequently used images such as a company logo.
- **HDCP compliance and visual confirmation** — A green screen is displayed when HDCP encrypted content is sent to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **Key Minder** — Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments while enabling simultaneous distribution of a single source signal to one or more displays.

- **Window transition effects** — Six types of window transition effects (22 different effects altogether) seamlessly mute and unmute (close and open) the windows.
- **3:2 pulldown detection for NTSC video and 2:2 film detection for PAL** — These advanced film mode processing features help maximize image detail and sharpness for video sources that originated from film.

When film is converted to NTSC video, the film frame rate has to be matched to the video frame rate in a process called 3:2 pulldown. Jaggies and other image artifacts can result if conventional deinterlacing techniques are used on film-source video.

The WindoWall Pro advanced film mode processing recognizes signals that originated from film. The WindoWall Pro then applies video processing algorithms that optimize the conversion of video made in the 3:2 pulldown process. This results in richly detailed images with sharply defined lines.

A similar process, 2:2 film detection, is used for PAL film-source video.

- **Graphics still store** — Screen captures and uploaded bitmap (.bmp) graphics can be stored and used as background images. Images stored on the WindoWall Pro can be downloaded to a computer as .bmp files for archiving. Up to six full screen high resolution images can be stored in graphics still store memory.
- **Background image capture, save, and recall** — Background Capture enables you to capture and save the image currently on the output screen. You can then recall the captured image and display it as a background later.
- **Auto Image** — Auto Image automatically sizes, centers, and optimizes the image to the scaled output rate, filling the window.
- **EDID Emulation** — The WindoWall Pro provides selectable resolutions and refresh rates, enabling you to specify the rate of the incoming signal and ensure proper communication with the video source.
- **Remote operation** — The WindoWall Pro can be operated remotely via the serial interfaces using the Windows-based control software or SIS commands, or via the Ethernet interface using the embedded web pages, SIS commands, or the Windows-based control software.
- **Rack mounting** — The 2U high and full rack wide metal enclosure can be rack mounted using the included rack and through-desk mounting brackets.
- **RGB and video scaling** — All sources are scaled to a single output rate.
- **Window captioning** — Each picture-in-picture window can be labeled with a text label of up to 16 characters. The label can be positioned and sized as desired, and background, text, and border colors can be selected.
- **Test patterns** — A variety of internal test patterns, including crop pattern, crosshatch, colorbars, and three aspect ratio patterns enable proper system setup.
- **Third party window preset recall** — Window presets that were configured and saved in the WindoWall Console application can later be recalled remotely by user-friendly text strings issued to the primary MGP. The primary MGP coordinates with the other MGPs and a matrix switcher to recall the preset and the inputs displayed in the windows.
- **LockIt HDMI cable lacing brackets** — One bracket is provided for each HDMI input and output connector to secure the cables to the rear panel and prevent signal loss due to loose connections.
- **Quad standard video decoding** — A digital four-line adaptive comb filter decodes NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.

Application Diagram

The following application diagram shows an example of how devices may be connected to the WindoWall Pro series.

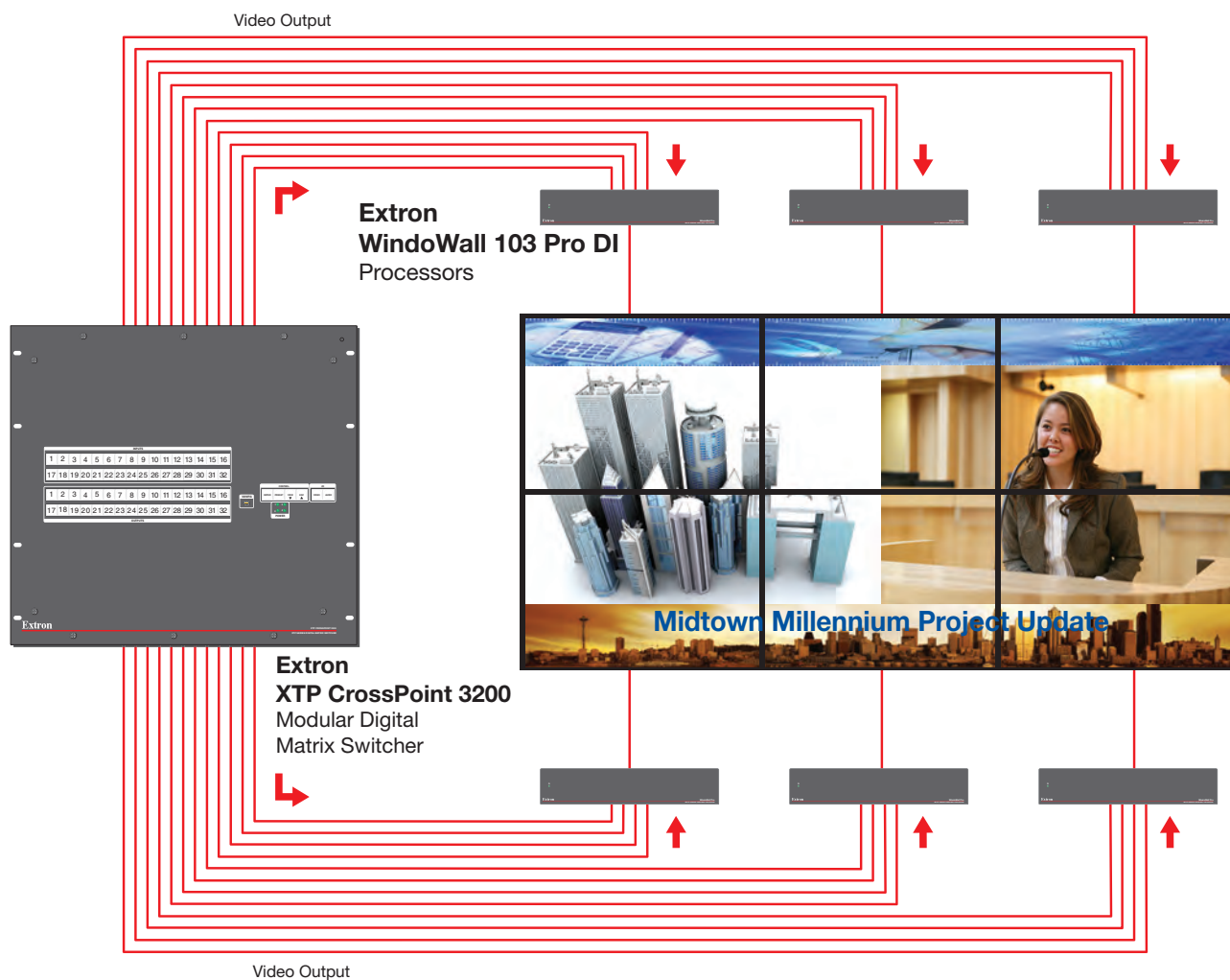


Figure 1. Connection Diagram for a WindoWall Pro DI

Installation

This section describes the installation procedures for the WindoWall Pro Series Multi-Graphic Processor and the connectors on the rear panel. Topics include:

- [Installation Overview](#)
- [Rear Panel Features](#)
- [Front Panel](#)
- [Resetting](#)

Installation Overview

The WindoWall Console software can control up to 16 MGPs in a videowall application. To install and set up multiple WindoWall Processor units for a videowall, follow the steps below (see the application diagram in [figure 1](#) on page 4 for a connection example).

1. Disconnect power from the processors and turn off all other devices that will be connected.
2. Install the four rubber feet on the bottom of the unit, or mount it using the supplied rack mounting brackets (see [Mounting the WindoWall Pro](#) on page 68).
3. Attach all video sources to the input connectors of a matrix switcher, such as an Extron CrossPoint.
4. If using HDMI inputs with the WindowWall Pro DI, connect each HDMI input source to an HDMI distribution amplifier (DA), such as an Extron HDMI DA.
5. Connect the video outputs of the matrix switcher to the four sets of WindoWall Pro BNC input connectors, or
If using HDMI inputs, attach each DA to one of the rear panel HDMI input connectors.
6. Connect the videowall displays to the RGBHV/YUV BNC output connector, the HDMI output connector, or both.
7. Connect an active LAN Ethernet cable to the RJ-45 port on the WindoWall Pro rear panel to establish a link to the network (see [④ LAN connector](#) on page 7).
8. If serial control is desired, connect an RS-232 cable from the host to the Remote RS-232/422 connector on the rear panel for serial control (see [③ Remote RS-232/422 connector](#) on page 6).
9. Plug the WindoWall Pro, input devices, and output devices into grounded AC sources, and power on all devices.
10. Install and set up the WindoWall Console software on your computer (see [Setting Up the WindoWall Console Software](#) on page 11).

NOTE: Step 10 can be performed without the inputs, matrix switcher, or any other hardware connected to the WindoWall Pro.

Rear Panel Features

Figure 2 shows the rear panel of the WindoWall Pro DI, which has four HDMI input connectors. The standard WindoWall Pro model does not have HDMI input connectors (although **both** models have HDMI output and Live Background connectors). In all other respects the rear panels are identical for both models.

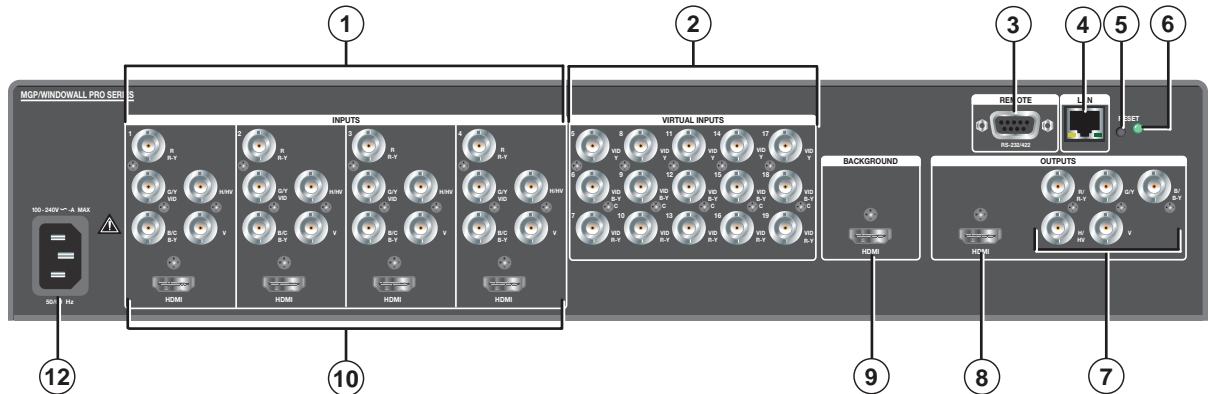


Figure 2. WindoWall Pro DI Rear Panel

- ① **BNC Inputs 1 through 4** — Plug RGB, high or standard definition component video, S-video, or composite video sources into these fully configurable BNC connectors, as shown in figure 3. Configure these connectors for the desired signal types via the WindoWall Console software.

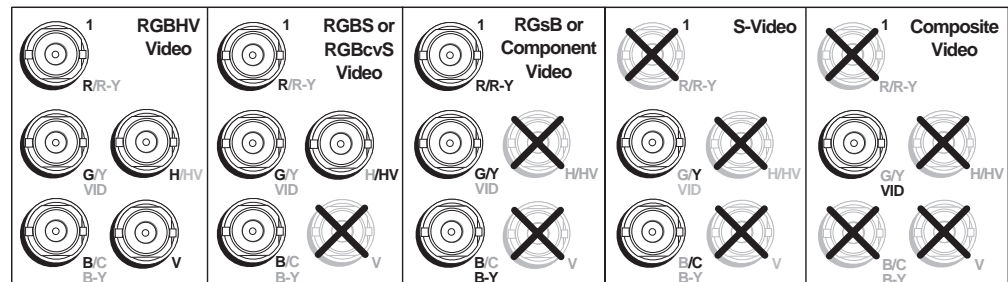
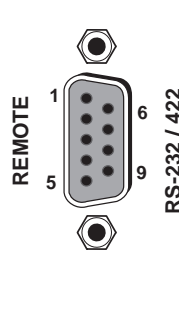


Figure 3. Connecting to RGB, Component HD, S-video, or Composite Video Inputs 1 through 4

- ② **Virtual inputs (inputs 5 through 19)** — Not used
- ③ **Remote RS-232/422 connector** — Plug a computer or other RS-232 or RS-422 host device into this female 9-pin D connector. Wire the connector as shown in [figure 4](#) on the next page.

NOTE: The cables used to connect the RS-232/422 port to a computer or control system may need to be modified by removing pins or cutting wires. If unneeded pins are connected, the processor may cease functioning.

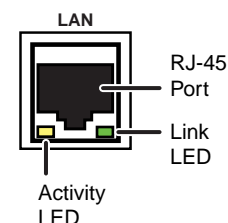


Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	Tx	Transmit data	Tx-	Transmit data (-)
3	Rx	Receive data	Rx-	Receive data (-)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	Rx+	Receive data (+)
8	—	Not used	Tx+	Transmit data (+)
9	—	Not used	—	Not used

Figure 4. RS-232/422 Connector Pin Configuration

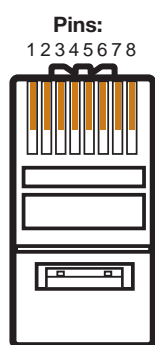
- ④ **LAN connector** — Plug an RJ-45 network cable into this connector to connect the unit to a network (via a switch, hub, or router) or to a single computer.

- **Activity LED** — This LED blinks to indicate network activity.
- **Link LED** — This LED lights to indicate a good network connection.



Use a straight-through cable to connect to a network, or a crossover cable to connect directly to a computer.

- For 10BaseT (10 Mbps) networks, use a CAT 3 or better cable.
- For 100BaseT (maximum 155 Mbps) networks, use a CAT 5 cable.



Insert Twisted
Pair Wires
**RJ-45
Connector**

Crossover Cable

Pin	End 1 Wire Color	End 2 Wire Color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown

T568A

T568B

A cable that is wired as T568A at one end and T568B at the other (Tx and Rx pairs reversed) is a "crossover" cable.

Straight-through Cable

Pin	End 1 Wire Color	End 2 Wire Color
1	White-orange	White-orange
2	Orange	Orange
3	White-green	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Green	Green
7	White-brown	White-brown
8	Brown	Brown

T568B

T568B

A cable that is wired the same at both ends is called a "straight-through" cable because no pin or pair assignments are swapped. Both ends of the cable can be T568B (as shown) or T568A (not shown).

Figure 5. Wiring the LAN Connector

If desired, configure the LAN port by using SIS commands (see [IP Setup Commands](#), beginning on page 44, in the Command and Response Table for IP SIS Commands). The LAN port defaults are:

IP address: 192.168.254.254
Gateway IP address: 0.0.0.0
Subnet mask: 255.255.0.0
DHCP: off

- ⑤ **Reset button** — Pressing this recessed button causes various IP functions and Ethernet connection settings to be reset to the factory defaults (see [Resetting](#) on page 9 for more information).
- ⑥ **Reset LED** — This LED, located to the upper-right of the reset button, blinks a varying number of times to indicate which reset mode has been entered (see [Resetting](#) for details).
- ⑦ **BNC output connectors** — Plug an output device into these five BNC connectors, as shown in figure 6.

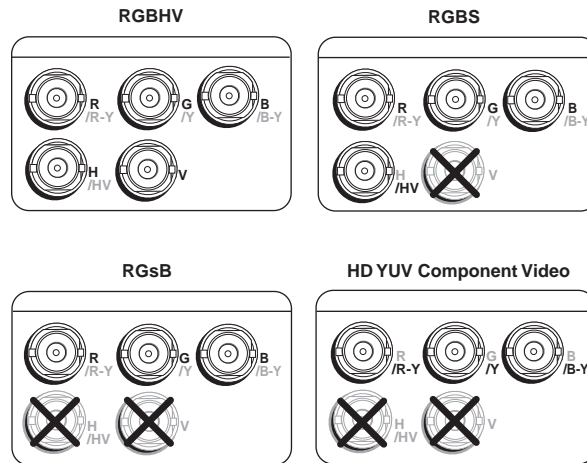


Figure 6. Connecting to BNC Output Connectors

- ⑧ **HDMI output** — Plug an HDMI or DVI output device into this HDMI connector.

NOTES:

- When two output devices are attached (one to each output connector), they both display the same image.
- Connecting a DVI display to this HDMI connector requires an adapter cable.

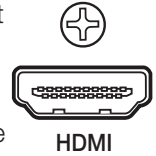
LockIt brackets: LockIt cable lacing brackets, one for each HDMI input and the output connector, are provided with the WindoWall Pro. These brackets secure the HDMI cables to the rear panel connectors and reduce stress on the connectors, preventing signal loss due to loose cable connections. For information on attaching the LockIt brackets, see the *LockIt HDMI Lacing Bracket Installation Guide* card, available at www.extron.com.

- ⑨ **Live Background input** — Connect an HDMI or DVI input source to this HDMI connector in order to display the video source live as a background on your output screen. The four WindoWall Pro windows are displayed in front of this HDMI image. When an Live background is used, the WindoWall Pro output is locked to the input rate of the live background. This input is not scaled.

NOTES:

- This input connector can be used only to receive the background image. To process HDMI input signals, use a WindoWall Pro DI.
- Connecting a DVI source to this HDMI connector requires an adapter cable.

- ⑩ **HDMI inputs (WindoWall Pro DI only)** — Connect up to four HDMI input sources to these HDMI input connectors, as an alternative to using the fully-configurable BNC input connectors (①).



- ⑫ **AC power connector** — Connect the included power cord from this male IEC connector to a 100–250 VAC, 50–60 Hz power source.

Front Panel



Figure 7. WindoWall Pro Front Panel

- ① **Indicator LED** — This green LED lights while the WindoWall Pro is receiving power.

Resetting

Resetting the unit causes various IP functions and Ethernet connection settings to revert to factory defaults. There are four reset modes (numbered 1, 3, 4, and 5 for the sake of comparison with Extron IP Link products) that are available by pressing the Reset button on the rear panel. The Reset button is recessed, so you must use a pointed stylus, ballpoint pen, or small screwdriver to press it (see the [Reset Modes Summary table](#) on the next page for an explanation of all the reset modes).

ATTENTION: Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.

Reset Modes Summary			
Mode	Activation	Result	Purpose
1	Hold in the Reset button while applying power to the WindoWall Pro.	Restores the factory-installed firmware. It does not clear the current configuration.	Mode 1 can be used to remove a version of firmware if incompatibility issues arise.
3	Hold in the Reset button until the Reset LED blinks once (after approximately 3 seconds). Then, within 1 second press Reset momentarily (for less than 1 second).	Turns events on and off. During resetting, the Reset LED blinks two times if events are starting or three times if events are stopping.	Mode 3 is useful for troubleshooting.
4	Hold in the Reset button until the Reset LED blinks twice (once after approximately 3 seconds and again after 6 seconds). Then, within 1 second press Reset momentarily (for less than 1 second).	<ul style="list-style-type: none"> • Enables ARP capability. • Sets the IP address, subnet address, and gateway address to the factory defaults. • Sets port mapping to the factory default. • Turns DHCP off. • Turn events off. <p>The Reset LED blinks four times in quick succession during the reset.</p>	<p>Mode 4 enables you to set IP address information using ARP and the MAC address.</p> <p>It does not replace any user-installed firmware.</p>
5	Hold in the Reset button until the Reset LED blinks three times (once after approximately 3 seconds, again after 6 seconds, and then again after 9 seconds). Then, within 1 second press Reset momentarily (for less than 1 second).	<p>Performs a complete reset to factory defaults (with the exception of the firmware), which includes:</p> <ul style="list-style-type: none"> • Everything mode 4 does • Reset of almost all real time adjustments: <ul style="list-style-type: none"> • Clears all ties, presets, audio or RS-232 mutes, and I/O grouping. • Resets all IP options. • Removes or clears all WindoWall Pro files. <p>The reset LED blinks four times in quick succession during the reset.</p>	Mode 5 is useful if you want to start over with configuration and uploading and also to replace events.
<p>NOTE: Mode 5 reset clears most adjustments. To save these settings, use the WindoWall Console software. Select Save Project as from the File menu before you perform this reset (see the WindoWall Console help file for more information).</p>			

NOTES:

- The reset modes listed in the table above close all open IP and Telnet connections and all sockets.
- Each mode is a separate function, not a continuation from mode 1 to mode 5.
- Reset mode 2 is not available on the WindoWall Pro products.

Remote Configuration and Control

This section describes the Ethernet connections through which the WindoWall Console software provides configuration and control of the WindoWall Pro system. It gives the procedure for installing and setting up the software on your computer. (For descriptions of all tasks that can be performed with the software, see the WindoWall Console Software help file.)

This section also describes the serial connection through which Extron Simple Instruction Set (SIS) commands can be issued to the WindoWall Pro and lists the commands that are available for controlling and configuring the processors. Topics include:

- [Setting Up the WindoWall Console Software](#)
- [Using SIS Commands](#)

Setting Up the WindoWall Console Software

The WindoWall Console application software is the user interface to the WindoWall Pro system. It brings all the WindoWall Pro processors together via TCP/IP and enables you to set up, create, and manage your videowall system. The software includes wizards that take you through step-by-step procedures to configure the input sources and the matrix switcher for the videowall. After completing the setup, you can create additional customized window layouts using the virtual canvas provided by the software, and save these layouts to up to 100 memory presets for future recall.

Installing and Starting the Software

You can complete the following startup procedure on the MGP either before or after you connect the other hardware (inputs, outputs, and WindoWall Pro) to it.

1. Insert the provided DVD into your computer CD drive. The disc should start automatically. If it does not, locate the LAUNCH.EXE file name on the CD drive and double-click on it. The Extron Software Products screen opens (see [figure 8](#) on the next page).

NOTE: If the WindoWall Pro software does not appear on the CD provided with your WindoWall Pro, download it from the Extron website at www.extron.com (see [Downloading the WindoWall Console Software from the Web](#) on page 13).

2. On the Extron Software DVD screen, click the **Software** button (shown at right).





Figure 8. DVD Main Screen

3. In the table on the Control Software screen, scroll to locate the WindoWall Pro, and click the **Install** link in the far right column.

Description	Part Number	Version	Date	Size	
WindoWall Console Control Software for the WindoWall System Release Notes	79-528-01	1.3	Sep 17, 2010	24060 KB	Install

Figure 9. WindoWall Console Link on the DVD Control Software Screen

4. On the download prompt that appears, click **Run** to begin installing the program.

NOTE: If you want to save the installation file (WindoWallSWnrxn.exe) to your desktop to run later, click **Save** instead of **Run**. On the Save As dialog box, save the installer file to the desired location on your PC. When you are ready to install the software, double-click on the setup file icon, click **Run** on the Security prompt, and restart the procedure at this point.

5. Another Security prompt appears. Click **Run** again to continue with the installation.

6. Follow the instructions on the InstallShield Wizard screens to complete the program installation.

By default the installation creates a folder called “WindoWall Console” in the following location on your computer:

Windows 7 and later: c:\Program Files (86)\Extron\WindoWall Console

Windows XP and earlier: c:\Program Files\Extron\WindoWall Console

If there is no Extron folder in your program files folder, the installation program creates it as well.

7. When installation is complete, close the Software Products screen. You can now start the WindowWall Console program.

Downloading the WindoWall Console Software from the Web

The WindoWall Console control program is also available on the Extron website at www.extron.com. From this site, you can also download updates to the software as they become available. To access the software on the web:

1. Open the Extron web page, and select the **Download** tab.
2. On the Download Center screen, click the **Control Software** button (shown at right). A Control Software screen displays, containing a list of control software products.
3. In one of the linked alphabets displayed across the top and bottom of the screen, click **W**.
4. On the W software products page, scroll to locate WindoWall Console and click the **Download** link at the far right.



Figure 10. WindoWall Console Link on the Web

5. On the next screen, fill in the required information.
6. Click the **Download WindoWallSWnxxn.exe** button.
7. On the File Download - Security Warning dialog box that opens, click **Run** to begin downloading the installer file.

NOTE: If you want to save the installation file to your computer hard drive to run later, click **Save**. On the Save As dialog box that opens, save the setup file to the desired location. When you are ready to install the software, double-click on the **WindoWallSWnxxn.exe** icon, click **Run** on the download screen that opens, and restart this procedure at step 9.

8. On the second security prompt that opens, click **Run** again to start the installation process.
9. Follow the instructions on the InstallShield Wizard screens to complete the software program installation. By default the installation creates a folder called “WindoWall Console” in the following location on the computer:

Windows 7 and later: c:\Program Files (x86)\Extron\WindoWall Console

Windows XP or earlier: c:\Program Files\Extron\WindoWall Console

If there is not already an Extron folder in your Program Files or Program Files (x86) folder, the installation program creates it as well.

Starting the WindoWall Console Software

To start using the WindoWall Console software:

1. Open the software program by clicking on the WindoWall Pro file icon, located at **All Programs > Extron Electronics > WindoWall Console > WindoWall Console** on your computer **Start** menu.
 - If no password has been set by your system administrator, an introductory screen appears briefly, then the WindoWall Console main window opens.
 - If a password has been set, the following screen appears:



Figure 11. WindoWall Console Login Screen

- a. If the password is not already entered and masked, enter the password in the **Login Password** field.

NOTE: The password is case sensitive.

- b. Click **Login**. The WindoWall Console main window opens.

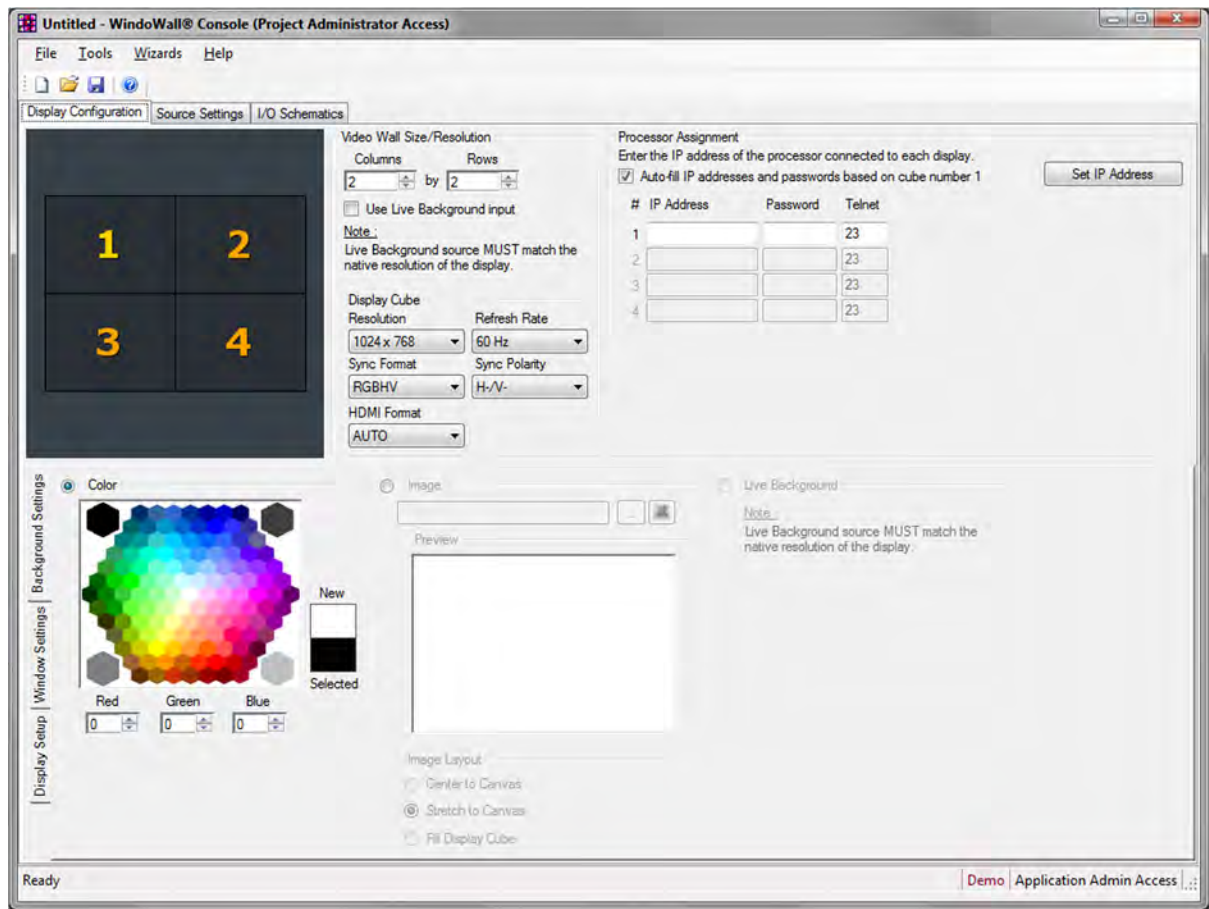


Figure 12. WindoWall Console Main Window

2. Set up a new WindoWall Pro project (see [Setting Up a WindoWall Pro Project](#)), or open an existing one (see the WindoWall Console help file).

Setting Up a WindoWall Pro Project

To set up the WindoWall Console software to configure and operate your WindoWall Pro system, you must create a new project. This section describes the procedure for creating a new project using the New Project Wizard.

NOTE: You can also create (or edit) a project by entering the information on the **Display Configuration**, **Source Settings**, and **I/O Schematic** tabs (see the WindoWall Console help file for more information on using these screens).

1. From the **Wizards** menu, select **New Project**.

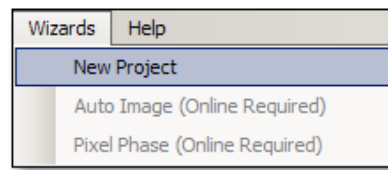


Figure 13. Selecting New Project from the Wizards Menu

2. The WindoWall Pro Setup Wizard opens with a screen outlining what the wizard covers. Click **Next** to begin setting up the new project.
3. On the Display Configuration window, enter information about the output displays on your videowall.

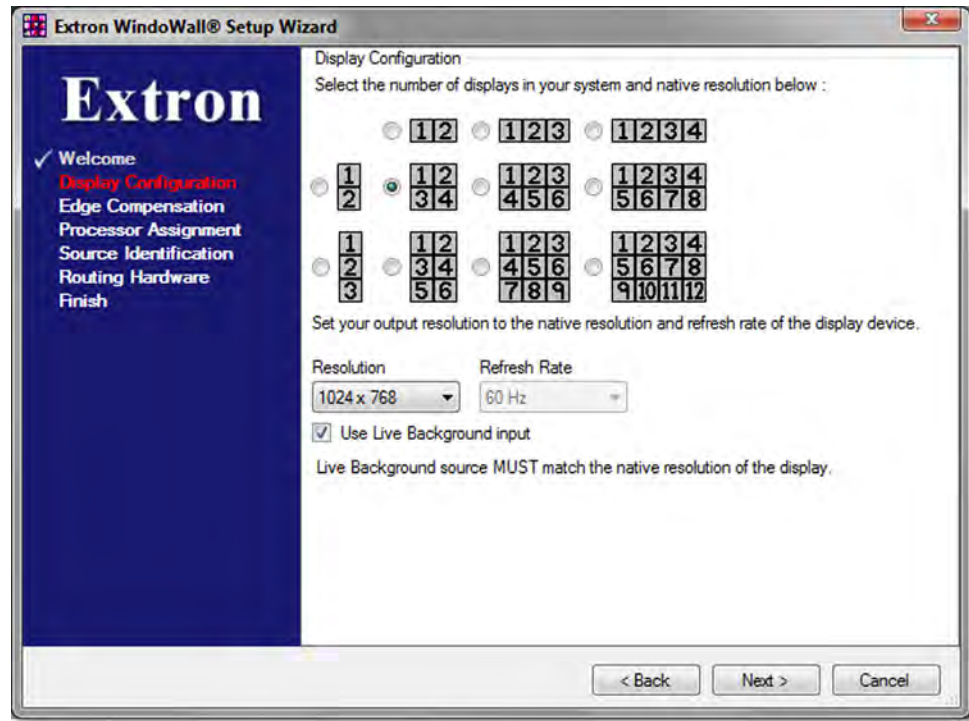


Figure 14. Display Configuration Window—Setup Wizard

- Select the number and horizontal/vertical configuration of your displays.

NOTE: If your display configuration is not shown in this window, select the closest one. You can modify it after completing the wizard.

- From the two drop-down menus, select a resolution and refresh rate for your displays.
 - If you want to use the unscaled image from an HDMI input source as a live background on the displays, select the **Use Live Background input** check box. When a live background is used, the selected resolution is the EDID information provided to the HDMI source.
- Click **Next** when finished with this screen.

4. (Optional) Define the size of the display borders using the Edge Compensation screen. Select the **Enable** check box to enable the fields on this screen.

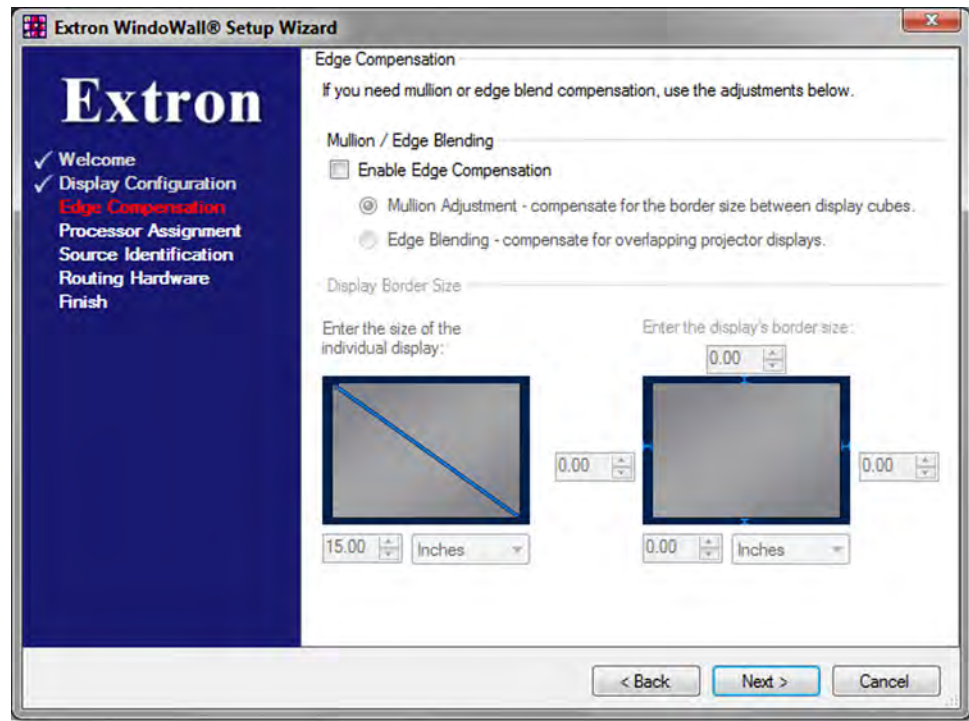


Figure 15. Edge Compensation Window, Mullion Adjustment Selected — Setup Wizard

The Edge Compensation screen contains the following:

- **Mullion Adjustment radio button** — Select this button if you need to compensate for the border spaces around the displays. When you select **Mullion Adjustment**, the following fields are displayed:
 - **Enter the size of the individual display** — Type or use the incremental spin boxes and drop-down menus to select the diagonal size and unit of measure of the individual displays.
 - **Enter the display border size** — Type or use the incremental spin boxes and drop-down menus to select the sizes and unit of measure for the borders of each of the displays.
- **Edge Blending radio button** — Select this button if you are using projectors to display multiple images on one screen, and you need to compensate for overlapping edges. The Edge Compensation screen changes as shown in [figure 16](#) on the next page.

NOTE: The WindoWall Pro does not manage the brightness compensation associated with edge blended images. The WindoWall Console software supports projectors that have edge blending functionality built in (see the [Special Application: Edge Blending](#) section, beginning on page 64, for more information.)

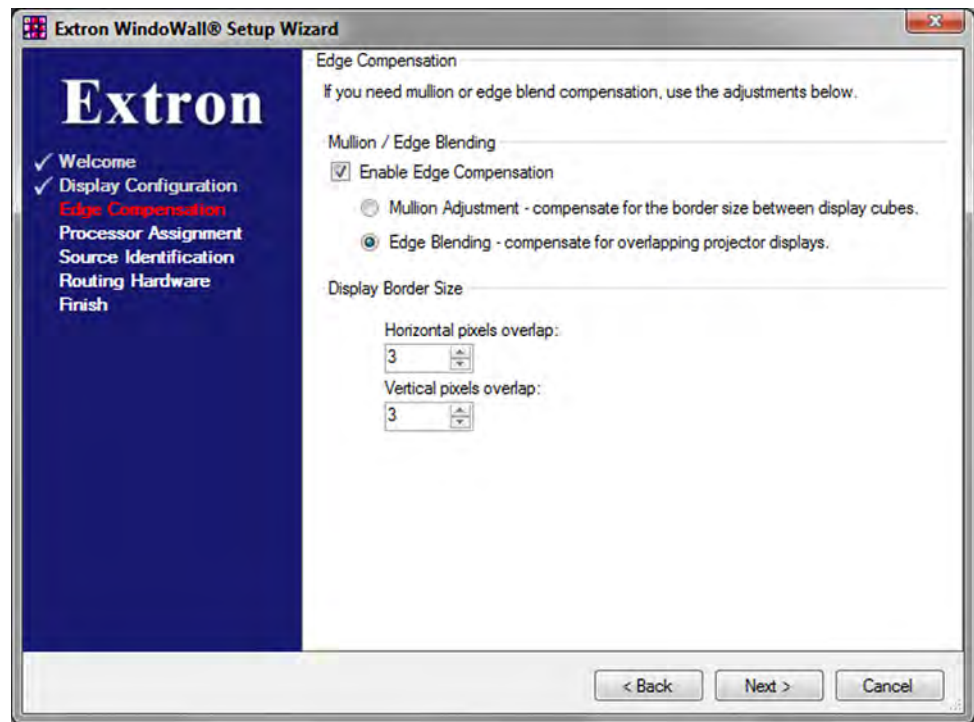


Figure 16. Edge Blending — Setup Wizard

5. The Processor Assignment screen contains a diagram of the videowall configuration you selected in step 3. In the **IP Address of cube #1** field, enter the IP address of the WindoWall Pro processor that is connected to the display represented by square 1 in the diagram.

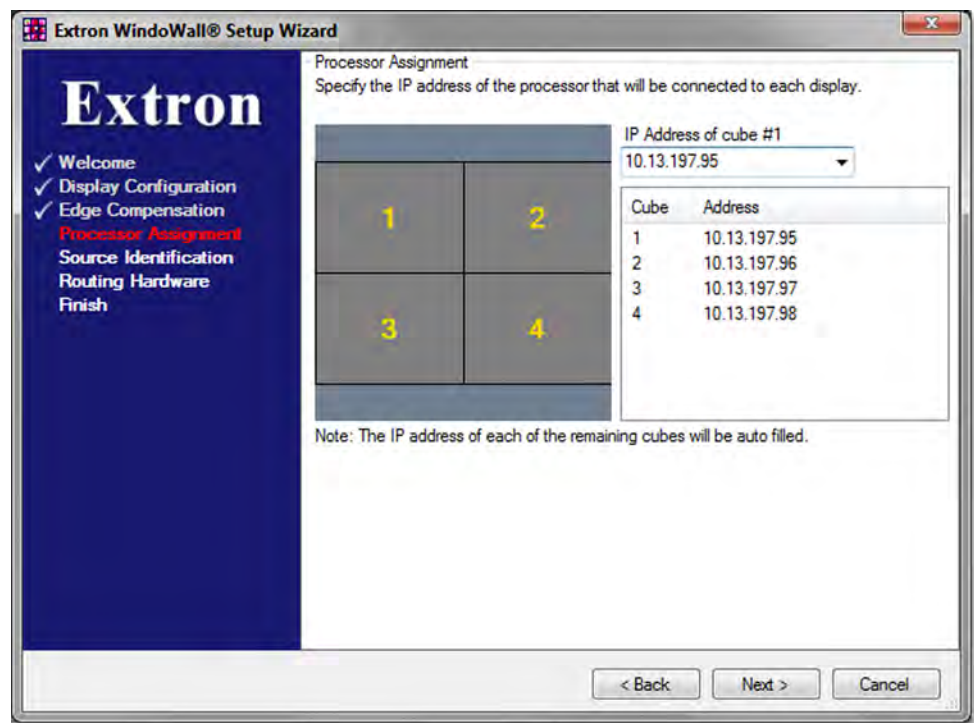


Figure 17. Processor IP Address Assignment — Setup Wizard

The wizard fills in IP addresses for the rest of the processors in your configuration, incrementing each successive address by 1. (If the actual addresses of the WindoWall Pros do not match the ones that the wizard automatically entered, you can correct the addresses on the WindoWall Console main window after you complete the setup wizard.)

Click **Next** to display the next screen.

6. On the Source Identification screen, enter information about your input sources:

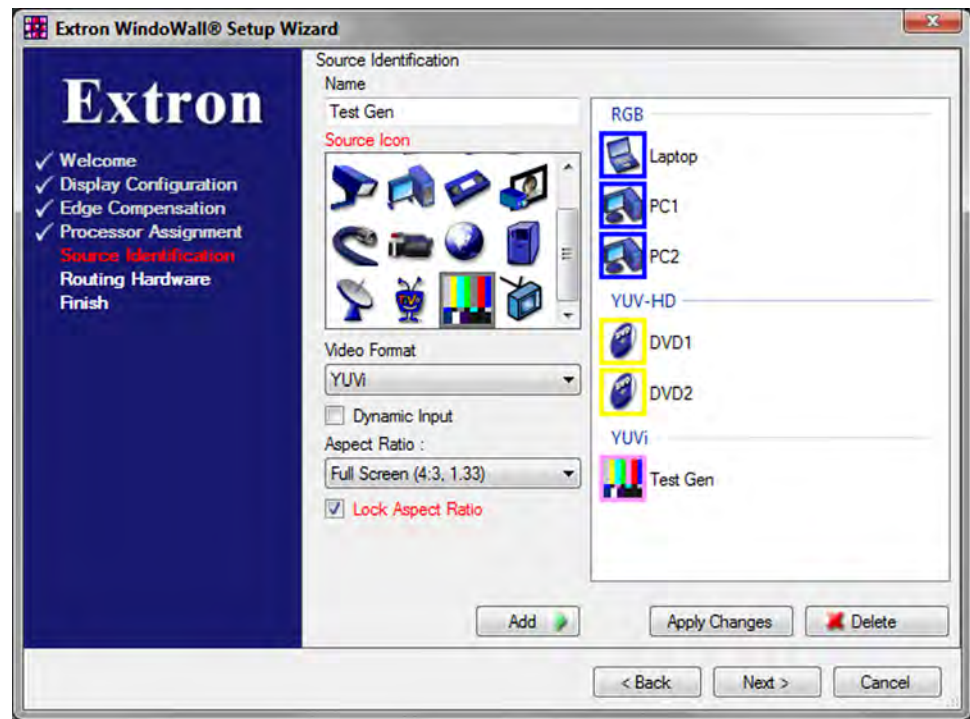


Figure 18. Source Identification — Setup Wizard

- a. In the **Name** field, enter a name for your first input, or leave the default name (Source 1).
- b. In the Source Icon panel, click on an icon that represents your first source. The available icons are listed in the [Input Source Icons table](#) on the next page.

NOTE: Custom icons can be added through the WindoWall Console main window.

Input Source Icons

	DVD player		Cable feed
	Laptop PC		Camera
	MAC computer		Map (PC)
	Desktop PC		Media server
	Security camera		Satellite
	Workstation PC		TIVO
	VCR		Test generator
	Video conferencing		TV broadcast

- c. From the **Video Format** drop-down menu, select the format for your first source.
- d. Select the **Dynamic Input** check box if the source input resolution is unknown or might vary (for example, in the case of a laptop input source, different laptops with different resolutions might be connected to the system).
- e. From the **Aspect Ratio** drop-down menu, select the default aspect ratio that the input source will have when it is added to the configuration. This source aspect ratio can subsequently be changed if desired.
- f. Select the **Lock Aspect Ratio** check box if you want to specify that the window aspect ratio **cannot** be changed after the input has been added to the project. When the aspect ratio is locked, the window can still be resized.
- g. When finished setting up the first input, click **Add**. The selected source icon and the name of the first source are displayed in the source list field to the right, categorized by signal type.
- h. Repeat steps a through f for the rest of your input sources.

To make changes to a source — If you want to make changes at any time to an input listed in the source panel, select the input icon. Its parameters are displayed in the fields to the left. Make any desired changes in those fields, then click **Apply Changes**.

To delete a source — To remove a source from the list, select its name/icon, then click **Delete**.

Click **Next** when finished setting up input sources.

Figure 18 on the previous page shows a set of sources that have been added to a configuration.

7. On the Routing Hardware screen, enter the IP address of the matrix switcher for your WindoWall Pro system and click **Next**.

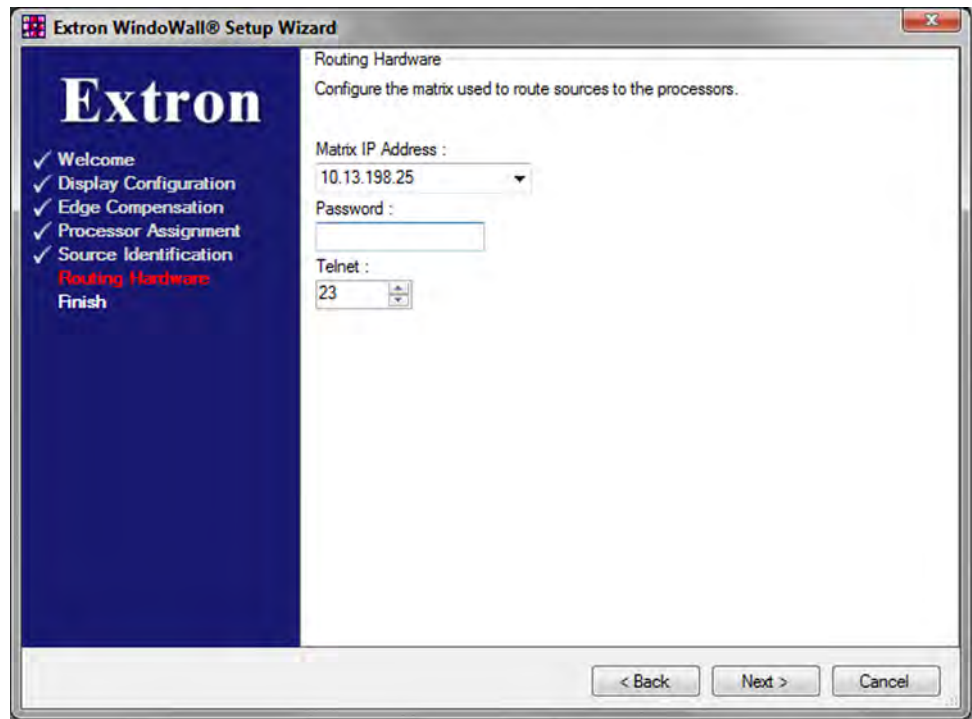


Figure 19. Routing Hardware Window — Setup Wizard

8. On the finish ("Congratulations") screen, click **Done**. The Wizard closes, and the **I/O Schematics** screen is displayed in the WindoWall Console window (see [figure 20](#) on the next page).

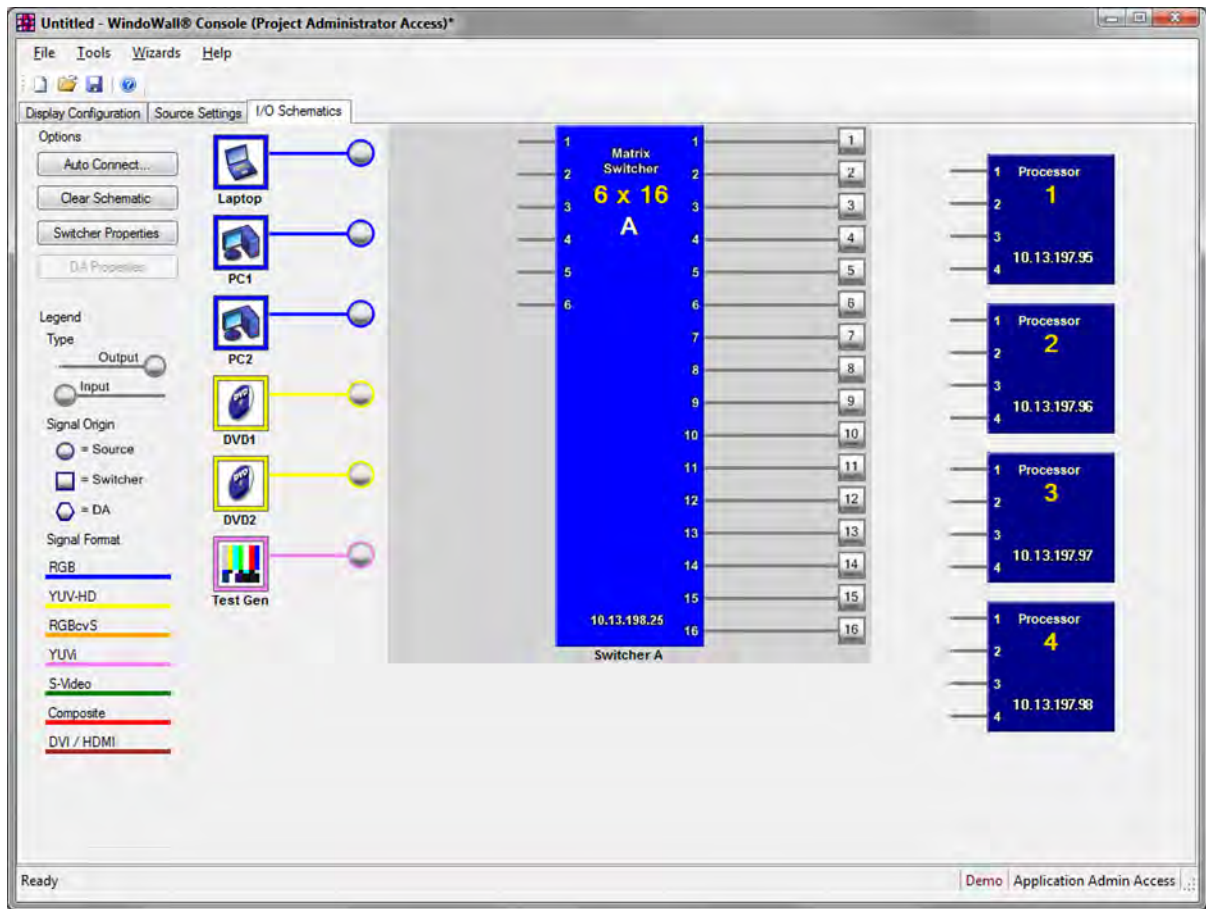


Figure 20. I/O Schematics Screen after Wizard Completion

9. On the I/O Schematics tab, if necessary, redefine the matrix size or any other switcher properties that may have changed.
 - a. Click the **Switcher Properties** button in the Options panel. (If this button is grayed out, click on the matrix diagram in the center of the screen to enable it.)
 - b. On the Switcher Properties window, enter any changes to the switcher IP address, Telnet port number, password, and number of inputs and outputs (see [figure 21](#) on the next page).

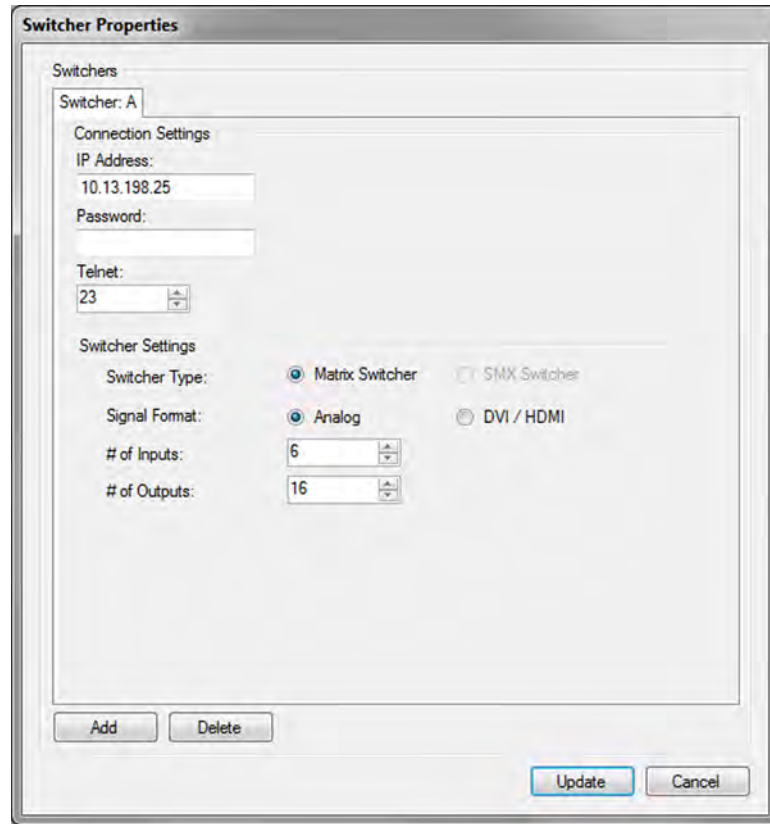


Figure 21. Switcher Properties Screen

10. Specify the input connectors on the matrix switcher to which the input sources are attached and the switcher outputs to which the processor inputs are attached, creating a connection diagram of your WindoWall Pro system. You can do this by one of the following methods:

- **Auto Connect** — Click the **Auto Connect** button in the upper-left corner of the screen. This connects all inputs to those of the matrix switcher and all switcher outputs to the processors. The source connections are grouped by signal type (RGB, YUV, and so on), and are arranged in alphabetical order by name within the signal category.

When you click the **Auto Connect** button, the following prompt appears:

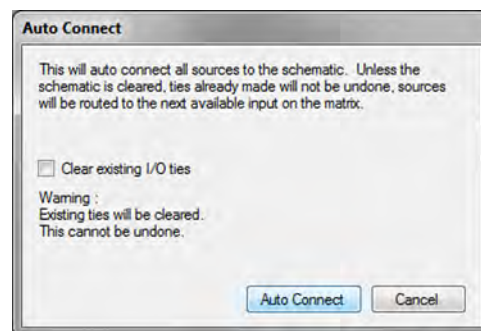


Figure 22. Auto Connect Prompt

If you select the **Clear existing I/O ties** check box, any connections that you may have specified previously are removed before the new set of connections is made. If you do not select the check box, previous connections are retained and the new connections are added following them (see the example in figure 23).

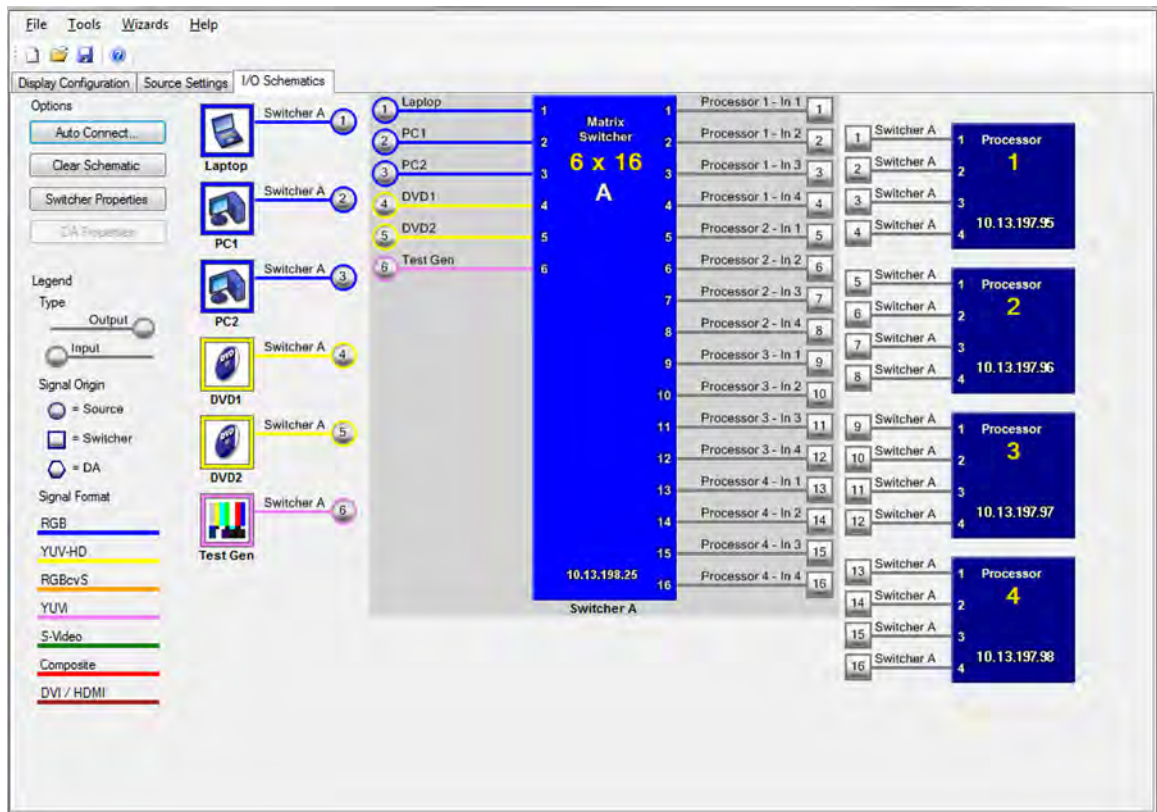


Figure 23. I/O Schematics Screen with Auto Connected Sources and Processors



- **Manually connect** — You can connect the inputs and the processors individually by dragging icons to the desired locations on the diagrams as follows:
 - Drag each source icon (for example, ) to the desired WindoWall Pro input on the diagram in the center.
 - Drag each WindoWall Pro output icon (for example, ) to the desired location on one of the Processor diagrams at the right edge of the I/O Schematics screen.
 - To delete a tie, do either of the following:
 - Right-click on the tie** to either the matrix switcher diagram or the appropriate MGP diagram, then click the **Delete** pop-up button that appears.
 - Place the mouse over the tie**, then press the <Delete> key on your keyboard.

Figure 24 on the next page shows a schematic diagram being assembled manually.

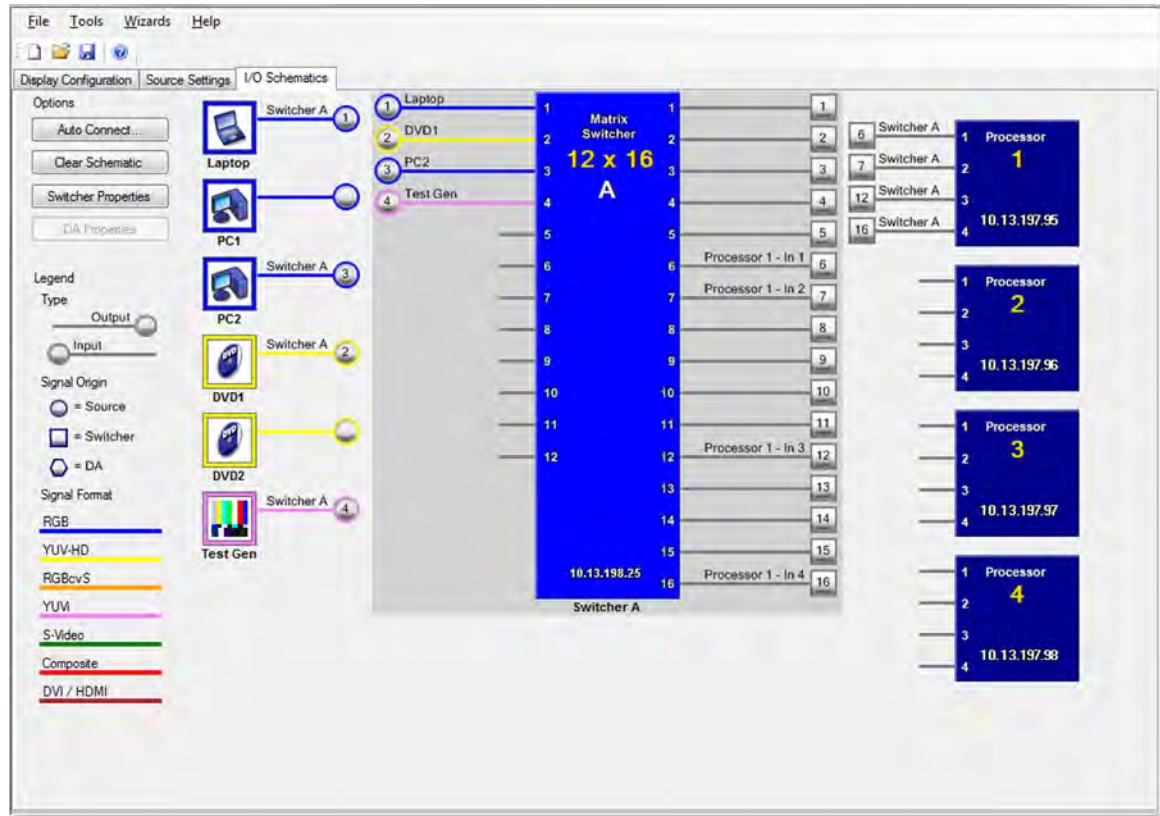


Figure 24. Manually Connecting Sources and Processors on the I/O Schematics Screen

For details on using the I/O Schematic screen, select **Contents** from the **Help** menu to view the WindoWall Console help file.

11. If you want to make changes to your input sources at this point, select the **Source Settings** tab and make your changes or additions there, then select the **I/O Schematics** tab again.

NOTE: The diagram you create on the **I/O Schematics** tab **must** match the physical cabling in the WindoWall Pro system.

12. Save your completed configuration:
 - a. Select **Save Project As** from the **File** menu.
 - b. On the Save As dialog box, enter a name for the configuration.
 - c. Browse to the location on your computer where you want to save the configuration, and click **Save**. The new configuration file name is displayed in the title bar of the WindoWall Console window.

13. From the **Tools** menu, select **Operate System** to connect online to the matrix switcher and the processors. (Be sure that you have access to these devices and that they have power.) The following screen is displayed:

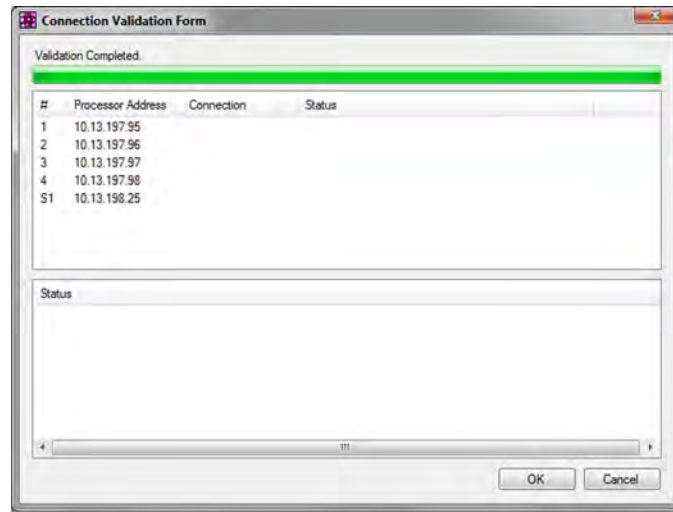


Figure 25. Connection Validation Form

14. Click **OK**. If the connections are successful, the software goes into operating mode, and the Canvas screen is displayed.

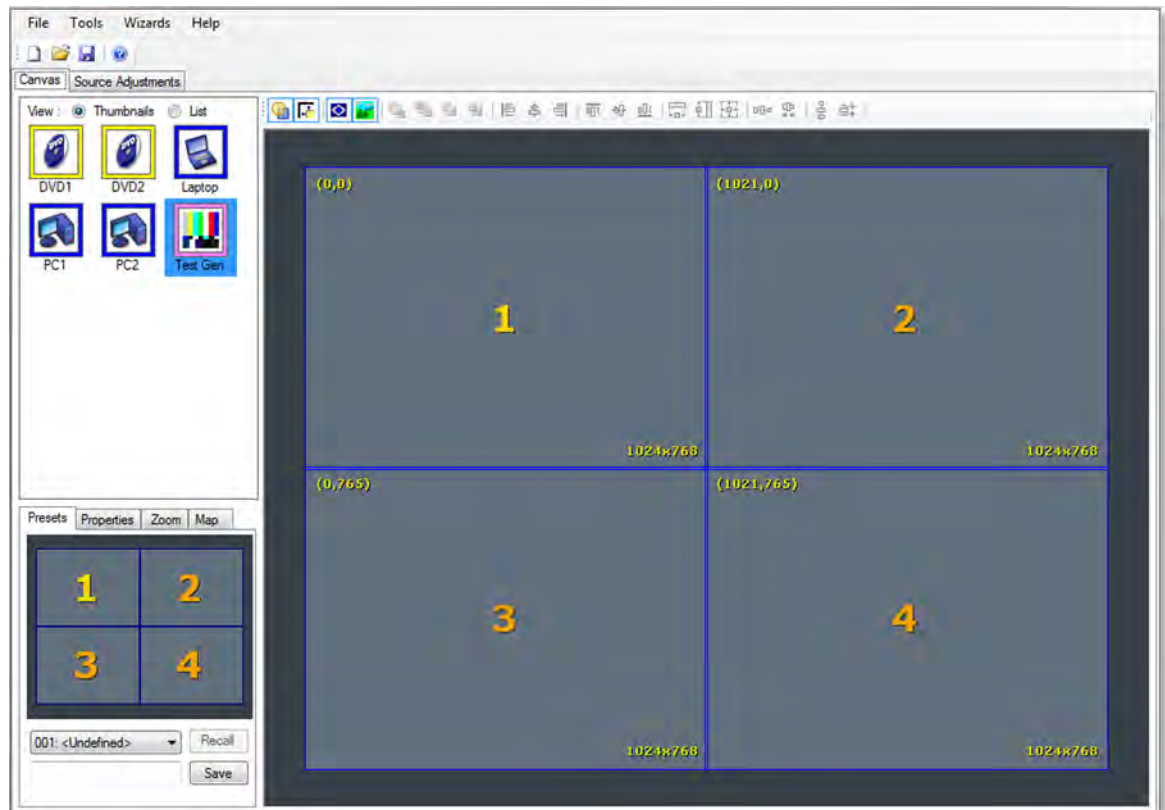


Figure 26. Canvas Tab on the WindoWall Console Window in Operating Mode

15. Run the Auto Image Wizard to configure the image sampling settings for the input sources that you have defined in this project (see [Using the Auto Image Wizard](#) on the next page).

Using the Auto Image Wizard

The Auto Image Wizard lets you set up the software to automatically configure the input sampling settings for all the sources that you defined in the project.

1. From the **Wizards** menu, select **Auto Image**. (This option is available only if your computer is online to the matrix switcher and the processors.)

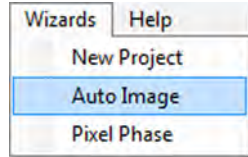


Figure 27. Selecting Auto Image from the Wizards Menu

2. On the Auto Image Wizard opening screen, select the check box. The **Next** button becomes available.

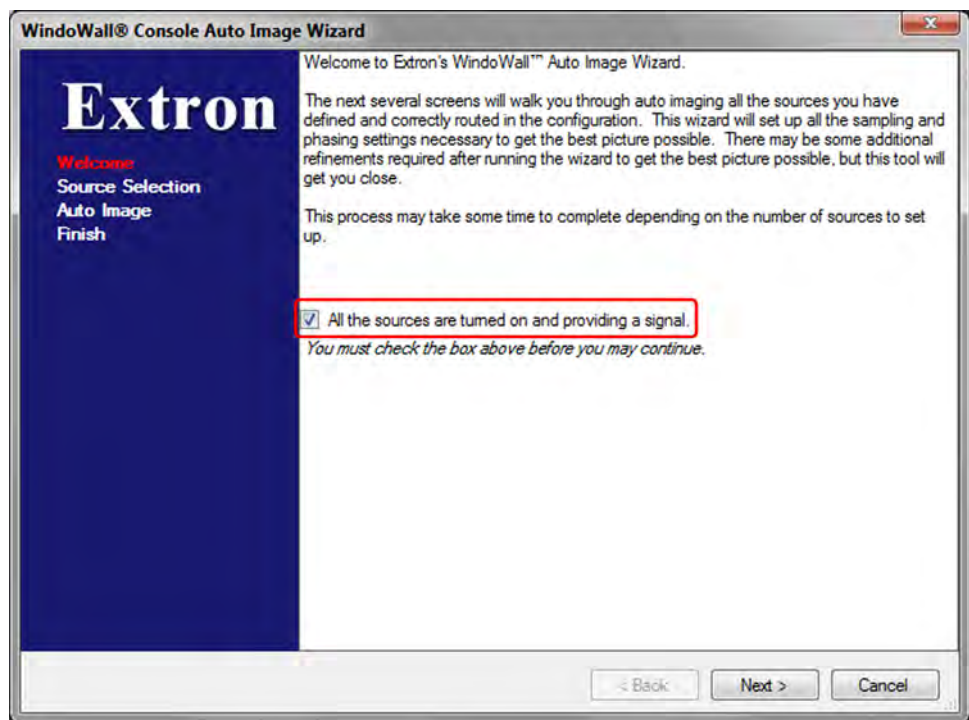


Figure 28. Check Box on the First Auto Image Wizard Screen

3. Click **Next**. The source selection window opens, displaying icons for all the input sources that you identified in the Setup Wizard.



Figure 29. Source Selection Screen — Auto Image Wizard

4. By default, the **Select All Sources** check box at the top of the screen is selected. Therefore, the check boxes for all the input icons are also selected. Clear the check box above the icon for any source that you do not want to be auto imaged.

5. Click **Next**. The software performs auto imaging on each selected source. While auto imaging is in progress, the Auto Image Progress screen is displayed (see figure 30).

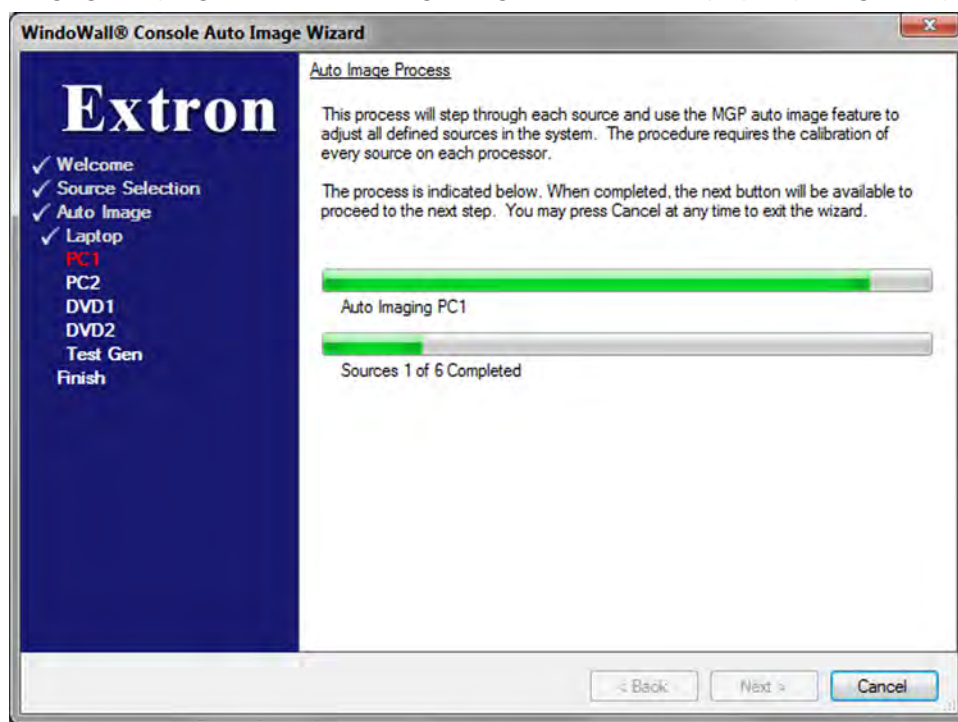


Figure 30. Auto Image Progress Bars — Auto Image Wizard

This screen contains two progress bars:

- The top bar shows the auto imaging progress for the source currently being processed.
- The second bar shows the auto imaging progress for the entire set of sources.

The left column of the screen contains a list of the inputs being auto imaged. The source currently being processed is shown in red; those completed are preceded by check marks.

6. When all auto imaging has been completed, a Congratulations screen appears. Click **Done** to close the wizard and return to the Canvas screen on the WindoWall Console.
7. You can now drag and drop sources onto the canvas, size and position the windows, and save the layouts as presets. If you want to edit your input sources, select the **Source Adjustments** tab.

For information on using all the WindoWall Console features, select **Contents** from the **Help** menu to display the WindoWall Console help file.

Using SIS Commands

Simple Instruction Set (SIS) commands provide an alternative way to control and configure the WindoWall Pro processor. They are issued from a host computer or control system to the processor by either of the communication protocols described below.

- **Serial (RS-232 and RS-422):** The WindoWall Pro can support either RS-232 or RS-422 serial communication protocol and can operate at 9600, 19200, 38400, or 115200 baud rates.

The RS-232/422 port on the WindoWall Pro rear panel can be connected to the serial port of a host device running the Extron DataViewer utility, to an RS-232 capable PDA, or a control system. This connection makes software control of the processor possible.

- **TCP/IP (Ethernet):** The rear panel Ethernet connector on the WindoWall Pro can be connected to an Ethernet LAN or WAN. Communication between the WindoWall Pro and the controlling device can be via Extron DataViewer or Telnet (a TCP socket using port 23). You can change the Telnet port number, if necessary, using SIS commands (for information on connecting via Telnet, see [Connecting as a Telnet Client](#) on page 72).

To access the WindoWall Pro via the Ethernet port, obtain the IP address of the unit (and the subnet mask and gateway address if needed) from your network administrator. If the IP address has been changed to an address comprised of words and characters, you can determine the actual numeric IP address using the ping (ICMP) utility (see [IP Addressing](#) on page 69 for more details). If the addresses have not been changed, the factory-specified defaults are:

- **IP address:** 192.168.254.254
- **Subnet mask:** 255.255.0.0
- **Gateway address:** 0.0.0.0

The Ethernet cable must be properly terminated for your application as either a straight-through cable or a crossover cable (for pin assignments for these cables, see [LAN connector](#) on page 7).

Host-to-Processor Communications

SIS commands issued from a host consist of one or more characters per command field. They do not require any special characters to begin or end the command character sequence. Each processor response to a command ends with a carriage return and line feed (**↵**), which signals the end of the response character string. A string is one or more characters.

WindoWall Pro-initiated Messages

When a local event such as an input selection or adjustment takes place, the WindoWall Pro responds by sending a message to the host. No response is required back from the host. Examples of processor-initiated messages are listed below (underlined).

- The WindoWall Pro sends the copyright message when it is first powered on. *Vn.n* is the firmware version number, and *60-nnnn-nn* is the part number of the processor.

The current date and time are displayed following the copyright message at power up if the connection is via the Internet. (*Www* are the first three letters of the day of the week, for example, Mon or Fri.)

(c) Copyright *20nn*, Extron Electronics, MGP 464 PRO [DI], *Vn.nn*, *60-nnnn-nn*
Www, DD Mmm YYYY HH:MM:SS

- The WindoWall Pro sends a **Reconfig** message as each of the four windows is configured via the new connection.

Reconfig
Reconfig
Reconfig
Reconfig

- The WindoWall Pro sends the output and input numbers response when an input is switched. **Out *n*** is the window number and **In *nn*** is the input number.

Out *n* In *nn*

Error Responses

When the WindoWall Pro receives a valid SIS command, it executes the command and sends a response to the host device. If the processor is unable to execute the command because the command is invalid or contains invalid parameters, it returns an error response to the host. The error response codes are:

E01 — Invalid input channel number (too large)
 E09 — Invalid function number (too large)
 E10 — Invalid command
 E11 — Invalid preset number
 E12 — Invalid output number (applies for addressing windows)
 E13 — Invalid value (out of range)
 E14 — Invalid for this configuration
 E17 — Invalid command for signal type
 E24 — Privilege violation
 E26 — Maximum number of users connected has been exceeded
 E27 — Invalid event number
 E28 — Bad filename/File not found

Telnet and Web Communications

The WindoWall Pro can also be controlled via an IP connection using either Telnet (port 23) or a web browser (port 80). The ASCII and URL commands listed in the tables in this panel perform the same functions but are encoded differently to accommodate the requirements of each port (Telnet or browser).

The ASCII to hexadecimal (hex) character conversion table below is for use with the command and response table (see [Command and Response Table for WindoWall Pro SIS Commands](#) beginning on page 37).

ASCII to Hex Conversion Table																Esc	1B	CR	0D	LF	0A
Space →	20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27						
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F						
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37						
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F						
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47						
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F						
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57						
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F						
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67						
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F						
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77						
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F						

Figure 31. ASCII to Hexadecimal Character Conversion Table

The command and response tables list valid ASCII (for Telnet) command codes, the corresponding URL encoded (for web browsers) command codes, the responses of the processor to the host, and a description of the command function or results from executing the command.

- Upper- and lowercase letters may be used interchangeably in the command field unless otherwise specified.
- Commands may be sent back-to-back without spaces; for example, 2*2!2*0B.
- Numbers can be entered as 1 digit, or as 2 or 3 digits with leading zeros; for example, 8V = 08V = 008V.
- There are a few differences in how to enter the commands depending on whether you are using Telnet or a web browser.
 - For control via a web browser, all non-alphanumeric characters must be represented as the hexadecimal equivalent, %xx, where xx represents the two-character hex byte. For example, a comma (,) would be represented as %2C.
 - When using these commands through a web browser, the URL reference is used to shorten the examples. "URL" refers to the full URL of the control interface and web page reference, including all path information; for example, `http://192.168.100.10/myform.htm`.
 - Some characters differ depending on what method you use to send the commands:

Telnet

<Escape> key (hex 1B)
Carriage return (hex 0D)

Web Browser

W [must not be encoded]
Pipe character (|) [must not be encoded]

NOTE: With Telnet you can use either the Escape commands or the W commands, and the carriage return or the pipe character. With the web browser, you are required to use the W commands and the pipe character.

In either method, the data string (shown in braces as {data} in the command and response table is directed to the specified port, and must be encoded if it is non-alphanumeric.

Symbol Definitions

↵	=	CR/LF Carriage return with line feed (hex 0D 0A)
←	=	Carriage return (no line feed) (hex 0D)
For web browser commands, use the pipe character (|) instead of the soft return (↵).		
•	=	Space character
|	=	Pipe (vertical bar) character
Esc	=	<Escape> key (hex 1B)
W	=	Alternative for <Escape> key
^{24, 27, 28}	=	Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters (see Error Responses on page 31).

WindoWall Pro Commands

X1 =	Input number (1 - 4).	X9 =	Scaler resolution
X2 =	Window number	0	Match output rate (EDID command only)
	0 = All windows (available only for freeze and window mute)	1	640 x 480
	1 = Window 1	2	800 x 600
	2 = Window 2	3	852 x 480
	3 = Window 3	4	1024 x 768
	4 = Window 4	5	1024 x 852
X3 =	Input video format	6	1024 x 1024
	1 = RGB	7	1280 x 768
	2 = YUV-HD	8	1280 x 1024
	3 = RGBcvS	9	1360 x 765
	4 = YUVi	10	1365 x 768
	5 = S-video	11	1366 x 768
	6 = Composite	12	1365 x 1024
	7 = HDMI or 3G-SDI	13	1400 x 1050
X4 =	On or off status	14	1600 x 1200
	0 = off or disabled	15	480p
	1 = on or enabled	16	576p
X5 =	Test pattern	17	720p
	0 = Off	18	1080i
	1 = Colorbars	19	1080p
	2 = X-hatch (crosshatch 16 x 12)	20	Live background input resolution
	3 = 4 x 4 X-hatch	21	1280 x 800
	4 = Grayscale	22	1360 x 768
	5 = Ramp	23	1440 x 900
	6 = Alt. pixels (alternating pixels)	24	1680 x 1050
	7 = White field	25	1080p Sharp
	8 = Crop	26	1920 x 1200
	9 = Side by side (4 x 3 crop)	27	1080p CVT
	10 = Quad Split (4 x 4)	28	2048 x 1080
	11 = Pip Images (4 x 3 or 16 x 9 PIP column)	99	Custom
	12 = 1.78 Aspect (4 x 3 or 16 x 9 with 1.78 film aspect ratio)	NOTE: Live background input resolution does not apply to input EDID.	
	13 = 1.85 Aspect (4 x 3 or 16 x 9 with 1.85 film aspect ratio)		
	14 = 2.35 Aspect (4 x 3 or 16 x 9 with 2.35 film aspect ratio)	X10 =	Detected input signal standard
		0	none
		1	NTSC
		2	PAL
		4	SECAM
		–	Not applicable (occurs when input is set for RGB or YUV)
		X20 =	Internal temperature in degrees Fahrenheit

- X27** = EDID table, 128 or 256 bytes (binary—machine readable only)
- X28** = EDID table, 128 or 256 bytes (hexadecimal—person-readable)
- X31** = HDMI output format
 - 0 = Auto (based on sink EDID)
 - 1 = DVI 444 RGB (0-255, no audio, no InfoFrames)
 - 2 = HDMI 444 RGB (0-255, audio, InfoFrames)
 - Default is 0.
- X34** = HDMI input HDCP encryption support
 - 0 = Block HDCP encryption
 - 1 = Allow HDCP encryption
 - Default is 1.
- X36** = Output polarity
 - 0 = H-/V- (default)
 - 1 = H-/V+
 - 2 = H+/V-
 - 3 = H+/V+
- X37** = Output sync format
 - 1 = RGBHV
 - 2 = RGBS
 - 3 = RGsB
 - 4 = YUV bi-level
 - 5 = YUV tri-level
- X44** = WindoWall Pro model name:
 - WindoWall Pro
 - WindoWall Pro DI

IP-specific Commands

X101 = Specific port number (01-99)
The port number is represented as two ASCII characters (2 bytes). For example, port 05 would be represented as **30 35** in hexadecimal.

01 = RS-232/422 port (rear panel)

02 = Config port (front panel)

X102 = Command data section

NOTE: For web encoding only: Data is directed to the specified port and must be encoded if it is non-alphanumeric. Because data can include either command terminator, it must be encoded as follows when used within the data section:

- Space (hex 20) must be encoded as %2 (hex 25 32 30)
- Plus sign (Hex 2B) must be encoded as %2B (hex 25 32 42).

X103 = Greenwich Mean Time (GMT) offset value (-12:00-14:00) in hours and minutes (hh:mm)

X104 = Firmware version number (listed to two decimal places)

X105 = Unit name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign or hyphen (-). The first character must be an alpha character. The last character must not be a minus. No blank or space characters are permitted, and no distinction is made between upper- and lowercase.

X106 = Local date and time format

Set format (MM/DD/YY-HH:MM:SS); for example: 06/21/02-10:54:00

Read format (day of the week, day month year); for example, HH:MM:SS; for example: Fri, 26 Sep 2008 18:19:33

X107 = IP address (nnn.nnn.nnn.nnn); leading zeros in each of the four fields are optional in setting values and are suppressed in returned values.

X109 = Time in tens of milliseconds to wait for the first response character via the serial port.
Default = 10 (100 ms)
Maximum = 32767

X110 = Time in tens of milliseconds to wait between characters received via the serial port
Default = 20 (200 ms)
Maximum = 32767

X111 = Message length, delimiter value, or byte count (via the serial port)
#L = Length of message to be received
#D = Delimiter value
= byte count (1 through 32767; default = 0)

X112 = Hardware (MAC) address (xx-xx-xx-xx-xx-xx)

X113 = Subnet mask (nnn.nnn.nnn.nnn). Leading zeros are optional in setting values in each of the four fields, and are suppressed in returned values.

X114 = Verbose response mode

0 = clear/none

1 = verbose mode

2 = tagged responses for queries

3 = verbose mode and tagged responses for queries

Default is 0 for Telnet connections and 1 for RS-232 or RS-422 control.

NOTE: If tagged responses are enabled, all read commands return the constant string plus the data. For example:

Command: [Esc] CN ←

Response: Ipn • X105 ←

X115 = Priority status for the port receiving timeouts.

0 = Use Send data string command parameters

1 = Use Configure receive timeout command parameters. The response includes leading zeros. (Default is 0.)

X116 = Baud rate: 2400, 4800, 9600, 19200, 38400, or 115200

X117 = Parity (only the first letter is needed):

Odd

Even

None

Mark

Space

X118 = Data bits: 7 or 8

X119 = Stop bits: 1 or 2

X120 = Port type

0 = RS-232

1 = RS-422

X121 = Flow control

H = hardware

S = software

N = none

X122 = Data pacing (0000-0001 ms between bytes)
Default = 0 ms

X123 = Password (12 characters = maximum length; no special characters are allowed.)

NOTE: A user password cannot be assigned if no administrator password exists; the E14 error code is returned. If the administrator password is cleared, the user password is also removed.

- X124** = Daylight saving time (used in the North America and parts of Europe and Brazil)
0 = off or ignore
1 = on in northern hemisphere
2 = on in Europe
3 = on in Brazil
- X130** = Read password. RS-232 or RS-422 connection responds with the password. The IP connection responds with 4 asterisks (****) if a password exists, and with an empty space if none exists, instead of with an actual password.
- X135** = Default name: a combination of the model-name and the last three character pairs of the unit MAC address (for example, **WindoWall-Pro-00-02-3D**)
- X137** = Connection security level
0 = anonymous
1 - 10 = extended security level
11 = user
12 = administrator
- X138** = (Ethernet only) Number of seconds (stated in tens of seconds) before timeout on IP connections
Min = 1 (10 seconds),
Max = 65000 (650,000 seconds), and
Default = 30 (300 seconds)
- If no data is received during the timeout period, the Ethernet connection is closed. Each step is 10 seconds.
- When the unit is connected via RS-232 or RS-422, only the global timeout commands apply; anything else returns an **E13** error code. The response contains leading zeros.

Command and Response Table for WindoWall Pro SIS Commands

Command	ASCII (Telnet) (Host to Processor)	Response (Processor to Host)	Additional Description
EDID Resolution and Refresh Rate			
Set input EDID resolution and rate	[Esc] A [X9] * [X16] EDID ←	Edid A [X9] * [X16] ↵	Set EDID resolution to scaler resolution [X9] and the refresh rate to [X16].
		For [X9]: Ø = Match output 1 = 640x480 2 = 800x600 3 = 852x480 4 = 1024x768 5 = 1024x852 6 = 1024x1024 7 = 1280x768 8 = 1280x1024 9 = 1360x765 1Ø = 1365x768 11 = 1366x768 12 = 1365x1024 13 = 1400x1050 14 = 1600x1200 99 = Custom	15 = 480p 16 = 576p 17 = 720p 18 = 1080i 19 = 1080p 2Ø = Live background resol. 21 = 1280x800 22 = 1360x768 23 = 1440x900 24 = 1680x1050 25 = 1080p Sharp 26 = 1920x1200 27 = 1080p CVT 28 = 2048x1080
			For [X16]: 1 = 50 Hz 2 = 60 Hz
NOTES: <ul style="list-style-type: none"> The default is to match the output resolution: [X9] = Ø, [X16] = Ø. EDID resolutions are available only at 50 Hz and 60 Hz. If another rate is selected, the WindoWall Pro issues an E13 error code. 			
View EDID resolution and rate	[Esc] A EDID ←	[X9] * [X16] ↵	View current EDID resolution [X9] and rate [X16].
Save EDID	[Esc] S ØEDID ←	Edid S Ø ↵	Save the EDID from the connected output to Custom EDID location 99.

Command	ASCII (Telnet) (Host to Processor)	Response (Processor to Host)	Additional Description
Output Scaler Resolution and Rate			
Set output resolution and scan rate	$\boxed{X9} * \boxed{X16} =$	Rte $\boxed{X9} * \boxed{X16}$ ↵ 1 = 640x480 2 = 800x600 3 = 852x480 4 = 1024x768 5 = 1024x852 6 = 1024x1024 7 = 1280x768 8 = 1280x1024 9 = 1360x765 10 = 1365x768 11 = 1366x768 12 = 1365x1024 13 = 1400x1050 14 = 1600x1200 15 = 480p 16 = 576p 17 = 720p 18 = 1080i 19 = 1080p 20 = Live background resol. 21 = 1280x800 22 = 1360x768 23 = 1440x900 24 = 1680x1050 25 = 1080p Sharp 26 = 1920x1200 27 = 1080p CVT 28 = 2048x1080 For $\boxed{X16}$: 1 = 50 Hz 2 = 60 Hz 3 = 72 Hz 4 = 96 Hz 5 = 100 Hz 6 = 120 Hz 7 = Live background input rate 8 = 24 Hz 9 = 59.94 Hz 10 = 29.97 Hz 11 = 30 Hz	Select scaler output resolution $\boxed{X9}$ and scan rate $\boxed{X16}$. For $\boxed{X9}$:
View output rate settings	=	$\boxed{X9} * \boxed{X16}$ ↵	View the current output resolution $\boxed{X9}$ and refresh rate $\boxed{X16}$ settings.
View output rate details	$\emptyset =$	<i>width * height * refresh rate</i> ↵	View the current output resolution and refresh rate in actual numbers.
NOTE: The output rate detail command can display the actual resolution of the output when the WindoWall Pro is configured to use the live background rate.			
Example:	$\emptyset =$	1024*0768*060 ↵	The output resolution is 1024x768; the rate is 60 Hz.
HDMI Output Format			
Set format	$\boxed{\text{Esc}} \boxed{X31} \text{ VTPO} \leftarrow$	Vtpo $\boxed{X31}$ ↵	Set the output color space and format to $\boxed{X31}$. For $\boxed{X31}$: 0 = Auto (based on sink EDID) 1 = DVI RGB (0-255, no audio and no InfoFrames) 2 = HDMI 444 RGB (0-255, with audio and InfoFrames) Default is 0.
View format setting	$\boxed{\text{Esc}} \text{ VTPO} \leftarrow$	$\boxed{X31}$ ↵	View the current colorspace for the HDMI output.

Command	ASCII (Telnet) (Host to Processor)	Response (Processor to Host)	Additional Description
Blue Mode			
Blue mode	3 * x4 #	Blu x4 ↵	Turn blue mode on and off. For x4 : 0 = blue mode off. 1 = blue mode on.
View blue mode status	3 #	x4 ↵	View the current blue mode status.
Test Pattern			
Set test pattern	x5 J	Tst x5 ↵	Select test pattern x5 . For x5 : 0 = Off (none) 1 = Colorbars 2 = X-hatch (16x12) 3 = 4x4 X-hatch 4 = Grayscale 5 = Ramp 6 = Alt. pixels 7 = White field 8 = Crop 9 = Side By Side (4x3 crop) 10 = Quad Split (4x4) 11 = Pip Images (4x3 or 6x9 PIP columns) 12 = 1.78 Aspect (4x3/16x9) 13 = 1.85 Aspect (4x3/16x9) 14 = 2.35 Aspect (4x3/16x9)
View test pattern	J	x5 ↵	View the currently selected test pattern.

Command and Response Table for IP SIS Commands

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Bi-directional Serial Data Port				
Send data string	<code>[Esc] [X101] * [X109] * [X110] * [X111] RS ← [X110]</code>	<code>W [X101] %2A [X101] %2A [X110] %2A [X111] RS | [X102]</code>	<code>{Response from command} ←</code>	
Example:	<code>[Esc] 05 * 4 * 7 * 3L RS ← <data> •</code>	<code>W 05 %2A 4 %2A 7 %2A 3L RS | {data}</code>	<code>{Response from command}</code>	
NOTES:				
<ul style="list-style-type: none"> • <code>[X101]</code> = Port number (01 - 99) • <code>[X109]</code> = Time in tens of milliseconds that the WindoWall Pro will wait until receipt of the first response character before terminating the command. Default = 10 = 10 ms. Max. = 32767. • <code>[X110]</code> = Time in tens of milliseconds that the WindoWall Pro will wait between characters being received via a serial port before terminating the current command or receive operation. Default = 20 = 20 ms. Max. = 32767. • <code>[X111]</code> = Message length #L or #D. The letter parameter is case sensitive (requires capital D or capital L). L = Length of the message to be received. D = Delimiter value. A delimiter of ASCII 0A = 10D. # = Byte count (for L) or a single ASCII character expressed in decimal form (for D). The byte count # can be 0-32767. Default = 0. The ASCII decimal # can be 0-00255. Default = the byte count. A 3-byte length = 3L. The response includes leading zeros. • <code>[X102]</code> = Command data section. For web encoding for <code>[X102]</code>, be sure to convert non-alphanumeric characters to hex numbers. • The * <code>[X109] * [X110] * [X111]</code> sequence is optional. If <code>[X109]</code> and <code>[X110]</code> are not specified, the default values are used. 				
Configure serial port parameters ²⁴	<code>[Esc] [X101] * [X116] , [X117] , [X118] , [X119] CP ←</code>	<code>W [X101] %2A [X116] %2A [X117] %2A [X118] %2A [X119] CP |</code>	<code>Cpn [X101] • Ccp [X116] , [X117] , [X118] , [X119] CP ←</code>	Set baud rate <code>[X116]</code> , parity <code>[X117]</code> , data bits <code>[X118]</code> , and stop bits <code>[X119]</code> for port <code>[X101]</code> . <code>[X116]</code> = 2400, 4800, 9600, 19200, 38400, or 115200. <code>[X117]</code> = odd, even, none, mark, or space. (Only the first letter is required.) <code>[X118]</code> = 7 or 8 <code>[X119]</code> = 1 or 2
View serial port parameters	<code>[Esc] [X101] CP ←</code>	<code>W [X101] CP |</code>	<code>[X116] , [X117] , [X118] , [X119] CP ←</code>	
Configure mode ²⁴	<code>[Esc] 1 * [X120] CY ←</code>	<code>W 1 %2A [X120] CY |</code>	<code>Cpn1 • Cty [X120] ←</code>	Select serial mode <code>[X120]</code> for the rear panel RS-232/422 port. For <code>[X120]</code> 0 = RS-232 1 = RS-422
View serial mode	<code>[Esc] [X101] CY ←</code>	<code>W [X101] CY |</code>	<code>[X120] ←</code>	View current port mode.

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Bi-directional Serial Data Port (continued)				
Configure flow control ²⁴	<code>[Esc] [X101] * [X121] , [X122] CF ←</code>	<code>W [X101] %02A [X121] %02C [X122] CF |</code>	<code>Cpn [X101] • Cfl [X121] , [X122] ↵</code>	Set flow control type [X121] with [X122] ms between bytes. For [X121] : H = Hardware. S = Software. N = None (default). [X122] = 0000 through 0001. Default = 0 ms.
View flow control	<code>[Esc] [X101] CF ←</code>	<code>W [X101] CF |</code>	<code>[X121] , [X122] |</code>	
Configure receive timeout ²⁴	<code>[Esc] [X101] * [X109] * [X110] * [X115] * [X111] CE ←</code>	<code>W [X101] %2A [X109] %2A [X110] %2A [X115] %2A [X111] CE |</code>	<code>Cpn [X101] • Cce [X109] , [X110] , [X115] , [X111] ↵</code>	Set the time that the WindoWall Pro will wait for a response before terminating the command.
NOTES: <ul style="list-style-type: none"> [X101] = Port number (01-99) [X102] = Command data section. For web encoding for [X102], be sure to convert non-alphanumeric characters to hex numbers. [X109] = Time in tens of milliseconds that the WindoWall Pro will wait until receipt of the first response character before terminating the command. Default = 10 = 10 ms. Max. = 32767. [X110] = Time in tens of milliseconds that the WindoWall Pro will wait between characters being received via a serial port before terminating the current command or receive operation. Default = 20 = 20 ms. Max. = 32767. [X111] = Message length #L or #D. The letter parameter is case sensitive (requires capital D or capital L). L = Length of the message to be received. D = Delimiter value. A delimiter of ASCII 0A = 10D. # = Byte count (for L) or a single ASCII character expressed in decimal form (for D). The byte count # can be 0-32767. Default = 0. The ASCII decimal # can be 0-00255. Default = the byte count. A 3-byte length = 3L. The response includes leading zeros. [X115] = Priority status for port [X101] receiving timeouts. For [X115]: 0 = Use Send data string command parameters (default). 1 = Use Configure receive timeout command parameters. The response includes leading zeros. The * [X109] * [X110] * [X111] sequence is optional. If [X109] and [X110] are not specified, the defaults are used. 				
View receive timeout	<code>[Esc] [X101] CE ←</code>	<code>W [X101] CE |</code>	<code>[X109] , [X110] , [X115] , [X111] ↵</code>	

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Ethernet Data Port				
Set current connection port timeout	[Esc] 0 * [X138] TC ←	W 0 %2A [X138] TC |	Pti 0 * [X138] ←	Set number of seconds (in tens of seconds) before timeout on the current IP connection only. [X138] = 1 - 32767. Default is 30 = 300 seconds = 5 minutes.
View current connection port timeout	[Esc] 0TC ←	W 0TC |	[X138] ←	
Set global IP port timeout	[Esc] 1 * [X138] TC ←	W 1 %2A [X138] TC |	Pti 1 * [X138] ←	Set number of seconds (in tens of seconds) before timeout on all IP connections made from this processor. [X138] = 1 - 32767. Default is 30 = 300 seconds = 5 minutes.
View global port timeout	[Esc] 1TC ←	W 1TC |	[X138] ←	
Firmware Version Requests				
NOTES: <ul style="list-style-type: none"> An asterisk (*) after the version number in these commands indicates which version is currently running. A caret (^) indicates bad checksum or invalid load. Question marks (? . ??) indicate that the firmware version is not loaded. In firmware version request command responses, the WindoWall Pro names are shown as MGP 464 Pro or MGP 464 DI Pro. 				
Query firmware version	Q or 1Q	Q or 1Q	[X104] ← <i>With tagged response – verbose modes 2 and 3:</i> Ver01 * [X104] ←	Show the WindoWall Pro firmware version number [X104] to two decimal places. Gives the number of the currently running version of the user-updatable firmware.
<i>Example:</i>	1Q	1Q	1.01	
Query verbose version information	0Q	0Q	Sum of responses from 2Q-3Q-4Q ← <i>With tagged response – verbose modes 2 and 3:</i> Ver00 * Sum of responses from 2Q-3Q-4Q ← (See below.)	Show bootstrap, factory-installed, and updated firmware versions (see 2Q, 3Q, and 4Q commands on the following lines).
<i>Example:</i>	0Q	0Q	3.46-1.00(1.81-MGP464 PRO -Wed, 16 Jan 2003 00:00:00 GMT) -1.00*(1.82-MGP464 PRO -Thu, 28 Feb 2003 07:18:07 GMT)	
Query bootstrap version	2Q	2Q	[X104] ← <i>With tagged response – verbose modes 2 and 3:</i> Ver02 * [X104] ←	The bootstrap firmware is not user-replaceable, but you may need this information for troubleshooting.

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Firmware Version Requests (continued)				
Query factory firmware version	3Q	3Q	<code>[X104]</code> (plus <i>web ver. -desc-UL date/time</i>) ↵ <i>With tagged response – verbose modes 2 and 3:</i> <code>Ver03 * [X104]</code> (plus <i>web ver. -desc-UL date/time</i>) ↵	Factory-installed firmware is not user-replaceable. This firmware was installed at the factory and is the version the processor reverts to after a mode 1 reset (see Resetting on page 9).
<i>Example:</i>	3Q	3Q	<code>1.00(1.81-MGP 464 PRO</code> <code>-Wed, 16 Jan 2003 00:00:00 GMT)</code>	In this example, the factory firmware version is 1.00, also known as the kernel version 1.81, for an MGP 464 Pro (WindoWall Pro), dated 16 January, 2003.
Query updated firmware version	4Q	4Q	<code>[X104]</code> (plus <i>web ver. -desc-UL date/time</i>) ↵ <i>With tagged response – verbose modes 2 and 3:</i> <code>Ver04 * [X104]</code> (plus <i>web ver. -desc-UL date/time</i>) ↵	Use this command to find out which version of the firmware, if any, was uploaded into the unit after it left the factory. <code>[X104]</code> = firmware version to two decimal places.
<i>Example:</i>	4Q	4Q	<code>1.00*(1.82-MGP464 PRO</code> <code>-Thu, 28 Feb 2003 07:18:07 GMT)</code>	In this example, the factory firmware version is 1.00, also known as kernel version 1.82, for an MGP 464 Pro (WindoWall Pro), dated 28 February, 2003, at 5:03 and 46 seconds pm, Greenwich mean time.
Information Requests				
NOTE: In firmware version request command responses, the WindoWall Pro names are shown as MGP 464 Pro or MGP 464 DI Pro.				
Request unit part number	N	N	<code>60-1259-11</code> or <code>60-1259-12</code> ↵ <i>With tagged response – verbose modes 2 and 3:</i> <code>Pno 60-1259-11</code> or <code>Pno 60-1259-12</code> ↵	Show unit part number. WindoWall Pro is <code>60-1259-11</code> . WindoWall Pro DI is <code>60-1259-12</code> .

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Information Requests (continued)				
Request model name	1I	1I	[X44] ↵ <i>With tagged response – verbose modes 2 and 3:</i> Inf01 * [X44] ↵	Show unit model name [X44] . [X44] can be: MGP 464 Pro MGP 464 Pro DI
Request model description	2I	2I	Standard: Multi-Graphic Processor DI: Multi-Graphic Processor w/ HDMI option ↵ <i>With tagged response – verbose modes 2 and 3:</i> Inf02 * Multi-Graphic Processor [w/ HDMI option] ↵	Show type of unit.
Request system memory usage	3I	3I	<i>n bytes used out of n kBytes</i> ↵ <i>With tagged response – verbose modes 2 and 3:</i> Inf03 * <i>n bytes used out of n kBytes</i> ↵	Show amount of memory used and total available memory for system operations.
Request user memory usage	4I	4I	<i>n bytes used out of n kBytes</i> ↵ <i>With tagged response – verbose modes 2 and 3:</i> Inf04 * <i>n bytes used out of n kBytes</i> ↵	Show amount of user memory used and total available user memory.
IP Setup Commands				
Set unit name ²⁴	[Esc] [X105] CN ↵	W [X105] CN |	Ipn • [X105] ↵	Change the processor name to [X105] , a name of your choosing. For [X105] : The name can consist of up to 24 alphanumeric characters and the minus sign or hyphen (-). The first character must be a letter, the last character cannot be a minus sign. Case does not matter.
Set unit name to factory default ²⁴	[Esc] • CN ↵	W %20 CN |	Ipn • [X135] ↵	[X135] is the name the processor was shipped with: MGP464Pro[DI]-xx-xx-xx, a combination of the model and the last three pairs of the hex numbers in the unit MAC address.
Example:	[Esc] • CN ↵	W %20 CN |	MGP464-PRO-DI-09-44-92 ↵	The factory name of this unit indicates that it is an MGP 464 Pro, DI configuration, and the last 6 digits of its MAC address are 09-44-92.
Read unit name	[Esc] CN ↵	W CN |	[X105] ↵	View current unit name [X105] .

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
IP Setup Commands (continued)				
Set time and date ²⁴	[Esc] [X106] CT ←	W [X106] CT |	Ipt • [X106] ↵	<p>[X106] is the local date and time format.</p> <p>The set format is <i>MM/DD/YY-HH:MM:SS</i>. (The hours, minutes, and seconds can also be separated by periods.) <i>Examples:</i> 11/13/06-10:54:00 or 11/13/06-10.54.00</p>
Read time/date	[Esc] CT ←	W CT |	[X106] ↵	<p>The read format is: <i>Www</i> [day of the week], <i>DD Mmm YYYY HH:MM:SS</i>. <i>Example:</i> Tue, 18 Nov 2006 18:19:33</p>
Set GMT offset ²⁴	[Esc] [X103] CZ ←	W [X103] CZ |	Ipz [X103] ↵	<p>Set Greenwich Mean Time (GMT) offset value [X103] for the processor location. GMT offset (-12.00 to +14.00) represents the time difference in hours and minutes (\pm <i>hh:mm</i> relative to Greenwich, England). The plus sign and leading zero are optional.</p> <p>[X103] is in the format <i>hh:mm</i>. <i>Example:</i> 5:30 or 5.30 = +05:30.</p>
Read GMT offset	[Esc] CZ ←	W CZ |	[X103] ↵	View the current GMT offset.
Set daylight saving time ²⁴	[Esc] [X124] CX ←	W [X124] CX |	Ipx [X124] ↵	<p>Set daylight saving time [X124] on your WindoWall Pro. Daylight saving time (DST) is a 1-hour offset that is observed in the USA and parts of Europe and Brazil.</p> <p>For [X124]:</p> <ul style="list-style-type: none"> 0 = Off or ignore 1 = On in north America 2 = On in Europe 3 = On in Brazil <p><i>Example:</i> California uses GMT -8:00 from the second Sunday in March to the first Sunday in November, and -7:00 GMT from November to March. DST should be turned off in Hawaii, American Samoa, Guam, Puerto Rico, the U.S. Virgin Islands, and Arizona (excluding the Navajo Nation).</p>
Read daylight saving time	[Esc] CX ←	W CX |	[X124] ↵	View the daylight saving time setting for your WindoWall Pro.

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
IP Setup Commands (continued)				
Set DHCP on ²⁴	[Esc] 1DH ←	W 1DH |	Idh1 ↵	Turn on Dynamic Host Configuration Protocol (DHCP) to enable automatic assigning of IP addresses.
Set DHCP off ²⁴	[Esc] 0DH ←	W 0DH |	Idh0 ↵	
View DHCP mode	[Esc] DH ←	W DH |	Idh [X4] ↵	View DHCP status [X4] : 0 = off, 1 = on.
Set IP address ²⁴	[Esc] [X107] CI ←	W [X107] CI |	Ipi • [X107] ↵	Set IP address [X107] for your unit in the format <i>nnn.nnn.nnn.nnn</i> . Leading zeros in each of the four fields are optional.
Read IP address ²⁴	[Esc] CI ←	W CI |	[X107] ↵	View IP address [X107] of your unit. Leading zeros in each of the four fields are suppressed in returned values.
Read hardware address (MAC)	[Esc] CH ←	W CH |	[X112] ↵	View hardware media access control (MAC) address [X112] of your unit in the format <i>XX-XX-XX-XX-XX-XX</i> .
Set subnet mask ²⁴	[Esc] [X113] CS ←	W [X113] CS |	Ips • [X113] ↵	View unit subnet mask [X113] (<i>nnn.nnn.nnn.nnn</i>). The syntax is the same as for IP addresses. Leading zeros are optional in setting values.
Read subnet mask	[Esc] CS ←	W CS |	[X113] ↵	View the unit subnet mask. Leading zeros are suppressed.
Set gateway address ²⁴	[Esc] [X107] CG ←	W [X107] CG |	Ipg • [X107] ↵	Set IP address [X107] for your gateway (<i>nnn.nnn.nnn.nnn</i>). Leading zeros are optional.
Read gateway address	[Esc] CG ←	W CG |	[X107] ↵	View the gateway IP address for your unit.
Set administrator password	[Esc] [X123] CA ←	W [X123] CA |	Ipa • [X130] ↵	Set administrator access password [X123] . [X123] = 4 to 12 alphanumeric characters. The password is case sensitive. Special characters (spaces or symbols) are not allowed. [X130] = displayed password. With an RS-232 or RS-422 connection, the password is displayed. With an IP connection, masked characters (four asterisks) are displayed (****).
Clear administrator password ²⁴	[Esc] • CA ←	W %20 CA |	Ipa • ↵	Remove all passwords (administrator and user).
NOTE: A user password cannot be assigned if an administrator password does not exist. Entering a password when the WindoWall Pro has not been configured displays an E14 error response from the processor. If the administrator password is cleared (removed), the user password is removed also.				

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
IP Setup Commands (continued)				
View administrator password	[Esc] CA ←	W CA |	[X130] ↵	View password [X130] , shown with leading zeros.
Set user password ^{14 24}	[Esc] [X123] CU ←	W [X123] CU |	Ipu • [X130] ↵	Set user password [X123] (4-12 alphanumeric characters). The password is case sensitive. Special characters (spaces or symbols) are not allowed.
NOTE: A user password cannot be assigned if an administrator password does not exist.				
Clear user password ²⁴	[Esc] • CU ←	W %20 CU |	Ipu • ↵	Clear the user password only
View user password	[Esc] CU ←	W CU |	[X130] ↵	View password [X130] , shown with leading zeros.
Query session security level	[Esc] CK ←	W CK |	[X137] ↵ <i>With tagged response – verbose modes 2 and 3:</i> Pv1 [X137] ↵	View security level [X137] of the current connection. For [X137] : Ø = Anonymous 1 - 1Ø = Extended security level 11 = User 12 = Administrator
Set verbose mode ²⁴	[Esc] [X114] CV ←	W [X114] CV |	[X114] ↵	Enable or disable verbose mode type [X114] . For [X114] : Ø = verbose mode and tagged responses disabled 1 = verbose mode enabled 2 = tagged responses for queries enabled 3 = verbose mode and tagged responses for queries enabled Default is Ø for Telnet connections and 1 for RS-232 or RS-422 control.
NOTE: The processor can send out unsolicited information (such as notice of a change in volume, input or some other setting). That is called a verbose (wordy) relationship between the processor and a connected device. For a direct RS-232 or RS-422 connection, the processor is set for verbose mode by default. When the WindoWall Pro is connected via Ethernet, verbose mode is disabled by default in order to reduce the amount of communication traffic on the network. If you want to use the verbose mode with a processor connected via Ethernet, this mode must be set to On each time you reconnect to the processor.				
Read verbose mode	[Esc] CV ←	W CV |	[X114] ↵	
Web Browser Specific Commands				
Read response from last URL command	[Esc] UB ←	W UB |	{Response from command} ↵	View the response to the last command that was entered.

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Remap Port Designations				
Set Telnet port map ²⁴	[Esc] {port#} MT ←	W {port#} MT |	Pmt {port#} ↵	
NOTES: <ul style="list-style-type: none"> Duplicate port number assignments are not permitted (for example, the Telnet and web mapping cannot be the same). An E13 error code (invalid parameter) results. Remapping of the port number to other than defaults 80 or 23 or disabling it by resetting it to 0 can be done only to ports numbered 1024 or higher. 				
Reset Telnet port map ²⁴	[Esc] 23MT ←	W 23MT |	Pmt 00023 ↵	
Disable Telnet port map ²⁴	[Esc] 0MT ←	W 0MT |	Pmt 00000 ↵	
Read Telnet port map	[Esc] MT ←	W MT |	{port#} ↵	
Set web port map ²⁴	[Esc] {port#} MH ←	W {port#} MH |	Pmh {port#} ↵	
Reset web port map ²⁴	[Esc] 80MH ←	W 80MH |	Pmh 00080 ↵	
Disable web port map ²⁴	[Esc] 0MH ←	W 0MH |	Pmh 00000 ↵	
Read web port map ²⁴	[Esc] MH ←	W MH |	{port#} ↵	
Set Direct Access port map ²⁴	[Esc] {port#} MD ←	W {port#} MD |	Pmd {port#} ↵	
Reset Direct Access port map ²⁴	[Esc] 2001MD ←	W 2001MD |	Pmd 02001 ↵	
Disable Direct Access port map ²⁴	[Esc] 0MD ←	W 0MD |	Pmd 00000 ↵	
Read Direct Access port map ²⁴	[Esc] MD ←	W MD |	{port#} ↵	
List Connections				
Get connection listing	[Esc] CC ←	W CC |	{Number of connections} ↵	

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
File Commands				
List files from current directory	[Esc] DF ←	W DF |	(See below.)	Retrieve a list of files stored in the WindoWall Pro
List files from current directory and below	[Esc] LF ←	W LF |	(See below.)	Each line of the response lists a different file name and its corresponding file size. The last line indicates remaining available file space.
<div>Unit web responses (HTML sample code): var file – new array () : file [1] = ‘filename1, date1, filesize1’; file [2] = ‘filename2, date2, filesize2’; file [3] = ‘filename3, date3, filesize3’; ... file [n] = ‘filename n, date n, filesize n’; file [n+1] = ‘filename n+1, date n+1, filesize n+1’;</div> <div>Unit Telnet text responses: filename x • date/time • length ← filename x • date/time • length ← filename x • date/time • length ← filename x • date/time • length ← ... space_remaining • bytes left ←←</div>				
Stream Files via Port 80				
Load file to user flash memory	Use POST on port 80 followed by the delimited data to be written to the flash file memory.			
Retrieve file from user flash memory	Send a page GET on port 80 followed by: WSF |	Responds with raw unprocessed data in file.		
Example	http://192.168.254.254/mypage.html?cmd=WSF |			
Stream Files via Telnet, RS-232, or RS-422				
Load file to user flash memory	[Esc] +UF {filesize}, {filename} ← {Raw unprocessed data in file up to filesize}			
Retrieve file from user flash memory	[Esc] filename SF ←	W {filename} SF |	Up1 ←	Responds with 4 bytes of file size + raw unprocessed data in file.
Directory Commands				
Change or create directory	[Esc] {path} / {directory} / CJ ← W {path} / {directory} / CJ | Dir • {path} / {directory} / ←			
NOTE: A directory does not exist until a file has been copied into the path.				
Move back to root directory	[Esc] / CJ ←	W %2F CJ |	Dir • / ←	
Move up one directory	[Esc] .. CJ ←	W %2E %2E CJ |	Dir • {path} / {directory} / ←	
View current directory	[Esc] CJ ←	W CJ |	{path} / {directory} / ←	

Command	ASCII (Telnet) (Host to Processor)	URL Encoded (Web) (Host to Processor)	Response (Processor to Host)	Additional Description
Reset (Zap) / Erase Commands				
Erase user-supplied web page/file ^{24 28}	[Esc] {filename} EF ←	W {filename} EF |	Del • {filename} ↵	
Erase current directory and its files ^{24 28}	[Esc] / EF ←	W / EF |	Dd1 ↵	
Erase current directory and subdirectories ^{24 28}	[Esc] // EF ←	W // EF |	Dd1 ↵	
Erase flash memory	[Esc] ZFFF ←	W ZFFF |	Zpf ↵	
Reset all device settings to factory default ²⁴	[Esc] ZXXX ←	W ZXXX |	Zpx ↵	No IP-related settings are reset.
Absolute system reset ²⁴	[Esc] ZQQQ ←	W ZQQQ |	Zpq ↵	Reset all settings and memories, including all adjustments, the IP address, and the subnet mask, to the factory default values. The IP address is reset to 192.168.254.254, and the subnet mask is set to 255.255.0.0 (identical to reset mode 5).
Absolute reset retaining IP ²⁴	[Esc] ZY ←	W ZY |	Zpy ↵	Same as Absolute system reset ([Esc] ZQQQ) except that IP settings, including IP address, subnet mask, gateway address, unit name, DHCP setting, and port mapping (Telnet/web/Direct Access) are excluded in order to preserve communication with the device (recommended after a firmware update).

HTML Configuration and Control

This section provides procedures for accessing and using the WindoWall Pro embedded web pages. Topics include:

- [Accessing the Web Pages](#)
- [Viewing System Status](#)
- [Using the Configuration Pages](#)
- [Using the File Management Page](#)
- [Using the Background Page](#)

The WindoWall Pro and the WindoWall Pro DI can be controlled and configured using HTML web pages that are accessed over a network or from a local PC connected to the WindoWall Pro LAN port. The WindoWall Pro has factory-installed HTML web pages that allow you to view and adjust IP settings, upload firmware and other files to the unit, and select a background image for the display. You can access these HTML pages using a web browser such as Microsoft Internet Explorer.

NOTE: Administrators have access to all of the web pages and are able to make changes to settings. Users can access the pages on the **System Status** and **Background** tabs only.

Accessing the Web Pages

To access the WindoWall Pro HTML web pages:

1. Start the web browser program.
2. Enter the IP address of your unit in the browser **Address** field.

NOTE: If your local system administrators have not changed the address, use the factory-specified default, 192.168.254.254, for this field.

3. If you want the browser to display a page other than the default page (such as a custom page that you have created and uploaded), enter a slash (/) and the name of the file to open.

NOTES:

- The browser **Address** field should display the address in the following format:
nnn.nnn.nnn.nnn/optional_file_name.html
- The following characters are invalid in file names:
{space} ~ @ = ` [] { } < > ' " ; : | \ and ?.

4. Press the <Enter> key. If the WindoWall Pro HTML pages are not password protected, the browser displays a start page as described in step 5.

If the WindoWall Pro HTML pages are password protected, the browser displays the Connect To dialog box.

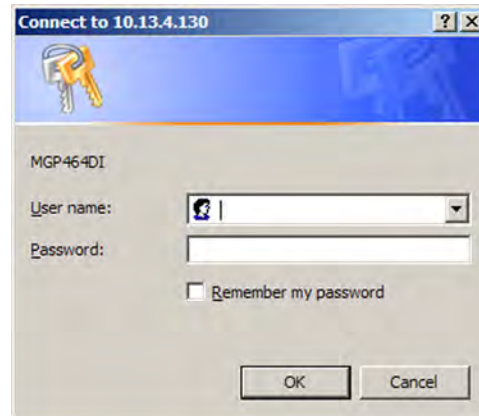


Figure 32. Example of a Connect To Dialog Box

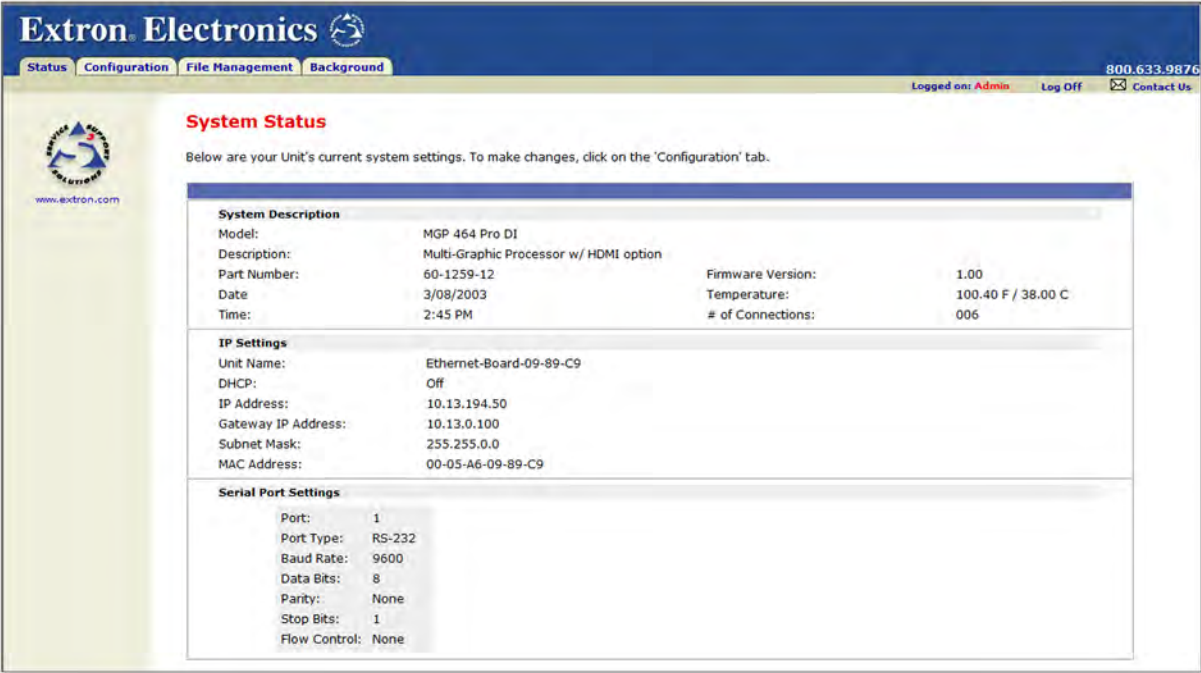
- a. Enter the administrator or user password in the **Password** field.

NOTE: A User Name entry is not required.

- b. If desired, select the **Remember my password** check box to have the system input your password the next time you enter the IP address.
- c. Click **OK**.
5. If you entered the filename for a custom HTML page in step 4, the browser displays that page. If not, the browser displays the System Status page, which is the WindoWall Pro default start page. You can select the tabs at the top of this screen to display additional screens that enable you to configure the WindoWall Pro.

Viewing System Status

The System Status web page, accessed by clicking the **Status** tab, provides information on the current settings of your WindoWall Pro. Changes must be made via the Configuration web pages, the WindoWall Pro Series Windows-based configuration software or SIS commands. Personnel who have user access can view this page but cannot access the Configuration pages; they see only the **Status** and **Background** tabs. Figure 33 shows a typical WindoWall Pro System Status web page.



The screenshot displays the Extron Electronics System Status web page. The page has a blue header with the Extron logo and navigation tabs: Status, Configuration, File Management, and Background. The Status tab is selected. Below the header, there is a sidebar with the Extron logo and the website URL www.extron.com. The main content area is titled "System Status" and includes a message: "Below are your Unit's current system settings. To make changes, click on the 'Configuration' tab." The settings are organized into three sections: System Description, IP Settings, and Serial Port Settings.

System Description			
Model:	MGP 464 Pro DI		
Description:	Multi-Graphic Processor w/ HDMI option		
Part Number:	60-1259-12	Firmware Version:	1.00
Date:	3/08/2003	Temperature:	100.40 F / 38.00 C
Time:	2:45 PM	# of Connections:	006

IP Settings	
Unit Name:	Ethernet-Board-09-89-C9
DHCP:	Off
IP Address:	10.13.194.50
Gateway IP Address:	10.13.0.100
Subnet Mask:	255.255.0.0
MAC Address:	00-05-A6-09-89-C9

Serial Port Settings	
Port:	1
Port Type:	RS-232
Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

Figure 33. System Status Page

The System Status web page updates itself periodically to reflect the latest status of the processor components. If an item changes, the display shows the change in status the next time it updates.

Using the Configuration Pages

There are three Configuration pages, which only administrators can access. When you click the **Configuration** tab, these pages are listed on the sidebar menu at the left of the screen. The following sections describe the changes you can make from these pages.

System Settings Page

On the System Settings page (figure 34), you can set IP parameters for the WindoWall Pro.

Extron Electronics

Status Configuration File Management Background

Logged on: Admin Log Off 800.633.9876 Contact Us

System Settings
Passwords
Firmware Upgrade

www.extron.com

System Settings

Below are your Unit's basic System Settings. Most units will work with the default IP Settings without making any changes. If you require help changing your settings, please refer to the user guide.

IP Settings

Unit Name: Ethernet-Board-09-89-C9

DHCP: ☐ On ☒ Off

IP Address: 10.13.194.50

Gateway IP Address: 10.13.0.100

Subnet Mask: 255.255.0.0

MAC Address: 00-05-A6-09-89-C9

Firmware: 1.00

Model: MGP 464 Pro DI

Part Number: 60-1259-12

Submit Cancel

Date/Time Settings

Date: 3/8/2003 Local Date/Time

Time: 2:59 PM

Zone: (GMT-12:00) Eniwetok, Kwajalein

Daylight Saving: ☒ Off ☐ USA ☐ Europe ☐ Brazil

Submit Cancel

Figure 34. System Settings Page

To change your system settings:

1. On the **Configuration** tab, select **System Settings** from the sidebar menu at the left edge of the screen.
2. Select or enter the new information in the desired fields.
3. When you have made all the desired inputs, click the **Submit** button at the bottom of the panel. The new settings appear in the fields.

IP Settings fields

The IP Settings fields provide a location for viewing and editing settings unique to the Ethernet interface. After editing any of the settings on this page, click the **Submit** button at the bottom of the IP Settings panel.

Unit Name field

The **Unit Name** field contains the name of the WindoWall Pro. The name assigned at the factory consists of the model name, followed by the last three character pairs of the **MAC address**. You can change this name field to any valid name, up to 24 alphanumeric characters.

NOTE: The following characters are invalid in the name:

+ ~ , @ = ` [] { } < > ' " ; : | \ and ?.

DHCP radio buttons

The **DHCP On** radio button directs the WindoWall Pro to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable).

The **DHCP Off** radio button turns DHCP off. Contact the local system administrator to set this control.

IP Address field

The **IP Address** field contains the IP address of the connected WindoWall Pro. This value is encoded in the WindoWall Pro flash memory.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeros, up to 3 digits total per field, are optional. Values of 256 and above are invalid.

The factory-installed default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE: IP address changes can cause conflicts with other equipment. Only local system administrators should change IP addresses.

Gateway IP Address field

The **Gateway IP Address** field identifies the address of the gateway to the mail server to be used if the WindoWall Pro and the mail server are not on the same subnet.

The gateway IP address has the same validity rules as the system IP address.

Subnet Mask field

The **Subnet Mask** field is used to determine whether the WindoWall Pro is on the same subnet as the mail server when you are subnetting. For more information, see [Subnetting, a Primer](#) on page 74.

MAC Address field

The Media Access Control (MAC) Address consists of six hexadecimal character pairs and is used to identify the processor hardware. This address is hard-coded in the unit and cannot be changed.

Date/Time Settings fields

The Date/Time Settings panel provides a location for viewing and setting the time functions.

The screenshot shows the 'Date/Time Settings' dialog box. It includes input fields for Date (Month: 5, Day: 15, Year: 2006), Time (Hour: 59, Minute: AM), and Zone (Pacific Time (US & Canada), Tijuana). There are also radio buttons for Daylight Saving (USA, Europe, Brazil). A 'Local Date/Time' button is present next to the date fields. At the bottom are 'Submit' and 'Cancel' buttons.

Figure 35. Date/Time Settings Panel

To change the date and time settings:

1. Click the drop box for the desired variable. The adjustable variables are month, day, year, hours, minutes, am or pm, and (time) zone. A drop-down scroll box appears (the **Month** drop box is selected in figure 35).
2. Click and drag the slider or click the **Scroll Up** button or **Scroll Down** button until the desired variable is visible.
3. Click on the desired variable.

NOTES: If setting the time, set the local time. The **Zone** variable allows you to then enter the offset from Greenwich Mean Time (GMT).

The **Zone** field identifies the standard time zone that has been selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.

4. Repeat steps 1 through 3 for other variables that need to be changed.
5. Select the appropriate **Daylight Saving** radio button. To turn off daylight saving time, select **Off**.

NOTE: When daylight saving time is enabled, the WindoWall Pro updates its internal clock between Standard Time and Daylight Saving Time in the spring and fall on the date that the time change occurs in the United States of America and parts of Europe and Brazil. When daylight saving time is turned off, the processor does not adjust its time reference.

6. Click the **Submit** button at the bottom of the Date/Time Settings panel to implement your selections.

Passwords Page

The Passwords page lets you assign an administrator or user password to control access to the WindoWall Pro web pages. To access this page, click the **Configuration** tab, then the **Passwords** link on the left sidebar menu.

NOTE:

- An administrator password must be in place before a user password can be assigned.
- Passwords must contain 4 to 12 alphanumeric characters. Symbols and spaces are not allowed, and the passwords are case sensitive.

Figure 36. Passwords Page

Assigning a password

To assign passwords:

1. Enter the new administrator password in the **Administrator Password** field.
2. In the **Re-enter Admin Password** field, enter the same password again to confirm it.
3. If you want to assign a user password, enter it in the **User Password** field.

NOTE: You cannot assign a user password unless an administrator password has been assigned.

4. Reenter the same user password in the **Re-enter the User Password** field.
5. Click the **Submit** button to set the passwords.

Clearing a password

To remove an assigned password:

1. In the **Administrator Password** or **User Password** field, enter a single space.
2. Enter a single space in the **Re-enter Admin Password** or the **Re-enter User Password** field.
3. Click the **Submit** button.

Firmware Upgrade Page

The Firmware Upgrade page enables you to install a new version of firmware to your WindoWall Pro. (The same firmware file is used for both the MGP Pro and the WindoWall Pro.) You can download the latest firmware version from the Extron website to your computer (see [Updating the Firmware](#) on page 75 for more details on firmware updating).

To access the Firmware Upgrade page, click the **Configuration** tab, then the **Firmware Upgrade** link on the left sidebar menu.

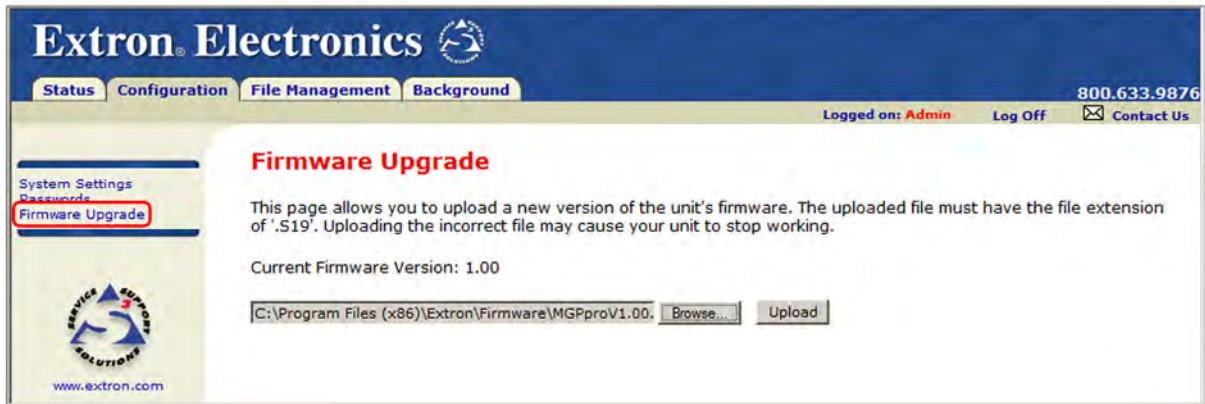


Figure 37. Firmware Upgrade Page

Determining the current firmware version

There are two methods you can use to find out what firmware version is currently installed on your WindoWall Pro:

- **Using the LCD screen:** Watch the LCD screen as you connect the WindoWall Pro to a power source. The first piece of information displayed on the screen is the firmware version (along with the product name).
- **Using the System Status web page:** Select the **Status** tab on the WindoWall Pro web page to display the System Status page. The firmware version is in the System Description panel.

Downloading the firmware file

To obtain the latest version of WindoWall Pro and MGP Pro firmware file and install it on your computer:

1. Go to the Extron website (www.extron.com) and click the **Download** tab.
2. On the Download Center page, click the **Firmware** link on the left sidebar.
3. On the Firmware page, click the letter **M** in the alphabet displayed at the top and bottom of the page, then scroll down to the MGP Pro line.
4. Click the **Download** link located at the far right of the MGP Pro line.
5. On the next page, fill in the required information, then click the **Download MGPSeriesFWn.nn.exe** button. A File Download - Security Warning dialog box is displayed.
6. Click **Save**. A Save As dialog box opens.
If you want to install the firmware on your computer immediately, click **Run** instead of **Save**, and skip to step 9.
7. Browse to the folder where you want to save the firmware installation file on your computer, and click **Save**.

8. When ready to install the new firmware on your computer, locate the downloaded file, and double-click on it to open it.
9. Follow the instructions on the Installation Wizard screens to install the new firmware on your computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Updating the firmware on the WindoWall Pro

After you have installed the new firmware on your computer, you must upload it to the WindoWall Pro. To upload the firmware using the web pages:

1. On the WindoWall Pro **Configuration** tab, select **Firmware Upgrade** from the sidebar menu to display the Firmware Upgrade page.
2. Click **Browse** to open the Choose File to Upload (or Choose File) dialog box, and locate the firmware file on your computer or server. The file extension must be **.S19**.

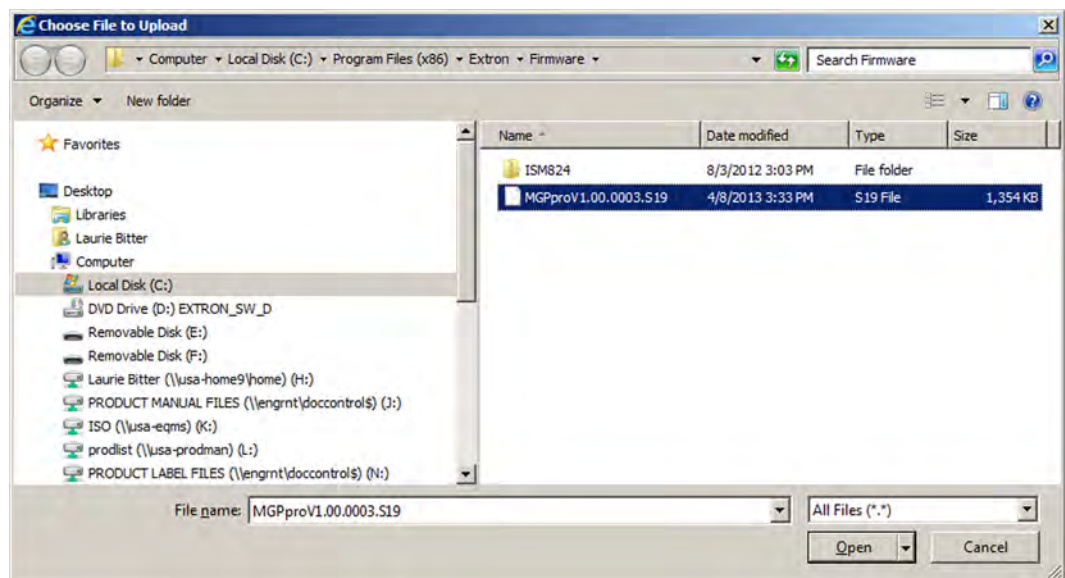


Figure 38. Choose File to Upload Dialog Box

ATTENTION: Uploading a file with an extension other than .S19 may cause the unit to stop functioning.

3. Open the firmware file. Its name appears below the Current Firmware Version on the Firmware Upgrade page.
4. Click the **Upload** button on the Firmware Update page to start the firmware update process. While the firmware is being uploaded, the **Upload** button changes to **Uploading...**

NOTE: While the firmware is uploading and rebooting, do not make any selections on the web pages.

When the uploading process is complete, the **Uploading...** button on the screen changes back to **Upload**.

NOTE: As an alternative method of updating the WindoWall Pro firmware, you can use the Firmware Loader software (see [Updating the Firmware](#) on page 75 for information on downloading and using this software).

Using the File Management Page

The File Management page lets you upload files to the WindoWall Pro from your computer or network, and delete files from the unit. You can also upload personalized web pages via this page. To access the File Management page, select the **File Management** tab on the WindoWall Pro web page. You can use this function to load background images from your computer or the internet to display on the output screen. All background image files must be 24-bit bitmaps. The image files must be loaded to a folder named "nortxe-graphics."

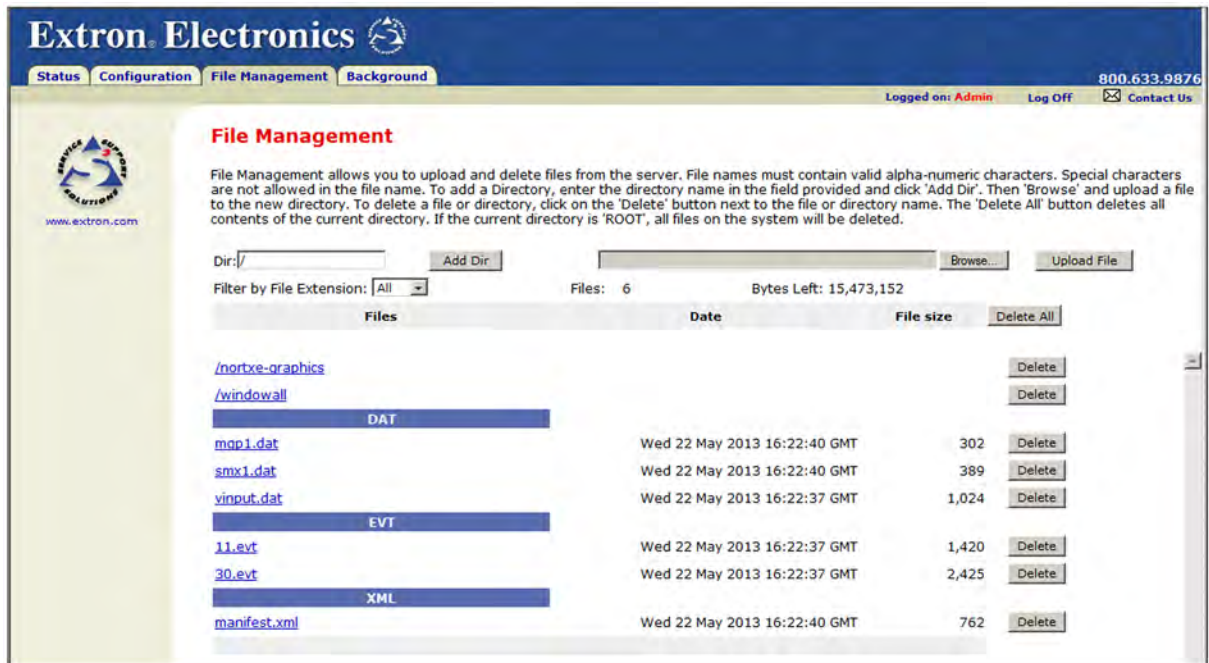


Figure 39. File Management Page

Uploading Files

Names of files to be uploaded to the WindoWall Pro must contain only valid alphanumeric characters and underscores. No spaces or special characters (symbols) are allowed. To upload files from the server,

1. Click the **Browse** button to the right of the file name field.
2. Browse to locate the file that you want to upload, and open it. The file name and directory path are displayed in the file name field on the File Management page.
3. Click the **Upload File** button. The selected file name appears in the Files column on the page. (Files are listed separately under headings of their extensions.)

Adding a Directory

To add a directory or folder to the WindoWall Pro file system,

1. Enter the directory name in the **Dir:** field, following the slash (/).
2. Click the **Add Dir** button.
3. With the directory name displayed, perform the Uploading files procedure described in the previous section to add a file to the directory. The directory name appears at the top of the Files column, preceded by a slash.

To add more files to the directory, click the directory name to open it, then use the Uploading files procedure. To exit the directory, click **(root)** or **(back)**.

Other File Management Activities

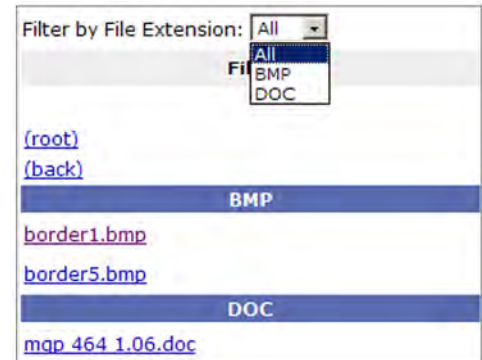
You can also perform the following tasks on the File Management page:

Open a file: Click on the name of the file in the Files column.

Delete a file: Click the **Delete** button at the right end of the line that contains the file you want to remove.

Delete all files: Click the **Delete All** button.

Display files by file extension: The **Filter by File Extension** menu (shown at right) lists the extensions of the files that have been uploaded to the WindoWall Pro. This menu lets you choose to display only files with the extension you select. Select **All** to display all uploaded files.



Using the Background Page

The Image Settings screen on the Background page lets you select a background for the output display. You can choose a background color, or you can upload bitmap images to the WindoWall Pro, and select one as the display background. You can also specify the image from an HDMI input to display live as the background on the screen.



Figure 40. Image Settings Screen

Selecting a Background Color

To change the background color on the output display, select a color from the **Background Color** pull-down menu. The default selection, **Off**, results in a black background.

Displaying a Background Image

An image can be displayed as a background behind the windows on the output screen. This can be done by uploading a bitmap image to the WindoWall Pro and selecting it by using the **Add** and **Take** buttons.

Using an HDMI input

To use the unscaled image from an HDMI source as a live background on the output screen,

1. Connect an HDMI source to the Live background connector on the rear panel.
2. From the **Background Color** menu, select **DVI Background Input**.

Using a bitmap image

The Image Settings screen lets you upload bitmap images, including those saved via background capture, from your computer to the WindoWall Pro; and to select an uploaded image as the background for the output screen.

NOTE: The WindoWall Pro supports only 24-bit bitmap files as backgrounds. The background file names must have a **.bmp extension**. The WindoWall Pro has 16 MB of memory to store captured or loaded images (see the WindoWall Console software help file to calculate the size of an image).

Uploading an image

To upload a bitmap image to the WindoWall Pro:

1. In the Image Index field, click **Add**. The **Add Image** field is displayed.

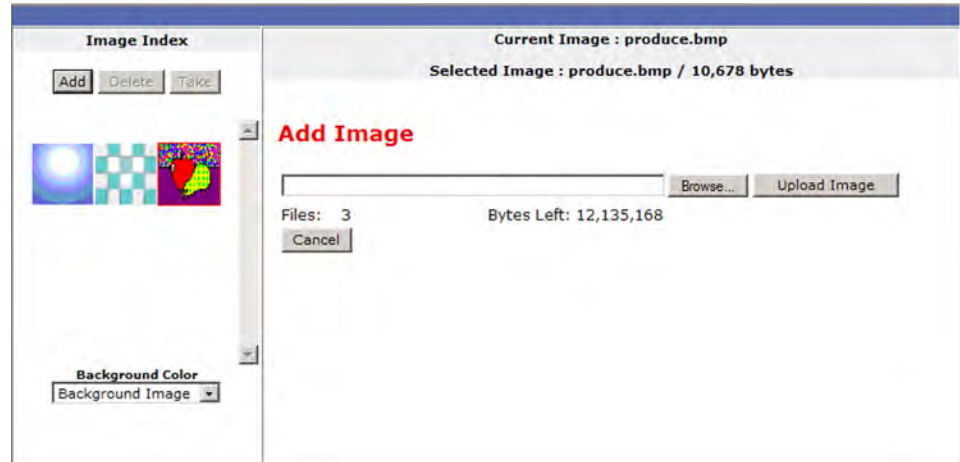


Figure 41. Add Image Field on the Image Settings Screen

2. Click **Browse** to open the Choose File to Upload (or Choose File) dialog box, and locate the image (.bmp) file that you want to upload.
3. Open the image file in the Choose File to Upload dialog box. Its name and the path to it are displayed in the **Add Image** field on the Image Settings screen.
4. Click **Upload Image**. This button changes to **Uploading...** while the file is being loaded.
5. When the uploading is complete, a thumbnail image of the uploaded file is displayed in the Image Index panel.

Selecting a background image

To select an uploaded image to be displayed as the background on the output screen:

1. In the Image Index panel, click the thumbnail of the image you want to display. A larger version of the selected image appears to the right.
2. Click **Take** to select that image for the output background.

Special Application: Edge Blending

This section describes examples of applications using edge blending and edge matching. It also provides instructions for setting up an edge blending application using the Setup Wizard. Topics include:

- **Example of a System Using Edge Blending**
- **Example of an Edge-matched System**
- **Setting Up the WindoWall Console Software for Edge Blending**

Example of a System Using Edge Blending

In an edge-blended system, projectors with edge blending functionality are used to display multiple images on one screen to form a videowall display that appears to be one image. Figure 42 shows a diagram of a typical edge-blended system.

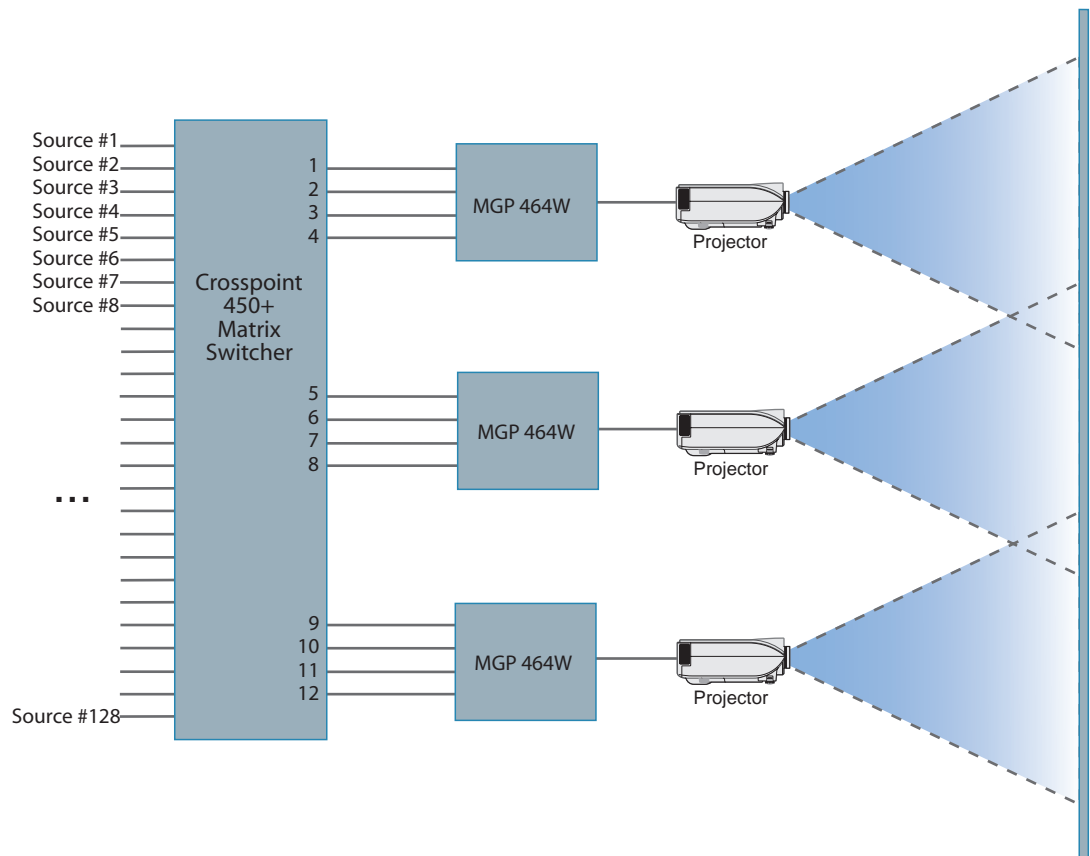


Figure 42. Typical Edge-blended System

The edges of the projected images overlap by a few pixels. However, to the viewer, the videowall appears to contain one seamless image, with no indication of where the edges of the component images are.

NOTE: The WindoWall Pro does not manage the contrast adjustments and brightness compensation needed to visually blend the image edges so that the overlapped edges are not brighter than the rest of the image. With the WindoWall Console software, the processor can manage the video information so that the information in the blended areas is the same on adjacent projectors.

Figure 43 shows a system in which three projectors produce a display consisting of eight windows. In this illustration, each cross-hatched area represents the blended area that two projectors are responsible for displaying. The top diagram shows the projector images overlapping. Because the images overlap, the video information in the overlap area is identical on both projectors.

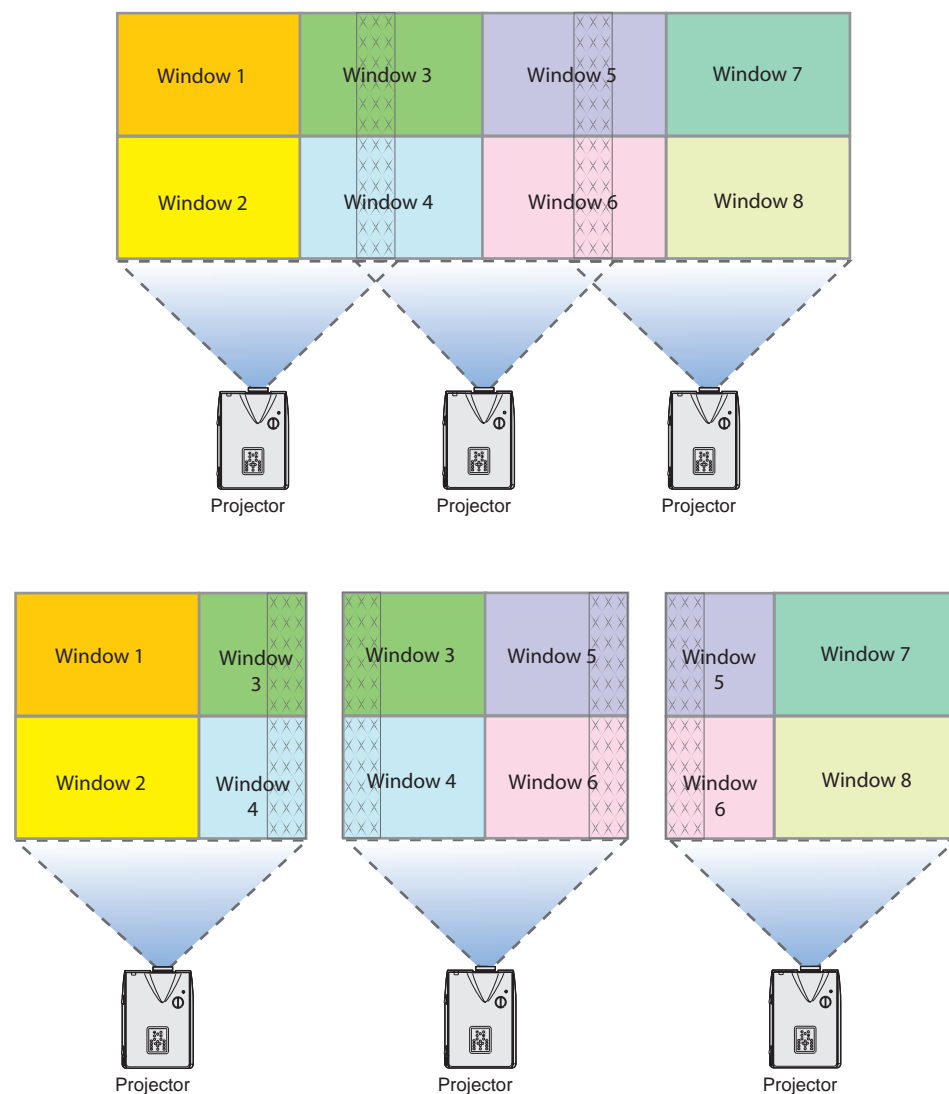


Figure 43. Three Projectors Displaying Overlapping Images that Require Edge Blending

The bottom diagram in [figure 43](#) on the previous page shows the images from the three projectors separated from each other. When you separate out what each side-by-side pair of projectors is displaying, you can see that a window in each WindoWall Pro is needed to display any window that is in the overlapping area. In the example above, the images displayed in windows 3 and 4 from projector 1 and projector 2 must be the same. Because the total number of windows per processor is four, the maximum number of windows allowable in an edge-blended system varies based on the layout of the windows.

Example of an Edge-matched System

By contrast, if you were to set up the system as “edge-matched” (no overlapping), the number of windows possible is always four per processor. In an edge-matched system, in which there is no overlap, each WindoWall Pro can display all four windows, and a greater total number of windows can be tiled across the canvas.

In the example shown in [figure 44](#), the top diagram shows the three projector images with edges matched. The bottom diagram shows the three images separated from each other.

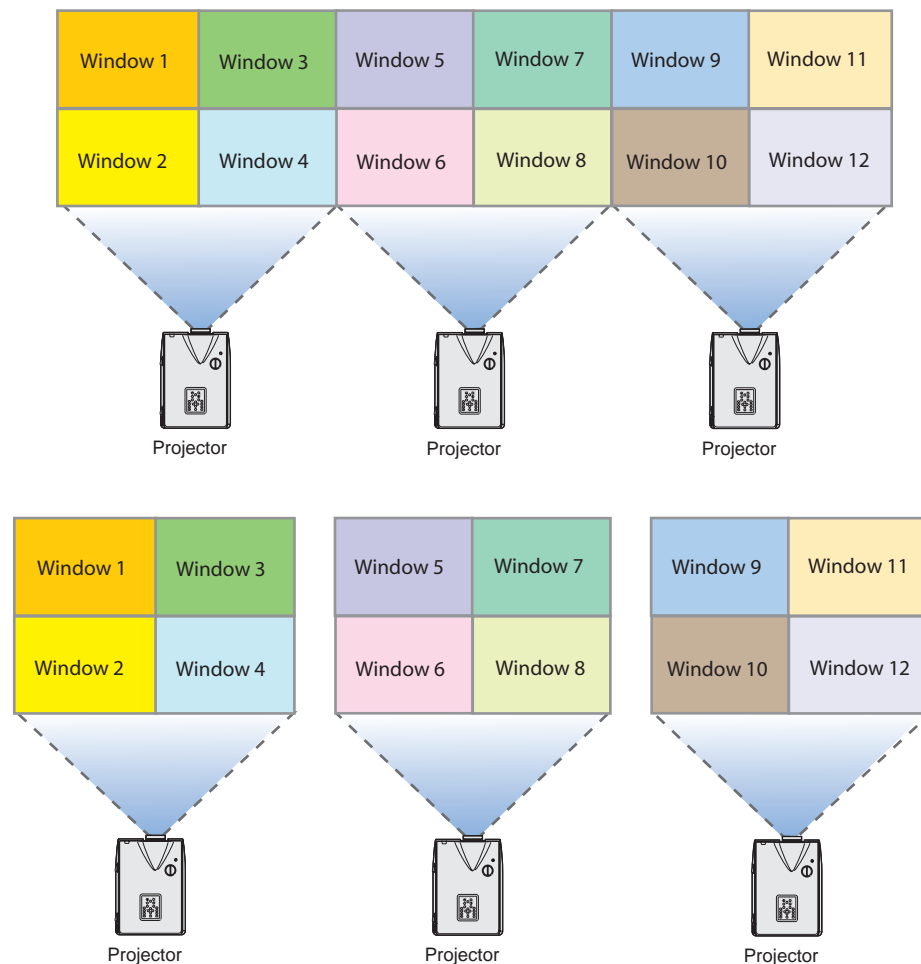


Figure 44. Three Projectors Set Up to Produce an Edge-matched Display (No Overlapping)

Setting up the WindoWall Console Software for Edge Blending

To set up the WindoWall Pro software for a system in which edge blending will be used:

1. Install and open the WindoWall Console software (see [Installing and Starting the Software](#) on page 11).
2. From the **Wizards** menu on the WindoWall Console main window, select **New Project**.
3. Follow the instructions on the Setup wizard screens until you reach the Edge Compensation screen (see [Setting up a WindoWall Pro Project](#) on page 15 for instructions on setting up a project using the wizard).
4. On the Edge Compensation screen, select the **Enable Edge Compensation** check box and the **Edge Blending - compensate for overlapping projector displays** radio button. The screen changes as shown in figure 45.

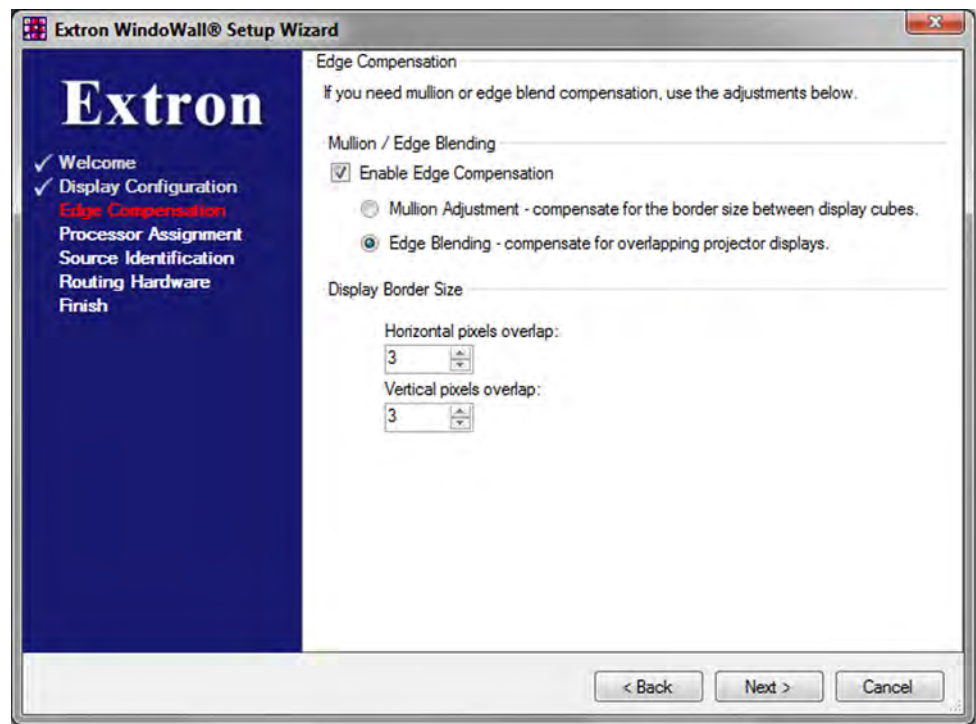


Figure 45. Edge Compensation Wizard Screen with Edge Blending Selected

5. In the two incremental spin boxes in the Display Border Size section, enter the number of overlapping pixels as follows:
 - **Horizontal pixels overlap** — Type or select the number of pixels by which the images' right and left borders will overlap each other.
 - **Vertical pixels overlap** — Type or select the number of pixels by which the top and bottom borders of the image will overlap each other.
6. Click **Next** to continue, and complete the wizard, following the instructions on the screens.
7. Use the WindoWall Pro test patterns to help you set up your projectors for the edge-blended videowall display.

Reference Information

This section provides reference information on the WindoWall Pro products. Topics include:

- [Mounting the WindoWall Pro](#)
- [IP Addressing](#)
- [Updating the Firmware](#)

Mounting the WindoWall Pro

Tabletop Use

Four self-adhesive rubber feet are included with the WindoWall Pro. For tabletop use, attach one foot to each corner of the bottom side of the unit and place the unit in the desired location.

Rack Mounting

UL guidelines for rack mounting

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the WindoWall Pro into a rack:

- **Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- **Reduced air flow** — Install the equipment in the rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- **Circuit overloading** — When connecting the equipment to the supply circuit, consider the connection of the equipment to the supply circuit and the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
- **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Rack Mounting Procedure

For optional rack mounting, do not install the rubber feet. Mount the WindoWall Pro in the rack as follows:

1. Attach the included rack/through-desk mounting brackets to the unit, using eight of the machine screws supplied with the mounting kit (see figure 46).
2. Insert the unit into the rack and align the holes in the mounting brackets with the holes in the rack. Use four machine screws to attach the brackets to the rack.

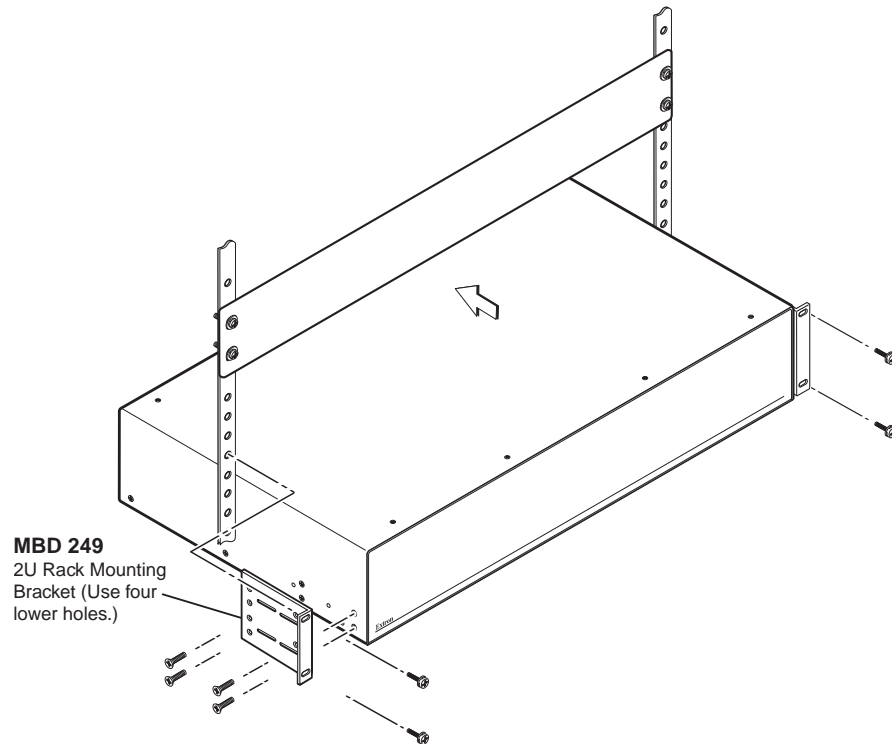


Figure 46. Rack Mounting a WindoWall Pro

IP Addressing

What is an IP Address?

An IP address is a 32-bit binary number that is used to identify each device on an Ethernet network. This number is usually represented by four decimal numbers (called “octets”), each in the range of 0 through 255 and separated by dots; for example, 198.123.34.240. This is called “dotted decimal notation.”

An IP address is divided into two parts:

- Network identifier
- Host identifier

Each address on a given network must have the same network identifier value but have a unique host identifier. As a result, there are different classes of addresses that define the range of valid addresses and the parts of the address that are used for the network and host identifiers.

The most common IP address classes are:

Class Name	Valid Address Range	Identifier Arrangement
Class A	0.0.0.1 to 127.255.255.254	<i>NNN . HHH . HHH . HHH</i>
Class B	128.0.0.1 to 191.255.255.254	<i>NNN . NNN . HHH . HHH</i>
Class C	192.0.0.1 to 223.255.255.254	<i>NNN . NNN . NNN . HHH</i>

NNN refers to the network identifier and *HHH* refers to the host identifier.

Choosing IP Addresses

If the computer and the WindoWall Pro are directly connected or connected via their own independent network, follow the guidelines below for choosing the IP addresses.

However, if you intend to connect your computer and WindoWall Pro to an existing network, you need to advise the network administrator and ask the administrator to allocate suitable IP addresses.

On an independent network, it is generally recommended that you use the Class C format (from 192.0.0.1 to 223.255.255.254).

There are two rules for choosing IP addresses:

- Network identifier must be the same for each IP address
- Host identifier must be unique for each address.

Applying these rules to Class C addresses, the first three decimal values of your IP address must all be the same while the last value is used to uniquely identify each device.

The following is an example of a **valid** Class C addressing scheme:

Device	IP Address
WindowWall Console Software computer	208.132.180.41
WindoWall Pro Signal Processor	208.132.180.42

NOTE: The host identifiers (41 and 42 in the above example) do not need to be sequential or in any particular order. However, it is recommended that you group the numbers for simplicity.

The following is an example of an **invalid** Class C addressing scheme:

Device	IP Address
WindoWall Console Software computer	208.132.180.41
WindoWall Pro Signal Processor	192.157.180.42

NOTE: The above addresses are invalid because the network identifier for each address is not the same even though each IP address is unique.

You can perform a test from your computer to check that a device at a particular address is responding correctly or to determine its address (see [Pinging for the IP Address](#) on the next page).

Subnet Mask

The subnet mask is another 32-bit binary number that is used to “mask” certain bits of the IP address. This provides a method of extending the number of network options for a given IP address. It works by allowing part of the host identifier to be used as a subnet identifier.

It is important that you set the correct value for the subnet mask. The basic values depend on the class of IP address being used.

Class Name	Subnet Mask
Class A	255.0.0.0
Class B	255.255.0.0
Class C	255.255.255.0

See [Subnetting, a Primer](#) on page 74 for more information.

Pinging for the IP Address

To access the WindoWall Pro via the Ethernet port, you need the processor IP address. If the address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the Ping utility. If the address has not been changed, the factory-specified default is 192.168.254.254.

Ping can also be used to test the Ethernet link to the WindoWall Pro.

Ping to determine Extron IP address

The Microsoft Ping utility is available at the command prompt. Ping tests the Ethernet interface between the computer and the WindoWall Pro. Ping can also be used to determine the actual numeric IP address from an alias and to determine the web address.

Ping the WindoWall Pro as follows:

1. From the Windows **Start** menu, select **Run...** The Run dialog box opens.
2. In the **Open** text field, enter **command**.
3. Click **OK**. A command screen opens.
4. At the command prompt, enter **ping IP address**. The computer returns a display similar to figure 47.

The line **Pinging ...** reports the actual numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

```
C:\>ping 192.168.254.254

Pinging 192.168.254.254 with 32 bytes of data:

Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128

Ping statistics for 192.168.254.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Figure 47. Ping Response

Ping to determine web IP address

The Ping utility has a modifier, **-a**, that directs the command to return the web address rather than the numeric IP address.

At the prompt, enter `ping -a IP address`. The display that the computer returns is similar to the Ping response shown in [figure 47](#) on the previous page, except that when you specify the **-a** modifier, the line `Pinging mail...` reports the web IP address instead of the numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

Connecting as a Telnet Client

The Microsoft Telnet utility is available from the command prompt. Telnet allows you to input SIS commands to the WindoWall Pro from the PC via the Ethernet link and the LAN.

Starting Telnet

Access the command prompt and start Telnet as follows:

1. From the **Start** menu, select **Run...** The Run dialog box opens.
2. In the **Open** text field, enter `command`.
3. Click **OK**. A command screen opens.
4. At the prompt, enter `telnet`. The computer returns a display similar to figure 48.

```
Microsoft (R) windows 2000 (TM) Version 5.0 (Build 2195)
Welcome to Microsoft Telnet Client
Telnet Client Build 5.00.99203.1

Escape Character is 'CTRL+]'

Microsoft Telnet>
```

Figure 48. Telnet Screen

Operating using Telnet

This guide does not detail all of the operations and functionality of Telnet. However, some basic level of understanding is necessary for operating the WindoWall Pro via Telnet.

Connecting to the WindoWall Pro (Open command)

You connect to the WindoWall Pro using the **Open** command. After your computer is connected to the processor, you can enter the SIS commands the same as you would if you were using the RS-232 or RS-422 link.

Connect to the WindoWall Pro as follows:

1. At the Telnet prompt, enter `open IP address`.
 - **If the WindoWall Pro is not password-protected**, no further prompts are displayed until you disconnect from the WindoWall Pro.
 - **If the WindoWall Pro is password-protected**, Telnet displays the password prompt.

2. If necessary, enter the password at the password prompt.

Connection to the WindoWall Pro via the Ethernet can be password protected. There are two levels of password protection: administrator and user.

- A person logged on as an administrator has full access to all WindoWall Pro capabilities and editing functions.
- Users can select test patterns, mute or unmute the output, select a blue screen, and view all settings with the exception of passwords. By default, the WindoWall Pro is delivered with both passwords set to “carriage return.”

When you are logged in, the WindoWall Pro returns either **Login Administrator** or **Login User**. No further prompts are displayed until you disconnect from the unit.

Escape character and <Esc> key

Many SIS commands include the keyboard <Esc> key. Consequently, some confusion may exist between the **Escape** character and the <Esc> key.

When Telnet is first started, the utility advises that the **Escape character** is “Ctrl+].” This means that the Telnet **Escape** character is a key combination: the <Ctrl> key and the <]> key pressed simultaneously. Pressing these keys displays the Telnet prompt while leaving the connection to the WindoWall Pro intact.

Local echo

Once your computer is connected to the WindoWall Pro, by default Telnet does not display your keystrokes on the screen. SIS commands are entered blindly, and only the SIS responses are displayed on the screen. To command Telnet to show all keystrokes, enter **set local_echo** at the Telnet prompt before you open the connection to the WindoWall Pro.

With local echo turned on, keystrokes and the WindoWall Pro responses are displayed on the same line.

Example: `1*1!In1 Out1 All,`

where `1*1!` is the SIS command and `In1 Out1 All` is the response.

Note that all keystrokes are displayed, even those that should be masked, such as the password entry. For example, when entering a password with local echo turned on, you see a display such as `a*d*m*i*n*`, where `admin` is the keyed-in password and `*****` is the masked response.

Local echo can be turned off by entering **unset local_echo** at the Telnet prompt. If your computer is connected to the WindoWall Pro and you need to access the Telnet prompt to turn local echo off, enter the **Escape** sequence (<Ctrl +]>).

Setting carriage return-line feed

Unless commanded otherwise, Telnet transmits a line feed character only (no carriage return) to the connected WindoWall Pro when you press the <Enter> key. This is the correct setting for SIS communication with the WindoWall Pro. The Telnet **set crlf** command forces Telnet to transmit carriage return and line feed characters when <Enter> is pressed; however, if **crlf** is set, the SIS link with the WindoWall Pro does not function properly.

Closing the link to the WindoWall Pro

To close the link to the WindoWall Pro, access the **Telnet** prompt by entering the escape sequence (<Ctrl +]>). At the **Telnet** prompt, enter **close**.

Help

For Telnet command definitions, enter ? at the Telnet prompt.

Exiting Telnet (Quit command)

Exit the Telnet utility by entering quit at the Telnet prompt. If you are connected to the WindoWall Pro, access the Telnet prompt by entering the Escape sequence (<Ctrl +]>).

Subnetting, a Primer

A subnet is a **subset** of a **network** — a set of IP devices that have portions of their IP addresses in common. It is not the purpose of this manual to describe TCP/IP protocol in detail. However, some understanding of TCP/IP subnetting is necessary in order to understand the interaction of the WindoWall Pro and the mail server gateway. To understand subnetting at the level required to install and operate the WindoWall Pro, you must understand the concepts of a gateway, local and remote devices, IP addresses and octets, and subnet masks and octets.

Gateways

The WindoWall Pro can communicate with the e-mail server that it uses for e-mail notification directly (if they are on the same subnet), or the communication can be routed via a gateway (a computer that provides a link between different subnets).

Local and remote devices

The local and remote devices are defined from the point of view of the function being described. In this guide, subnetting is an issue when you are using the controlling computer to set TCP/IP and e-mail values for the WindoWall Pro. When you are setting up the variables for e-mail notification, the WindoWall Pro is the local device and the e-mail server is the remote device.

IP addresses and octets

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric sub-fields, called “octets,” which are separated by dots (periods) (figure 49). Each octet can be numbered from 000 through 255. Leading zeros, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

Typical IP Address: 192,168,254,254
Octets

Figure 49. IP Address and Octets

Subnet masks and octets

The subnet mask (figure 50) is used to determine whether the local and remote devices are on the same subnet or different subnets. The subnet mask consists of four numeric octets separated by dots. Each octet can be numbered from 000 through 255. Leading zeros, up to 3 digits total per octet, are optional. Each octet typically contains either 255 or 0. The octets determine whether or not the same octets of two IP addresses will be compared when determining if two devices are on the same subnet.

255 indicates that this octet will be compared between two IP addresses. 0 indicates that this octet will **not** be compared between two IP addresses.

Typical Subnet Mask: 255,255,0,0
Octets

Figure 50. Subnet Mask and Octets

Determining whether devices are on the same subnet

To determine the subnet, the local device IP address is compared to the remote device IP address (see figure 51). The octets of each address are compared or not, depending on the value in the related subnet mask octet.

- If a subnet mask octet contains the value 255, the related octets of the local device address and the remote device IP address are unmasked.

Unmasked octets are compared (indicated by ? in figure 51).

- If the subnet mask octet contains the value 0, the related octets of the local device and remote device IP addresses are masked.

Masked octets are not compared (indicated by n in figure 51).

If the unmasked octets of the two IP addresses **match** (indicated by = in example 1 of figure 51), the two addresses **are on the same subnet**.

If the two unmasked fields **do not match** (indicated by an unequal sign [≠] in figure 51, examples 2 and 3), the addresses **are not on the same subnet**.

	Example 1	Example 2	Example 3
Local IP Address:	192.168.254.254	192.168.254.254	192.168.254.254
Subnet Mask:	255.255.0.0 (??.X.X)	255.255.0.0 (??.X.X)	255.255.0.0 (??.X.X)
Remote IP Address:	192.168.2.25	190.190.2.25	192.190.2.25
Match?:	=.X.X — Match (Same subnet)	≠.X.X — No match (Different subnet)	≠.X.X — No match (Different subnet)

Figure 51. Comparing the IP Addresses

Updating the Firmware

Updates to the Extron WindoWall Pro Series Multi-Graphic Processor firmware are made available periodically via the Extron Website. If the need arises, you can replace the WindoWall Pro main firmware via an IP connection without opening the unit.

Determining the Firmware Version

There are three ways to check which version of firmware the WindoWall Pro is using: view the System Status page of the WindoWall Pro embedded web pages, select **About WindoWall Pro...** from the WindowWall Console software **Help** menu, or enter the Q SIS command (to use SIS commands, see the **Remote Configuration and Control** section, beginning on page 11).

Using the web pages

The WindoWall Pro comes from the factory with a set of default embedded web pages. The System Status web page displays the firmware version of your unit, along with other information such as your WindoWall Pro IP address and part number.

To use the web pages to find out the current firmware version number:

1. Connect the WindoWall Pro to a PC via an Ethernet connection (using a crossover cable), or connect the WindoWall Pro and the PC to a network, using a straight-through cable (see **Rear Panel Features** on page 6 for details).
2. Start a web browser program (such as Microsoft Internet Explorer).
3. Enter the WindoWall Pro IP address in the browser **Address** field.

NOTE: If your local system administrators have not changed the value, use the factory-specified default, 192.168.254.254, for this field.

4. Press the <Enter> key. If the WindoWall Pro HTML pages are not password protected, the browser displays the System Status page.

If the WindoWall Pro HTML pages are password protected, the browser displays the Enter Network Password dialog box (figure 52).

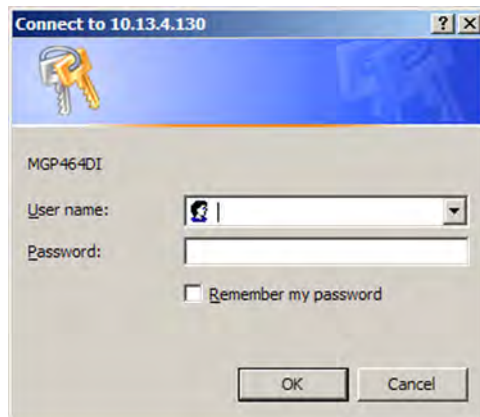
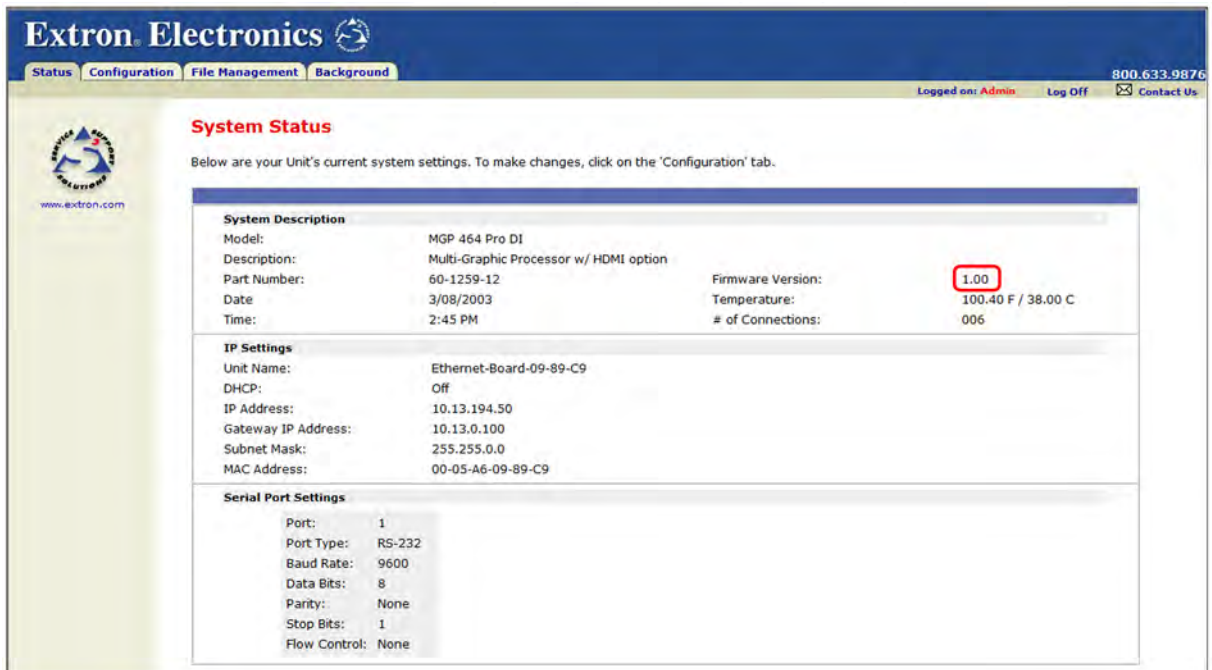


Figure 52. Example of an Enter Network Password Dialog Box

- a. Enter the appropriate administrator password in the Password field.

NOTE: A User name entry is not required.

- b. If desired, select the check box to have the system input your password the next time you enter your WindoWall Pro IP address.
 - c. Click **OK**. The System Status page or your custom start page opens.
5. Access the System Status page if it is not already displayed. The firmware version is listed in the System Description area (figure 53).



System Description	
Model:	MGP 464 Pro DI
Description:	Multi-Graphic Processor w/ HDMI option
Part Number:	60-1259-12
Date:	3/08/2003
Time:	2:45 PM
Firmware Version:	1.00
Temperature:	100.40 F / 38.00 C
# of Connections:	006

IP Settings	
Unit Name:	Ethernet-Board-09-89-C9
DHCP:	Off
IP Address:	10.13.194.50
Gateway IP Address:	10.13.0.100
Subnet Mask:	255.255.0.0
MAC Address:	00-05-A6-09-89-C9

Serial Port Settings	
Port:	1
Port Type:	RS-232
Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

Figure 53. Current Firmware Version on System Status Page

Downloading the Firmware

Obtain the latest WindoWall Pro firmware by downloading it from the Extron website as follows:

1. Go to the Extron website (www.extron.com) and click the **Download** tab.
2. On the Download Center page, click the **Firmware** link on the left sidebar menu.
3. On the Firmware page, click the letter M in the alphabet displayed at the top and bottom of the page, then scroll down to the MGP Series line.
4. Click the **Download** link located at the far right of the MGP Series line.
5. On the next page, fill in the required information, then click the **Download MGPSeriesFWn.nn.exe** button (*n.nn* indicates the firmware version number). A File Download - Security Warning dialog box is displayed.
6. Click **Save**. A Save As dialog box opens.
If you want to install the firmware on your computer immediately, click **Run** instead of **Save**, and skip to step 9.
7. Browse to the folder where you want to save the firmware installation file on your computer, and click **Save**.
8. When ready to install the new firmware, locate the downloaded file, and double-click on it to open it.
9. Follow the instructions on the Installation Wizard screens to install the new firmware on your computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Uploading the Firmware

After you have installed the new firmware on your computer, you must upload it to the WindoWall Pro. Firmware uploads can be performed via the WindoWall Pro internal web pages or the Firmware Loader software. The computer and the WindoWall Pro must both be connected to an Ethernet network in order to update the main firmware.

NOTE: Check the Extron website for firmware-related documents, instructions, patch files, and new firmware files before loading new firmware into the unit.

Uploading using the web pages

Follow these steps to update the firmware using the WindoWall Pro web pages.

1. Launch a web browser (for example, Internet Explorer) on the connected computer, and enter the WindoWall Pro IP address in the address field.
2. If no password has been assigned, the WindoWall Pro web page opens, displaying the System Status screen.

If an administrator password has been assigned to the WindoWall Pro, the Enter Network Password dialog box opens (shown below). Enter the administrator password in the Password field (a user name is not required), and click **OK**. The WindoWall Pro web page appears.

NOTE: Passwords must contain 4 to 12 alphanumeric characters. Symbols and spaces are **not** allowed, and the passwords are case sensitive.



Figure 54. Enter Network Password Dialog Box

3. On the WindoWall Pro **Configuration** tab, select **Firmware Upgrade** from the left sidebar menu to display the Firmware Upgrade screen.

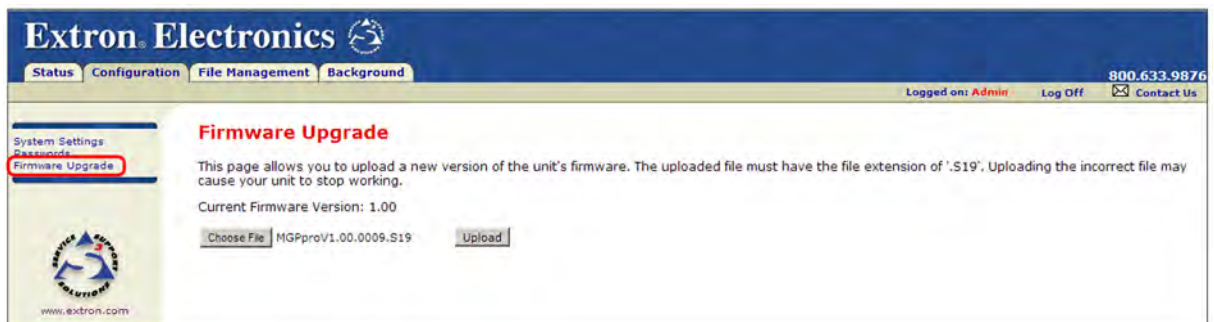


Figure 55. Firmware Upgrade Screen

4. Click **Choose File** to open the Choose file dialog box, and locate the firmware file on your computer or server. The file extension must be **.S19**.

ATTENTION: Uploading a file with an incorrect extension may cause the unit to stop working.

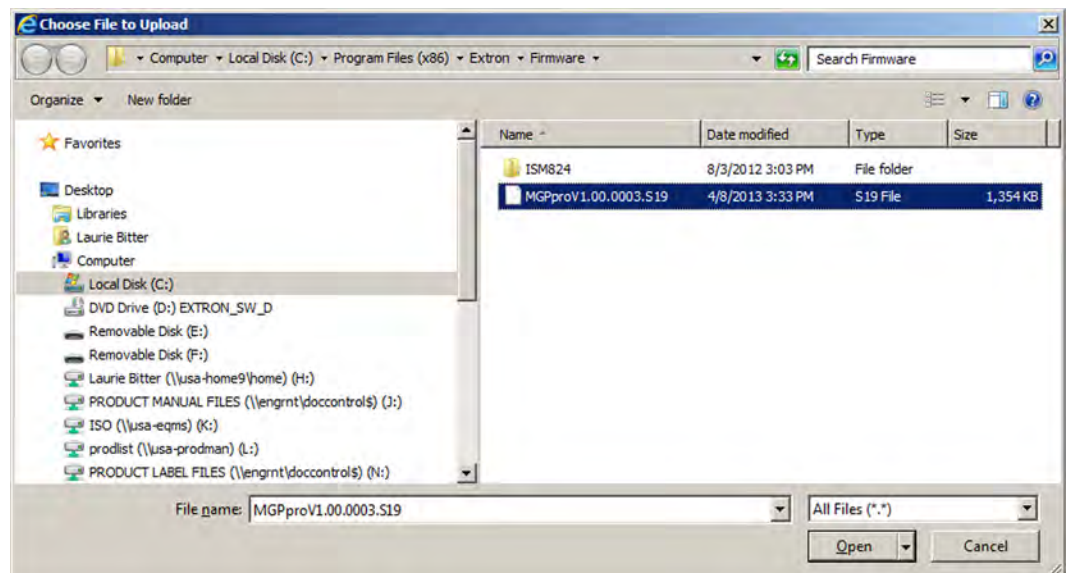


Figure 56. Choose File to Upload Dialog box with Firmware File Selected

5. Open the firmware file. Its name appears in the field below the Current Firmware Version on the Firmware Upgrade screen.
6. Click the **Upload** button on the Firmware Update screen to start the firmware update process. While the firmware is being uploaded, the **Upload** button changes to **Uploading...**

NOTE: While the firmware is uploading and rebooting, do not press any front panel buttons or make any selections on the web pages.

When the uploading process is complete, the **Uploading...** button on the screen changes back to **Upload**.

When the update is complete, the new firmware version number is displayed in the **Current Firmware Version** field. The LCD screen on the unit displays the first screen that appears on power-up, containing the new firmware version number.

7. If you want to further verify that the new version has been loaded, click the **Status** tab and view the current firmware version on the System Status screen.

Uploading using the Firmware Loader

An alternative way to update the WindoWall Pro firmware is to download and run the Firmware Loader software.

1. Download the Firmware Loader installer executable file to your computer.
 - a. On the Extron web page, click the **Download** tab.
 - b. On the Download Center page, click **Software** on the left sidebar menu.
 - c. Locate the "Firmware Loader" line and click the **Download** link at the far right.
 - d. Follow the instructions on the download screens to save the installer file to your computer.
2. If necessary, download the latest version of WindoWall Pro firmware and install it on your computer (see [Downloading the Firmware](#) on the page 77).

3. Open the Firmware Loader via your desktop **Start** menu by making the following selections:

Start > All Programs > Extron Electronics > Firmware Loader > Firmware Loader

The Firmware Loader dialog box opens with the Add Device dialog box displayed in front of it.

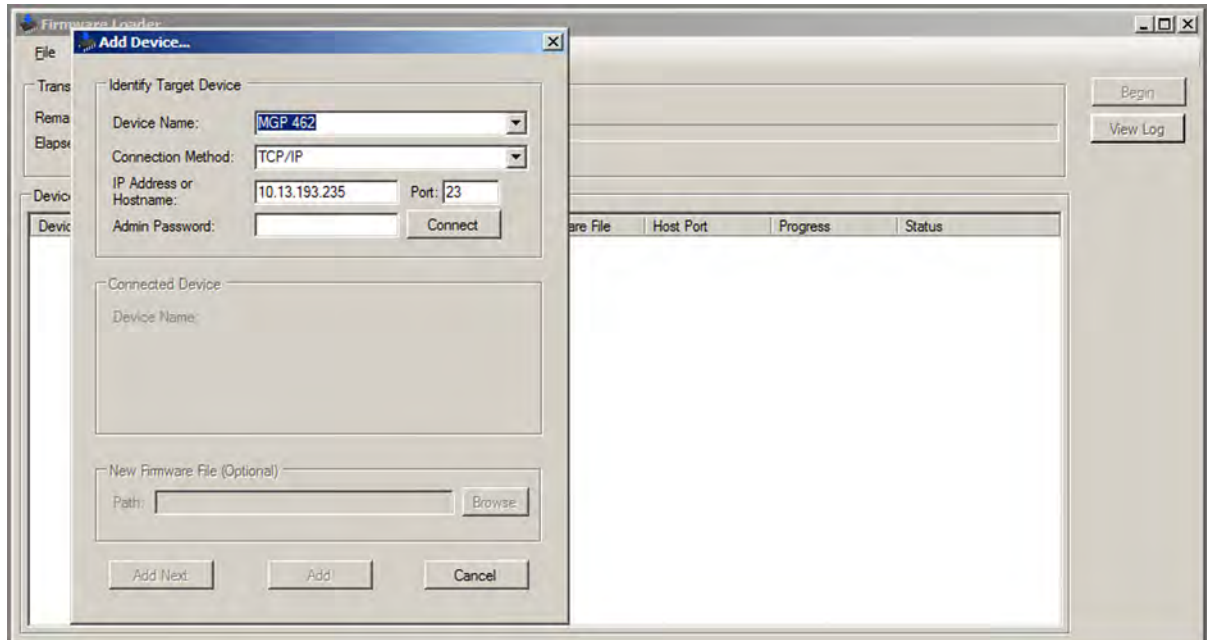


Figure 57. Add Device Dialog Box

4. On the Add Device dialog box, select **WindoWall Pro Series** from the **Device Names** drop-down menu.
5. Click **Connect**. If the connection is successful, **WindoWall Pro 46n Pro** is displayed in green in the Connected Device panel, followed by a green check mark.
6. Click the **Browse** button in the New Firmware File (Optional) panel.

7. On the Open dialog box, navigate to the new firmware file, which has an **S19** extension, and double-click it.

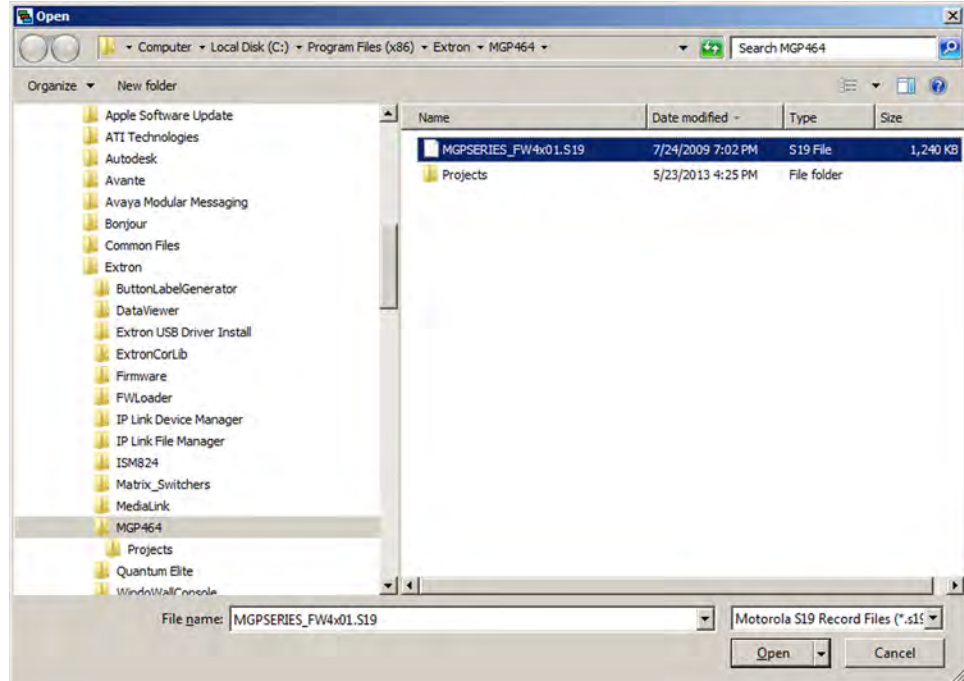


Figure 58. Open Dialog Box for Firmware File Selection

ATTENTION: Valid firmware files must have the file extension **S19**. A file with any other extension is not a firmware upgrade for this product and could cause the WindoWall Pro to stop functioning.

NOTES:

- The original factory-installed firmware is permanently available on the WindoWall Pro. If the attempted firmware upload fails for any reason, the WindoWall Pro reverts to the factory version.
- When downloaded from the Extron website, by default the firmware is placed in a folder at:
C:\Program Files\Extron\Firmware\MGP Pro (Windows XP) or
C:\Program Files (x86)\Extron\Firmware\MGP Pro (Windows 7).

On the Add Device dialog box, the path to the new firmware file is displayed in the **Path** field.

8. If this is the only device to which you are uploading firmware, click **Add**. The WindoWall Pro information is added to the Devices panel of the Firmware Loader dialog box and the Add Device dialog box closes.

If you will be uploading the firmware to multiple WindoWall Pro WindoWall Pros that are connected to your computer, do the following:

- a. Click **Add Next**. Your first device is added to the Devices panel of Firmware Loader dialog box, and the Add Device dialog box remains open.
- b. For each additional device you want to add to the Firmware Loader dialog box, repeat steps 4 through 7, then click **Add Next**.
- c. For the **last** device, click **Add** (instead of **Add Next**) to add the device and to close the Add Device dialog box.

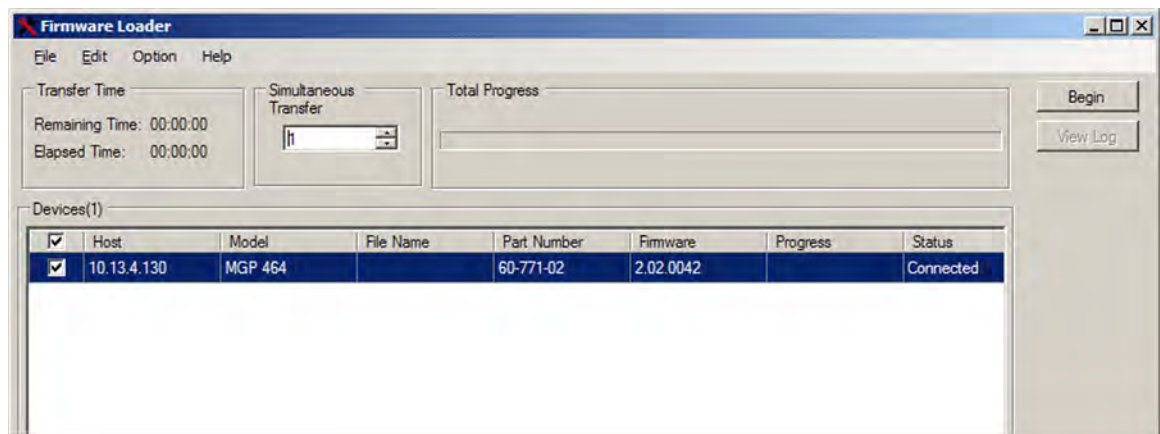


Figure 59. Firmware Loader Dialog Box with a WindoWall Pro Added

9. If you want to remove a device from the Devices panel, do the following:
 - a. Click on the names of the devices to be deleted, to highlight them.
 - b. Select **Remove Selected Device(s)** from the **Edit** menu.
 - c. On the Remove Device(s) dialog box, select or deselect any devices on the list as desired, then click **Remove**.

To remove **all** devices, select **Remove All Devices** from the **Edit** menu.

10. Click **Begin**. The following indicators show the progress of the update (see figure 60):
- The Transfer Time panel shows the amounts of remaining and elapsed time for the update.
 - The Total Progress panel displays a progress bar with **Uploading...** above it.
 - In the Devices panel, the Progress column displays an incrementing percentage and another progress bar. The Status column displays **Uploading**.

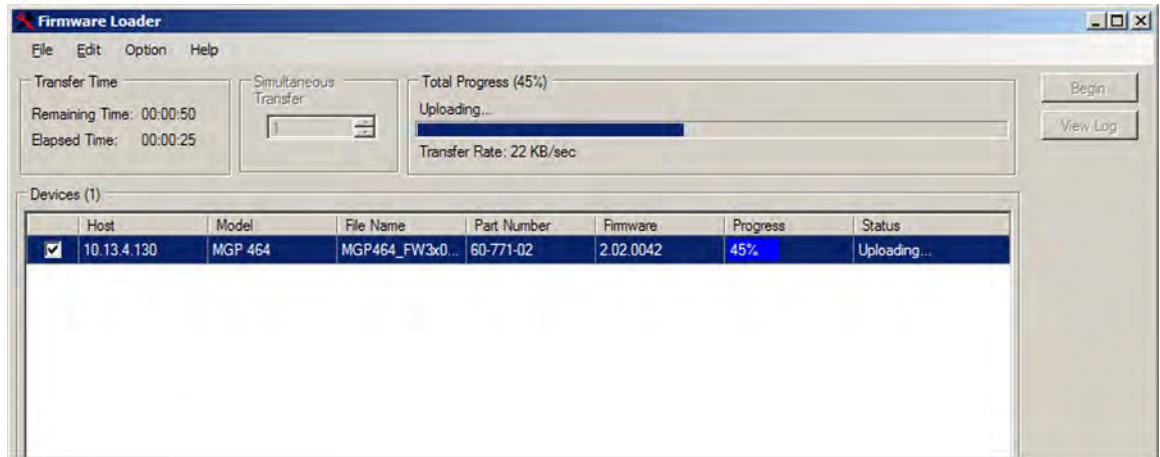


Figure 60. Firmware Upload in Progress

11. The upload is complete when the **Remaining Time** field shows **00.00.00**, the Progress column shows **100%**, and **Completed** is displayed above the progress bar and in the **Status** field. Close the Firmware Loader dialog box.

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876
Asia: 65.6383.4400

Europe: 31.33.453.4040
Japan: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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