Crestron UPX-2
Universal Presentation Processor
Operations Guide

This document was prepared and written by the Technical Documentation department at:

Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Contents

UPX-2 Quick Start

Introduction

The following steps are designed to guide you through the basic hookup, configuration and loading of the demo program. The demo program contains files required by the UPX-2 and the 2-Series control system.

Required Equipment

The following equipment is required to load and run the demo program.

- UPX-2 Universal Presentation Processor.
- 2-Series control system with CUZ file version 3.137 or later.
- DTT DualTouch touchpanel
- PS/2® keyboard (not included)
- PS/2 mouse (not included)
- USB cable for connecting UPX-2 to DTT DualTouch touchpanel (included with DTT DualTouch touchpanel)
- RGB cable for connecting UPX-2 to DTT DualTouch touchpanel (included with DTT DualTouch touchpanel)
- Power cables (included with UPX-2 and DTT DualTouch touchpanel)
- Cresnet® cable for connecting the UPX-2 to the 2-Series control system (not included)

Hook Up

Refer to the following diagrams and connect the UPX-2 in the following order.

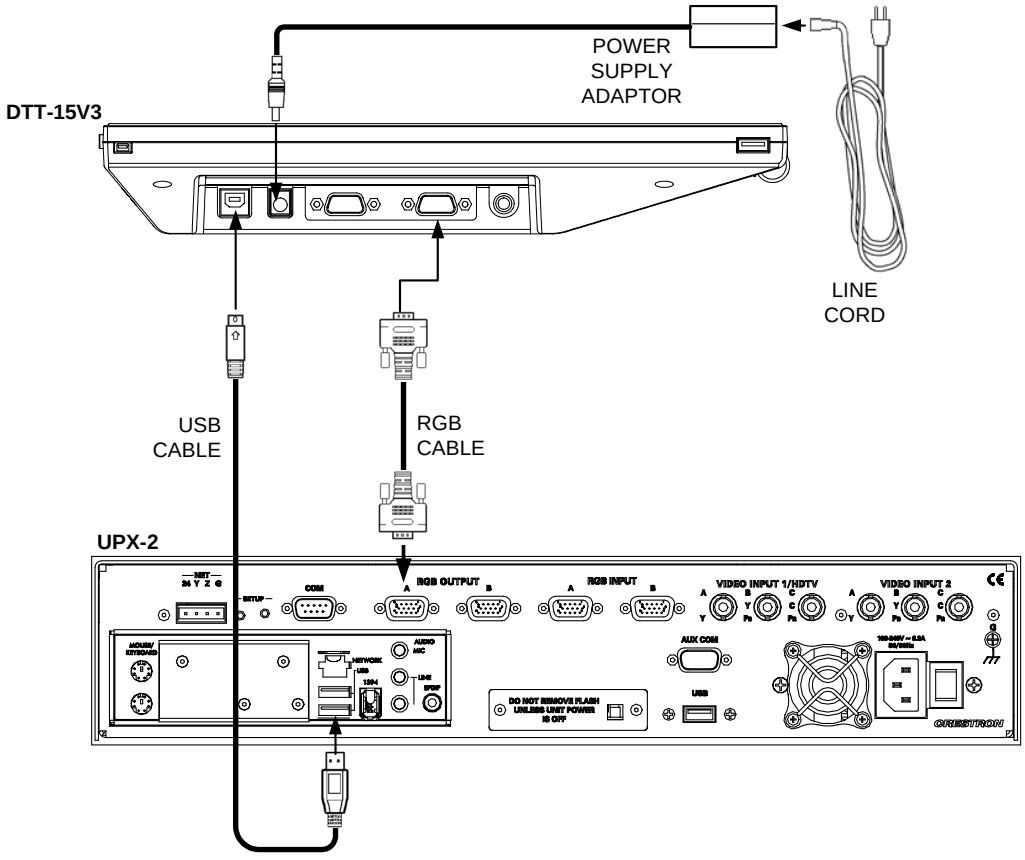
1. You must connect a PS/2 keyboard and mouse to the UPX-2 to establish communication for the first time. After the initial setup, the mouse and keyboard will not be required except for troubleshooting.
2. Connect the DTT DualTouch touchpanel to the UPX-2 using the supplied DVI/RGB cable and USB cable. The DVI/RGB adaptor cable is connected to RGB OUTPUT A. The USB cable is connected to a USB port on the UPX-2.

NOTE: If using a UPX-2 containing a 512MB operating system, the USB cable should be connected to the bottom-left USB port.

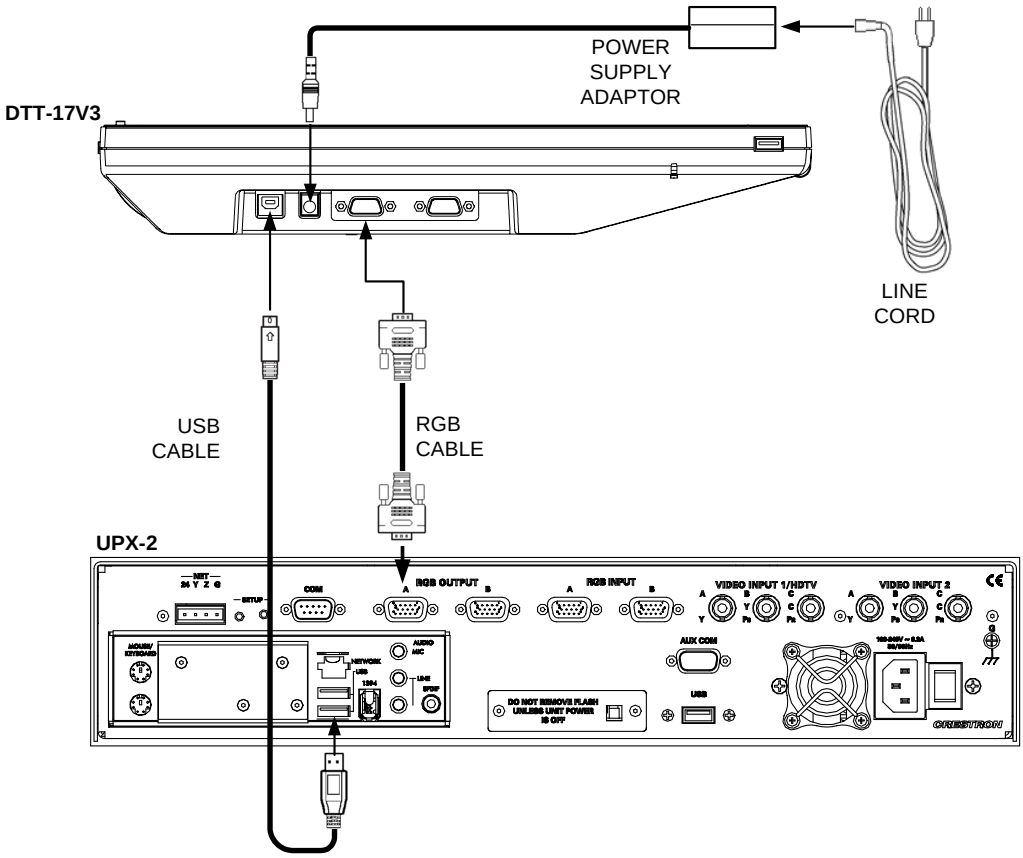
NOTE: Refer to the DTT DualTouch Touchpanel's Operations Guide for additional details. Guides for DTT touchpanels are available from the Crestron website (http://www.crestron.com/manuals).

NOTE: The UPX-2 also supports a variety of touchpanels from different manufacturers. For information on selecting a supported touchpanel model, refer to "Touch Screen" on page 26 for more information.

DTT-15V3 Hookup



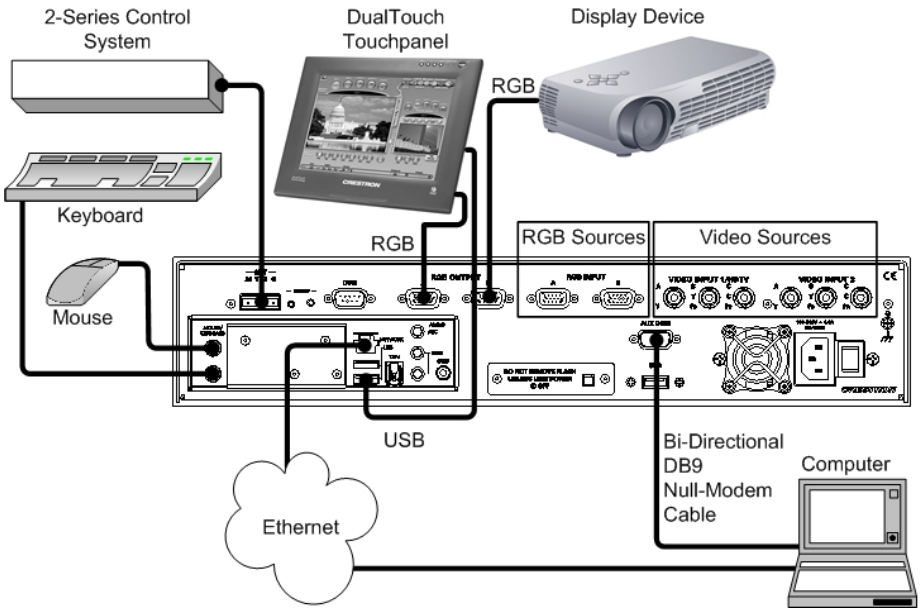
DTT-17V3 Hookup



NOTE: One or two touchpanels may be connected.

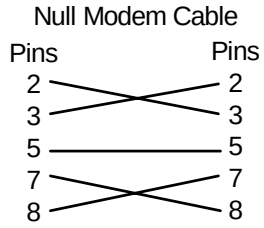
3. Use the following diagram to make the rest of the required connections.

Setup Connections



NOTE: Refer to "Hardware Hookup" on page 50 for additional hook up information.

4. Connect the programming computer to the UPX-2 **AUX COM** connector with a null-modem serial cable. Refer to page 16 for **AUX COM** connector pinouts.



   Optionally, you can connect to the UPX-2 via Ethernet (after establishing serial communications), or use a crossover Ethernet connector to connect directly to the computer. The Ethernet connection is the fastest method for sending/uploading projects and firmware. Refer to "TCP/IP" on page 62 for Ethernet connection information.

   NOTE: Sending project files via Cresnet is not recommended.

5. Connect the 2-Series control system using a Cresnet cable.

   NOTE: The UPX-2 does not supply power to, or use power from, the 24 VDC Cresnet connection.

   NOTE: The UPX-2 defaults to Cresnet ID 03.

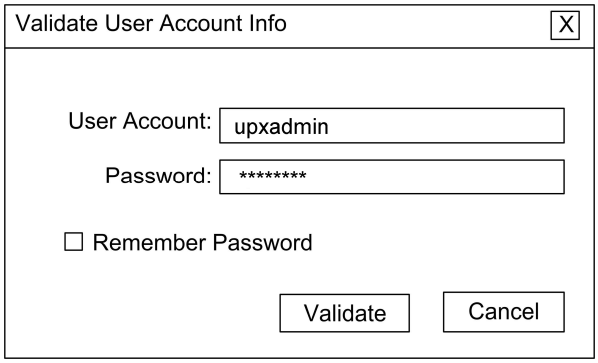
6. Connect the audience display device to **RGB OUTPUT B**.
7. Connect the power cord and power up the UPX-2. The DTT screen cycles through a series of different color screens as it normally powers up.
8. When the license agreement appears, click **I agree** to accept the terms and conditions. A printed version of this agreement appears at the end of this guide.
9. The SETUP MENU will be displayed after agreeing to the license.

   CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

Accessing the SETUP MENU

1. If a project is displayed, access the SETUP MENU by pressing **Ctrl+Alt+Shift** on the keyboard connected to the UPX-2.
2. When prompted, enter the user account *upxadmin*, and the password *upxadmin* and click **Validate**.

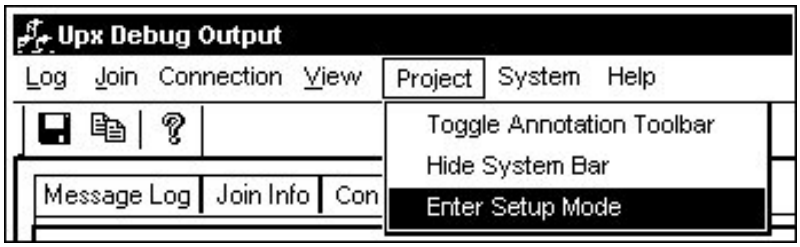
"Security" Window



NOTE: The password is case sensitive.

3. When the "Upx Debug Output" window appears, select **Project | Enter Setup Mode**.

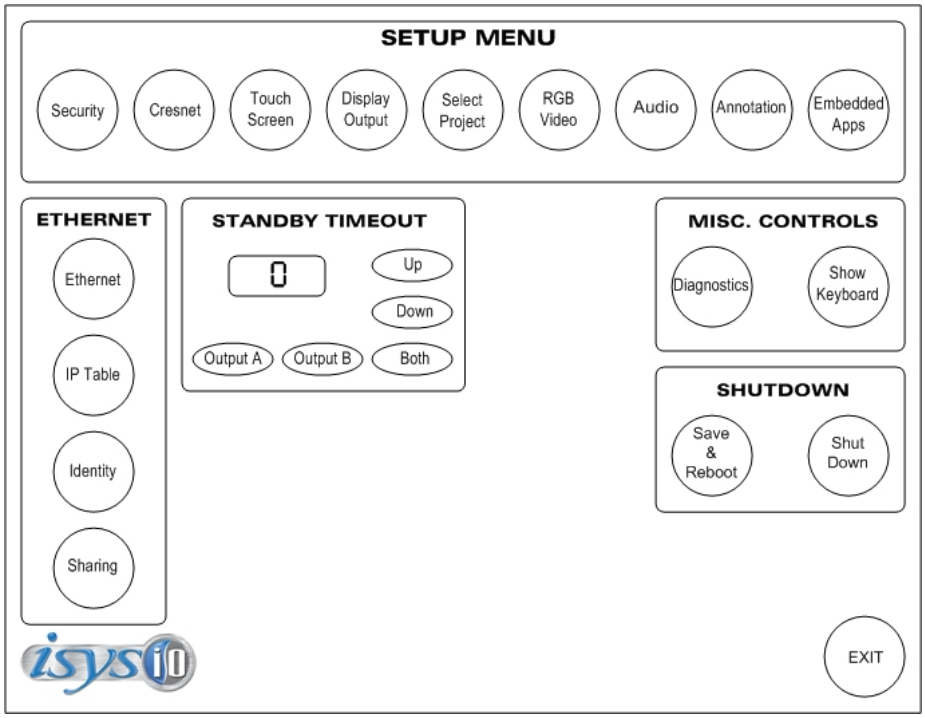
"Upx Debug Output" Window



The SETUP MENU will be displayed in the center of the screen.

NOTE: For output displays set to resolutions greater than 800 x 600, the SETUP MENU may be displayed on the left side of the screen. If this occurs, the display needs to be adjusted. To adjust the display, select **Display Output** from the SETUP MENU and select the **Full Screen White** test pattern. Turn off the display's power and turn back on after five seconds. Press the screen to return to the "Display Output" window and then press **Close** to return to the SETUP MENU. The display will be adjusted and the SETUP MENU will be centered on the display.

UPX-2 SETUP MENU



Establish Communications

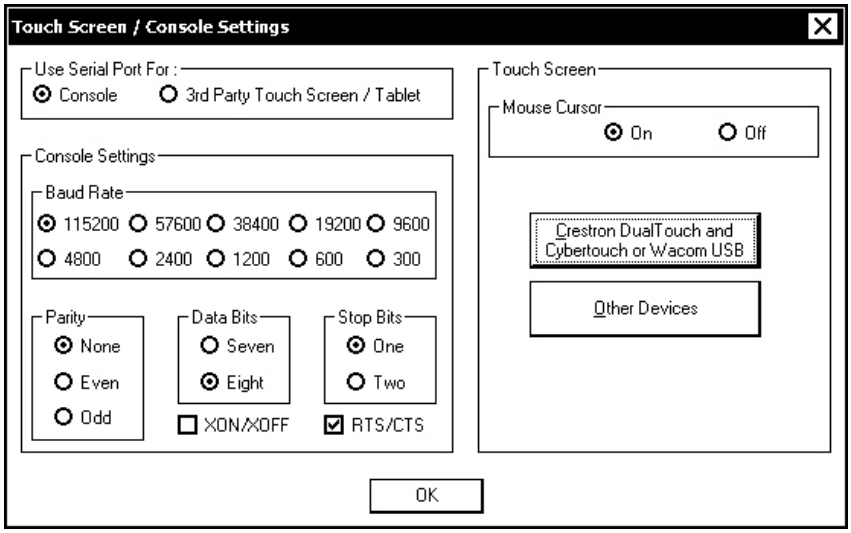
NOTE: Communications is initially established by serial method. Ethernet communication is recommended for faster sending. Refer to "Establishing Communication" on page 58 for detailed communications information.

NOTE: This procedure requires Crestron Toolbox. The minimum version of Crestron Toolbox required to operate with the UPX-2 is version 1.2.10 or later.

Direct Serial

1. When the SETUP MENU appears, click the **Touch Screen** button.
2. In the *Use Serial Port For:* box, click **Console.** In the *Console Settings* box, select the Baud Rate (115200), select Parity (None), select Data Bits (Eight), select Stop Bits (One), and enable RTS/CTS. Then click **OK**.

"Touch Screen / Console Settings" Window



3. Click **Save & Reboot** on the SETUP MENU. Do not click **EXIT**.

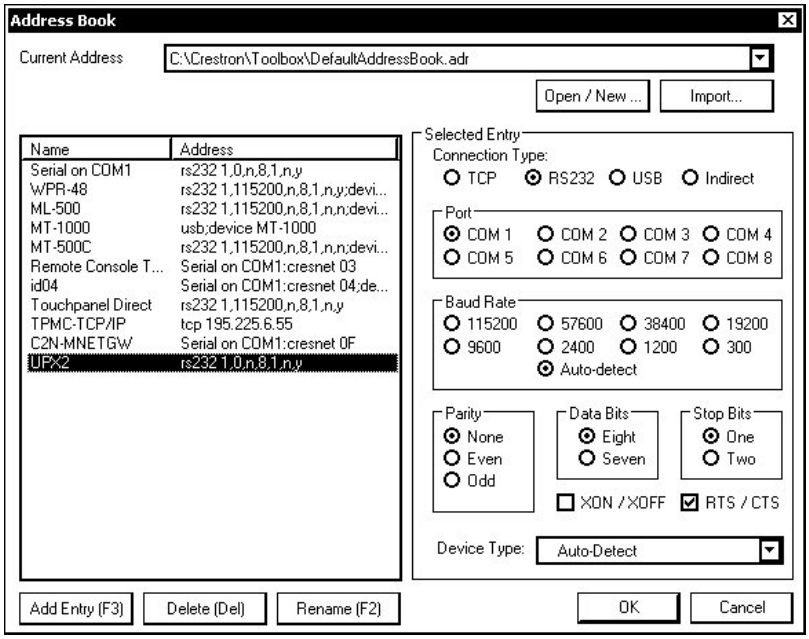
CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

4. Open Crestron Toolbox and click the **Address Book** icon , or select **Tools | Manage Address Book** to open the Address Book. The Address Book allows you to maintain a list of accessible control systems and network devices. You can establish a session with any or all of the devices in the address book (provided the PC has a valid connection to the Cresnet or Ethernet network).
5. Select the device from the Address Book or click **Add Entry** and type a name for the new device (UPX2 in our example).
6. Select **RS232** as the *Connection Type* and select the serial settings specified in step 2. This sets the PC to the same serial settings as the UPX-2. Enter the settings and click **OK**.

   For the UPX-2, the default settings are:

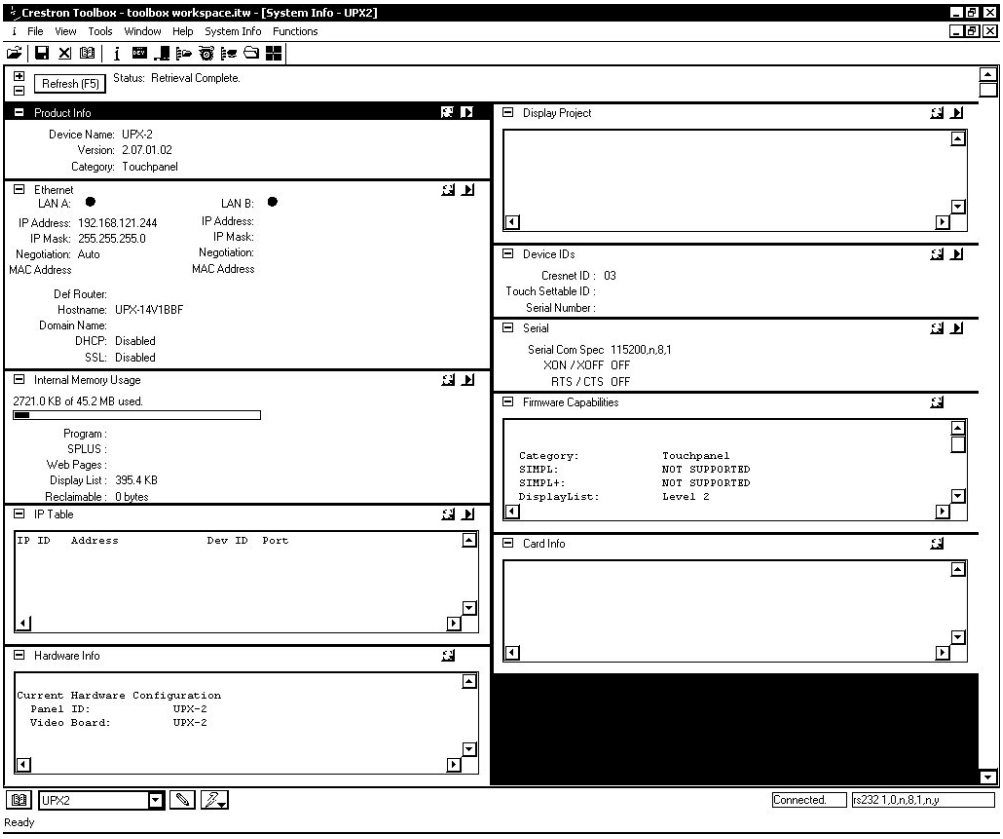
   - Port = COM 1
   - Baud Rate = 15200 (or select Auto-Detect)
   - Parity = None
   - Data Bits = 8
   - Stop Bits = 1
   - Hardware Handshaking (RTS/CTS) enabled
   - Software Handshaking (XON/XOFF) not enabled

Crestron Toolbox Address Book Setup for Serial Connection



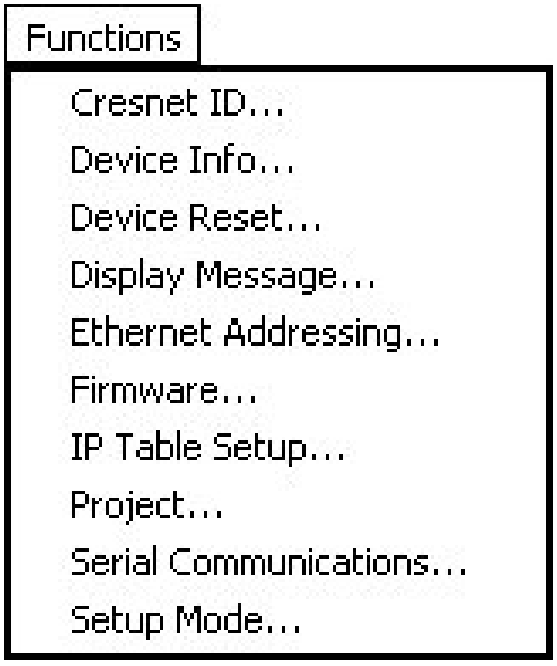
7. Click the System Info icon and select **UPX2** from the drop-down list if it is not already selected. If communication is successful, the "System Info" window displays the firmware version number, Cresnet ID, connection parameters, memory usage, and hardware information.

Crestron Toolbox – System Info



The **Functions** menu may now be used to upload a project, update firmware, and reset the network ID.

Crestron Toolbox Functions Menu

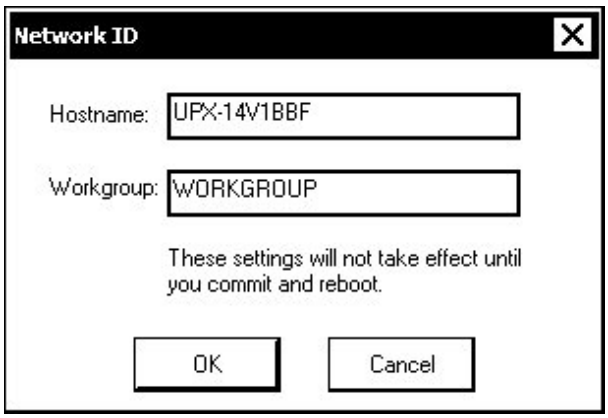


Ethernet

For complete instructions for establishing Ethernet communications, refer to "Establishing Communication" on page 58.

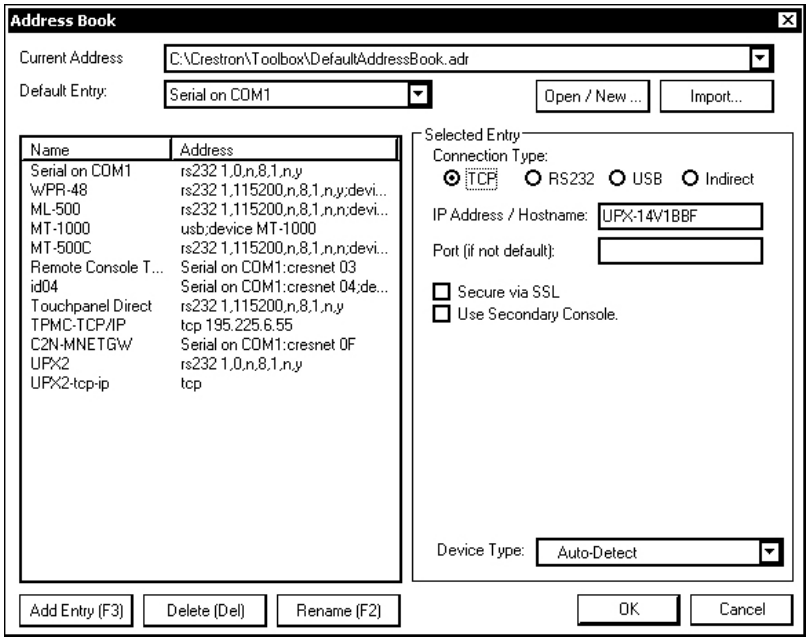
1. To establish Ethernet communications, select **Identity** from the UPX-2 SETUP MENU.

   "Network ID" Window

2. Copy the Hostname from the "Network ID" window.
3. Start Crestron Toolbox and open the address book by clicking  .
4. Select the existing UPX2 entry from the Address Book (for changing to a TCP/IP entry) or click **Add Entry** and type a name for the new device (UPX2-tcp-ip in our example).
5. Select **TCP** as the *Connection Type* and enter the Hostname in the *IP address* field and click **OK**.

Crestron Toolbox Address Book Setup for TCP-IP Connection



NOTE: The UPX-2 Ethernet default communication mode is DHCP. Refer to "TCP/IP" on page 62 for Ethernet setup instructions and use the SETUP MENU to change communication format if desired.

Calibrate the Output Display Device

Access the UPX-2 SETUP MENU as described in "Accessing the SETUP MENU" on page vi.

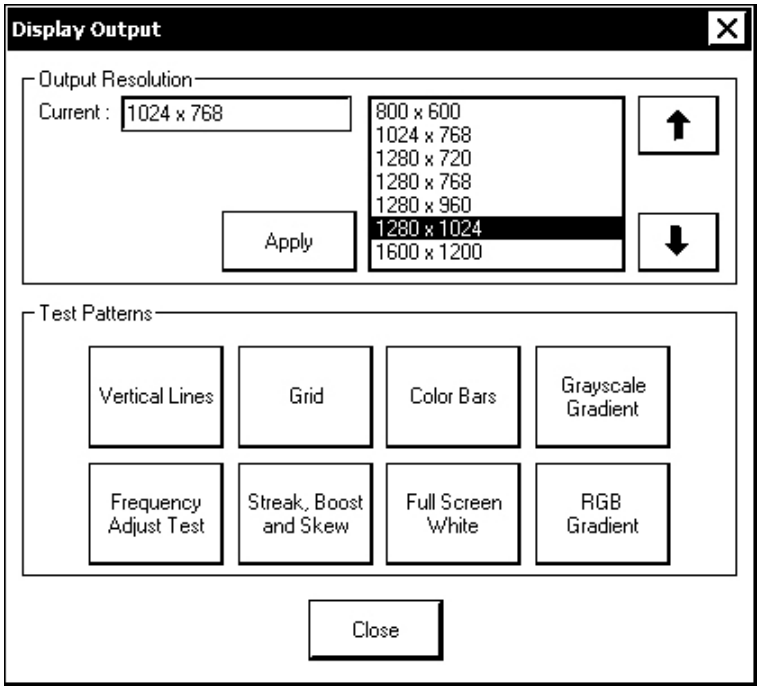
Click **Display Output**, select the appropriate *Output Resolution*, and click **Apply**. If the screen resolution is not acceptable, choose another resolution setting. If the controls are not visible due to the change in resolution, use Crestron Toolbox to change the resolution. Refer to "Display Output" on page 29 for instructions.

Select the following *Test Patterns*, in the following order, and adjust the display device as necessary.

1. Grid
2. Vertical Lines
3. Color Bars
4. Grayscale Gradient
5. Frequency Adjust Test
6. Streak, Boost and Skew
7. Full Screen White
8. RGB Gradient

NOTE: If the screen does not fit properly, adjust the resolution.

"Display Output" Window



Calibrate the Touchpanel

If the touchpanel requires calibration, access the UPX-2 SETUP MENU as described in "Accessing the SETUP MENU" on page vi.

Refer to "Touch Screen" on page 26 for additional calibration information.

1. Click **Touch Screen | Crestron DualTouch and Cybertouch or Wacom USB | Calibrate** and follow the directions for touch and pen calibration.
2. Click **Save and Reboot** to save your changes.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

NOTE: Touchpanel calibration is required after a firmware upgrade.

NOTE: If a touchpanel is disconnected and reconnected to a different port, or reconnected with a hub connecting to the UPX-2, the touchpanel must be recalibrated.

If necessary, you can also access the internal setup screen for the touchpanel. Refer to "Display Settings" in the appropriate touchpanel guide.

Download the Required Files from Crestron

The 2-Series control system must contain the correct .CUZ firmware file. These files are located on the Crestron website.

On the Crestron website, browse to **Tools & Resources| Product Resources | Software & Firmware Updates** and select the appropriate file for the 2-Series control system that is to be connected to the UPX-2. Files are also available on the FTP site.

You must use the following software versions to program the control system and the UPX-2. These programs are available from the Crestron website.

- SIMPL™ Windows® version 2.06.20 or later with Library Update 320 or later. Requires SIMPL+® Cross Compiler version 1.1 or later.
- Crestron Database version 17.4.4 or later. Required by SIMPL Windows.
- Crestron VisionTools® Pro-e version 3.3 or later. Used for graphical touchpanel design.
- Crestron Toolbox version 1.2.10 or later. Used for observing system processes, uploading operating systems and firmware, uploading programs and UPX-2 projects, and many other tasks.

Load the Demo Program & Project

For the demo program to function the UPX-2 must contain the correct .VTZ project file and the control system it is connected with must contain the correct .SPZ file. These files are contained in a ZIP file on the Crestron FTP server. The FTP server contains a ZIP file for systems with a DTT-15V3 touchpanel and a ZIP file for systems with a DTT-17V3 touchpanel.

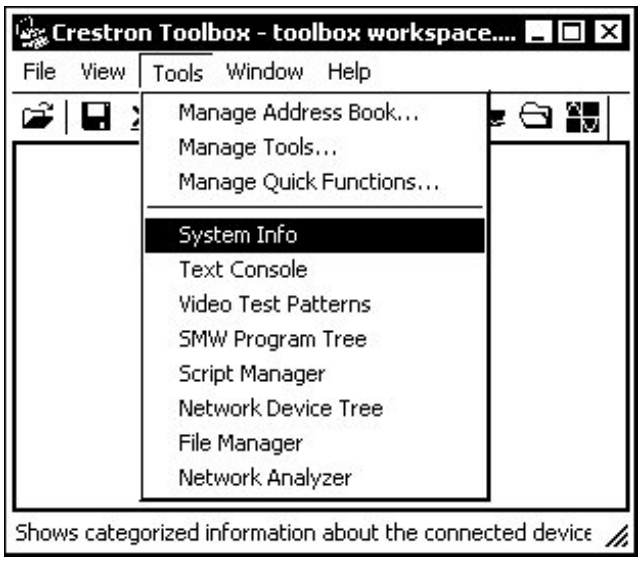
To access the FTP site, go to the Crestron website and select **Tools & Resources | FTP Servers**. Log in to the FTP server with your website login and password.

1. Navigate to the “specific_products” subdirectory of the “demos” directory.
2. Select the appropriate file for your system.
   – **upx_15_inch_demo_rev_XXX.zip** for the DTT-15V3
   – **upx_17_inch_demo_rev_XXX.zip**for the DTT-17V3.
3. Unzip the file and open Crestron Toolbox to transfer the .VTZ project file directly to the UPX-2.

   NOTE: Crestron recommends sending the project files to the UPX-2 via Ethernet, the fastest method. Crestron also recommends reviewing the UPX-2 FAQs that are available through the *Online Help* on the Crestron website.

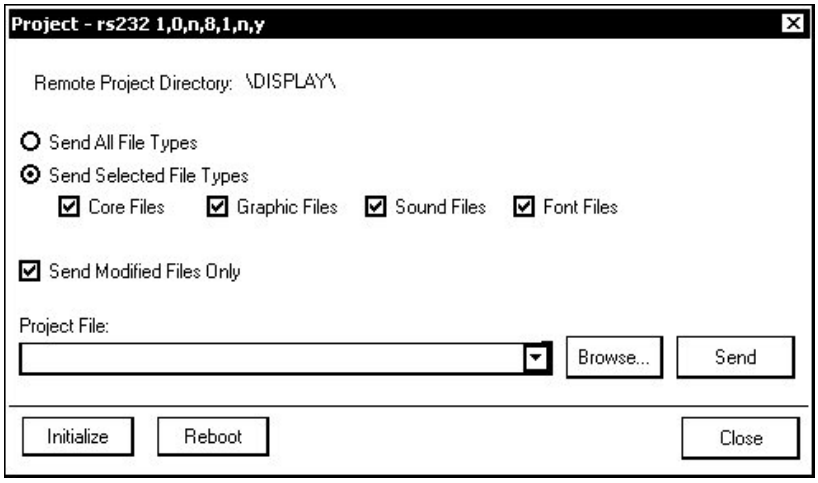
4. Select **Tools | System Info**.

Crestron Toolbox – Tools | System Info



5. When the "System Info" window appears, select the UPX-2 from the drop-down list on the bottom of the screen. The **Functions** option becomes available from the menu bar.
6. Select **Functions | Project…**.
7. The "Project" window is used to select the project to be uploaded to the UPX-2.

"Project" Window



Each time a project is selected using the **Browse…** command, that project is added to the *Project File* drop-down list. This makes it convenient to recall projects without need to browse to a directory.

Selecting **Send All File Types** sends the entire project.

Selecting **Send Selected File Types** sends only the file types that are selected. **Core Files** are files that include UPX-2 logic, join number remapping, and other files related to UPX-2 functionality. **Graphic Files** are graphics that are displayed on the UPX-2 display. **Sound Files** are

WAV files that are assigned within a UPX-2 project. **Font Files** are fonts that are part of a UPX-2 project.

Selecting **Send Modified Files Only** will only send files that are different from those that are currently stored in the UPX-2. Note that if any pages in the UPX-2 are not present in the project, those pages will be deleted from the touchpanel.

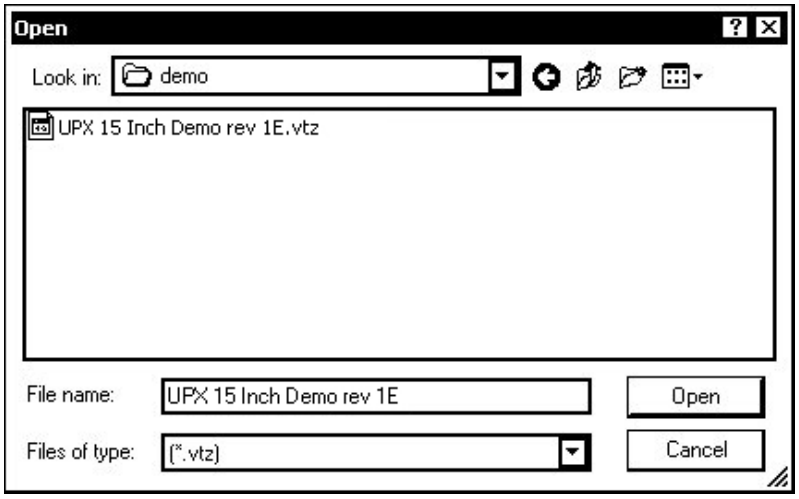
The UPX-2 can be rebooted by clicking **Reboot**.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

NOTE: Crestron Toolbox compares the time required to send the modified files against the time required to send the entire project. Crestron Toolbox will then select the package with the shorter transmission time.

8. Click the **Browse…** button to browse for a new compiled (.vtz) program.

"Open" Window



9. Select a file and click **Open.** When the "Project" window re-opens click **Send** to send the project to the UPX-2.

   To verify that the project has been transferred successfully, select **Tools | System Info**. The new project information will appear in the "System Info" window.

10. Connect to the control system as described in the latest version of the 2-Series Reference Guide (Doc. 6256) (available from the Crestron website (www.crestron.com/manuals)) and send the compiled SIMPL Windows program (.spz) to the control system.

NOTE: The SIMPL Windows program was created for the PRO2. If you are using a different 2-Series control system, open the source file (.smw) in SIMPL Windows and modify the program for your control system model.

Troubleshoot the Demo Program

If the touchpanel displays the message "Communications Error with Control System", check the following possibilities.

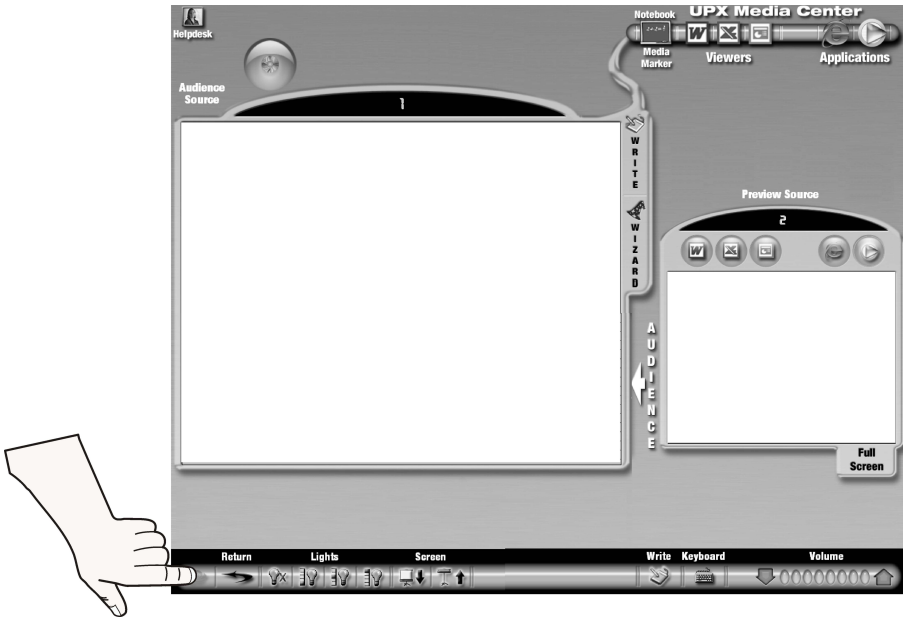
- The control system has the wrong CUZ file version (3.137 or greater is required).
- The UPX-2 Cresnet ID must be set to 03 for the demo program to function. In Crestron Toolbox, open the address book, connect to the control system, and select **Tools | Network Device Tree** for a network device report. Change the NET ID to 03 if necessary.
- Verify that the demo program for the DualTouch touchpanel is running on the 2-Series control system.
- If communicating to the UPX-2 via Ethernet, the control system's IP address must be in the UPX-2's IP table. Refer to page 62 for information on IP tables.

Button Configuration

When the system is initially started after loading the demo project, the five source selection buttons are not assigned.

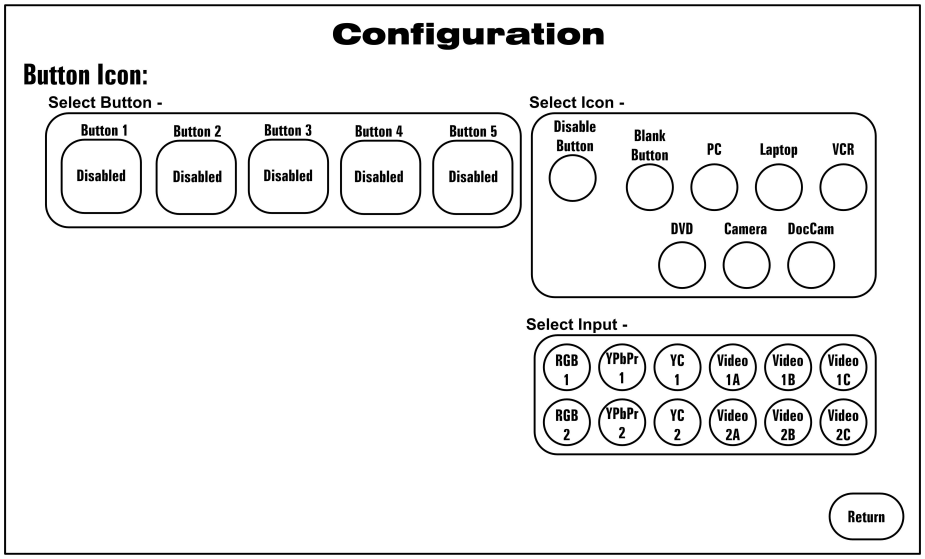
Place and hold a finger on the Crestron logo at the bottom left corner of the screen for approximately five seconds.

Pressing the Crestron Logo on the Demo Program



A new page will appear that allows you to select each button, assign an icon, and assign an input. Click the **Return** button to go back to the demo program.

Assigning Inputs for the Demo Program



Connect the RGB and Video Sources

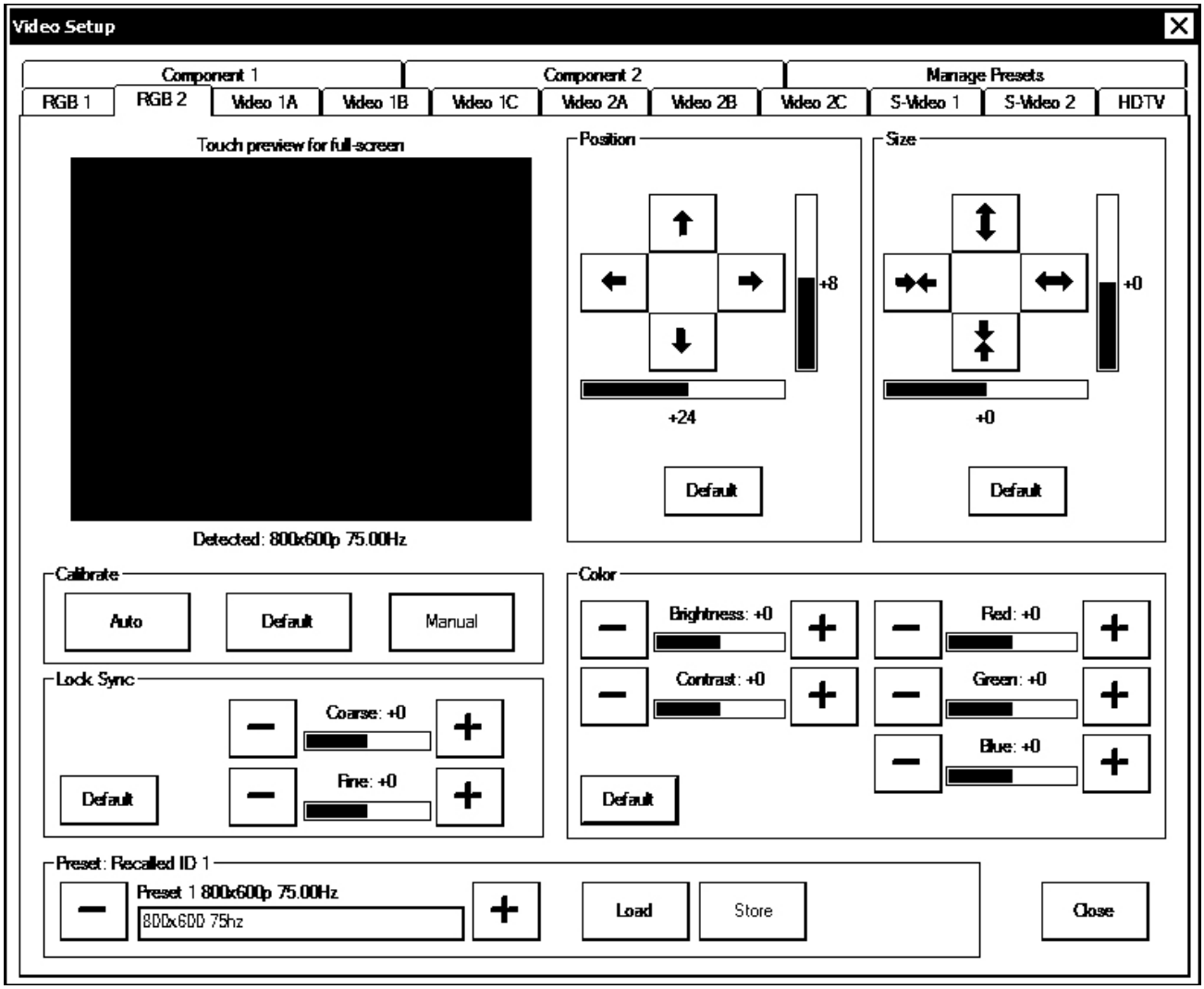
Video can include HDTV (on Video Input 1 only), component, composite, and S-video. Refer to page 16 for additional port information, and the Appendix on page 70 for basic video and RGB information.

Calibrate the RGB/Video Inputs

Click **RGB Video** on the UPX-2 SETUP MENU.

Select each of the RGB and video inputs and adjust them using this window. Click on an input tab and adjust the settings (resolution, horizontal and vertical frequency) for the selected input. Refer to “RGB Video” on page 30 for additional RGB and Video setup details.

"RGB/Video Setup" Window



Storage Devices

A USB drive (connected to one of the USB ports) or a PCMCIA Flash Card adaptor card and flash memory card can be used to store the Word, Excel, and other files that can be read by the embedded applications. These storage devices can also be used to save the MediaMarker presentations and Word, Excel, and PowerPoint files created with the UPX-2. Refer to "MediaMarker" on page 64 for additional MediaMarker information.

NOTE: The UPX-2-MSO-2007 has approximately 100MB of hard drive storage on the Z drive.

NOTE: Word, Excel, and PowerPoint files can only be created on the UPX-2-MSO-2007.

The UPX-2 supports removable storage devices such as compact flash via PC-Card or USB interface. When a device is inserted (for example, a PC-Card in the front

ports of the UPX-2), a drive letter is assigned by the UPX-2 for access to that storage. The first device is assigned the drive letter G.

- If the assigned drive letter is for temporary use, no further steps are required.
- If one or more devices are added to the UPX-2 for continuous use, ensure they are connected and then reboot the UPX-2. The assigned drive letters will not change unless you change the connected devices or reboot without the device(s) connected. From this point forward, you can connect and disconnect other temporary use devices without rebooting. This is only a configuration step and not required for normal use. The device will function even if this step is not performed. However, rebooting with the storage devices connected will guarantee that drive assignment letters will remain consistent for long-term use.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2. Damage may occur.

NOTE: Certain USB flash drives may not be recognized by the UPX-2 if they are left connected during a reboot or when power is cycled. To recognize a USB flash drive that is not recognized by the UPX-2, disconnect and reconnect the drive after the UPX-2 has completed rebooting.

This concludes the Quick Start section of the UPX-2 Operations Guide. Continue reading for more information on installing and operating the UPX-2. Programming tips and reference information are contained in the latest version of the UPX-2 Reference Guide (Doc. 6286).

Universal Presentation Processor: UPX-2

Introduction

This guide contains specifications, operation, installation, and setup information for the UPX-2 series of Universal Presentation Processors. For Crestron VisionTools® Pro-e project, SIMPL Windows programming instructions and related information, refer to the latest version of the UPX-2 Reference Guide (Doc. 6286) which is available from the Crestron® website (www.crestron.com/manuals).

Model Variations

For simplicity within this guide, UPX-2 is used except where noted.

The UPX-2 is available in two variations: The UPX-2-1GB and the UPX-2-MSO-2007. While both models feature the same performance, different applications are embedded in the different models. Refer to the table below to compare the features of each UPX-2 model.

UPX-2 Model Lineup*

MODEL	FIRMWARE FLASH CARD SIZE	EMBEDDED APPLICATIONS	NOTES
UPX-2-1GB	1GB	MediaMarker™, Microsoft® Internet Explorer, Windows Media® Player, RealPlayer®, Remote Desktop, NetMeeting®, Java™ Runtime, Adobe® Flash® Plug-In, Axis ActiveX® controls, DirectX®, and viewers for Microsoft Word, Microsoft Excel, Microsoft PowerPoint®, and Adobe® Acrobat®	Can be upgraded to UPX-2-MSO-2007 by purchasing UPX-OS4GB-MSO-2007. Additional features may be available from free downloads from the Crestron website.
UPX-2-MSO-2007	4GB	All of the embedded applications of the UPX-2-1GB with the 2007 versions of Microsoft Picture Manager, Microsoft Word, Microsoft Excel and Microsoft PowerPoint. Also adds Adobe® Flash® Player 9.	Additional features may be available from free downloads from the Crestron website.

* A version of the UPX-2 with a 512MB compact flash operating system was produced until January 2006. The 512MB model of the UPX-2 was replaced by the UPX-2-1GB. If you have a 512MB version of the UPX-2, you can upgrade to the UPX-2-1GB or UPX-2-MSO-2007 by ordering a firmware upgrade. For ordering information, contact Crestron at 1-888-CRESTRON.

Features and Functions

The UPX-2 series of multi-window digital video processors integrate a full-featured video annotator and multimedia PC with Crestron's DualTouch™ Technology.

- A complete AV and digital media presentation solution - no computer required!
- 24-bit Isys i/O graphics | Synapse Image Rendering Algorithm
- MediaMarker annotation with DualTouch™ Technology
- Microsoft® Windows® XP Embedded operating system
- Onboard PC applications for Web browsing, streaming media, videoconferencing, and multimedia presentation
- Full-blown Microsoft Word, Excel and PowerPoint® applications (UPX-2-MSO-2007 model only)
- High-performance multi-window HD video and RGB display
- Separately-controlled display outputs for presenter and audience
- Supports input resolutions up to 1600 x 1200 pixels
- Secure high-speed Ethernet and Cresnet communications

Crestron's UPX-2 Universal Presentation Processor provides a complete, streamlined AV and digital media presentation solution. In one compact rack mount processor, the UPX-2 fuses touchpanel control with professional annotation, multi-window video processing, and an embedded multimedia PC. The result is a total presentation solution supporting multiple video and digital media formats, complete with real-time annotation that requires no additional computers, software, or hardware dongles.

The UPX-2 puts complete display control in the hands of the presenter, providing independently controllable outputs to the presenter's touchpanel and audience display. Multiple scalable video windows and PC applications can be displayed simultaneously for preview at the podium while the audience sees only what the presenter chooses. In addition to great video and computer, the UPX-2 features incredible touchpanel graphics with 24-bit color depth and 8-bit alpha channel supporting 16.7 million colors, full-motion animations, dynamic text and graphics, transparency, and dramatic transition effects, all with astonishing speed.

DualTouch™ Technology

In combination with a Crestron DualTouch Technology touchpanel (sold separately), the UPX-2 provides full touchpanel control of the AV system and environment, plus native Wacom® Penabled® annotation capability using a wireless pen. DualTouch Technology means the switching between touchpanel and annotation occurs transparently allowing presenters to focus on the presentation instead of the technology.

Embedded PC

With built-in Windows Media® Player, RealPlayer®, and Internet Explorer, plus viewers for Word, Excel, PowerPoint®, and Adobe® Acrobat®, the base model UPX-2-1GB serves as a powerful multimedia presentation source without necessitating a separate computer. The enhanced UPX-2-MSO-2007 model adds full-blown Word, Excel and PowerPoint applications, letting presenters freely create

and edit presentations and documents right onboard. Both models also include NetMeeting® and Remote Desktop to enable videoconferencing and provide remote access to other computers.

Programmatic control of the embedded applications erases the lines between control system and PC, allowing programmers to customize each application's behavior to create a truly powerful and user-friendly interface. Running the Windows XP Embedded operating system, the UPX-2 delivers a reliable and secure platform for touchpanel control with integrated PC functionality that's invulnerable to viruses or other rogue software. New security features have been added to enable enhanced Web browsing with Java™, ActiveX® and Macromedia® Flash® support.

Both Cresnet and high-speed Ethernet are standard on the UPX-2 providing for seamless communications with Crestron control systems, computers, digital media servers, and other IP-based devices. Adding an external mouse and keyboard as well as cameras, CD ROM drives, and memory devices is possible through a host of PS/2, USB 2.0, RS-232, and IEEE 1394 ports and front mounted PC Card slots.*

* Refer to manual, Website, or contact factory for a current list of compatible devices and embedded applications; to ensure reliable performance, new device drivers and applications are available only from Crestron through firmware updates.

Multi-Window Digital Video Processor

In addition to its built-in PC applications, the UPX-2 supports the display of external video and computer sources in up to three simultaneous scalable windows. The built-in seamless video switcher accepts multiple inputs from NTSC/PAL composite, S-video, component and HDTV sources. Two RGB inputs are also provided to accommodate non-interlaced sources with up to 1600 x 1200 resolution.

Four discrete video scalers are used to process the individual video windows and full-screen outputs. Motion-adaptive deinterlacing brings out the highest detail by minimizing visible scan lines and motion artifacts. Advanced gamma correction and built-in time base correction ensure accurate color reproduction and a jitter-free image.

Individual RGB outputs are provided for the presenter's touchpanel and audience display, allowing the presenter full control over what the audience sees. The presenter output displays the control GUI, including pop-up PC applications and up to three video windows. The audience can view that same image or a full-screen image of any external video or RGB source.

MediaMarker™ Annotation

Only the UPX-2 lets presenters draw, write or type in real-time over any computer or video source, display the complete presentation to the audience, and then save, edit, and share screenshots in a variety of formats. Crestron's exclusive MediaMarker application puts truly professional video annotation and electronic whiteboard capability directly onboard.

Without requiring a separate computer or special software, MediaMarker empowers presenters to easily annotate over any of the UPX-2's embedded PC applications, including streaming video, or draw freely on the whiteboard with a choice of background templates or imported graphics. MediaMarker also enables telestration over external video, HDTV, and high-res RGB sources displayed frozen or full-motion. No other annotation solution so easily and elegantly supports such a complete range of media formats.

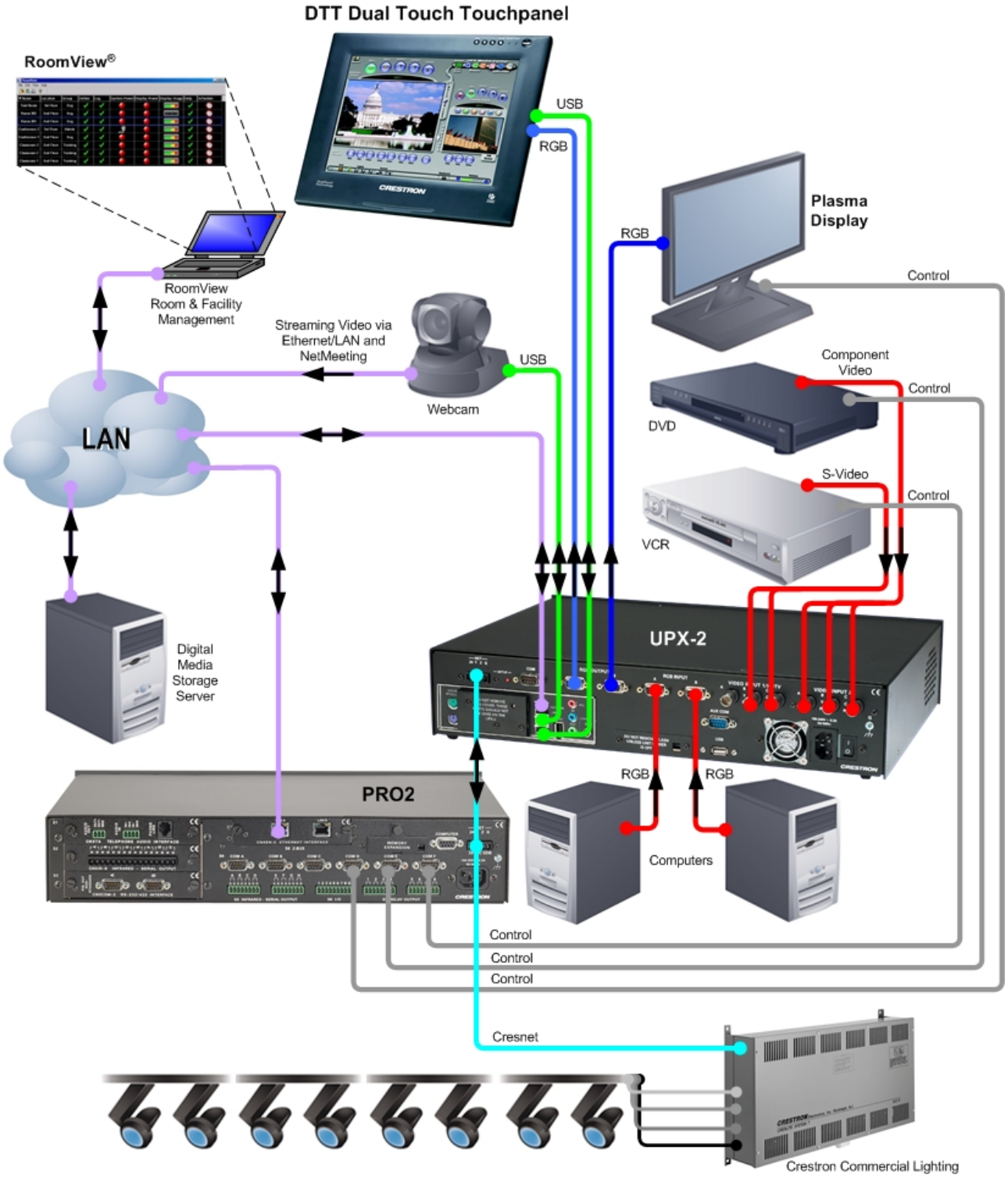
For ultimate clarity and impact, the MediaMarker Toolbar provides an extensive assortment of drawing tools to enable on-the-fly selection of line weights, colors,

shapes, and fonts. To enable instant sharing of completed annotations, screenshots may be captured and saved to a network drive or portable flash card in JPEG, BMP, PNG, TIFF, and HTML formats. The MediaMarker Notebook even allows complete annotation sessions to be saved and reopened in a fully editable format, allowing the session to be continued at a later time, and allowing screen captures to be further manipulated following a presentation for high-quality distribution, posting and publishing purposes.

Applications

The following diagram shows a UPX-2 in a lecture hall application.

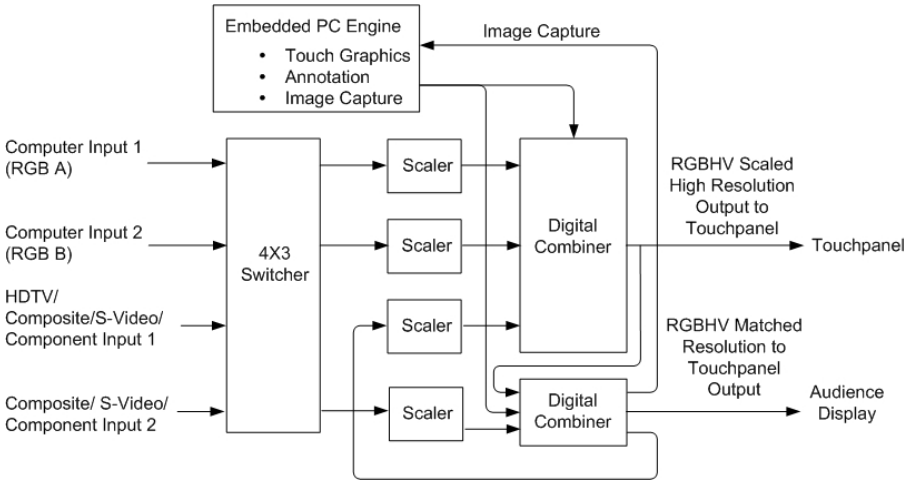
UPX-2 Universal Presentation Processor and DualTouch Technology Touchpanel – Typical Application Diagram



Internal Block Diagram

The following diagram represents the video processing abilities of the UPX-2.

UPX-2 Video Processing Block Diagram



The UPX-2 supports non-interlaced RGB input resolutions up to 1600 x 1200. Output resolution for both outputs is set to that of the DualTouch Technology touchpanel, 1280 x 1024 for the DTT-17V3, 1024 x 768 for the DTT-15V3, and up to 1600 x 1200 with third-party touchpanel displays.

The UPX-2 allows for the creation of graphics, images, dynamic text, and animations. The UPX-2 features PNG image support, which enables translucent objects to be placed over still images (such as background). The dynamic graphics feature enables the display of images (pictures, CD cover art, etc.) that are hosted externally on a flash memory card or media server. The position and appearance of each video window can be fully customized within the total graphical interface.

NOTE: PNG image support and dynamic graphics requires either the 1GB or 4GB compact flash operating system. The UPX-2-1GB includes a 1GB compact flash card while the UPX-2-MSO-2007 includes a 4GB compact flash card. UPX-2 models with 512MB compact flash can be upgraded to the 1GB compact flash with Crestron part number UPX-OS1GB or the 4GB compact flash with Crestron part number UPX-OS4GB-MSO-2007. For ordering information, contact Crestron.

Programming tips and reference information are contained in the latest version of the UPX-2 Reference Guide (Doc. 6286).

Demonstration Program

The UPX-2 is shipped with a pre-programmed demonstration program that can be configured and used as an "out-of-the-box" presentation system with a 2-Series control system.

Pre-Programmed User Interface

For information on running the demonstration program, refer to "UPX-2 Quick Start" on page iii.

Specifications

Specifications for the UPX-2 are listed in the following table.

UPX-2 Specifications

SPECIFICATION	DETAILS
Processor	Intel Celeron A, 1.8 GHz
Memory	
SDRAM	512 MB DDR PC2100 DIMM
Flash	1 GB Type II CF (occupies COMPACT FLASH card slot)[1]
PC Card	Accepts up to (2) 4GB Type II PC Cards (not included)
Hard Drive (UPX-2-MSO-2007 only)	100 MB
Maximum Project Size	190 MB
Operating System	Microsoft® Windows® XP Embedded
Graphics Engine	Isys i/O engine, 24-bit non-palette graphics + 8-bit alpha channel transparency, 16.7 million colors, Synapse image rendering algorithm, multi-mode objects, dynamic graphics, PNG translucency, full-motion (60 fps) animation, transition effects, color key video windowing
Embedded Software Applications	Crestron MediaMarker™, Microsoft Internet Explorer w/Macromedia® Flash® plug-in, Windows Media® Player, RealPlayer®, Axis® Media Control, Remote Desktop, NetMeeting®, Java™ Runtime, DirectX®, Adobe® Acrobat® Reader, Wordpad, MS Word Viewer 2003, Excel® Viewer 2003, PowerPoint® Viewer 2003 UPX-2-MSO-2007 includes full featured MS Office applications including Word 2007, Excel 2007, and PowerPoint 2007
Touch/Mouse Device Support	
Mouse/Keyboard	Microsoft Serial Mouse, Kensington Serial Mouse, generic USB mouse/keyboard, PS/2 compatible mouse/keyboard
Touchscreen/Pen Display	Crestron DTT, 3M Microtouch (serial), CyberTouch **NOTE:** Specific models and protocols subject to verification; Contact Crestron for latest device support.
Ethernet	10BaseT/100BaseTX, auto-switching Fast Ethernet, full duplex, TCP/IP, CIP, DHCP, IEEE 802.3U compliant

(Continued on following page)

UPX-2 Specifications (Continued)

SPECIFICATION	DETAILS
Video	
Inputs	(2) RGB inputs and up to (6) video inputs configurable for various combinations of composite, S-video, component, and HDTV
Output A (Presenter)	Displays Control/PC GUI with up to (3) video windows showing any combination of up to (2) RGB sources, up to (2) video sources, and/or (1) HDTV source
Output B (Audience)	Selectively displays same image as Output A (control toolbars selectively hidden) or any external input source displayed full screen
Color Depth	24-bit, 16.7M colors
Scalers	(3) Scalable video windows with time base correction, gamma correction, line doubling, motion adaptive deinterlacing, and reverse 3:2/2:2 pulldown; (1) additional scaler enables display of Output B within a window on Output A
Streaming/File Formats	MPEG4 & MJPEG via Axis Media Control plus all formats supported by the embedded media player applications
Audio	
Streaming/File Formats	As supported by the embedded media player applications
Audio Feedback (WAV)	8 & 16 bit PCM, mono & stereo, 8 – 44 kHz sampling rates
Power Requirements	
Main Power Consumption	6.3 Amps, 100-240 Volts AC, 50/60 Hz
Cresnet Power Usage	None
Default Net ID	03
2-Series Control System Update File[2,3]	Version 3.137 or later
Environmental	
Temperature	41° to 113°F (5° to 45°C)
Environmental	10% to 90% RH (non-condensing)
Enclosure	
Chassis	Steel, black matte powder coat finish, side-vented variable-speed fan cooling
Faceplate	Extruded aluminum, black matte powder coat finish with polycarbonate label overlay
Mounting	Freestanding or 2U 19-inch rack-mountable (adhesive feet and rack ears included)

(Continued on following page)

UPX-2 Specifications (Continued)

SPECIFICATION	DETAILS
Dimensions	
Height	3.56 in (9.04 cm); 3.47 (8.81 cm) without feet
Width	17.03 in (43.26 cm); 19.0 in (48.26 cm) with ears
Depth	12.12 in (30.78 cm)
Weight	11.65 lb (5.28 kg)
Available Models	
UPX-2-1GB	Universal Presentation Processor
UPX-2-MSO-2007	Universal Presentation Processor with Microsoft® Office
Available Accessories	
DTT-15V3	15-inch DualTouch Technology Touchpanel
DTT-17V3	17-inch DualTouch Technology Touchpanel

1. Found on UPX-2-1GB and UPX-2-MSO-2007 only. UPX-2 models with 512MB compact flash can be upgraded to the 1GB compact flash with Crestron part number UPX-OS1GB or the 4GB compact flash with Crestron part number UPX-OS4GB-MSO-2007. Both are available from Crestron. For ordering information, contact Crestron. Part number UPX-OS4GB-MSO-2007 adds Microsoft Office® to the features of the UPX-OS1GB described in this manual.
2. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
3. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

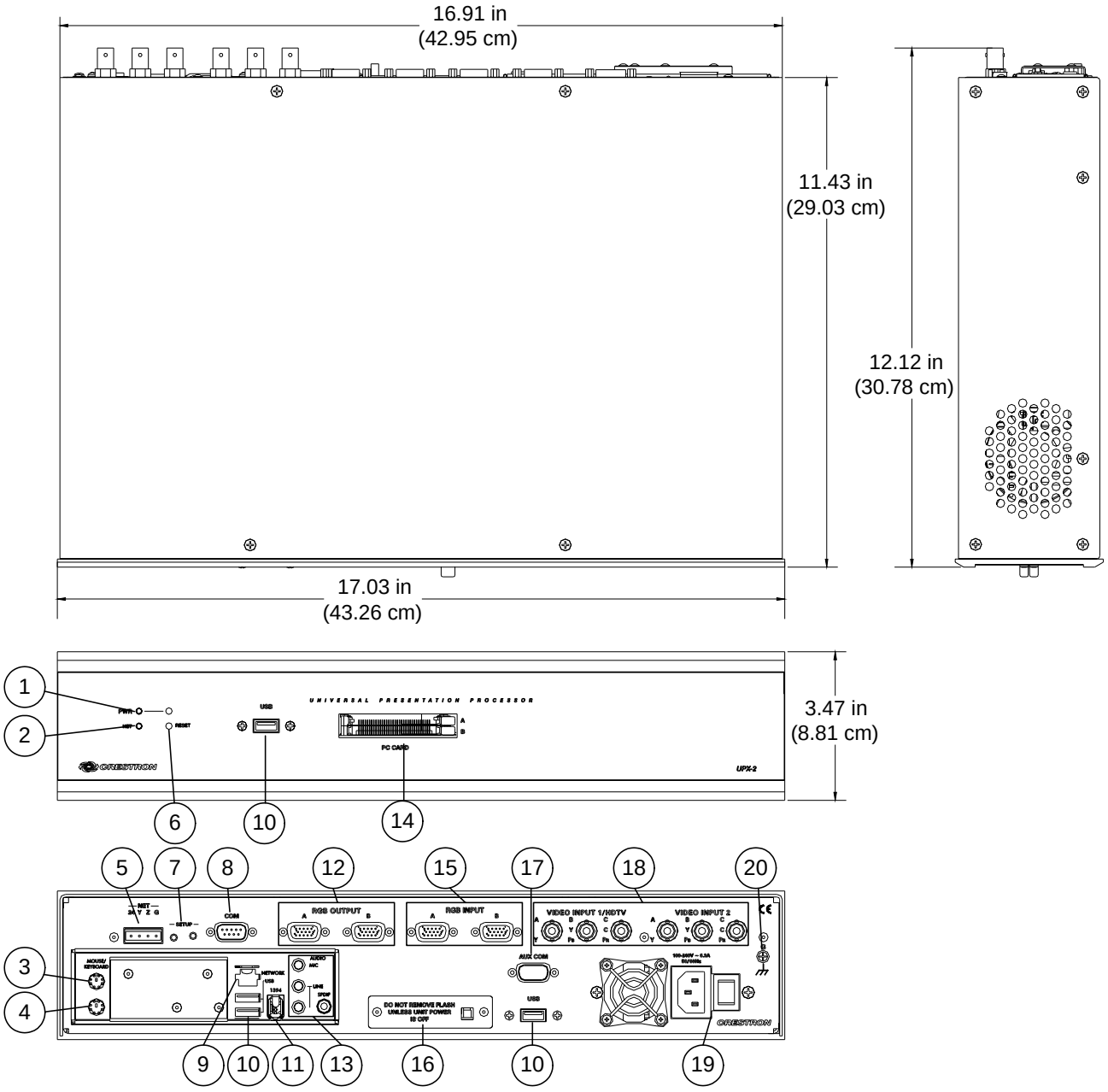
Physical Description

This section provides information on the connections, controls and indicators available on your UPX-2.

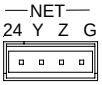
UPX-2 Physical View (Front)

UPX-2 Physical View (Rear)

UPX-2 Overall Dimensions

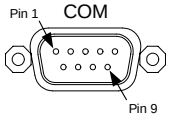
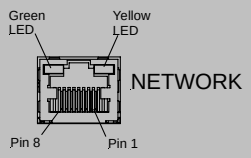
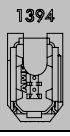


Connectors, Controls & Indicators

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
1	PWR (LED and button)	Indicates processor is powered on and active; Recessed pushbutton, processor shutdown/reactivate; Press and hold button for five seconds to shut down the system (overrides the main off switch on the rear). Press momentarily to restart.
2	NET LED	Indicates communication with Cresnet system.
3	MOUSE 	6-pin mini DIN female; PS/2® mouse port
4	KEYBOARD 	6-pin mini DIN female; PS/2® keyboard port
5	NET 	(1) 4-pin 5mm detachable terminal block; Cresnet slave port (data only; 24V terminal not used); Connects to Cresnet control network. Pin 1 (24) N/A Pin 2 (Y) Data Pin 3 (Z) Data Pin 4 (G) Ground **NOTE:** The UPX-2 does not use, or supply power to the 24 VDC Cresnet connection. **NOTE:** The UPX-2 is only compatible with 2-Series control systems.
6	RESET Button	(1) Recessed pushbutton, hardware/software reset
7	SETUP (LED and button)	Used to setup unit's Net ID in conjunction with Crestron Toolbox; touch-settable ID (TSID)

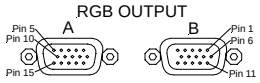
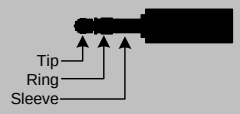
(Continued on following page)

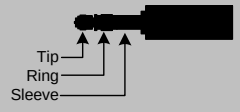
Connectors, Controls & Indicators (Continued)

<table>
<tr><th>#</th><th>CONNECTORS[1], CONTROLS & INDICATORS</th><th>DESCRIPTION</th></tr>
<tr><td>8</td><td>COM
 
</td><td>(1) DB9 male, bidirectional RS-232/422/485 port for 3rd-party device control or Touch-The-PC mouse control;
Up to 115.2K baud;
Hardware and software handshaking support
<table>
<tr><th>PIN</th><th>DIRECTION</th><th>DESCRIPTION</th><th>PIN</th><th>DIRECTION</th><th>DESCRIPTION</th></tr>
<tr><td>1</td><td>To UPX-2</td><td>(RXD-) RS-422 Receive Data (Idles Low)</td><td>6</td><td>To UPX-2</td><td>(RXD+) RS-422 Receive Data (Idles High)</td></tr>
<tr><td>2</td><td>To UPX-2</td><td>(RXD) RS-232 Receive Data</td><td>7</td><td>From UPX-2</td><td>(RTS) RS-232 Request to Send</td></tr>
<tr><td>3</td><td>From UPX-2</td><td>(TXD) RS-232 Transmit Data</td><td>8</td><td>To UPX-2</td><td>(CTS) RS-232 Clear to Send</td></tr>
<tr><td>4</td><td>From UPX-2</td><td>(TXD+) RS-422 Transmit Data (Idles High)</td><td>9</td><td>From UPX-2</td><td>(TXD-) RS-422 Transmit Data (Idles Low)</td></tr>
<tr><td>5</td><td>GND</td><td>RS-232 & RS-422 Signal Common</td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>9</td><td>NETWORK
 
</td><td>(1) 8-wire RJ-45 with 2 LED indicators;
10/100BaseT Ethernet port;
Green LED indicates link status;
Yellow LED indicates Ethernet activity
<table>
<tr><th>PIN</th><th>SIGNAL</th><th>PIN</th><th>SIGNAL</th></tr>
<tr><td>1</td><td>TX +</td><td>5</td><td>N/C</td></tr>
<tr><td>2</td><td>TX -</td><td>6</td><td>RC -</td></tr>
<tr><td>3</td><td>RC+</td><td>7</td><td>N/C</td></tr>
<tr><td>4</td><td>N/C</td><td>8</td><td>N/C</td></tr>
</table></td></tr>
<tr><td>10</td><td>USB
 
</td><td>(4) Type A female (1 front, 3 rear);
USB 2.0 ports for DTT, touch/mouse, keyboard, and storage devices*
* Contact factory for a current list of compatible devices. To ensure reliable performance, new device drivers are available only from Crestron through firmware updates.</td></tr>
<tr><td>11</td><td>1394
 
</td><td>(1) IEEE 1394b port*
* Contact factory for a current list of compatible devices. To ensure reliable performance, new device drivers are available only from Crestron through firmware updates.</td></tr>
</table>

(Continued on following page)

Connectors, Controls & Indicators (Continued)

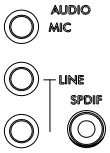
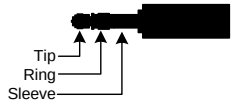
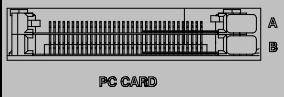
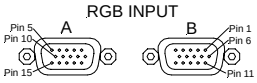
<table>
<tr><th>#</th><th>CONNECTORS[1], CONTROLS & INDICATORS</th><th>DESCRIPTION</th></tr>
<tr><td>12</td><td>RGB OUTPUT A & B
 
</td><td>(2) DB15HD female, RGB (VGA) outputs (Both outputs use same display setting);
Analog Format: RGBHV;
Aspect Ratio: Software configurable 4:3, 15:9, or 16:9;
Output Resolution: Software selectable 800x600, 1024x768, 1280x720, 1280x768, 1280x960, 1280x1024;
Sync Output Type: RGBHV;
Sync Output Level: TTL, 5.0 V_{p-p};
Polarity: H/V user-selectable;
Vertical Frequency: 60 to 85 Hz (60 Hz limit at 1280 x 1024)</td></tr>
<tr><td colspan="3">
<table>
<tr><th>PIN</th><th>DESCRIPTION</th><th>PIN</th><th>DESCRIPTION</th><th>PIN</th><th>DESCRIPTION</th></tr>
<tr><td>1</td><td>Red Video</td><td>6</td><td>Ground</td><td>11</td><td>No Connect</td></tr>
<tr><td>2</td><td>Green Video</td><td>7</td><td>Ground</td><td>12</td><td>No Connect</td></tr>
<tr><td>3</td><td>Blue Video</td><td>8</td><td>Ground</td><td>13</td><td>Horizontal or Composite Sync</td></tr>
<tr><td>4</td><td>No Connect</td><td>9</td><td>No Connect</td><td>14</td><td>Vertical Sync</td></tr>
<tr><td>5</td><td>Ground</td><td>10</td><td>Ground</td><td>15</td><td>No Connect</td></tr>
</table>
</td></tr>
<tr><td>13</td><td>AUDIO
 
</td><td>MIC:
(1) 3.5 mm TRS mini phone jack (red);
Simplex-powered PC microphone input;
Input Level: 0.1 V_{rms} (Boost on); 1.0 V_{rms} (Boost off);
Input Impedance: 10k ohms
 

Tip: Microphone Audio
Ring: Bias Power
Sleeve: Ground
LINE IN:
(1) 3.5 mm TRS mini phone jack (blue);
Unbalanced stereo audio input;
Input Level: 1.0 V_{rms};
Input Impedance: 10k ohms
 

Tip: Left Audio
Ring: Right Power
Sleeve: Ground</td></tr>
</table>

(Continued on following page)

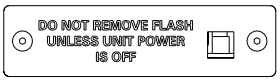
Connectors, Controls & Indicators (Continued)

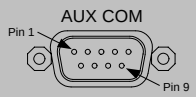
#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
13	AUDIO (continued) 	**LINE OUT**: (1) 3.5 mm TRS mini phone jack (green); Unbalanced stereo audio output; Output Level: 1.0 V_{rms}; Output Impedance: 10k ohms  Tip: Left Audio Ring: Right Power Sleeve: Ground **SPDIF**: (1) RCA female, coaxial digital audio output; Impedance: 75 ohms
14	PC CARD A & B 	(2) Type II PC Card slots (front); For memory expansion, project upload, and wireless NIC* * PQI FPC-PC.E and Kingston CF/ADP have been tested. Contact factory for a current list of other compatible devices. To ensure reliable performance, new device drivers are available only from Crestron through firmware updates.
15	RGB INPUT A & B 	(2) DB15HD female, RGB (VGA) inputs; Analog Formats: RGBHV, RGBS and RGsB; Input Resolution, Non-interlaced: 640 x 480 minimum to 1600 x 1200 maximum; Input Levels: 0.5 to 1.5 V_{p-p} with built-in DC restoration; Input Impedance: 75 ohms; Sync Input Type: Autodetect RGBHV, RGBS, RGsB; Sync Input Level: 3 to 5 V_{p-p}; Sync Input Impedance: 1k ohms; Horizontal Frequency: 31.5 to 100 kHz; Vertical Frequency: 60 to 85 Hz (75 Hz limit at 1600 x 1200)

PIN	DESCRIPTION	PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red Video	6	Ground	11	No Connect
2	Green Video	7	Ground	12	DOC Clock
3	Blue Video	8	Ground	13	Horizontal Sync
4	No Connect	9	No Connect	14	Vertical Sync
5	Ground	10	Ground	15	DOC Data

(Continued on following page)

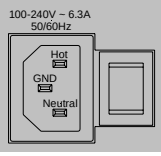
Connectors, Controls & Indicators (Continued)

<table>
<tr><th>#</th><th>CONNECTORS[1], CONTROLS & INDICATORS</th><th>DESCRIPTION</th></tr>
<tr><td>16</td><td>COMPACT FLASH
 
</td><td>(1) Type II Compact Flash card slot;
For compact flash card containing firmware and operating system (included).

NOTE: The UPX-2-1GB includes a 1GB compact flash card while the UPX-2-MSO-2007 includes a 4GB compact flash card. UPX-2 models with 512MB compact flash can be upgraded to the 1GB compact flash with Crestron part number UPX-OS1GB or the 4GB compact flash with Crestron part number UPX-OS4GB-MSO-2007. Both are available from Crestron. For ordering information, contact Crestron.</td></tr>
<tr><td>17</td><td>AUX COM
 
</td><td>(1) DB9 male, bidirectional RS-232 port for computer console and touch/mouse input*
Up to 115.2k baud;
Hardware and software handshaking support
<table>
<tr><th>PIN</th><th>MODE</th><th>FUNCTION</th><th>PIN</th><th>MODE</th><th>FUNCTION</th></tr>
<tr><td>1</td><td>Control</td><td>Data Carrier Detect</td><td>6</td><td>Control</td><td>Data Set Ready</td></tr>
<tr><td>2</td><td>Status</td><td>Receive Data</td><td>7</td><td>Control</td><td>Request to Send</td></tr>
<tr><td>3</td><td>Output</td><td>Transmit Data</td><td>8</td><td>Control</td><td>Clear to Send</td></tr>
<tr><td>4</td><td>Control</td><td>Data Terminal Ready</td><td>9</td><td>Control</td><td>Ring Indicator</td></tr>
<tr><td>5</td><td>GND</td><td>Signal Ground</td><td></td><td></td><td></td></tr>
</table>
* Contact factory for a current list of compatible devices. To ensure reliable performance, new device drivers are available only from Crestron through firmware updates.</td></tr>
<tr><td>18</td><td>VIDEO INPUT 1/HDTV & VIDEO INPUT 2
 
</td><td>VIDEO INPUT 1/HDTV:
(3) BNC female;
Signal Types: Dynamically configurable under system control as: (1) Component (YP_bP_r) video input, or (3) Composite (NTSC/PAL) video inputs, or (1) S-video (Y/C) input and (1) Composite input;
Formats: SDTV 480i (NTSC) & 576i (PAL), EDTV 480p & 576p, HDTV 720p & 1080i;
Input Levels: 0.5 to 1.5 V_{p-p} with built-in DC restoration;
Input Impedance: 75 ohms;
Horizontal Frequency: 15 to 45 kHz;
Vertical Frequency: 50 to 60 Hz</td></tr>
</table>

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	**CONNECTORS**[1]**, CONTROLS & INDICATORS**	**DESCRIPTION**
18	VIDEO INPUT 1/HDTV & VIDEO INPUT 2 (continued)	**VIDEO INPUT 2**: (3) BNC female; Signal Types: Dynamically configurable under system control as: (1) Component (YP_bP_r) video input, or (3) Composite (NTSC/PAL) video inputs, or (1) S-video (Y/C) input and (1) Composite input; Formats: SDTV 480i (NTSC) & 576i (PAL); Input Levels: 0.5 to 1.5 V_{p-p} with built-in DC restoration; Input Impedance: 75 ohms; Horizontal Frequency: 15.75 kHz (NTSC); 15.625 kHz (PAL); Vertical Frequency: 50 to 60 Hz
19	100-240V ~6.3A 50/60 HZ 	(1) IEC socket and main power switch; Mates with removable power cord, included
20	GROUND 	(1) 6-32 screw, chassis ground lug

Industry Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc.

(E174344)

As of the date of manufacture, the UPX-2 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

NOTE: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Setup

Network Wiring

When wiring the Cresnet® and Ethernet network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

Cresnet

For larger networks, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

For more details, refer to "Check Network Wiring" on page 67.

Ethernet

The UPX-2 can also use high-speed Ethernet for communications between the device and a control system, computer, digital media server and other IP-based devices.

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052).

Identity Code

Net ID

The Net ID of the UPX-2 has been factory set to **03**. The Net IDs of multiple UPX-2 devices in the same system must be unique. The Net ID is set using the internal setup menu (refer to "Cresnet" on page 25.). Net ID may also be set from a personal computer (PC) via Crestron Toolbox (refer to "Establishing Communication" on page 58).

When setting the Net ID, consider the following:

- The Net ID of each unit must match an ID code specified in the SIMPL™ Windows® program.
- Each network device must have a unique Net ID.

For more details, refer to the Crestron Toolbox help file.

IP ID

The IP ID is set within the UPX-2's table using Crestron Toolbox. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple UPX-2 devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

Configuring the UPX-2

The UPX-2 is configured from the SETUP MENU.

NOTE: If a project has not been loaded, or if an invalid project has been loaded, the touchpanel displays an error message and defaults to the SETUP MENU screen.

If a project is running, the SETUP MENU can be accessed using one of three methods:

Via Touch Screen

1. At unit startup, when the "Project Loading" progress bar and time countdown is displayed, press and hold your finger on the touchpanel display until the text "Loading Setup Screen" is displayed.
2. Press the **SETUP** button to open the SETUP MENU. The SETUP MENU will be displayed in the center of the screen.

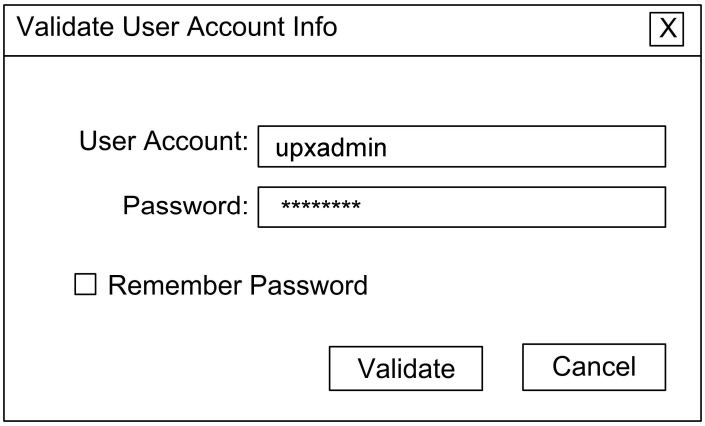
NOTE: If the SETUP MENU is not displayed in the center of the screen, refer to the note on page 22 for instructions on adjusting the display.

NOTE: If the touchpanel is out of calibration, the calibration menu will be displayed. Refer to "Touch Screen" on page 26 for information on calibrating the touchpanel.

Via USB Keyboard Screen

1. Attach a USB keyboard as shown on page v.
2. Open the "Validate User Account Info" window (shown below) by pressing **Ctrl+Alt+Shift** on the keyboard.

"Validate User Account Info" Window

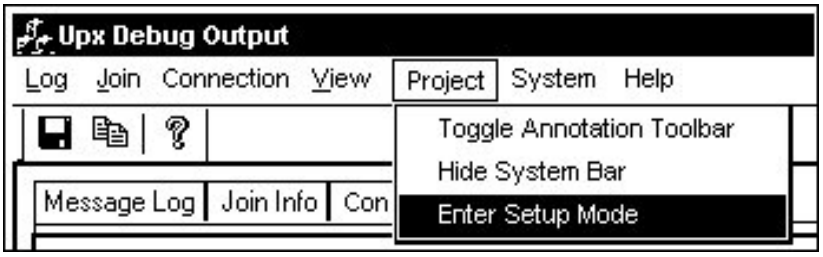


3. Enter the user account name, and password and click **Validate**.

NOTE: The default account name is *upxadmin* and the default password is *upxadmin*. The password is case sensitive. After logging in, the account name and password can be changed from the "Security" window. Refer to "Security" on page 23 for more information.

4. When the "UPX Debug Output" window appears (shown in the following diagram), select **Project | Enter Setup Mode** to enter the SETUP MENU (shown on page 22). The SETUP MENU will be displayed in the center of the screen.

"Upx Debug Output" Window

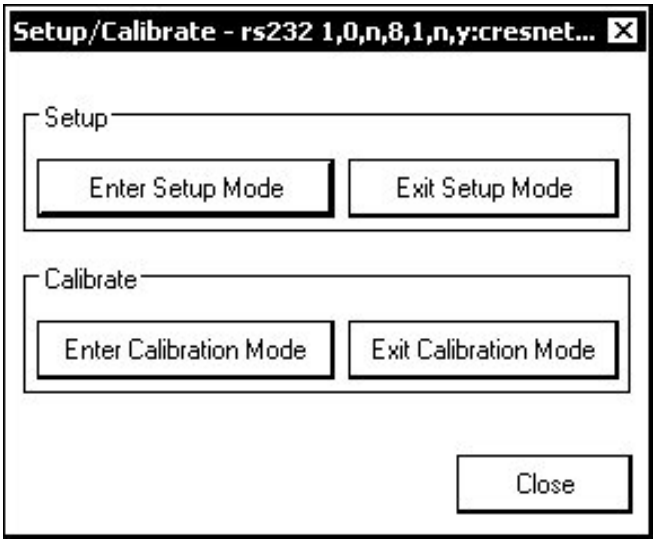


NOTE: If the SETUP MENU is not displayed in the center of the screen, refer to the note on page 22 for instructions on adjusting the display.

Via Crestron Toolbox

1. Establish communication with the UPX-2 as described in "Establishing Communication" on page 58.
2. Right-click on the device and select **Functions | Setup Mode…**.

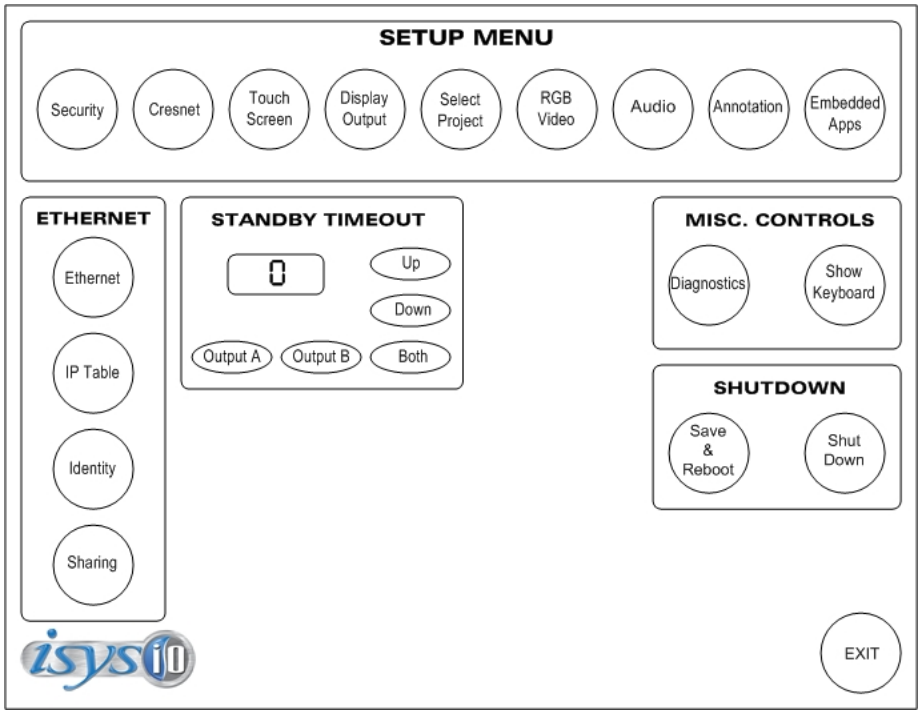
"Setup/Calibrate" Window



3. Select **Enter Setup Mode**. The SETUP MENU will be displayed in the center of the screen as shown in the following diagram.

NOTE: Select **Exit Setup Mode** to exit the SETUP MENU.

UPX-2 SETUP MENU



NOTE: For output displays set to resolutions greater than 800 x 600, the SETUP MENU may be displayed on the left side of the screen. If this occurs, the display needs to be adjusted. To adjust the display, select **Display Output** from the SETUP MENU and select the **Full Screen White** test pattern. Turn off the display's power and turn back on after five seconds. Press the screen to return to Display Output dialog and then press **Close** to return to the SETUP MENU. The display will be adjusted and the SETUP MENU will be centered on the display.

The SETUP MENU provides access to all basic functions and parameters. It is divided into **SETUP**, **ETHERNET**, **STANDBY TIMEOUT**, **MISC. CONTROLS** and **SHUTDOWN** sections.

NOTE: To allow the UPX-2 to upload projects, Standby Timeout is disabled until approximately five minutes after the project is loaded.

To exit the SETUP MENU and return to the program, press **Exit**, located at the bottom of the SETUP MENU. To reboot the UPX-2, press **Save & Reboot**, located in the **SHUTDOWN** section of the SETUP MENU.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while is rebooting. Damage may occur.

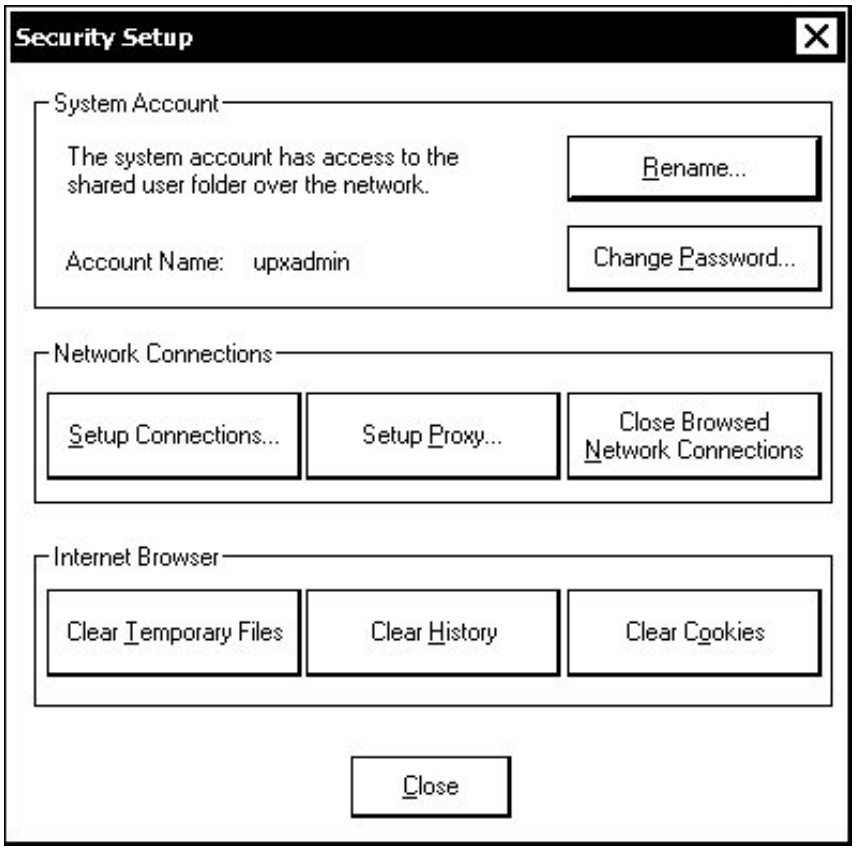
SETUP MENU Details

The SETUP MENU allows configuration of the UPX-2's settings for security, Cresnet, RS-232 communications, display, runtime project, video, audio, annotation, and embedded applications.

Security

The **Security** button opens the "Security Setup" window, which allows the user to change the username and password of the system account, setup and close network connections, setup a Proxy Server, close network connections, and manage the cache of the Internet Browser (clear temporary files, history, and cookies).

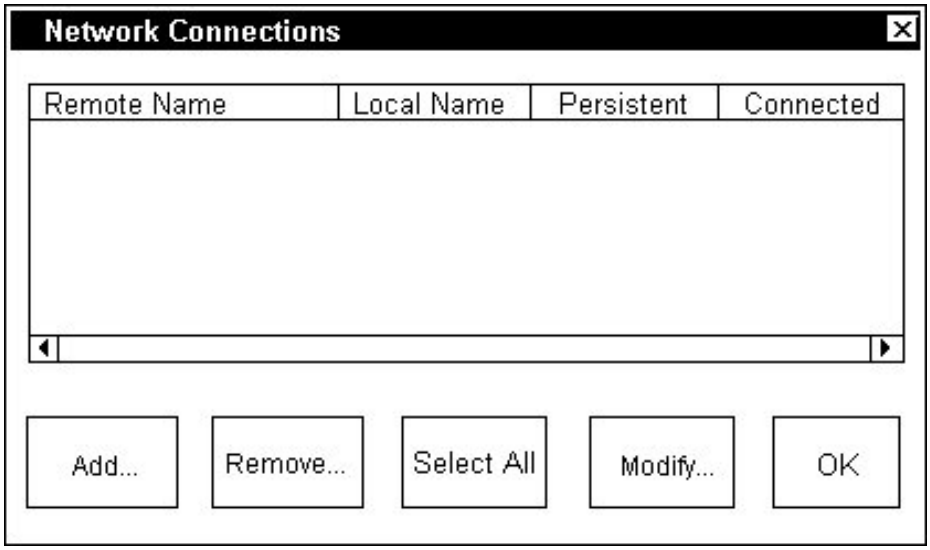
"Security Setup" Window



Setup Connections

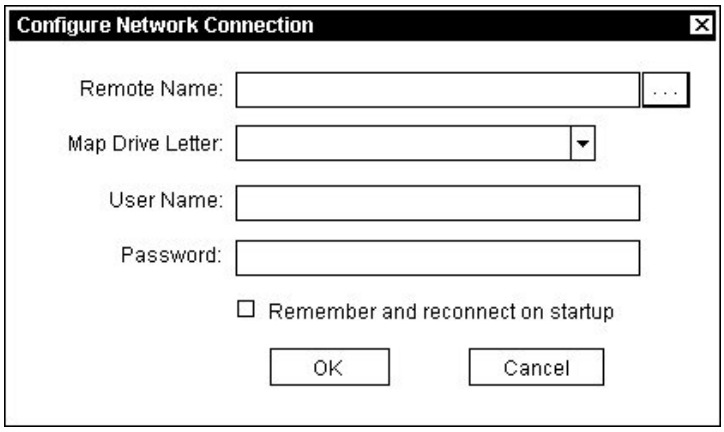
Click **Setup Connections…** to open the "Network Connections" window. This window is used to map to a network drive. A mapped network drive permits easy access to embedded application files (Word, Excel, Powerpoint, MediaMarker, etc.) and provides a location to save files. To further customize the installation, network drives containing compiled UPX-2 project files can also be mapped.

"Network Connections" Window



To add a new network connection, click **Add…**.

"Configure Network Connection" Window



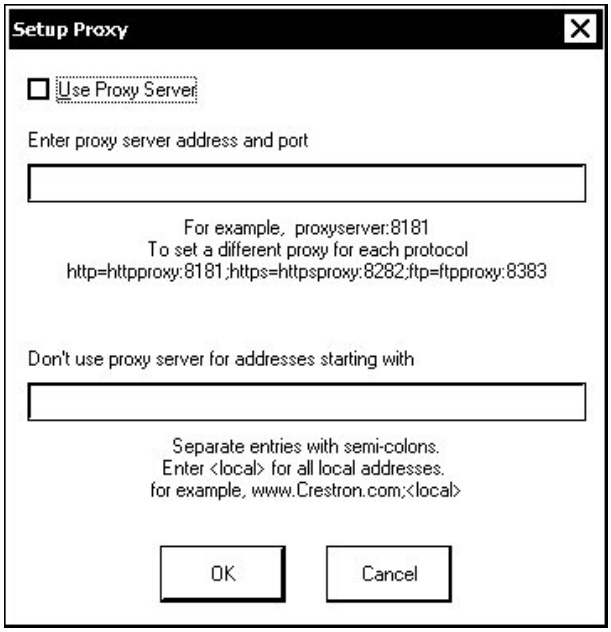
To add a network drive, click  to browse for the new network connection.

1. Map this connection by selecting a drive letter from the *Map Drive Letter* drop-down list.
2. Enter a User Name and Password.
3. Click the *Remember and reconnect on startup* checkbox if so desired.
4. Click **OK** to enable the new network connection and return to the "Network Connections" window.

Setup Proxy…

Click **Setup Proxy…** to open the "Setup Proxy" window. This window is used to point to a proxy server for Internet access. A proxy server acts as an intermediary between your internal network (intranet) and the Internet, retrieving files from remote Web servers.

"Setup Proxy" Window



To setup a proxy server, select *Use Proxy Server*.

1. Enter the IP address or name of the proxy server.
2. If desired, specify addresses that should not use the proxy server (i.e. intranet addresses).

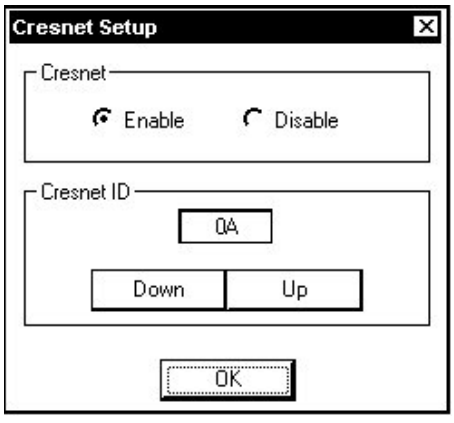
Click **OK** to enable the proxy server connection and return to the "Network Connections" window.

Once all changes to network connections have been completed, click **OK** to return to the SETUP MENU.

Cresnet

The "Cresnet Setup" window allows you to enable or disable Cresnet and permits changing the Cresnet ID.

"Cresnet Setup" Window



Select **Enable** for normal Cresnet communication mode or **Disable** to disable Cresnet communications. The communication mode is factory set to **Enable**.

The Cresnet network identity number (CRESNET ID) is displayed in the "Cresnet Setup" window. CRESNET ID is the two-digit hexadecimal number. The

hexadecimal number can range from 03 to FE and must correspond to the Net ID set in the SIMPL Windows program of the Cresnet system. Matching IDs between touchpanel and SIMPL Windows program is required if data is to be successfully transferred. The Net ID for the UPX-2 is factory set to 03. No two devices in the same system can have the same Net ID.

Two buttons below the hexadecimal display, **UP** and **DOWN**, increase and decrease the CRESNET ID by one, respectively.

Select **OK** to accept the changes and return to the SETUP MENU.

Touch Screen

The **Touch Screen** button permits you to select how to use the **AUX COM** serial port. The **AUX COM** port can be used for serial communications between a PC and the UPX-2 console or as a communications port between the UPX-2 and third party touch screens. The "Touch Screen / Console Settings" window also provides Mouse Cursor, Key Click, and touch screen calibration for both finger touch and annotation pen.

NOTE: Touchpanel calibration may be required after a firmware upgrade.

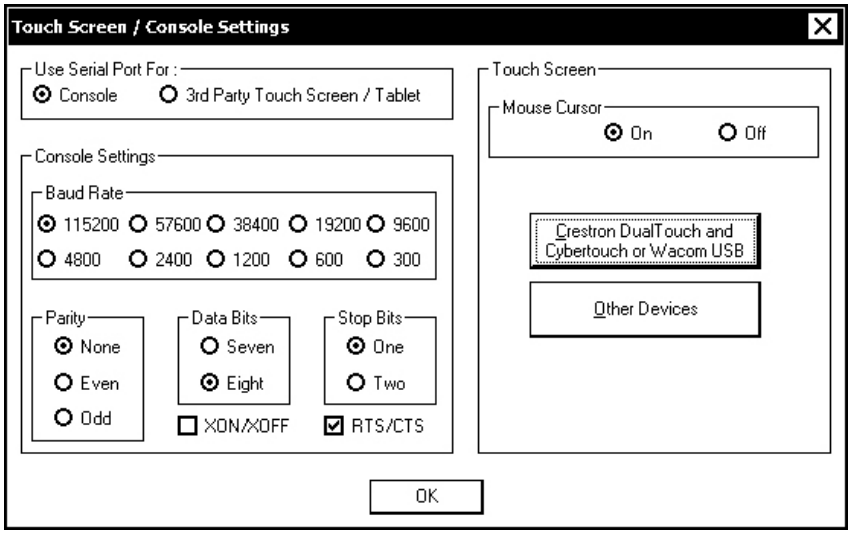
Console Operations

To use a PC to communicate with the UPX-2, over a serial connection, you must select **Console** in the upper-left corner of the "Touch Screen / Console Settings" window. Select the console settings required to communicate with the PC.

Touch Screen/Tablet Operations

To set the **AUX COM** port to communicate with a third party touch screen or tablet, you must select **3rd Party Touch Screen / Tablet** in the upper-left corner of the "Touch Screen / Console Settings" window.

"Touch Screen / Console Settings" Window



The UPX-2 supports Crestron DTT, CyberTouch™, Wacom™ USB, and other third party touchpanels. Specific models and protocols are subject to verification. Refer to the Crestron website or contact Crestron for latest device support.

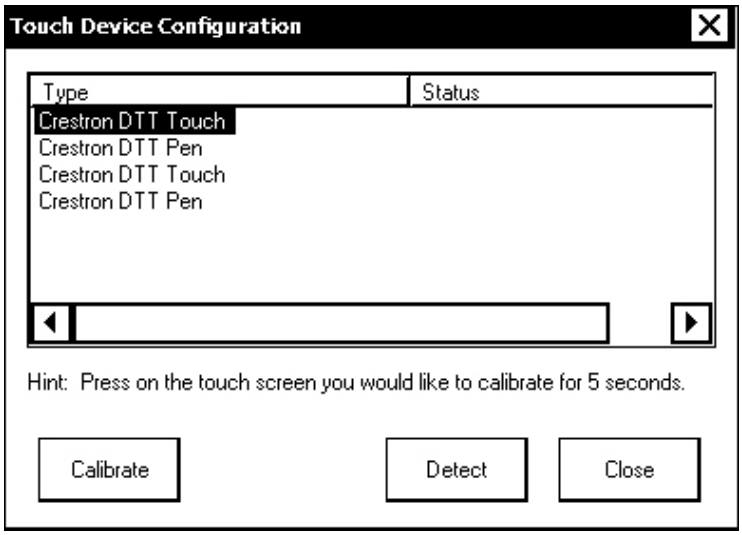
Up to five touchpanels (up to four Crestron, CyberTouch, or Wacom USB touchpanels and one third party serial touchpanel) can be connected to the UPX-2 at one time. Only one third party touchpanel can be connected at any time. The touchpanels can be connected to the UPX-2's four **USB** ports and **AUX COM** port

while sharing an optional RGB switch. Refer to "Connecting Multiple Touchpanels" on page 51 for more information.

Configuring Crestron DualTouch, CyberTouch, and Wacom USB Touchpanels

Click **Crestron DualTouch and CyberTouch or Wacom USB** to calibrate Crestron DTT, CyberTouch, and Wacom touchpanels. The"Touch Device Configuration" window will open and permit you to calibrate and detect touch configuration devices.

"Touch Device Configuration" Window



Select a device and click **Calibrate** to calibrate. You can also calibrate a device by touching the screen for five seconds. A full screen appears on the touchpanel with calibration instructions for the touch procedure. Once calibration is complete, you must click **Save & Reboot** on the SETUP MENU to save the calibration settings.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

NOTE: If a touchpanel is disconnected and reconnected to a different port, or reconnected with a hub connecting to the UPX-2, the touchpanel must be recalibrated.

NOTE: A Crestron DTT consists of two separate touch devices, "Crestron DTT Touch, USB" and "Crestron DTT Pen, USB". Both must be added and calibrated separately for the DTT to function properly. If two DTTs are connected, both devices must be added to the list of installed devices for a total of four touch devices.

NOTE: The UPX-2's calibration routine can also be accessed through Crestron Toolbox by selecting the device from the Network Device Tree and right-clicking the device to select **Functions | Setup Mode…**. Select **Enter Calibration Mode** to begin calibration.

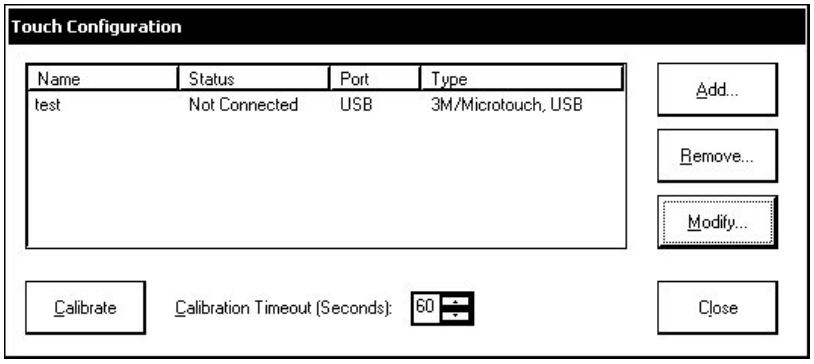
- Click **Detect** to detect a new touch device.
- Click **Close** to close the "Touch Device Configuration" window.

- Press **OK** to accept the changes and return to the SETUP MENU.

Configuring Other Touchpanels

A variety of third party touchpanels and tablets are supported by the UPX-2. Click **Other Devices** in the "Touch Screen/Console Settings" window to open the "Touch Configuration" window for third party devices.

"Touch Configuration" Window

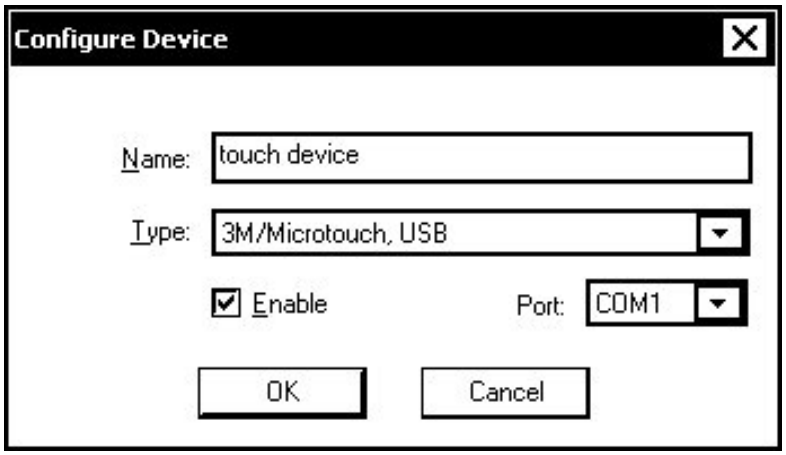


A device can be calibrated by selecting the device and clicking **Calibrate**. The timeout (in seconds) for the calibration procedure can be adjusted from this screen by clicking the up or down arrows next to the time value. To add a new device, click **Add…** to open the "Configure Device" window.

If a device's configuration requires changes to be made, select the device and click **Modify…** to open the device's "Configure Device" window.

NOTE: Only one third party touchpanel can be connected to the UPX-2 at a time. Before adding a new third party touchpanel, the existing touchpanel entry must be removed by clicking **Remove…**.

"Configure Device" Window



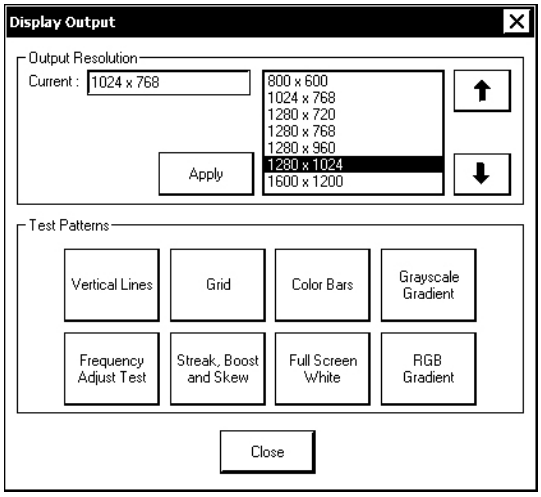
Enter a name for the new device (or edit the existing device name) and select a supported device-type from the *Type* drop-down list. If applicable, the *Port* field will indicate which of the UPX-2's serial ports should be connected to the device. USB devices can be enabled or disabled by checking or unchecking the *Enable* box.

NOTE: The *Name* which is entered for the device is for the end-user's convenience and is displayed only during calibration.

Display Output

The **Display Output** button permits you to select the output resolution and provides test charts for setting up the display device. Output A and B have the same resolution.

"Display Output" Window



Select the appropriate *Output Resolution*, and click **Apply**. If the screen resolution is not acceptable, choose another resolution setting. If the controls are no longer visible due to the changed resolution setting, use Crestron Toolbox to change the resolution.

Using Crestron Toolbox to change the display resolution:

1. Establish communication with the UPX-2 as described on page 58.
2. Select **Tools | Text Console** to open a text console window.
3. From the drop-down list on the bottom of the window, select the address book entry for the UPX-2. The prompt for the UPX-2 will be displayed.
4. Type the command **output H V** where **H** is the horizontal resolution in pixels and **V** is the vertical resolution in pixels.
5. Press **Enter** to activate the new resolution setting.

Select the following *Test Patterns*, in the following order, and adjust the display as necessary.

1. Grid
2. Vertical Lines
3. Color Bars
4. Grayscale Gradient
5. Frequency Adjust Test
6. Streak, Boost and Skew
7. Full Screen White
8. RGB Gradient

NOTE: If the screen does not fit properly, adjust the resolution.

Select Project

Permits the selection of the UPX-2 program, a .vtz file. The default file location is the internal flash. To select a project from the internal flash, select **Browse** and select the compiled project to be loaded.

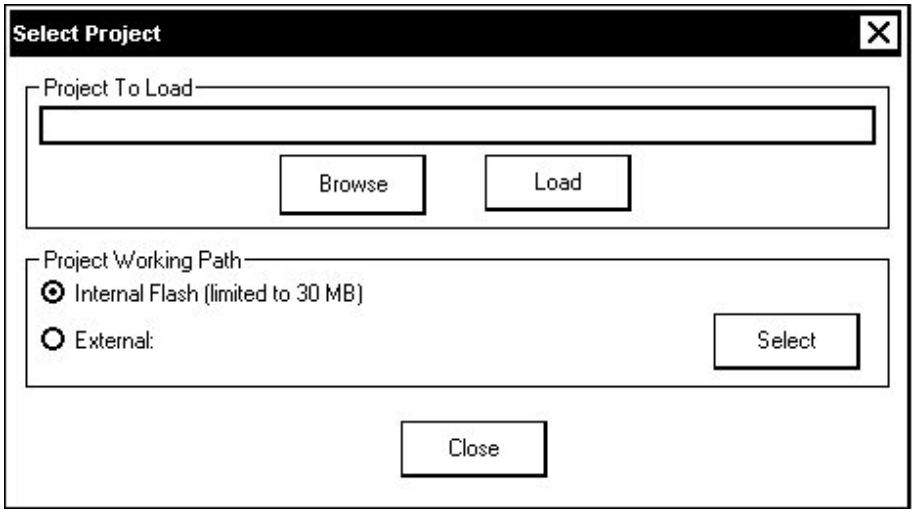
If loading an external file, check **External** as the *Project Working Path* and use the **Select** button to select the network drive and/or flash drive where the compiled project is located. After selecting the location of the compiled project, select **Browse** to find the compiled project file.

NOTE: Selecting the **External** option permits you to connect to a network drive, USB devices, and the PC Card ports on the front of the UPX-2.

NOTE: If **External** is checked, the display list cannot be viewed via Crestron Toolbox.

After the compiled project has been selected, press **Load** to load the project to the UPX-2.

"Select Project" Window – Project to Load



RGB Video

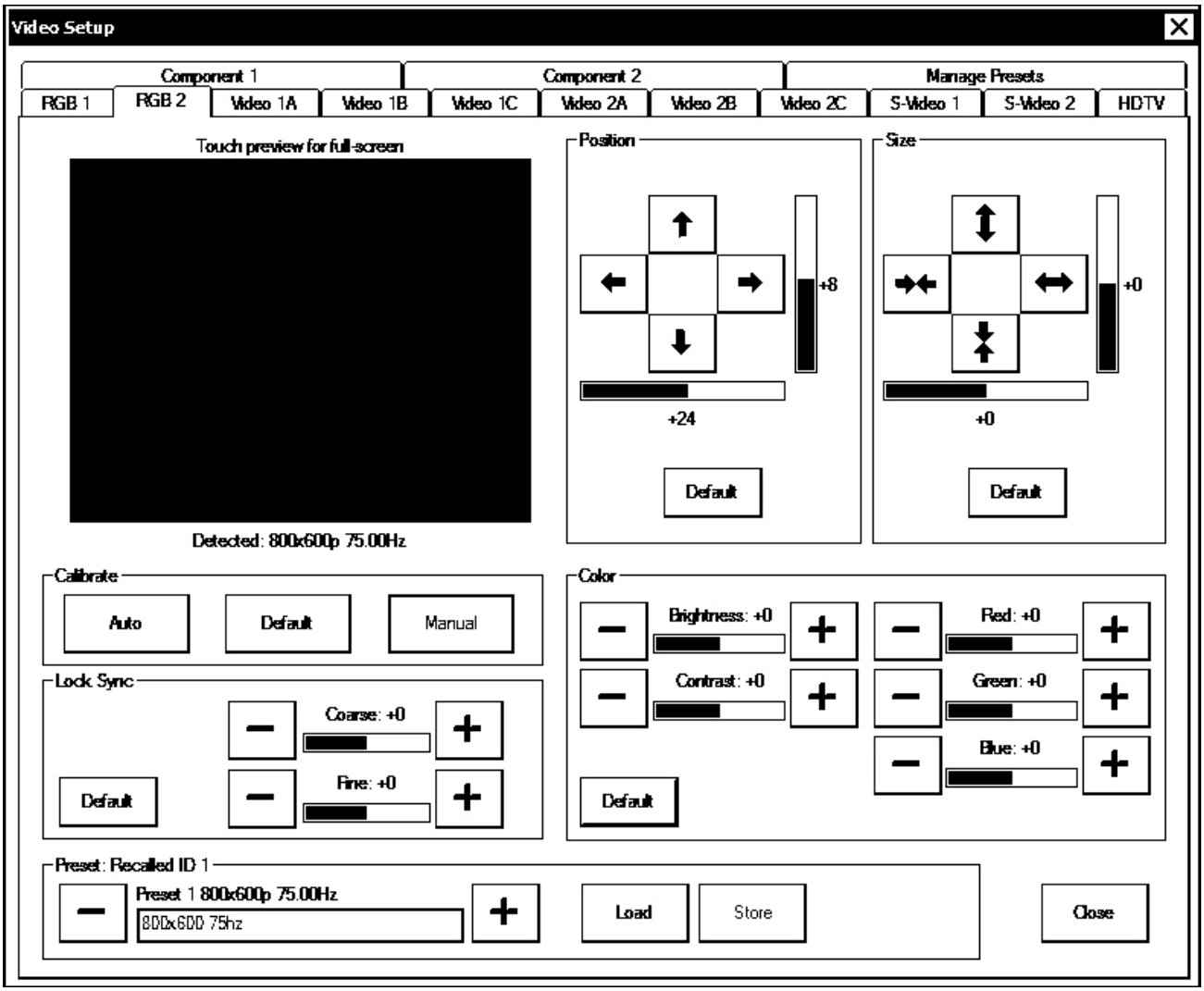
Each one of the video and RGB inputs is selected and adjusted from this window. Click on an input tab and adjust the settings (resolution, horizontal and vertical frequency) for the selected input. The selected input is shown on output B.

The "RGB/Video Setup" window can be brought up and hidden using reserved joins from within a project. Refer to the latest version of the UPX-2 Reference Guide (Doc. 6286).

The "RGB/Video Setup" window contains the following settings as displayed in the image. Changes are made in real time.

RGB Setup

"Video Setup" Window - RGB 2 Tab



RGB is setup using the *Size*, *Position*, *Color*, and *Lock Sync* controls. The following test patterns are recommended for adjustment.

Lock Sync – A vertical (alternating black/white lines) line test pattern screen is recommended. Lock Sync is available for RGB only.

NOTE: The vertical line test pattern should look uniform. If you see dark vertical bars in the test pattern, adjust 'Coarse' to eliminate bands. If you see only horizontal noise, adjust 'Fine' to reduce or eliminate noise. You may also need to perform this vertical line adjustment again after changing the size of the display image.

Size and Position – A vertical/horizontal line grid screen test pattern is recommended when adjusting for position and size.

Color – Color bar and gray scale screens test patterns are recommended for color adjustments. All inputs are adjusted for brightness and contrast. Red, green and blue are individually adjusted for an RGB input. Hue and saturation are adjusted for composite, S-video and component video inputs.

NOTE: Changes made in the SIMPL windows program override these color adjustments.

NOTE: When **Default** is selected, all controls are set to zero.

Calibrate Auto, Default and Manual – Auto calibrate is the preferred setup method for RGB. Auto calibrate automatically adjusts the input setting every time the source is selected. It looks at the sync for "front and back porch", and sets them for the selected input. Auto calibrate is a mode that is set in the "Video Setup" window for each RGB input. You must select the source and have it displayed before selecting **Auto** from the *Calibrate* area. You can return to this setup screen when you want to perform auto calibrate in the future.

If this selection does not look correct, select default calibrate, which sets the input setting to the factory defaults.

Manual calibrate permits you to manually adjust the controls.

NOTE: If you are unable to obtain a stable RGB window using **Auto** or **Default,** perform the manual lock sync adjustment (coarse and fine) before continuing with the color, size, and position adjustments.

Presets – Up to 30 presets may be stored for future retrieval. Press **Store** to store the settings in the preset location displayed. Press **Load** to load the settings of the preset location displayed.

When an RGB source is connected, the UPX-2 automatically detects the horizontal resolution, vertical resolution, and sync frequency of the source. The UPX-2 will search through all of the presets that are defined for the detected settings. If a matching preset is found, the preset will be applied to the detected source. The preset number will be reported to the control system and displayed on the screen. If two or more presets were found with matching settings, the last-recalled preset will be used and the preset will be reported to the control system.

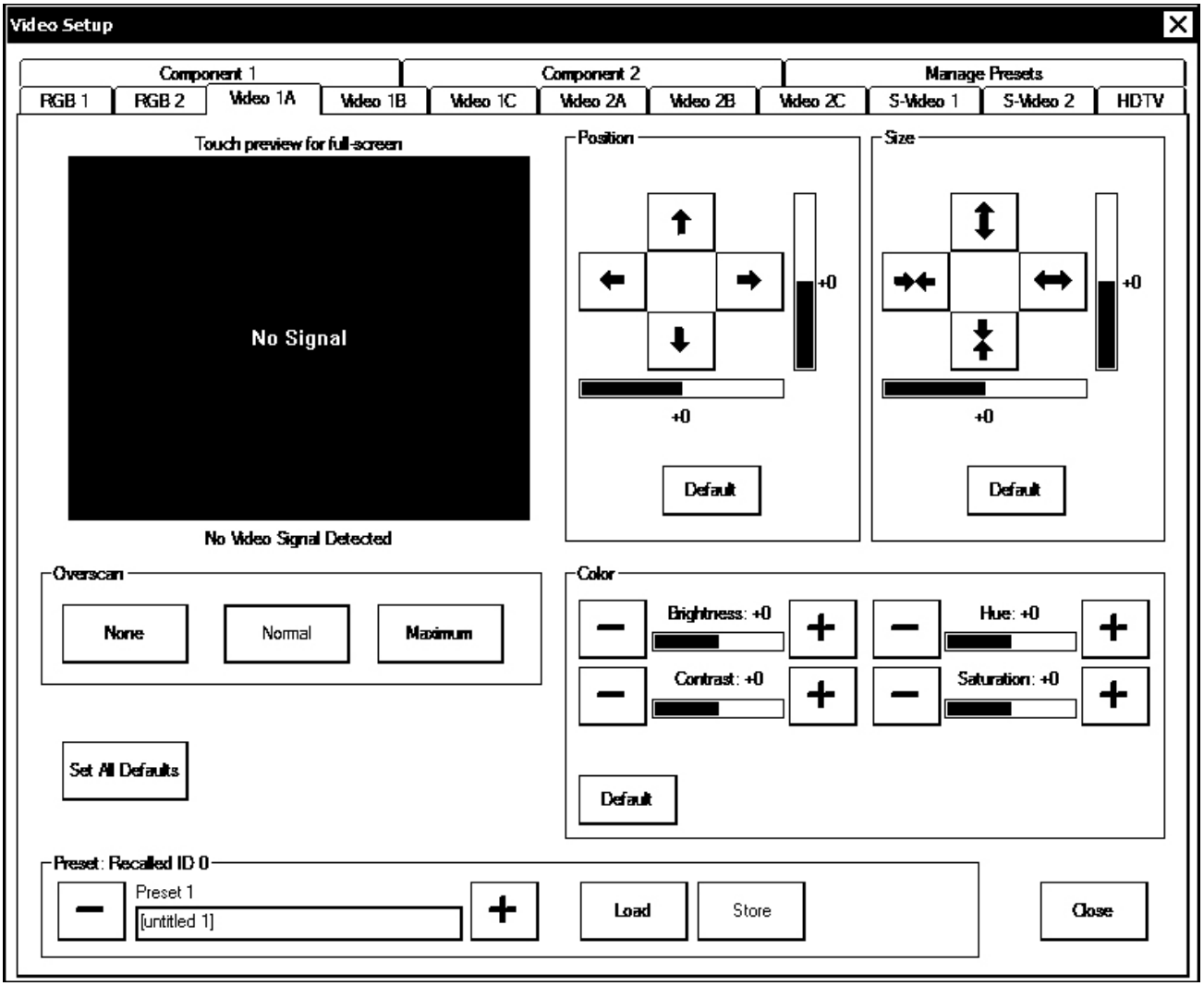
If a matching preset is not found, the UPX-2 will automatically calibrate for the RGB source. These settings will be stored as the last-recalled settings.

If presets have not been stored for a specific input, the last-recalled settings will be applied to all sources for the input. The preset number "0" will be reported to the control system and displayed on the screen.

Video Setup

The setup screen for each video source contains the settings as displayed in the following image. Changes are made in real time.

"Video Setup" Window - Video 1A Tab



Video is setup using the *Color* and *Overscan* controls. The following test patterns are recommended for adjustment.

Overscan – Overscan is the active image area in a video picture that is outside the edges of the display device (does not apply to RGB). Overscan first came about because of noise and other artifacts at the beginning and end of the scan lines. To reliably eliminate the noise and fill the screen with a picture, the outside edge of the active picture area was pushed out past the edge of the display area. The average or targeted over-scan loss is about 5 to 10% of the image on each edge. Digital images have nearly eliminated the noise and other artifacts at the edge of the picture, so more of the video image can be safely shown. The **Normal** setting is usually the correct choice for most video inputs.

Presets – Up to 30 presets may be stored for future retrieval. Press **Store** to store the settings in the preset location displayed. Press **Load** to load the settings of the preset location displayed.

When a video source is connected, the UPX-2 automatically detects the horizontal resolution, vertical resolution, frame rate (frames per second), and whether the signal is interlaced or deinterlaced. The UPX-2 will search through all of the presets that are defined for the detected settings. If a matching preset is found, the preset will be

applied to the detected source. The preset number will be reported to the control system and displayed on the screen. If two or more presets were found with matching settings, the last-recalled preset will be used and the preset will be reported to the control system.

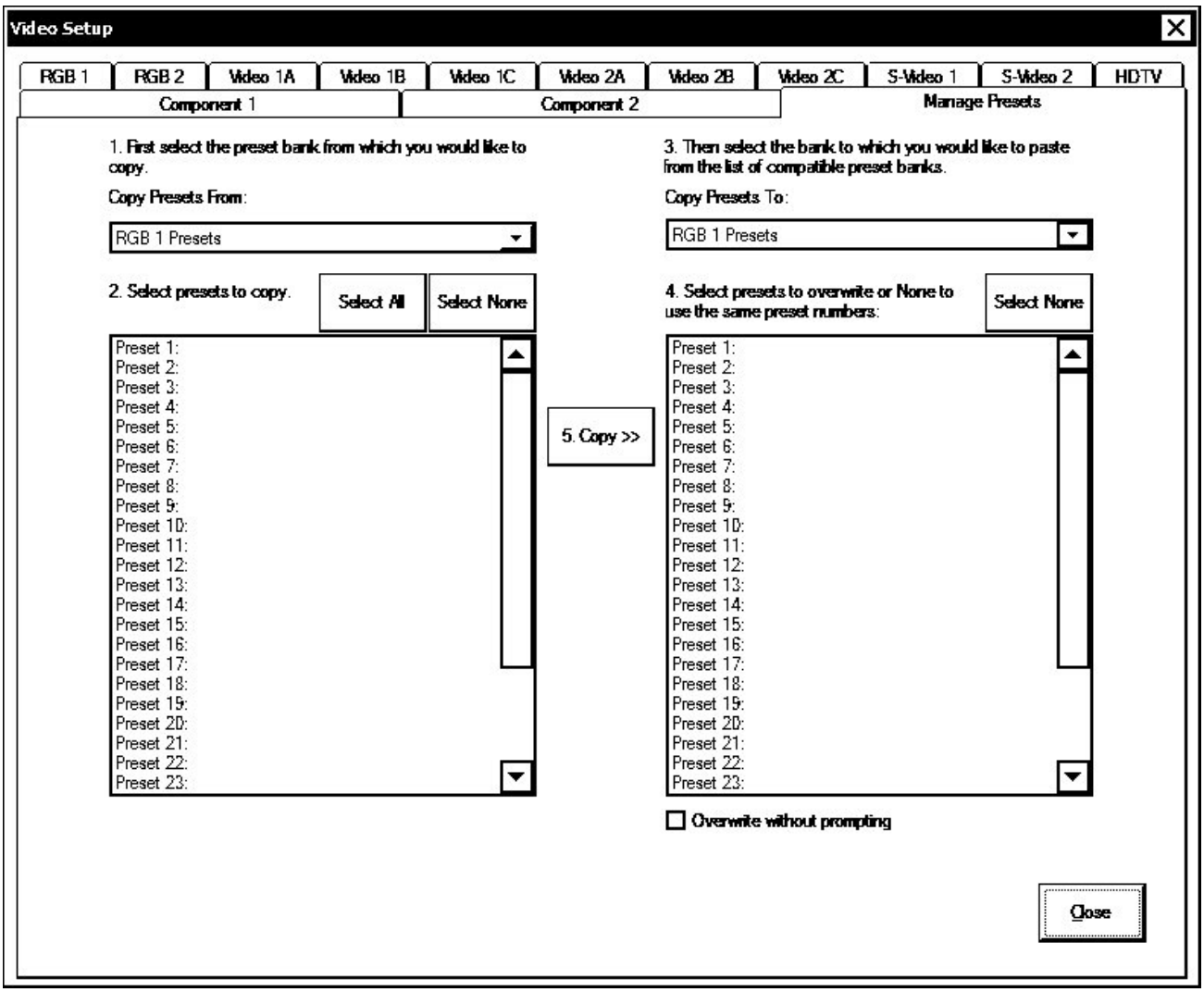
If a matching preset is not found, the UPX-2 will automatically set the default settings for a video signal (brightness = 0, contrast = 0, hue = 0, and saturation = 0). These settings will be stored as the last-recalled settings.

If presets have not been stored for a specific input, the last-recalled settings will be applied to all sources for the input. The preset number "0" will be reported to the control system and displayed on the screen.

Manage Presets

Use the *Manage Presets* tab to copy presets for size, position, and color for one source to other sources.

"Video Setup" Window – Manage Presets Tab

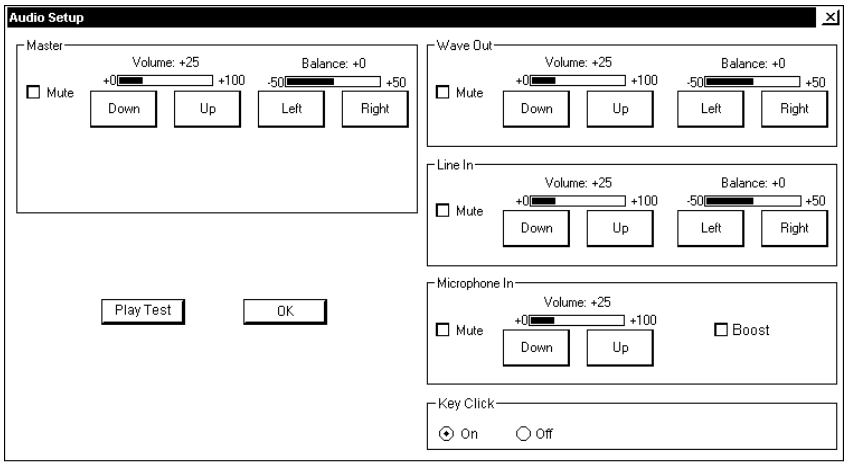


Audio

Audio settings are made in real time. Pressing **Play Test** plays a short internal audio file. Volume adjustments are available for the *Wave Out*, *Line In*, and *Microphone* signals while balance adjustments are available for the *Wave Out* and *Line In* signals.

There are also overall controls for the *Master* volume and balance. In addition, you can enable or disable the key click sound. Defaults are +25 for volume and zero for balance.

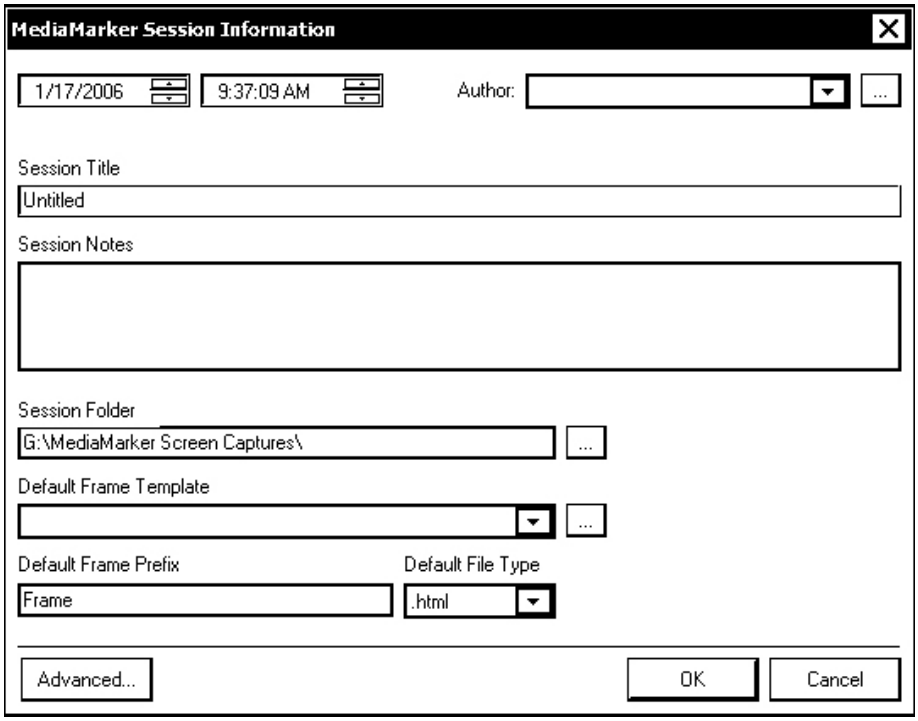
"Audio Setup" Window



Annotation

The **Annotation** button displays the "MediaMarker Session Information" window.

"MediaMarker Session Information" Window



NOTE: This screen will display a flashing message (**INVALID PATH**) if there is no flash card installed, or no folder available at the session folder location. This may also occur in the case of an invalid login.

The "MediaMarker Session Information" window allows the author name, time, date, session title and session notes to be stored for the current frame. The *Author* drop-down list contains all the authors available on the system. Authors can be added

and removed from the **Edit | Preferences | Authors** menu within MediaMarker, or by pressing [...].

Frames created during the annotation session will use a default annotation template file, frame prefix and frame output file type.

Each new frame title will contain the frame prefix followed by a sequential frame number.

The frame template serves as a starting point for each new frame. Crestron supplies some ready-made templates, or you can use one of your own.

Screen captures can automatically save the contents of the current annotation frame to an image file. The file will be saved as the default file type (HTML, JPG, BMP, PNG, or TIF) as specified in the session folder.

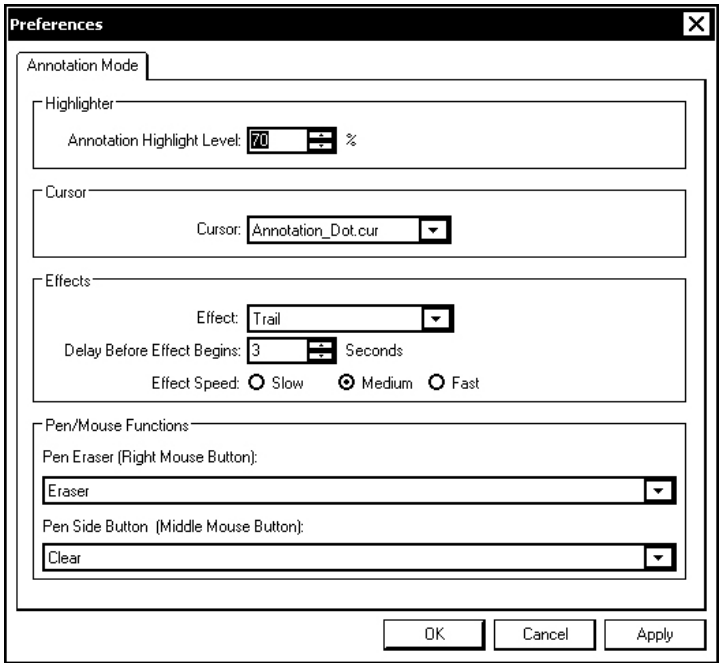
The *Session Folder* browse button [...] permits searching other folders. You may select a flash memory card, a network drive, or a USB drive.

The *Default Frame Template* browse button [...] permits you to search for templates. For Crestron provided templates, choose from the drop-down list.

For additional MediaMarker information, refer to "MediaMarker" on page 64 and the help file included with the MediaMarker software.

Advanced Settings – Click **Advanced...** to further customize the operation of the annotation feature.

Annotation "Preferences" Window



The *Highlighter* section of the "Preferences" window is used to adjust the translucency level of the highlighter tool.

Different cursor styles can be selected in the *Cursor* section of the "Preferences" window.

The *Effects* section of the "Preferences" window determines how annotations will disappear from the screen. Select the effect style from the drop-down list, the delay

before the effect begins, and the speed of the effect to change how annotations disappear from the screen.

NOTE: To use effects, annotation animation must be enabled by the control system program or a control on a UPX-2 touchpanel project.

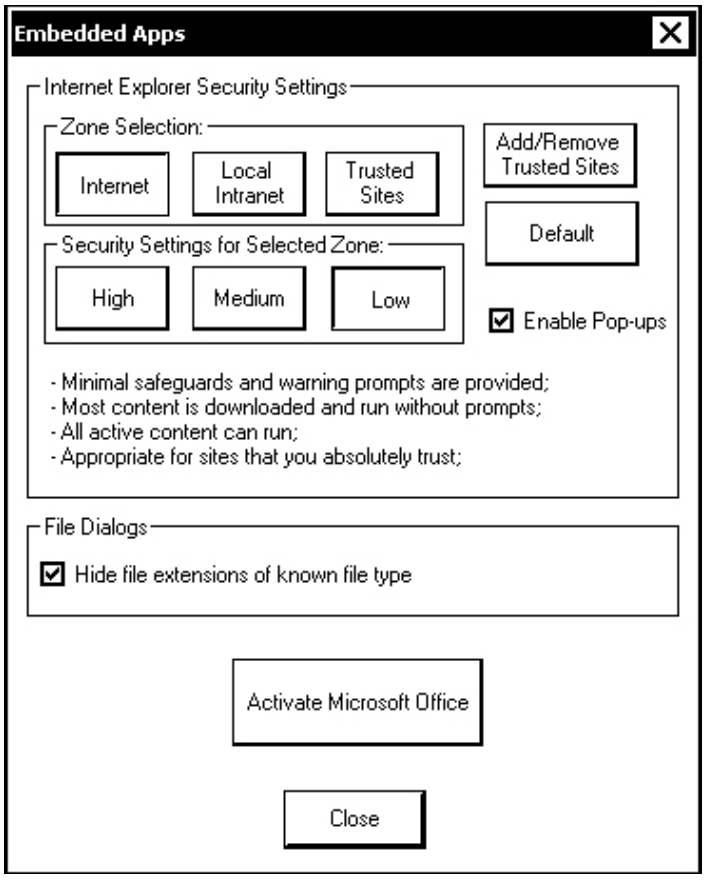
When using a DTT touchpanel or a mouse, the functions of the buttons on the stylus or mouse can be defined in the *Pen/Mouse Functions* section of the "Preferences" window. The tip of the pen corresponds to the left mouse button. The pen side button corresponds to the middle mouse button (if present) when rocked toward the tip and the right mouse button when rocked toward the eraser. The eraser also corresponds to the right mouse button.

After all changes have been made, click **OK** to save the settings and return to the "MediaMarker Session Information" window.

Embedded Apps

The "Embedded Apps" window permits you to set Internet security to different levels for different types of Internet sites.

"Embedded Apps" Window (UPX-2-MSO-2007 shown)



NOTE: UPX-2-MSO-2007 models will have a button labeled **Activate Microsoft Office**. For more information, refer to "Microsoft Office Configuration & Activation (UPX-2-MSO-2007 only)" on page 39.

Internet Explorer Security Settings

Three security levels, high, medium, and low can be selected for each of the three zones, Internet, intranet, and trusted sites. The security levels are defined as:

- **High:** The safest way to browse, but also the least functional. Less secure features are disabled. Appropriate for sites that may have harmful content.
- **Medium:** Safe browsing and still functional. Prompts before downloading potentially unsafe content. Unsigned ActiveX controls will not be downloaded. Appropriate for most Internet sites.
- **Low:** Minimal safeguards and warning prompts are provided. Most content is downloaded and run without prompts. All active content can run. Appropriate for sites you absolutely trust.

Press **Default** to restore the default security settings. By default, security is set to *High* for Internet, *Medium* for intranet, and *Low* for trusted sites.

The "Embedded Apps" window also permits you to enable the popup windows (child windows) that open when you are in Internet Explorer (not the popup windows of the embedded applications).

Press **Close** after all changes have been made. The UPX-2 must be rebooted for changes to take effect. Refer to "SHUTDOWN Details" on page 48 for more information.

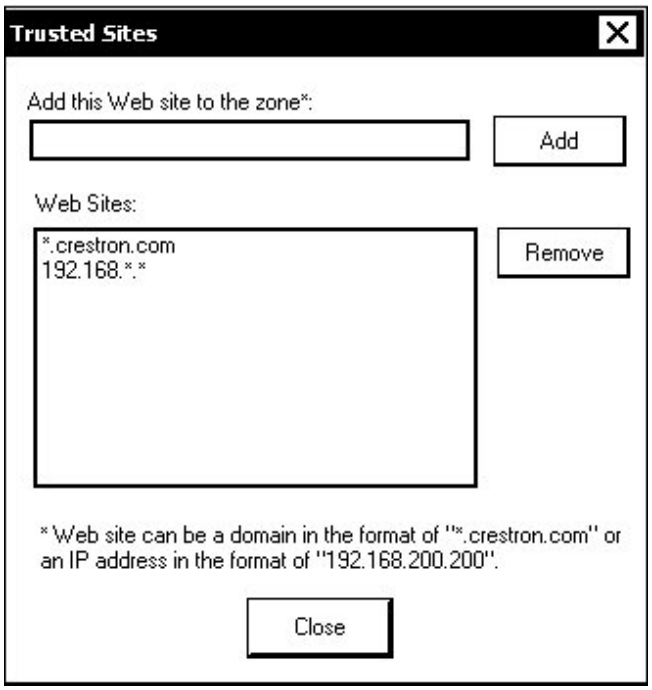
CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

Trusted Sites

A list of trusted sites can be created and edited by pressing **Add/Remove Trusted Sites**.

To add or remove a trusted site, press **Add/Remove Trusted Sites** to open the "Trusted Sites" window. From here, trusted sites can be added and edited. Sites are listed by either domain name or IP address. Once all sites have been entered, press **Close**.

"Trusted Sites" Window



CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

NOTE: Save & Reboot on the SETUP MENU must be selected for Embedded Apps changes to take effect.

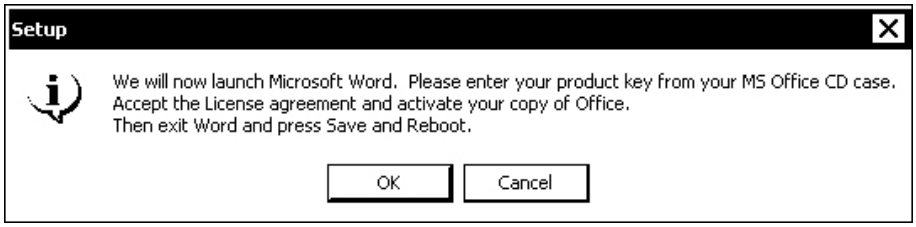
NOTE: While browsing the Internet with the UPX-2, clicking on a link may cause a message box titled "Restrictions" to appear that contains the text "This operation has been cancelled due to restrictions in effect on this computer. Please contact your system administrator." If this message appears, checking *Enable Pop-ups* in the "Embedded Apps" window may correct this error. Other restrictions may also cause this error, so this may not prevent all occurrences.

Microsoft Office Configuration & Activation (UPX-2-MSO-2007 only)

Press the button labeled **Activate Microsoft Office** to start the process of configuring and activating Microsoft Office. A window will open describing the procedure and requirements for activating Microsoft Office.

NOTE: An Internet connection is recommended to activate Microsoft Office. For instructions on setting up an Internet connection, refer to "Establishing Communication" on page 58.

Setup Microsoft Office (UPX-2-MSO-2007 Only)



1. Click **OK** to begin the configuration process. Configuration requires the product key with the UPX-2-MSO-2007.

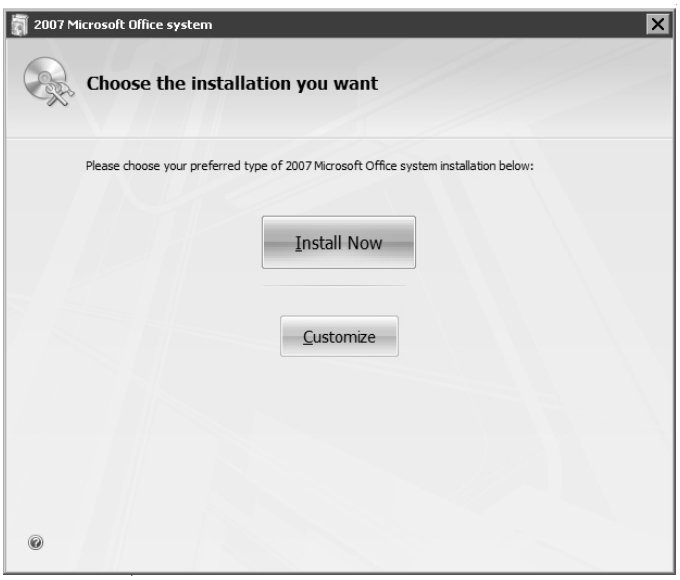
   The UPX-2-MSO-2007 will launch Microsoft Word and prompt the user for the product key. Enter the product key and referral key that is included with the UPX-2-MSO-2007 and click **Continue**.

   "Product Key" Window (UPX-2-MSO-2007 Only)

2. Click **Install Now** to continue the configuration.

   To customize the user name and/or organization, click **Customize**.

"Select Installation" Window

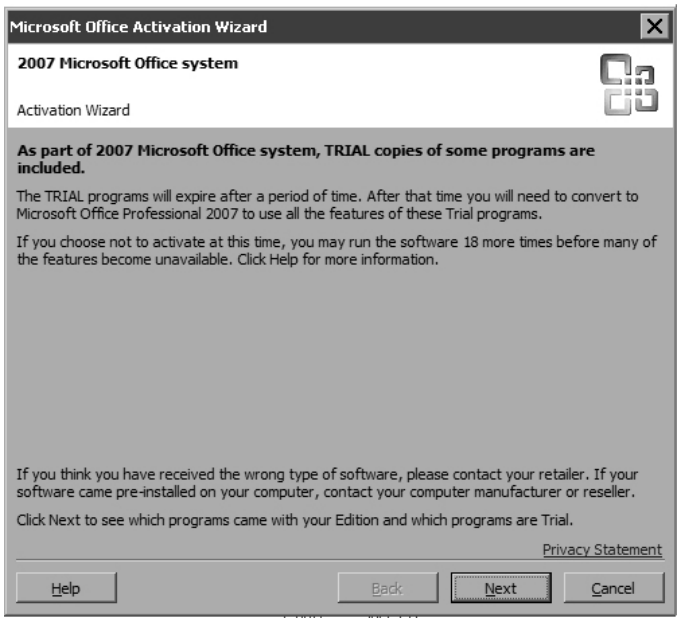


3. When configuration is complete, click **Close**.

"Configuration Complete" Window

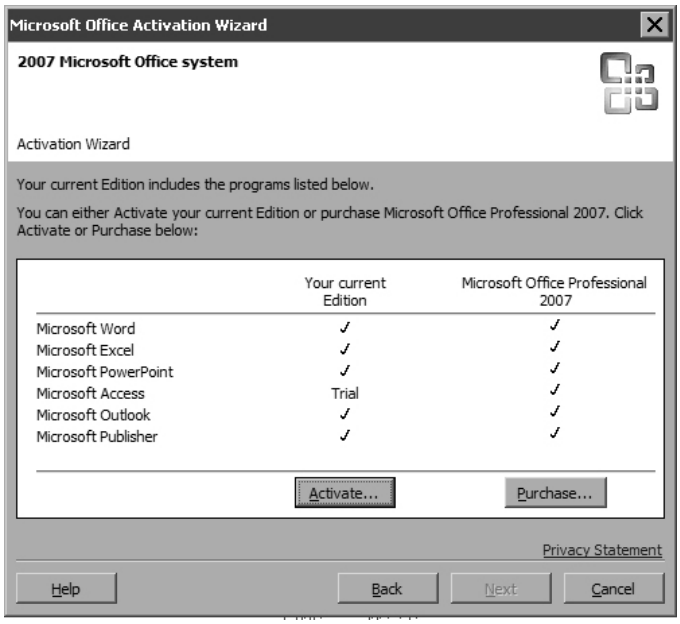
4. Close Microsoft Word. The "Activation Wizard" window will open.

"Activation Wizard" Window



5. Click **Next** to view the list of included programs.

"Applications List" Window



6. Click **Activate** to activate Microsoft Word, Microsoft Excel, and Microsoft PowerPoint.

NOTE: Although the Microsoft Access, Microsoft Outlook, and Microsoft Publisher applications are on the list of applications, they are not present on the UPX-2-MSO-2007.

7. Select the method of activation (Internet or Telephone) and click **Next**.

8. Click **Close** to close the "Application Wizard" window and return to the SETUP MENU.
9. Click **Save & Reboot** to complete the activation.

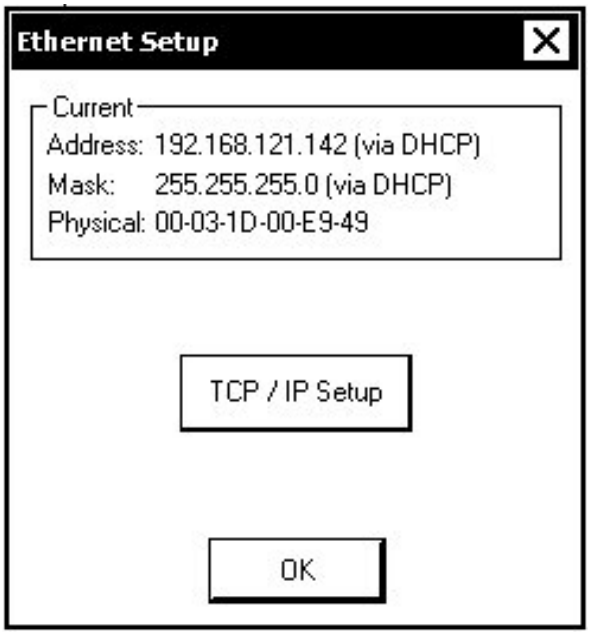
ETHERNET Details

The *ETHERNET* section of the SETUP MENU allows configuration of the UPX-2's settings for Ethernet communications.

Ethernet

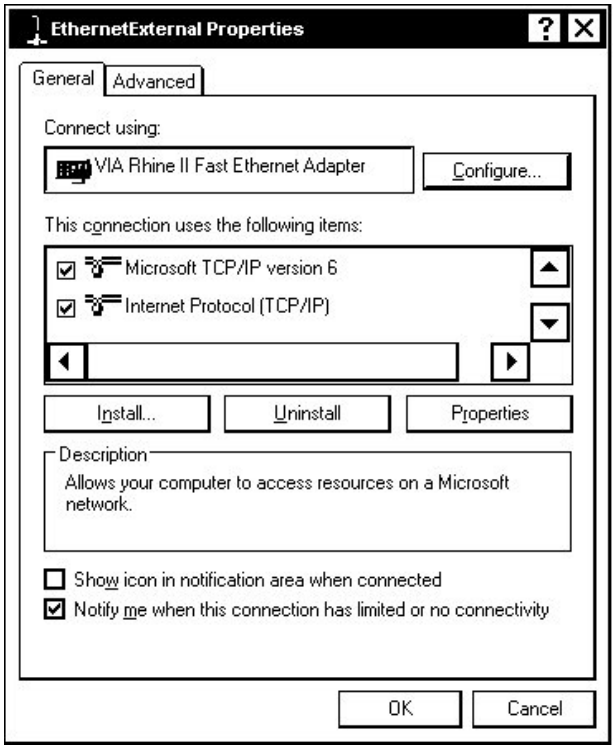
Press the **Ethernet** button to access the "Ethernet Setup" window. Changes are made in real time and there is typically no need to reboot. The Ethernet address and mask are displayed on this screen.

"Ethernet Setup" Window



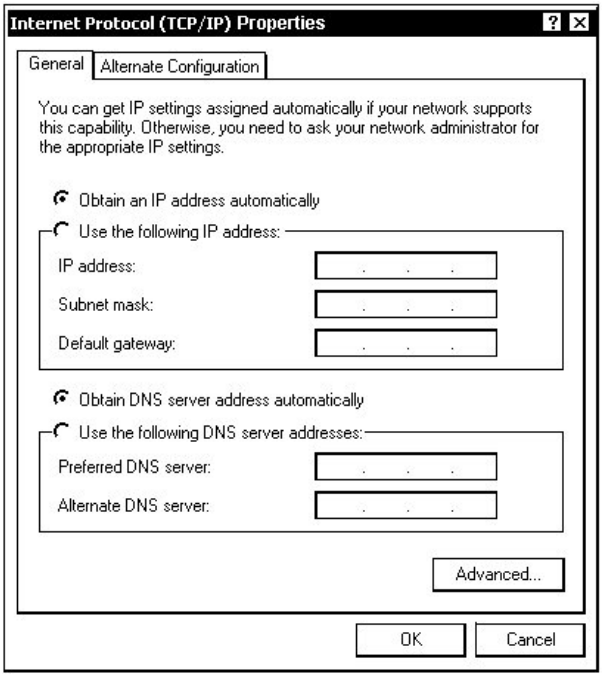
Click **TCP/IP Setup** to open the "EthernetExternal Properties" window. This window displays the connection and related required items.

"Ethernet External Properties" Window



To establish dynamic or static processing, select **Internet Protocol (TCP/IP)** and click **Properties**.

"Internet Protocol (TCP/IP) Properties" Window



Transmission Control Protocol/Internet Protocol (TCP/IP) is a set of protocols that defines how to transfer data between two computers. TCP monitors and ensures correct transfer of data. IP receives the data from TCP, breaks it up into packets, and

ships it off to a network. The IP address is a unique number consisting of four parts separated by dots, e.g., 165.113.245.2.

Dynamic Host Configuration Protocol (DHCP) is a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the IP address of the device can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.

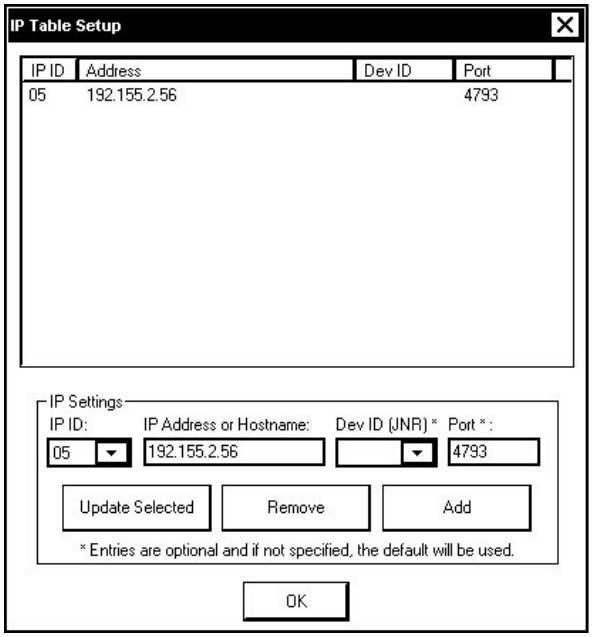
Dynamic addressing simplifies network administration because the software keeps track of IP addresses rather than requiring an administrator to manage the task. New computers can be added to a network without manually assigning each one a unique IP address.

IP Table

Edit, remove, or enter a control system's IP address in the IP table to enable communication between the UPX-2 and a control system. The UPX-2 can communicate with multiple control systems.

Refer to the latest version of the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for more information on IP tables.

"IP Table Setup" Window

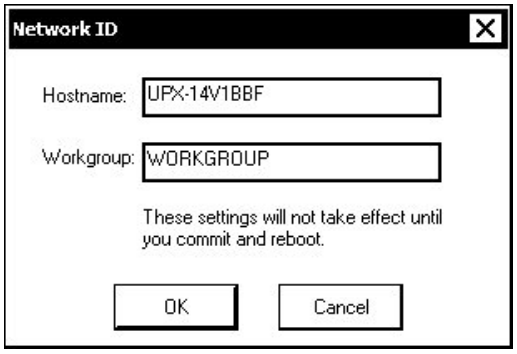


The IP ID is the ID number that is used to identify the UPX-2 in a control system's IP table. The IP ID should match the IP ID set in the control system's SIMPL Windows program. The IP Address field lists the IP address of the control system that will address the corresponding IP ID.

Identity

Press **Identity** to open the "Network ID" window. The "Network ID" window displays the hostname and workgroup that identify the UPX-2 on the network. The hostname may be used when transferring a program over Ethernet using Crestron Toolbox. This window permits editing of the hostname and workgroup.

"Network ID" Window

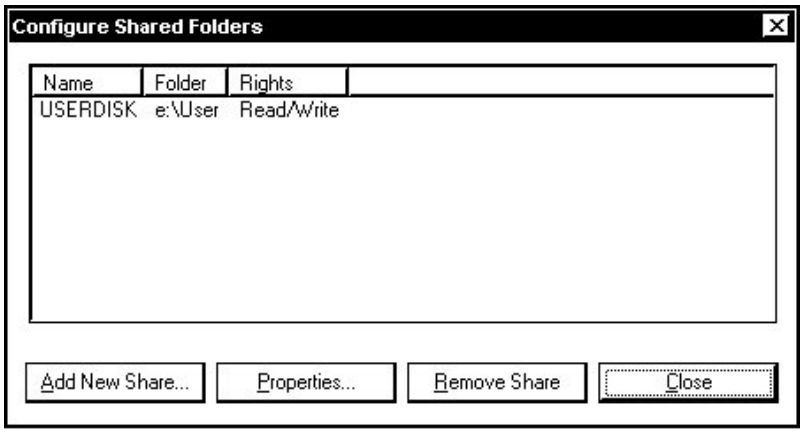


NOTE: The hostname is required if a static IP address is not used.

Sharing

Press **Sharing** to open the "Configure Shared Folders" window. This window is used to set up shared folders. Sharing enables remote computers to view and/or modify files stored on the UPX-2.

"Configure Shared Folders" Window



Click **Add New Share…** to browse and add directories with permission to read-only or read/write. Click **Close** after adding all folders to be shared.

MISC. CONTROLS Details

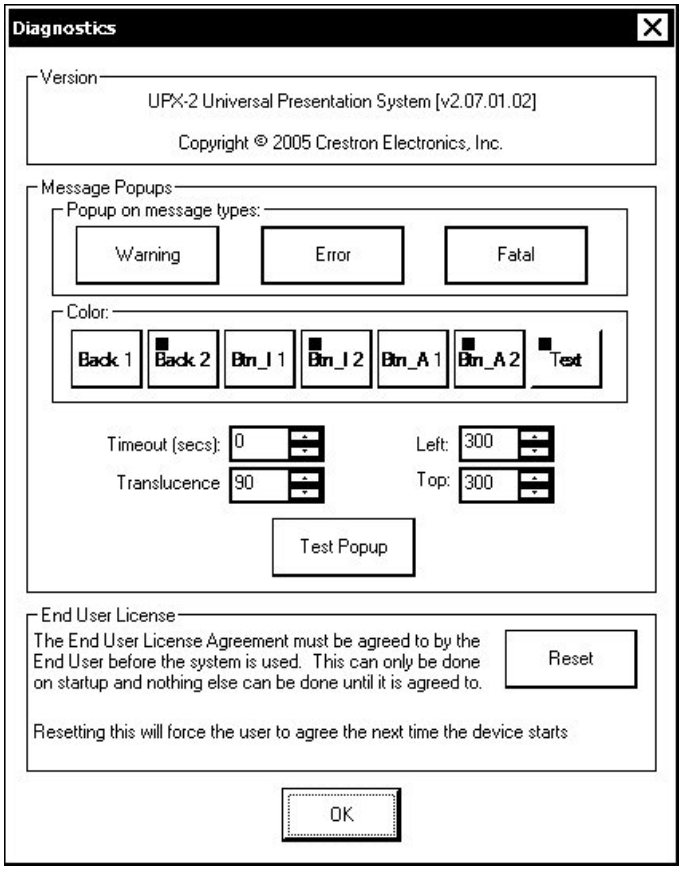
The *Misc. Controls* section of the SETUP MENU contain the **Diagnostics** and **Show Keyboard** buttons.

Press the **Diagnostics** button to display the firmware version number, control popup messages and appearances, and to reset the end user license.

There are various types of popup messages. Following are definitions of each message type:

- **Warning:** An event occurred that may affect the normal operation of the unit.
- **Error:** An operation has failed.
- **Fatal:** An event occurred which will require the unit to be reset.

The "Diagnostics" Window in Miscellaneous Controls

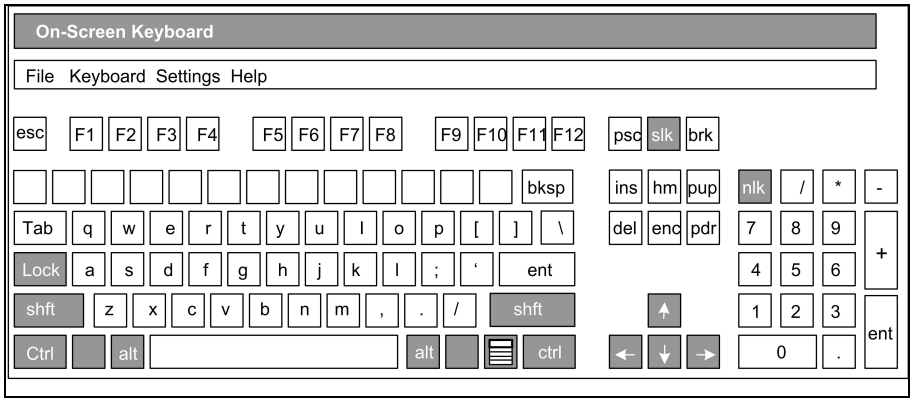


Click the **Show Keyboard** button to display the on-screen keyboard.

The on-screen keyboard can be used in an identical manner to a physically connected keyboard. The on-screen keyboard can be used in any of the embedded applications, for example, enter a web address, enter data into a spreadsheet, etc.

Exit the on-screen keyboard by selecting **File | Exit**.

On-Screen Keyboard



NOTE: If **Ctrl+Alt+Shift** is selected from the onscreen keyboard, user accounts and passwords can no longer be typed from the onscreen keyboard or an external keyboard.

NOTE: The on-screen keyboard cannot be used when the UPX-2 is in the *Annotation* mode. The on-screen keyboard cannot be used with MediaMarker Notebook.

SHUTDOWN Details

To reboot the UPX-2, press **Save & Reboot**, located in the *SHUTDOWN* section of the SETUP MENU.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

To turn off the UPX-2, press **Shut Down**, located in the *SHUTDOWN* section of the SETUP MENU.

CAUTION: Do not turn off power to the UPX-2 while it is shutting down. Damage may occur.

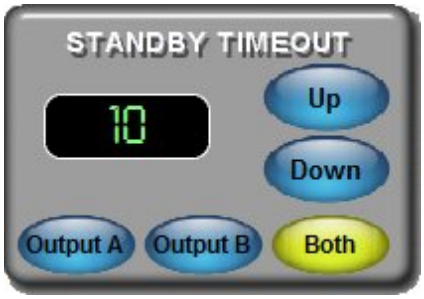
- The screen goes black.
- You may see various images on the display. This may take a few minutes.
- When a screen appears with the Windows logo that says "It is now safe to turn off your computer", you may turn off the power.

This is the recommended method for powering down the UPX-2. After the UPX-2 has been shut down, the power cord can be safely removed from the UPX-2.

STANDBY TIMEOUT Details

The *STANDBY TIMEOUT* section can turn off the display outputs when the screen has not been touched for a specified time frame (minutes). When a display is activated, the last screen to be displayed reappears. Minutes can vary from 0 to 120, where 0 disables the timeout. Press **Up** or **Down** to adjust the timeout period.

"Standby Timeout" Example



The timeout time of each output can be set individually by selecting the relevant output. The timeout time of both outputs can be set simultaneously by selecting **Both**. To increase the timeout period, press **Up**. To decrease the timeout period, press **Down**.

Installation

Ventilation

The UPX-2 should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consider using forced air ventilation and/or incrementing the spacing between units to reduce overheating. Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the environment may be greater than the room ambient temperature. Contact with thermal insulating materials should be avoided on all sides of the unit.

Rack Mounting

The UPX-2 can be mounted in a rack or stacked with other equipment. Two "ears" are provided with the UPX-2 so that the unit can be rack mounted. These ears must be installed prior to mounting. Complete the following procedure to attach the ears to the unit. The only tool required is a #2 Phillips screwdriver.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

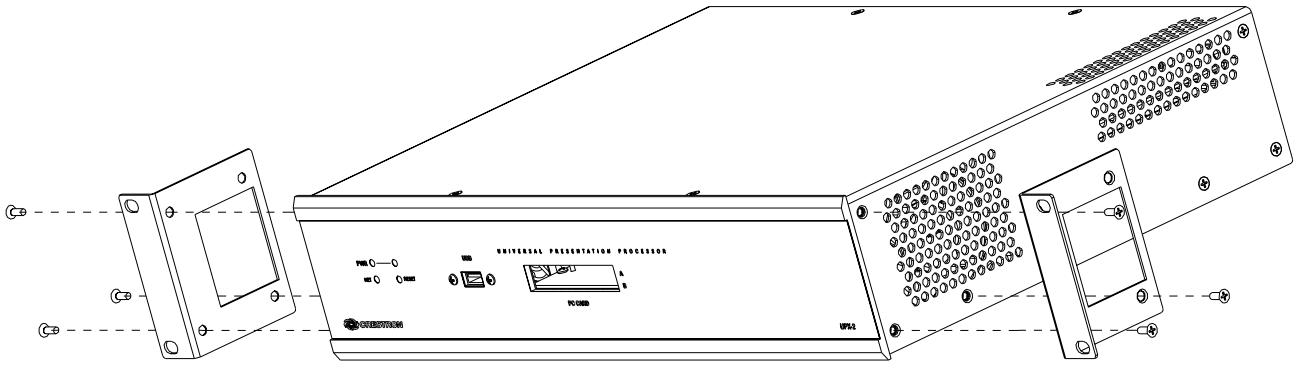
NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

NOTE: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

To install the ears:

1. There are screws that secure each side of the UPX-2 top cover. Using a #2 Phillips screwdriver, remove the three screws closest to the front panel from one side of the unit. Refer to the diagram following step 3 for a detailed view.
2. Position a rack ear so that its mounting holes align with the holes vacated by the screws in step 1.
3. Secure the ear to the unit with three screws from step 1, as shown in the following diagram.

Ear Attachment for Rack Mounting



4. Repeat procedure (steps 1 through 3) to attach the remaining ear to the opposite side.

Stacking

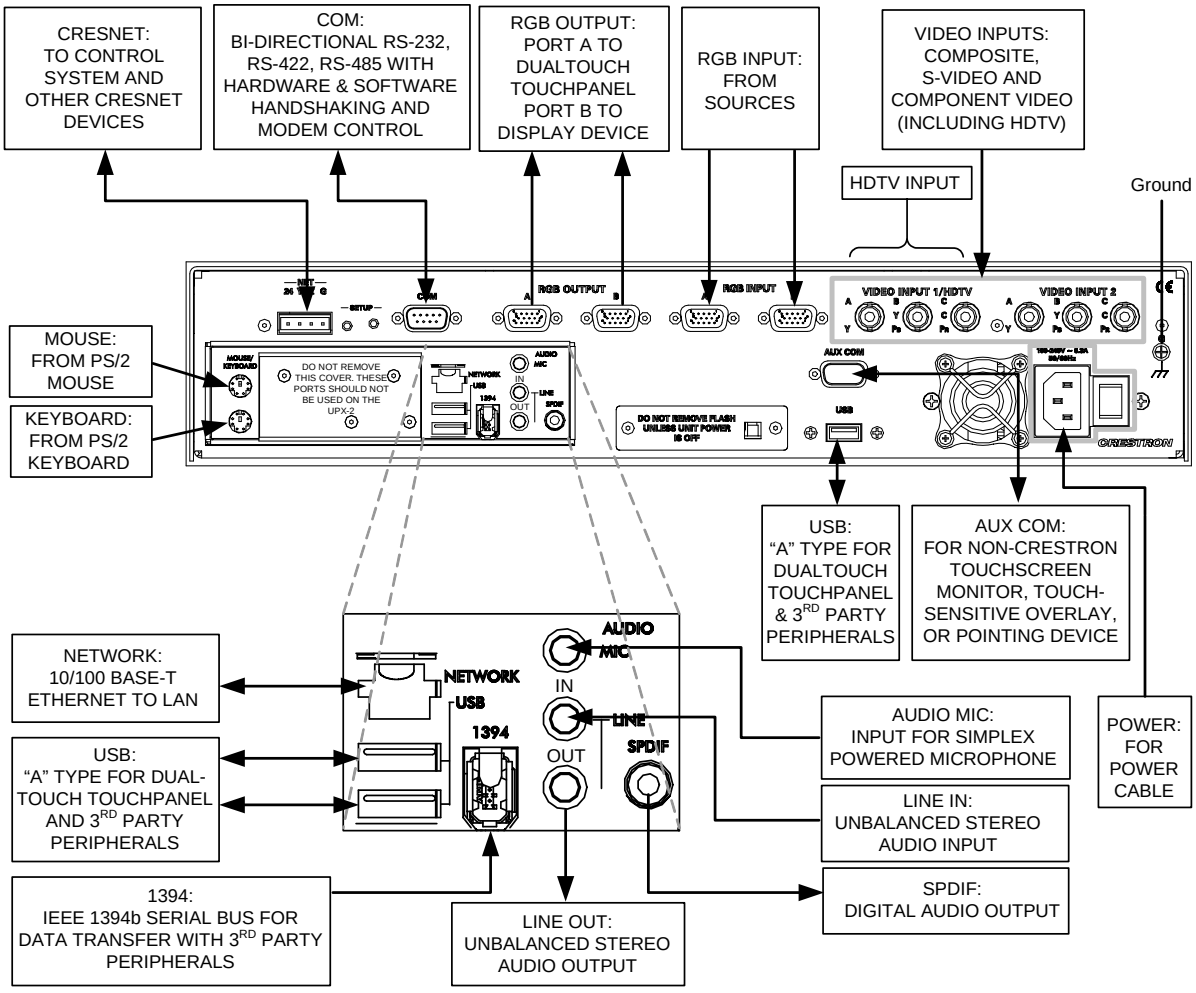
Four "feet" are provided with the UPX-2 so that if the unit is not rack mounted, the rubber feet can provide stability when the unit is placed on a flat surface or stacked. These feet should be attached prior to the hookup procedure.

Hardware Hookup

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to "Network Wiring" on page 19 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

When making connections to the UPX-2, use Crestron power supplies for Crestron equipment.

Hardware Connections for the UPX-2



NOTE: An "A" type USB port is also located on the front of the UPX-2.

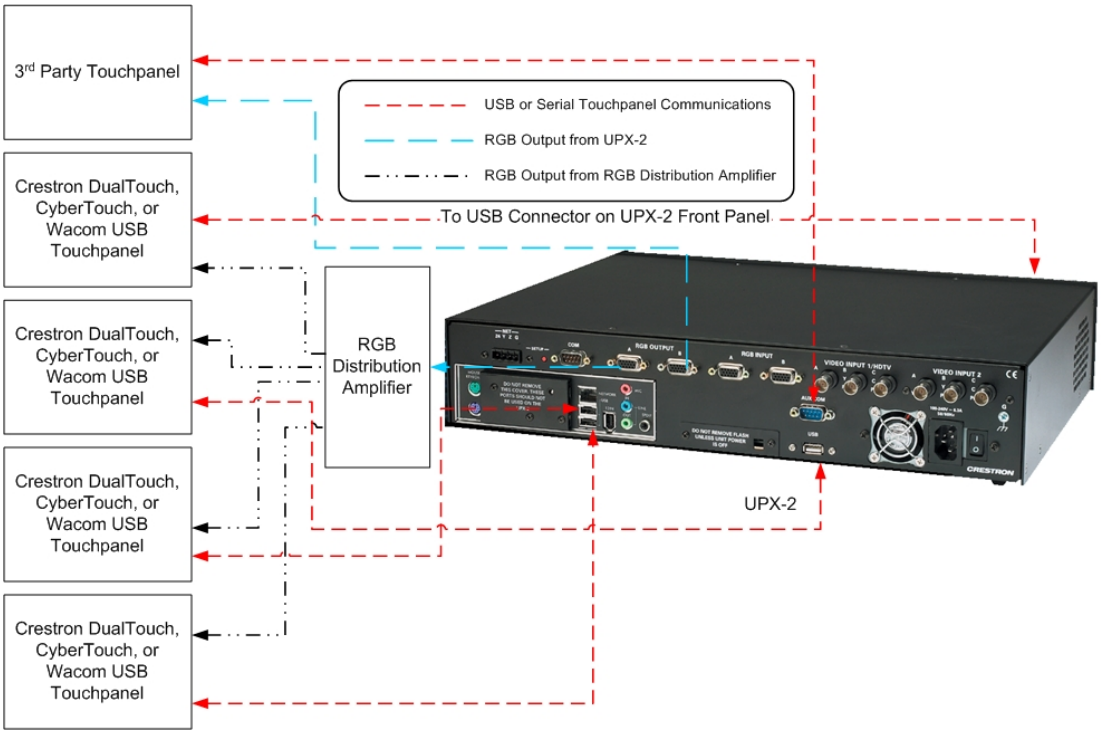
NOTE: Certain USB flash drives may not be recognized by the UPX-2 if they are left connected during a reboot or when power is cycled. To recognize a USB flash drive that is not recognized by the UPX-2, disconnect and reconnect the drive after the UPX-2 has completed rebooting.

NOTE: If using a UPX-2 containing a 512MB compact flash operating system, the USB cable should be connected to the bottom-left USB port.

Connecting Multiple Touchpanels

Up to five touchpanels (up to four Crestron, CyberTouch, or Wacom USB touchpanels and one third party serial touchpanel) can be connected to the UPX-2 at one time. The touchpanels can be connected to the UPX-2s four **USB** ports while the third party serial touchpanel is connected to the **AUX COM** port. All of the touchpanels can share an RGB output using an RGB switch as shown in the following diagram.

Connecting Multiple Touchpanels



Some USB touchpanels may draw too much power, and prevent the UPX-2 from booting up correctly. Use a powered USB hub to connect touchpanels that draw too much USB power.

Only one third party touchpanel can be connected at any time.

Extending the VGA and USB Cables

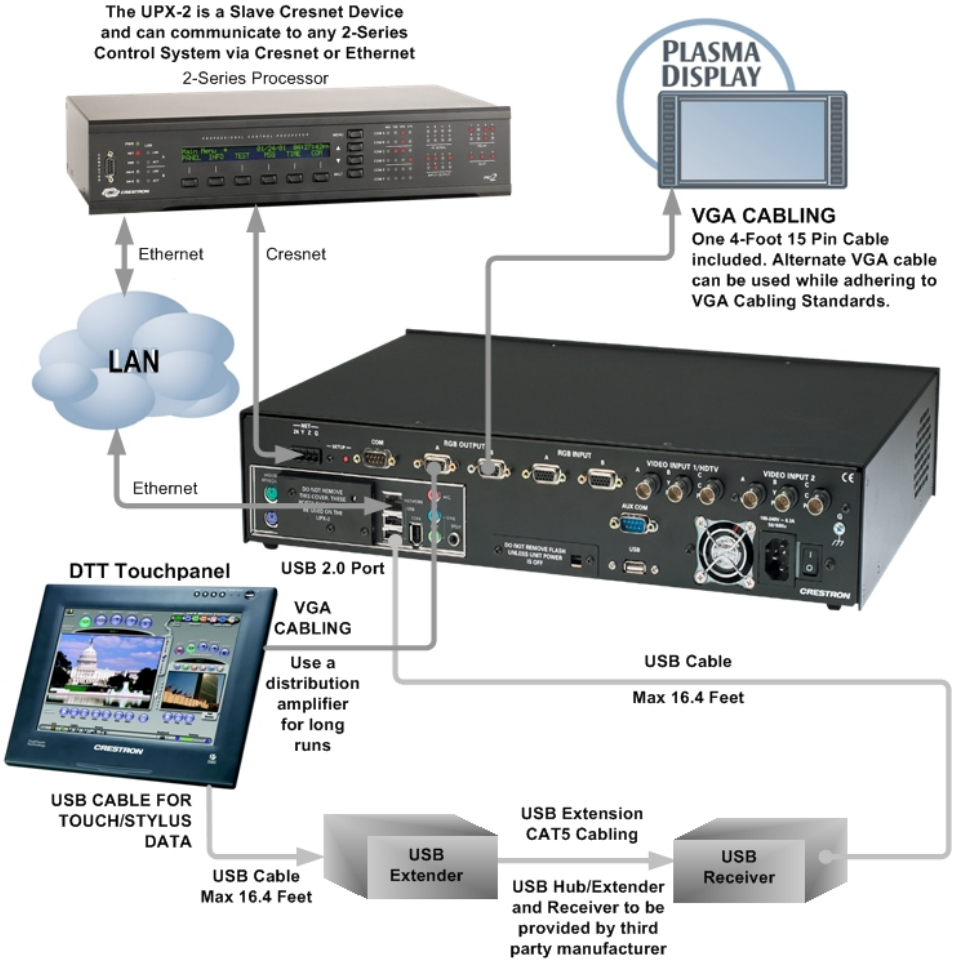
The following diagram details the method of extending the USB and RGB (VGA) cables for a DTT DualTouch Technology touchpanel when connecting to the UPX-2.

Crestron has successfully tested the following USB extenders:

- I/O Gear model GUCE50.
- Gefen model EXT-USB-200

NOTE: Do not use a hub with a USB extender.

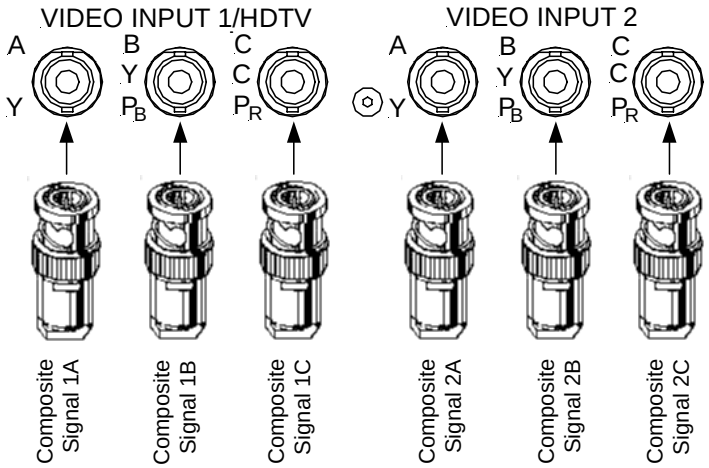
Extending RGB & USB Cables



Composite Video Connections

The UPX-2 has six composite video inputs available. All six connectors may be used as composite video inputs. Refer to the following diagram.

Composite Video Connections

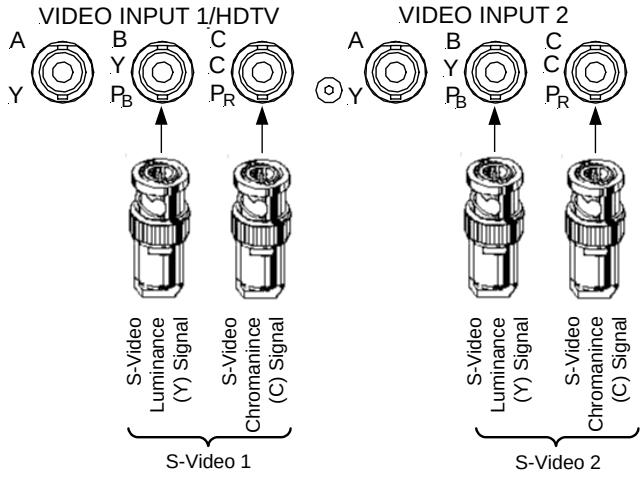


S-Video Connections

When connecting S-video cables, make sure to connect one set to one input. Connect Y to the B input and C to the C input. The A input of **VIDEO INPUT 1** and **VIDEO INPUT 2** may be used for a composite video connection. Refer to the following diagram.

NOTE: If you are using a 4-pin DIN S-video cable, you will need to use a 4-pin (female) DIN to BNC adapter (adaptor not included).

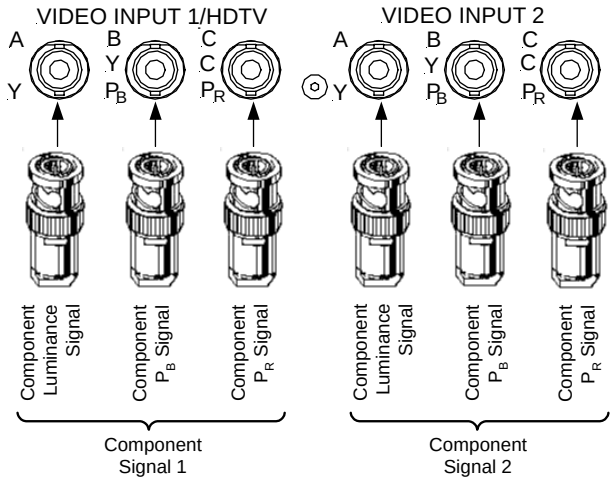
S-Video Connections



Component Video Connections

When connecting Component video, connect one set of Y, P_b, and P_r to one set of connectors. Only **VIDEO INPUT 1** supports HDTV. Refer to the following diagram.

Component Video Connections



The following chart shows the maximum possible video connections that can be made using both **VIDEO INPUT 1** and **VIDEO INPUT 2**.

NOTE: Only two video sources can be displayed at any one time.

Possible Video Input Combinations (Maximum)

Maximum Number	VIDEO INPUT 1			VIDEO INPUT 2		
	A	**B**	**C**	**A**	**B**	**C**
6 Composite	Composite 1	Composite 2	Composite 3	Composite 4	Composite 5	Composite 6
4 Composite and 1 S-Video	Composite 1	S-Video Y	S-Video C	Composite 2	Composite 3	Composite 4
2 Composite and 2 S-Video	Composite 1	S-Video 1 Y	S-Video 1 C	Composite 2	S-Video 2 Y	S-Video 2 C
4 Composite and 1 S-Video	Composite 1	Composite 2	Composite 3	Composite 4	S-Video Y	S-Video C
1 Component and 3 Composite	Component (HDTV) Y	Component (HDTV) P_b	Component (HDTV) P_r	Composite 1	Composite 2	Composite 3
1 Component, 1 S-Video & 1 Composite	Component (HDTV) Y	Component (HDTV) P_b	Component (HDTV) P_r	Composite 1	S-Video Y	S-Video C
2 Component	Component 1 (HDTV) Y	Component 1 (HDTV) P_b	Component 1 (HDTV) P_r	Component 2 Y	Component 2 P_b	Component 2 P_r
3 Composite and 1 Component	Composite 1	Composite 2	Composite 3	Component Y	Component P_b	Component P_r
1 Component, 1 S-Video & 1 Composite	Composite 1	S-Video Y	S-Video C	Component Y	Component P_b	Component P_r

Setting Up a Projector for the UPX-2

The following procedure describes how to configure the audience output for use with a projector.

1. Set the projector's aspect ratio (4:3 or 16:9); turn off the keystone feature.
2. Open the SETUP MENU as described in "Configuring the UPX-2" on page 20 and press the **Display Output** button to configure the display output.
3. Set the resolution to the projector's native resolution.
4. Select the "Grid" test pattern on the UPX-2 and adjust the vertical & horizontal position on the projector. Do not adjust the size if the UPX-2 is set to the projector's native resolution.
5. Select the "Vertical Lines" test pattern on the UPX-2 and adjust the projector as required.
    a. If vertical bars are displayed, adjust the Coarse adjustment (also known as "Clock Adjustment", "Pixel/Dot clock", and "Pitch Adjustment") to eliminate the vertical bars.
    b. If the image has horizontal noise, adjust the Fine adjustment (also known as "Phase Adjustment") to eliminate the problem.
    c. Select the Grid test pattern and recheck the position.
6. Close the Display Output window by pressing **Close.**
7. Adjust the projector for RGB sources connected to the UPX-2.
    a. Install Crestron Toolbox on the RGB source.
    b. Open Crestron Toolbox and select the Video Test Pattern tool by clicking the  button.
    c. Select the Grid test pattern from the drop-down menu and click the **Full Screen** button.
    d. From the UPX-2 SETUP MENU, open the "RGB/Video Setup" window and select the RGB source.
    e. Adjust the position of the RGB source. If the source is not native resolution to the UPX-2 output, adjust the size as necessary. If the source is native resolution to the UPX output, do not adjust size; this will reduce the image quality of the source.
    f. On the RGB source, click the Grid test pattern, select the Vertical Bars test pattern from the drop-down menu, and click the **Full Screen** button.
    g. On the UPX-2, adjust the **Coarse** or **Fine** settings. If noisy, adjust the **Fine** setting. If there are vertical bars, adjust the **Coarse** setting.
    h. On the RGB source, click the Vertical Bars test pattern, select the Color Bars test pattern from the drop-down menu, and click the **Full Screen** button.
    i. On the UPX-2, adjust the **Color** settings.
8. Repeat for every RGB source that is connected to the UPX-2.

Programming

For programming tips and reference information, refer to the latest revision of the UPX-2 Reference Guide (Doc. 6286).

Uploading and Upgrading

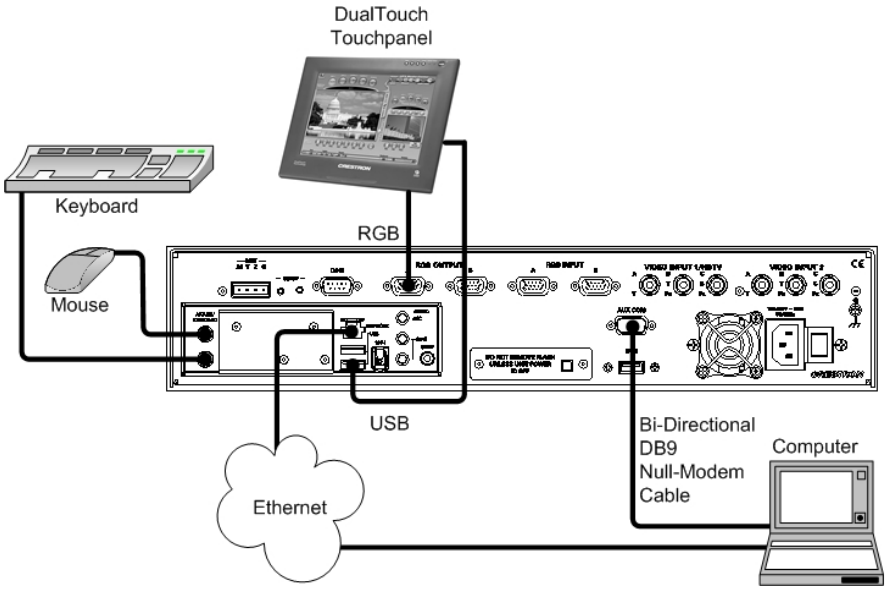
Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs, projects or firmware) can be transferred to the control system (and/or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

Establishing Communication

Use Crestron Toolbox for communicating with the UPX-2; refer to the Crestron Toolbox help file for details. There are three methods of communication.

To prepare the UPX-2 for communication, refer to the following figure for a typical connection diagram.

Communications Connections

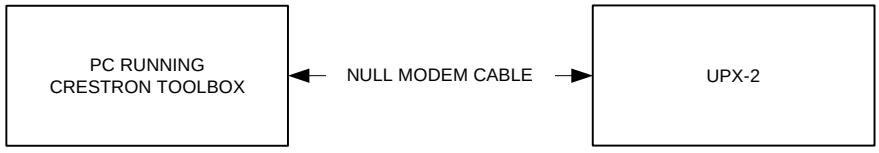


Direct Serial

NOTE: You must connect a PS/2 keyboard and mouse to the UPX-2 to establish communication for the first time. After the initial setup, the mouse and keyboard will not be required except for troubleshooting.

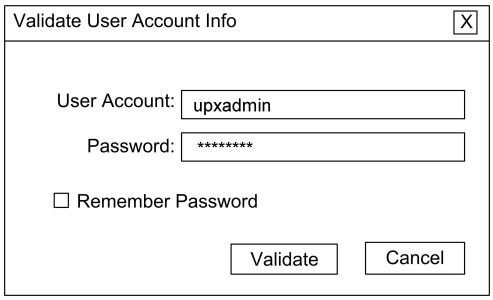
NOTE: Required for initial setup of Ethernet parameters.

Direct Serial Communication



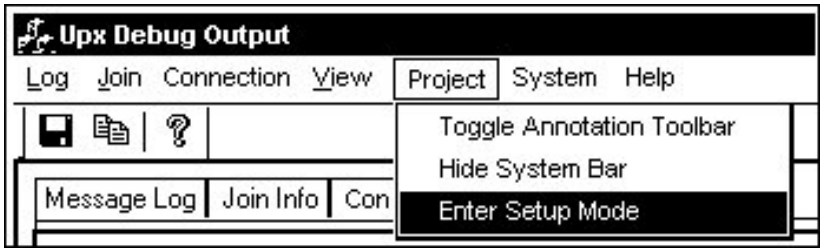
- The **AUX COM** port on the UPX-2 connects to the serial port on the PC via a serial cable.
- Power up the system. Ensure that hookup, output resolution, touchpanel calibration and the other setup procedures have been performed as outlined in the Quick Start section at the beginning of this guide.
- If a project has not been loaded, or if an invalid project has been loaded, the UPX-2 defaults to the SETUP MENU screen. To access the SETUP MENU after a valid program has been loaded, simultaneously press a combination of three function keys: **Ctrl+Alt+Shift**.
- The "Validate User Account Info" window appears. The default User Account is 'upxadmin'. Enter the default Password 'upxadmin' and click **Validate**.

"Validate User Account Info" Window

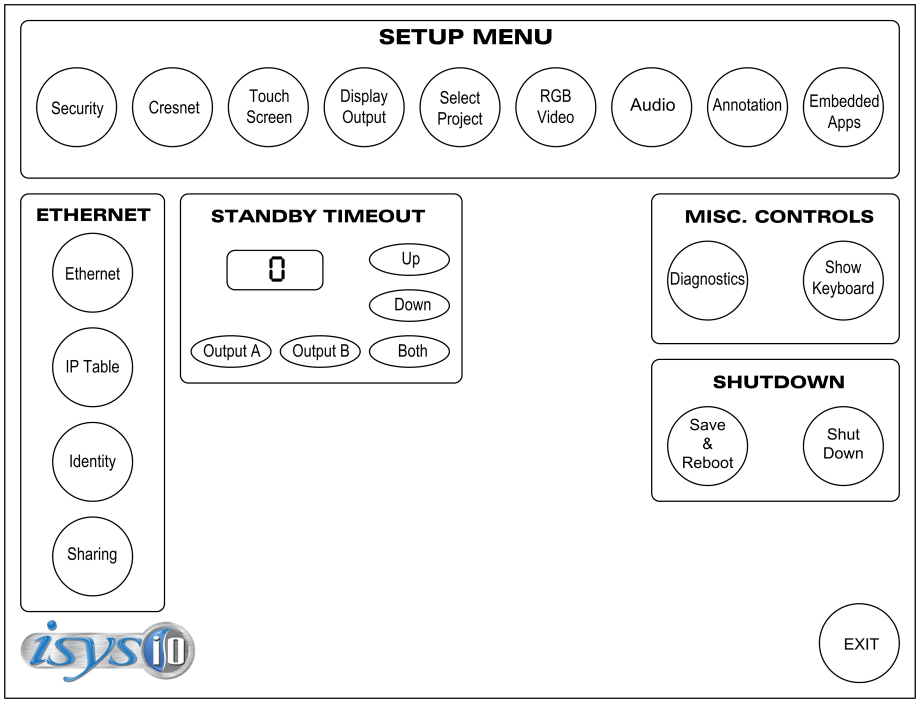


- The "Upx Debug Output" window appears and permits access to the SETUP MENU by clicking **Project | Enter Setup Mode**.

"Upx Debug Output" Window



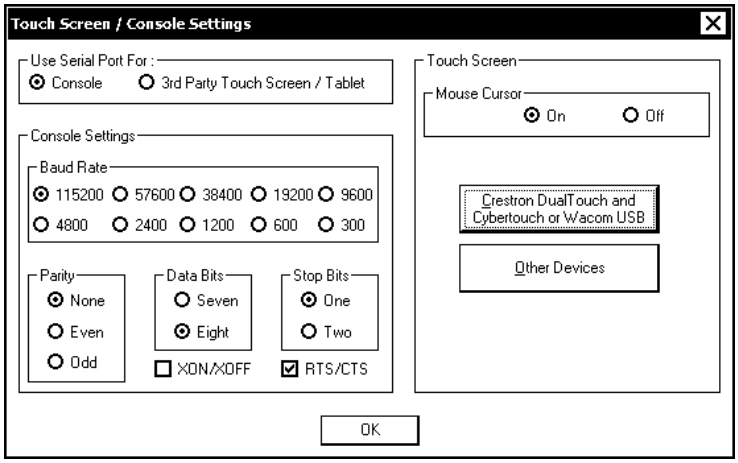
SETUP MENU Screen



NOTE: If the SETUP MENU is not displayed in the center of the screen, refer to the note on page 22 for instructions on adjusting the display.

- The **Touch Screen** button permits you to select how to use the **AUX COM** serial port via the "Touch Screen/Console Settings" window. You must select **Console** to establish communications and upload programming via the serial connection. In the *Console Settings* box, select the Baud Rate (115200), select Parity (None), select Data Bits (Eight), select Stop Bits (One), and enable RTS/CTS.

"Touch Screen / Console Settings" Window

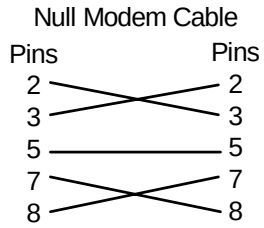


- Click **OK**, and then click **Save & Reboot** on the SETUP MENU.

CAUTION: At power up or reboot, the touchpanel will cycle through colors and the Crestron logo screen for approximately 2.5 minutes prior to displaying the progress bar. This is a normal part of the boot up process. **Do not** turn off power to the UPX-2 while it is rebooting. Damage may occur.

NOTE: If you are going to use the serial port (**AUX COM**) for a touchpanel, you must return to this window, choose **3rd Party Touch Screen / Tablet**, and **Save & Reboot**.

- Connect the **AUX COM** port on the UPX-2 to one of the COM ports (usually COM 1) on the PC. Use a null modem RS-232 cable with a DB9 female connector on both ends. Most commercially available null-modem cables are acceptable; they should have at least five pins for transmit, receive, ground, and hardware handshaking (pins 2, 3, 5, 7, and 8).



- Use the Address Book in Crestron Toolbox to create an entry using the expected serial communication protocol (RS-232, auto-detect baud rate, no parity, 8 data bits, 1 stop bit, XON/XOFF disabled, RTS/CTS enabled).
- Display the UPX-2's "System Info" window (click the icon); communications are confirmed when the device information is displayed.

Indirect

Indirect Communication

- UPX-2 connects to control system via Cresnet.
- Establish communication between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256).
- Use the Address Book in Crestron Toolbox to create an entry for the UPX-2 using the expected communication protocol (Indirect). Select the Cresnet ID of the UPX-2 and the address book entry of the control system that is connected to the UPX-2.
- Display the UPX-2's "System Info" window (click the icon); communications are confirmed when the device information is displayed.

TCP/IP

Ethernet Communication

- Establish serial or indirect communication between the UPX-2 and PC.
- Enter the IP address, IP mask and default router of the UPX-2 via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.
- Confirm Ethernet connections between UPX-2 and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router.
- Use the Address Book in Crestron Toolbox to create an entry for the UPX-2 with the UPX-2's TCP/IP communication parameters.
- Display the "System Info" window (click the icon) and select the UPX-2 entry.

If the UPX-2 is to communicate with a control system over TCP/IP, an IP table must be created on the UPX-2 to identify the control system(s) it will communicate with over TCP/IP. Use the following instructions to create the IP table.

- Use Crestron Toolbox to create the UPX-2's IP table.
  - ⇒ Select **Functions | IP Table Setup**.
  - ⇒ Either add, modify, or delete entries in the IP table. The UPX-2 can have up to 252 IP table entries.
  - ⇒ A defined IP table can be saved to a file or sent to the device.

NOTE: When an IP table is sent to the UPX-2, the UPX-2 will reboot and the previously loaded IP table will be overwritten.

The control system's IP table must have an entry for the UPX-2. The entry should list the UPX-2's IP ID and the internal gateway IP address 127.0.0.1. For more information, refer to the latest version of the Crestron e-Control Reference Guide (Doc. 6052).

Programs, Projects and Firmware

Program, project or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs and projects via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the SIMPL Windows help file, VisionTools Pro-e help file or the Crestron Toolbox help file.

SIMPL Windows

If a SIMPL Windows program is provided, it can be uploaded to the control system using SIMPL Windows or Crestron Toolbox.

VisionTools Pro-e

Upload the VisionTools Pro-e file to the UPX-2 using VisionTools Pro-e or Crestron Toolbox. While the UPX-2 can use project files that are located on a removable drive or a network drive, projects loaded with Crestron Toolbox become the default UPX-2 project. Other UPX-2 projects can be selected from the *Select Project* section of the SETUP MENU as described on page 30.

NOTE: The maximum usable project size is 190MB.

Firmware

Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

NOTE: UPX-2s requiring a compact flash upgrade cannot be upgraded with the procedures described in this section. For instructions or upgrading a compact flash operating system, refer to the latest version of the UPX-2 1GB Memory & Operating System Upgrade Installation Guide (Doc. 6443) or the UPX-2-4GB-MSO-2007 Memory & Operating System Upgrade Installation Guide (Doc. 6676).

NOTE: This procedure can only be used for firmware upgrades that are downloaded from the Crestron website.

Upgrade UPX-2 firmware via Crestron Toolbox.

- Establish communication with the UPX-2 and display the "System Info" window.
- Select **Functions | Firmware…** to upgrade the UPX-2 firmware.

CAUTION: While performing a firmware update, **do not** power off the device unless it is unresponsive for an excessively long period of time (i.e. greater than 15-20 minutes).

NOTE: UPX-2 firmware can only be downgraded to similar version numbers (i.e., the first three digits must match). For example, 2.08.009 can be downgraded to 2.08.006. However, 2.10 cannot be downgraded to 2.09.

NOTE: Touchpanel calibration may be required after a firmware upgrade.

Program Checks

Actions that can be performed on the UPX-2 vary depending on whether it is connected via Cresnet or Ethernet.

Cresnet Connections

For Cresnet connections, using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system. Right-click on the UPX-2 to display actions that can be performed on the UPX-2.

Ethernet Connections

For Ethernet connections, display the "System Info" window (click the  icon) and select the **Functions** menu to display actions that can be performed on the UPX-2.

Operation

Embedded Applications

NOTE: Microsoft Word 2007, Microsoft Excel 2007, and Microsoft PowerPoint 2007 are robust applications that require significant memory to operate smoothly. Try to avoid launching all these application simultaneously to avoid performance degradation.

NOTE: The UPX-2-1GB and UPX-2-MSO-2007 are presentation devices and are not intended for content creation.

The following application functions, while visible, have no function in the UPX-2-MSO-2007:

APPLICATION	TOOLBAR	MENU
Excel	EMail, Print, Insert Hyperlink	WebPage Preview, Page setup, Print Area, Print, Quick Print, Print Preview, Internet Fax
PowerPoint	EMail, Print, Insert Hyperlink	WebPage Preview, Page setup, Print Area, Print, Quick Print, Print Preview, Send to
Word	EMail, Print, Insert Hyperlink	Page setup, Print Area, Print, Quick Print, Print Preview, Send to, Internet Fax

MediaMarker

The Crestron MediaMarker Notebook software is used to create, organize and save presentations. Crestron Notebook software works with the UPX-2 Universal Presentation Processor and DTT DualTouch Technology touchpanels. A presenter can devise an entire lecture or demonstration and save it to the notebook. At the presenter's discretion, the audience may view the presentation complete with annotation in real-time.

You can use the Crestron MediaMarker Notebook software with the UPX-2 and DTT products or on your own personal computer.

In addition to containing the tools required for object creation, Crestron Notebook software can import graphics and text from many other applications. Importable objects include: HTML, JPG, BMP, PNG, and TIF.

MediaMarker notebook projects can be saved and retrieved to disk or to notebook (Export and Import functions in the **File** menu).

File | Export Project – Archives the project into one file.

File | Import Project – Opens and extracts all files from a previously exported project into an active folder.

NOTE: When saving a project, the background images are stored as external graphic files. The graphic file type (HTML, JPG, BMP, PNG, and TIF) can be set within **Edit | Preferences | Application Settings**.

Additional information is available in the MediaMarker help file and the latest version of the UPX-2 Reference Guide (Doc. 6286).

Security Infrastructure

Since the UPX-2 does not use a traditional hard drive, but rather an image that gets restored every time the UPX-2 is rebooted, any virus infection is cleared immediately after a reboot. However, using the currently available tools and techniques, Crestron has provided an infrastructure that protects against possible virus infections.

1. Executables/Scripts brought in on external media
   The implementation of the UPX-2 series has restrictions on starting any application or script. The only applications that can be started are those allowed by Crestron, and these can only be started from the Crestron project.
2. Downloaded Program/Script
   Depending on the settings established in the “Embedded Apps” section of the SETUP MENU, the UPX-2 can have download permissions enabled or disabled. The only files the browser can open regardless of the security settings are the files it has plug-ins for, such as PDF, etc.
3. Browser Hijack and Browser vulnerability
   Crestron has patched all currently known hijacks and vulnerabilities. Future updates can be downloaded from the Crestron website.
4. E-mail Viruses
   There is no e-mail client installed on the UPX-2. Email-based viruses cannot be executed.
5. Viruses that attack web/FTP servers
   The UPX-2 does not run a web or FTP server. Therefore, it is not listening to port 21 or 80. The only ports the system listens to are the ports registered to Crestron.
6. Virus from other machines on the network
   Since drives on the UPX-2 can be shared on the network, it is possible that a virus can write itself to files/folders on these shares. Our recommendation therefore is to share as "Read-Only," so that viruses cannot attach themselves to files on the UPX-2.
7. ActiveX and Java
   Depending on the settings established in the *Embedded Apps* section of the SETUP MENU, the UPX-2 can have ActiveX and Java permissions enabled or disabled. For more information, refer to “Embedded Apps” on page 37.

NOTE: While browsing the Internet with the UPX-2, clicking on a link may cause a message box titled "Restrictions" to appear that contains the text "This operation has been cancelled due to restrictions in effect on this computer. Please contact your system administrator." If this message appears, checking *Enable Pop-ups* in the “Embedded Apps” window may correct this error. Other restrictions may also cause this error, so this may not prevent all occurrences.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

UPX-2 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
UPX-2 does not function.	UPX-2 is not receiving power.	Verify power to unit.
	Incorrect firmware/software.	Update firmware/software versions as per those listed in the "Specifications" section.
	Incorrect cable connections.	Follow connection procedures in this guide and inspect connector pins.
		Verify RGB output cable connection to unit and video display, and correct **USB** port.
No video output displayed.	Wrong VT Pro-e or SIMPL Windows programs.	Verify correct programs.
	VT Pro-e project not set up correctly.	Verify proper video set up for each video window displayed.
	DTT touchpanel incorrectly setup.	Check DVI/VGA switch (should be in VGA position).
UPX-2 does not boot properly.	Incorrect cable connections.	Verify horizontal/vertical BNC cable connections. Verify 15-pin cable connection.
Wrong source or video displayed.	VT Pro-e project not set up correctly.	Verify correct video effect selected for video window.
	Wrong effect selected in "Video Properties".	Select correct effect in VT-Pro-e "Video Properties".
Video from RGB source is garbled or no output.	Analog join value has been set.	Change analog join corresponding to desired source.
UPX-2 does not respond to ping command.	IP address not correct (**LAN** green and amber LEDs are off).	Assign correct IP address to UPX-2.
	IP mask not correct (**LAN** green and amber LEDs are on).	Assign correct IP mask.
	PC and UPX-2 not on same subnet.	Ensure that the PC and the UPX-2 are on the same subnet.
Mouse or touchpanel does not work.	Incorrect Touch settings.	Check Touch settings.
DTT touchpanel does not respond to pen input.	Power is cycled too quickly.	Turn off DTT touchpanel for two seconds and restart.

(Continued on following page)

UPX-2 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
"Communication Error with Control System" is displayed when demo project loaded.	UPX-2 is unable to communicate with control system.	Check CUZ file version. Check UPX-2 Cresnet ID. Check for or load demo program in control system.
"Invalid Path" displayed in MediaMarker Session Information window.	Path not specified or no Flash memory installed.	Specify network path or install Flash memory in PC Card slot A or B.
A "Restrictions" message appears.	*Enable Pop-ups* not checked.	Open **SETUP MENU | Embedded Apps** and click checkbox.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

$$L < \frac{40{,}000}{R \times P}$$

Where: L = Length of run (or chain) in feet
R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM^2))
or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM^2))
P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet. If Cresnet HP is used for the same run, its length could extend to 1250 feet.

NOTE: All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

Strip and Tin Wire

When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires or the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

Add Hubs

For larger networks (i.e., greater than 28 network devices), it may become necessary to add a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality throughout the network. Also, for networks with lengthy cable runs it may be necessary to add a Hub/Repeater after only 20 devices.

Restore Default Settings

To restore the default settings of the UPX-2:

1. Connect to the UPX-2 as described in "Establishing Communication" on page 58.
2. Open a console window in Crestron Toolbox and type the command **RESTORE**. This command will affect the following parameters:
    - IP Table: All IP table entries are deleted.
    - Video/RGB settings: Settings are reset to "0".
    - Net ID: Reset Net ID to 03.
    - Display Output will be set to 1024 x 768.
    - Project Working Path: The Project Working Path will be set to *user\display*.
    - Internet Security settings: High for Internet sites, Medium for Intranet, Low for Trusted sites. Trusted sites list is restored to crestron.com and 192.168.*.*.
    - Standby Timeout: Standby Timeout will be reset to 10 minutes.
    - Console settings: Restored to factory defaults (115200 Baud, no parity, 8 data bits, 1 stop bit).
    - Mouse cursor show/hide status: Restored to factory default setting: "Hidden".
    - Ethernet Settings: TCP/IP properties will change to DHCP.
    - Mapped Drives: All mapped drives will be cleared.
    - Admin Username and Password: Admin Username and Password will be set to upxadmin.
    - Hostname and Workgroup name: The hostname and workgroup name of the touchpanel will reset to their factory defaults.

CAUTION: Do not turn off power to the UPX-2 while it is restoring the default settings. Damage may occur.

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (www.crestron.com/manuals). This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
Crestron e-Control Reference Guide
DTT DualTouch Touchpanels
UPX-2 1GB Memory & Operating System Upgrade
UPX-2-4GB-MSO-2007 Memory & Operating System Upgrade
UPX-2 Reference Guide

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the UPX-2, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

Appendix: Video Definitions

The following definitions may be helpful when setting up the UPX-2.

RGB and Video

RGB

The eye is capable of seeing only three colors, red (R), green (G), and blue (B). The brain extracts full spectrum information from varying intensities and combinations of these three colors. For example, when you see red and blue together, the brain interprets a third color. The proportion of red to blue determines if this color is shifted towards the red (violet) or the blue (purple).

Because of this physiological limit of vision, a video system need only reproduce red, green, and blue information.

Input synchronization for the UPX-2 can be horizontal and vertical (H&V), composite sync, or sync on G. Output sync of the UPX-2 is always H&V.

Composite (480i) and S-Video

Compression of all of the video information (luminance and chrominance) into one signal was devised in the early days of color television to permit transmission over the airwaves. This standard was defined by the National Television Standards Committee (NTSC) and is known as composite video. However, these compressed composite signals, which require RGB separation to drive a video display, cannot be fully restored to their original quality.

An S-video cable carries two separate signals, one for luminance (Y) and one for chrominance or color (C). The Y signal is the same as in the native component video format. And the C is simply a combination of the B-Y and R-Y color difference signals. (S-video is also referred to as Y/C.) By keeping luminance and chrominance information separate, most of the signal loss inherent in the conversion of composite to RGB video is avoided.

Y, P_b, P_r Component Video

The original RGB signal is divided into three component parts:

- The luminance signal contains the black & white (brightness) information in the original RGB signal. It is referred to as the "Y" component.
- The color difference signal B-Y contains the blue information, minus the luminance information. This signal is also called C_b (the digital color space signal designation), and P_b (the analog color space designation in component video).
- The color difference signal R-Y contains the red information minus the luminance information. This signal is also called C_r (the digital color space

signal designation), and P_r (the analog color space designation in component video).

The color difference channels (B-Y and R-Y) are algebraically recombined with the luminance channel to produce a full color picture, recreating the green information through this mathematical process. The original green data can consume more than half the bandwidth of a video signal.

NOTE: Color space is a method used to specify, create and visualize color. Color is defined by three attributes: brightness, hue and intensity. These three dimensions of color exist in a mathematical three-dimensional space, making it possible to specify precise colors.

Video Standards

HDTV (High Definition Television)

High-definition television is a high-resolution digital television broadcast and playback system composed of roughly a million or more pixels (picture elements), 16:9 aspect-ratio screens, and AC3 (Dolby Digital six-channel digital audio standard). A subset of digital television, HDTV formats include 1080i and 720p resolution.

1080i

A designated format of high-definition television in the Advanced Television Systems Committee Digital TV standard, with 1,080 vertical pixels by 1,920 horizontal pixels. The i stands for interlaced, painting odd-numbered scan lines in succession, then going back and filling in the remaining even-numbered lines. A complete picture is created 30 times per second. 1080i is a high-resolution digital television broadcast and playback system composed of roughly a million or more pixels (picture elements), 16:9 aspect-ratio screens, and AC3 (the Dolby Digital six-channel digital audio standard). The signal is supplied in Component format; Y (luminance) and separate chrominance signals P_b, and P_r. 1080i is designated by the Society of Motion Picture and Television Engineers (SMPTE) as 274m, 59.94 Hz (60 Hz) vertical and 33.716 kHz horizontal (33.75 kHz), 0.600 volts peak-to-peak.

720p

A format designated as high-definition television in the Advanced Television Systems Committee Digital TV standard. This technology comprises 720 vertical pixels and 1,280 horizontal pixels. The p stands for progressive, also called sequential scanning, by which all odd and even scanning lines are "painted" by an electron beam every 1/60 of a second.). To use a 720p resolution with the UPX-2 it must be first converted to RGB. Crestron recommends a converter made by Key Digital Systems, model number KD-CTCAL (www.keydigital.com) for this application.

720p is designated by the Society of Motion Picture and Television Engineers (SMPTE) as 296m, 59.94 Hz (60 Hz) vertical and 33.716 kHz horizontal (33.75 kHz), 0.600 volts peak-to-peak.

SDTV (Standard Definition Television)

Digital television format that includes 480-line resolution in both interlaced (480i) and progressively scanned (480p) formats, and offers discernible improvement over

conventional analog NTSC picture resolution, with less noise. SDTV is similar to DVD or satellite TV quality but not considered high-definition television (HDTV). SDTV can provide both widescreen (16:9) and traditional (4:3) aspect ratio formats. Most devices only output 4:3 and support the other aspect ration in a letterbox format. Refer to "Aspect Ratios" on page 74 for more information.

480i (Composite Video)

A form of standard-definition digital television (4:3 aspect ratio, 720 x 480 resolution) that approximates the quality of analog television but is not considered high-definition television (HDTV). The *i* stands for *interlaced* scanning. Even though the native resolution of DVDs is 480p, they are viewed at 480i on an NTSC or PAL analog television.

480p

A form of standard-definition digital television comparable to VGA computer displays but not considered high-definition television (HDTV), though 480p is discernibly cleaner and slightly sharper than analog television. 480p has a resolution of 720 x 480 and is a 4:3 aspect ratio. The signal is supplied in Component format; Y (luminance) and separate chrominance signals P_b, and P_r. The native resolution of DVD is 480i, but that resolution can be seen only if a DVD player outputs a progressive scan signal that is converted by an internal line-doubler and the DTV has progressive-scan or component-video outputs; it is also known as EDTV (Enhanced Definition Television). It is recommend that you use the 480i signal from the DVD (or other device) that has 480p and allow the UPX-2 to line-double the signal. The UPX-2 has a better line-doubler than most others.

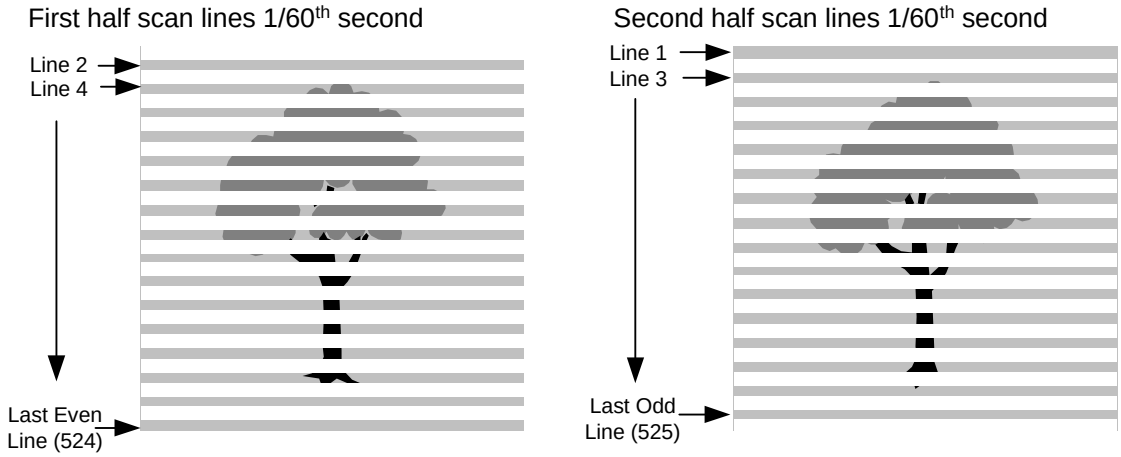
Progressive and Interlaced Video

Interlaced scanning is the standard for analog televisions. An interlaced scan draws the lines of each picture frame in two separate passes. Half of the 525 scan lines are drawn in the first pass (the even lines), and the other half (the odd lines) are drawn in the second pass. A complete picture of odd and even fields is painted on the screen 30 times a second.

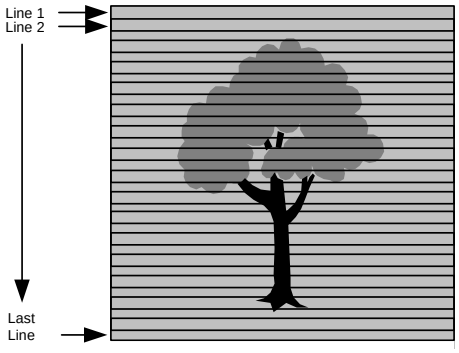
This technique was developed to compensate for the limited transmission technologies available when television was new, and was satisfactory in its day. However, improvements in display technology revealed some serious shortcomings of interlaced signals. Image flicker is more noticeable on larger screens, and on the edges of sharp objects. Vertically adjacent horizontal lines are not from the same field (a 60th of a second apart) so motion displacement becomes noticeable, especially on high-resolution displays.

Progressive scanning draws all 525 lines of a picture frame in a single top to bottom scan in $1/60^{th}$ of a second.

Interlaced Scan

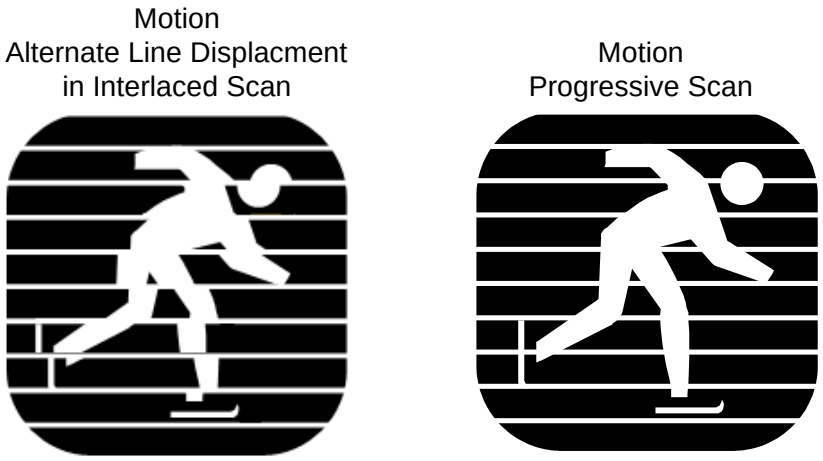


Progressive Scan – All Lines Displayed in 1/60th of a Second



De-interlacing is the process by which interlaced video is converted to progressively scanned video.

Interlaced and Progressive (de-interlaced) Scans of Objects in Motion



Some de-interlacers simply rearrange fields by creating an even-line output frame and an odd-line output frame every 60th of a second. Any motion occurring in the time between the odd and even fields results in undesirable motion artifacts.

In another de-interlacer scheme, each of the odd and even fields is scaled up to the entire frame size. The de-interlacer interpolates between the existing lines, reducing motion artifacts but significantly reducing vertical resolution.

Motion adaptive de-interlacing applies an algorithm that compares subsequent frames, reducing the vertical resolution of only the portion of the image that has moved.

Line doublers are designed to take advantage of the 3:2 pulldown technique used to transfer film to video. Film is recorded at 24 frames per second. To match speeds with video scanning (60 frames per second), the first film frame is captured onto three video fields (even, odd, and even) then the second film frame is captured onto two video fields (odd and even). This creates ten interlaced video fields for every four film frames.

An advanced line doubler de-interlacer examines a series of frames, detects the sequence and determines the pre-video film source. It then reassembles the original progressive frames from the partial interlaced frames without resolution loss and motion artifacts.

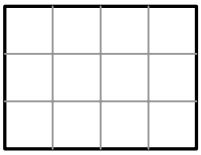
Aspect Ratios

Aspect ratio is a number that expresses the proportion of width to height. For example, a movie screen has an aspect ratio of 1.85:1. Converting the height and width dimensions to a fraction, and then reducing the fraction to a decimal, determines the aspect ratio number.

Width divided by height: 20/10.8 = 1.85/1.

Knowing the image height and the aspect ratio, you can calculate the image width.

Figure 1. 4:3 Aspect Ratio

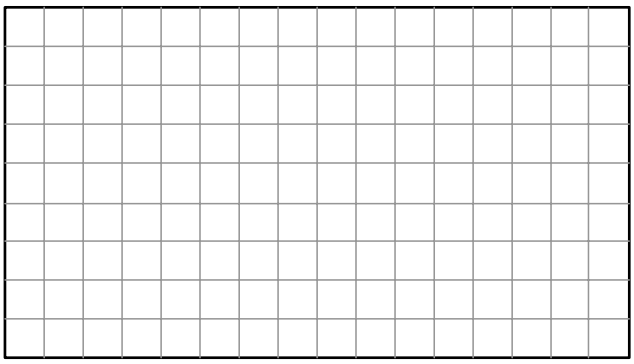


Some other common aspect ratios include 1.33:1 and 1.78:1. These are sometimes referred to in whole number ratios as 4:3 and 16:9 respectively. The term 4:3 means that the display is 4 units wide for every 3 units high (or 1.33 units wide for every one unit high). 4:3 is the aspect ratio of standard television (NTSC); 16:9 is the aspect ratio of HDTV.

Standard Aspect Ratios

FORMAT	ASPECT RATIO
16 mm Film	1.33
35 mm Film (before 1953)	1.33
35 mm Film (USA)	1.85
35 mm Film (Anamorphic)	2.35
70 mm Film	1.85
NTSC Video	1.33
PAL Video	1.33
HDTV	1.78

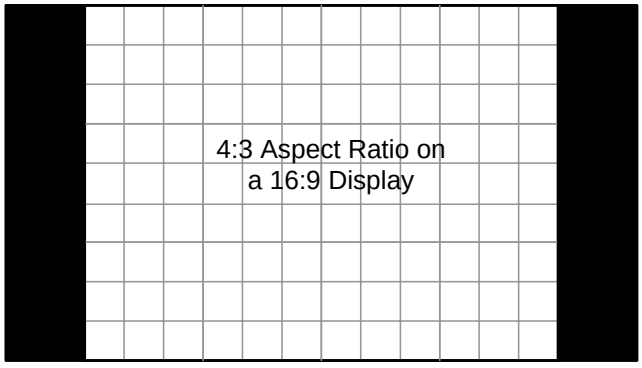
Figure 2. 16:9 Aspect Ratio



The UPX-2 supports 4:3 and 16:9 and can support other aspect ratios such as 15:9 using the custom output setting.

The UPX-2 can allow the simultaneous display of multiple formats. For example, displaying a 4:3 image on a 16:9 plasma screen appears without image distortion. It appears with black on the sides of the image, rather than top and bottom as in letterbox display.

Figure 3. 4:3 Aspect Ratio Displayed on a 16:9 Display



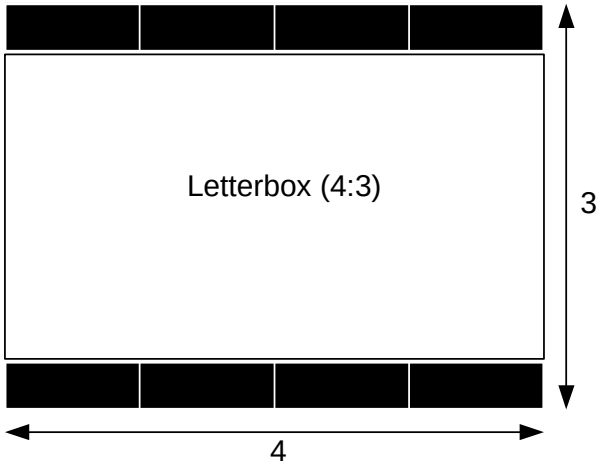
The UPX-2 displays a true 16:9 aspect ratio. The 16:9 aspect ratio is full screen; the image fills the screen from edge to edge.

Letterbox Display

A letterbox image is scaled to fit within another aspect ratio, usually the standard television format of 4:3, and has reduced vertical resolution.

NOTE: Letterbox (a 1.85 aspect ratio designed to fit within a 4:3 frame) and HDTV 16:9 (1.78) are *not* the same.

Figure 4. Letterbox on a 4:3 Display



When letterbox images are setup for a 4:3 aspect ratio screen, the black at the top and bottom of the image are the result of the difference between the original aspect ratio of the movie (1.85:1) and the 4:3 (1.33:1) aspect ratio of the display.

DVD Disks

Most available DVD disks are *not* formatted in a 16:9 aspect ratio. They are generally 1.85 or 2.35. When viewed on a 16:9 display, they appear in a letterbox format (although the black area is slightly smaller than the 4:3 letterbox).

To display a full screen image, the DVD disk must be formatted as HDTV (16:9 aspect ratio).

Camcorders

The normal mode for camcorders is a 4:3 aspect ratio. Most new models have a wide mode setting for 16:9.

Software License Agreement

This License Agreement (“Agreement”) is a legal contract between you (either an individual or a single business entity) and Crestron Electronics, Inc. (“Crestron”) for software referenced in this guide, which includes computer software and as applicable, associated media, printed materials and “online” or electronic documentation (the “Software”).

BY INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE, YOU REPRESENT THAT YOU ARE AN AUTHORIZED DEALER OF CRESTRON PRODUCTS OR A CRESTRON AUTHORIZED INDEPENDENT PROGRAMMER AND YOU AGREE TO BE BOUND BY THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, DO NOT INSTALL OR USE THE SOFTWARE.

IF YOU HAVE PAID A FEE FOR THIS LICENSE AND DO NOT ACCEPT THE TERMS OF THIS AGREEMENT, CRESTRON WILL REFUND THE FEE TO YOU PROVIDED YOU (1) CLICK THE DO NOT ACCEPT BUTTON, (2) DO NOT INSTALL THE SOFTWARE AND (3) RETURN ALL SOFTWARE, MEDIA AND OTHER DOCUMENTATION AND MATERIALS PROVIDED WITH THE SOFTWARE TO CRESTRON AT: CRESTRON ELECTRONICS, INC., 15 VOLVO DRIVE, ROCKLEIGH, NEW JERSEY 07647, WITHIN 30 DAYS OF PAYMENT.

LICENSE TERMS

Crestron hereby grants You and You accept a nonexclusive, nontransferable license to use the Software (a) in machine readable object code together with the related explanatory written materials provided by Crestron (b) on a central processing unit (“CPU”) owned or leased or otherwise controlled exclusively by You and (c) only as authorized in this Agreement and the related explanatory files and written materials provided by Crestron.

If this software requires payment for a license, you may make one backup copy of the Software, provided Your backup copy is not installed or used on any CPU. You may not transfer the rights of this Agreement to a backup copy unless the installed copy of the Software is destroyed or otherwise inoperable and You transfer all rights in the Software.

You may not transfer the license granted pursuant to this Agreement or assign this Agreement without the express written consent of Crestron.

If this software requires payment for a license, the total number of CPU’s on which all versions of the Software are installed may not exceed one per license fee (1) and no concurrent, server or network use of the Software (including any permitted back-up copies) is permitted, including but not limited to using the Software (a) either directly or through commands, data or instructions from or to another computer (b) for local, campus or wide area network, internet or web hosting services or (c) pursuant to any rental, sharing or “service bureau” arrangement.

The Software is designed as a software development and customization tool. As such Crestron cannot and does not guarantee any results of use of the Software or that the Software will operate error free and You acknowledge that any development that You perform using the Software or Host Application is done entirely at Your own risk.

The Software is licensed and not sold. Crestron retains ownership of the Software and all copies of the Software and reserves all rights not expressly granted in writing.

OTHER LIMITATIONS

You must be an Authorized Dealer of Crestron products or a Crestron Authorized Independent Programmer to install or use the Software. If Your status as a Crestron Authorized Dealer or Crestron Authorized Independent Programmer is terminated, Your license is also terminated.

You may not rent, lease, lend, sublicense, distribute or otherwise transfer or assign any interest in or to the Software.

You may not reverse engineer, decompile or disassemble the Software.

You agree that the Software will not be shipped, transferred or exported into any country or used in any manner prohibited by the United States Export Administration Act or any other export laws, restrictions or regulations (“Export Laws”). By downloading or installing the Software You (a) are certifying that You are not a national of Cuba, Iran, Iraq, Libya, North Korea, Sudan, Syria or any country to which the United States embargoes goods (b) are certifying that You are not otherwise prohibited from receiving the Software and (c) You agree to comply with the Export Laws.

If any part of this Agreement is found void and unenforceable, it will not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms. This Agreement may only be modified by a writing signed by an authorized officer of Crestron. Updates may be licensed to You by Crestron with additional or different terms. This is the entire agreement between Crestron and You relating to the Software and it supersedes any prior representations, discussions, undertakings, communications or advertising relating to the Software. The failure of either party to enforce any right or take any action in the event of a breach hereunder shall constitute a waiver unless expressly acknowledged and set forth in writing by the party alleged to have provided such waiver.

If You are a business or organization, You agree that upon request from Crestron or its authorized agent, You will within thirty (30) days fully document and certify that use of any and all Software at the time of the request is in conformity with Your valid licenses from Crestron of its authorized agent.

Without prejudice to any other rights, Crestron may terminate this Agreement immediately upon notice if you fail to comply with the terms and conditions of this Agreement. In such event, you must destroy all copies of the Software and all of its component parts.

PROPRIETARY RIGHTS

Copyright. All title and copyrights in and to the Software (including, without limitation, any images, photographs, animations, video, audio, music, text and "applets" incorporated into the Software), the accompanying media and printed materials and any copies of the Software are owned by Crestron or its suppliers. The Software is protected by copyright laws and international treaty provisions. Therefore, you must treat the Software like any other copyrighted material, subject to the provisions of this Agreement.

Submissions. Should you decide to transmit to Crestron's website by any means or by any media any materials or other information (including, without limitation, ideas, concepts or techniques for new or improved services and products), whether as information, feedback, data, questions, comments, suggestions or the like, you agree such submissions are unrestricted and shall be deemed non-confidential and you automatically grant Crestron and its assigns a non-exclusive, royalty-free, worldwide, perpetual, irrevocable license, with the right to sublicense, to use, copy, transmit, distribute, create derivative works of, display and perform the same.

Trademarks. CRESTRON and the Swirl Logo are registered trademarks of Crestron Electronics, Inc. You shall not remove or conceal any trademark or proprietary notice of Crestron from the Software including any back-up copy.

GOVERNING LAW

This Agreement shall be governed by the laws of the State of New Jersey, without regard to conflicts of laws principles. Any disputes between the parties to the Agreement shall be brought in the state courts in Bergen County, New Jersey or the federal courts located in the District of New Jersey. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement.

CRESTRON LIMITED WARRANTY

CRESTRON warrants that: (a) the Software will perform substantially in accordance with the published specifications for a period of ninety (90) days from the date of receipt and (b) that any hardware accompanying the Software will be subject to its own limited warranty as stated in its accompanying written material. Crestron shall, at its option, repair or replace or refund the license fee for any Software found defective by Crestron if notified by you within the warranty period. The foregoing remedy shall be your exclusive remedy for any claim or loss arising from the Software.

CRESTRON shall not be liable to honor warranty terms if the product has been used in any application other than that for which it was intended or if it as been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number or license code altered, defaced, improperly obtained or removed.

Notwithstanding any agreement to maintain or correct errors or defects, Crestron shall have no obligation to service or correct any error or defect that is not reproducible by Crestron or is deemed in Crestron's reasonable discretion to have resulted from (1) accident; unusual stress; neglect; misuse; failure of electric power, operation of the Software with other media not meeting or not maintained in accordance with the manufacturer's specifications or causes other than ordinary use; (2) improper installation by anyone other than Crestron or its authorized agents of the Software that deviates from any operating procedures established by Crestron in the material and files provided to You by Crestron or its authorized agent; (3) use of the Software on unauthorized hardware or (4) modification of, alteration of or additions to the Software undertaken by persons other than Crestron or Crestron's authorized agents.

ANY LIABILITY OF CRESTRON FOR A DEFECTIVE COPY OF THE SOFTWARE WILL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF YOUR COPY OF THE SOFTWARE WITH ANOTHER COPY OR REFUND OF THE INITIAL LICENSE FEE CRESTRON RECEIVED FROM YOU FOR THE DEFECTIVE COPY OF THE PRODUCT. THIS WARRANTY SHALL BE THE SOLE AND EXCLUSIVE REMEDY TO YOU. IN NO EVENT SHALL CRESTRON BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND (PROPERTY OR ECONOMIC DAMAGES INCLUSIVE), EVEN IF A CRESTRON REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR OF ANY CLAIM BY ANY THIRD PARTY. CRESTRON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO TITLE OR INFRINGEMENT OF THIRD-PARTY RIGHTS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTIES, NOR AUTHORIZES ANY OTHER PARTY TO OFFER ANY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY FOR THIS PRODUCT. THIS WARRANTY STATEMENT SUPERSEDES ALL PREVIOUS WARRANTIES.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact an authorized CRESTRON dealer. Only authorized CRESTRON dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

Microsoft® Windows XP® Embedded End User License Agreement

- You have acquired a device ("DEVICE") that includes software licensed by Crestron Electronics from Microsoft Licensing Inc. or its affiliates ("MS"). Those installed software products of MS origin, as well as associated media, printed materials, and "online" or electronic documentation ("SOFTWARE"), are protected by international intellectual property laws and treaties. The SOFTWARE is licensed, not sold. All rights reserved.
- IF YOU DO NOT AGREE TO THIS END USER LICENSE AGREEMENT ("EULA"), DO NOT USE THE DEVICE OR COPY THE SOFTWARE. INSTEAD, PROMPTLY CONTACT CRESTRON ELECTRONICS FOR INSTRUCTIONS ON RETURN OF THE UNUSED DEVICE(S) FOR A REFUND. **ANY USE OF THE SOFTWARE, INCLUDING BUT NOT LIMITED TO USE ON THE DEVICE, WILL CONSTITUTE YOUR AGREEMENT TO THIS EULA (OR RATIFICATION OF ANY PREVIOUS CONSENT).**
- **GRANT OF SOFTWARE LICENSE.** This EULA grants you the following license:
  - You may use the SOFTWARE only on the DEVICE.
  - **NOT FAULT TOLERANT.** THE SOFTWARE IS NOT FAULT TOLERANT. CRESTRON ELECTRONICS HAS INDEPENDENTLY DETERMINED HOW TO USE THE SOFTWARE IN THE DEVICE, AND MS HAS RELIED UPON CRESTRON ELECTRONICS TO CONDUCT SUFFICIENT TESTING TO DETERMINE THAT THE SOFTWARE IS SUITABLE FOR SUCH USE.
  - NO WARRANTIES FOR THE SOFTWARE. **THE SOFTWARE IS PROVIDED "AS IS" AND WITH ALL FAULTS. THE ENTIRE RISK AS TO SATISFACTORY QUALITY, PERFORMANCE, ACCURACY, AND EFFORT (INCLUDING LACK OF NEGLIGENCE) IS WITH YOU. ALSO, THERE IS NO WARRANTY AGAINST INTERFERENCE WITH YOUR ENJOYMENT OF THE SOFTWARE OR AGAINST INFRINGEMENT.** IF YOU HAVE RECEIVED ANY WARRANTIES REGARDING THE DEVICE OR THE SOFTWARE, THOSE WARRANTIES DO NOT ORIGINATE FROM, AND ARE NOT BINDING ON, MS.
  - No Liability for Certain Damages. **EXCEPT AS PROBHIBITED BY LAW, MS SHALL HAVE NO LIABILITY FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE SOFTWARE. THIS LIMITATION SHALL APPLY EVEN IF ANY REMEDY FAILS OF ITS ESSENTIAL PURPOSE. IN NO EVEN SHALL MS BE LIABLE FOR ANY AMOUNT IN EXCESS OF U.S. TWO HUNDRED FIFTY DOLLARS (U.S. $250.00).**
  - **Limitations on Reverse Engineering, Decompilation, and Disassembly.** You may not reverse engineer, decompile, or disassemble the SOFTWARE, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.
  - **SOFTWARE TRANSFER ALLOWED BUT WITH RESTRICTIONS.** You may permanently transfer rights under this EULA only as part of a permanent sale or transfer of the Device, and only if the recipient agrees to this EULA. If the SOFTWARE is an upgrade, any transfer must also include all prior versions of the SOFTWARE.
  - **EXPORT RESTRICTIONS.** You acknowledge that SOFTWARE is subject to U.S. export jurisdiction. You agree to comply with all applicable international and national laws that apply to the SOFTWARE, including the U.S. Export Administration Regulations, as well as end-user, end-use and destination restrictions issued by U.S. and other governments. For additional information, see www.microsoft.com/exporting.
- **Limited Use of Particular SOFTWARE Services.** Provided that the DEVICE continues to comply with the terms of the "Restricted Functionality" paragraph below, without limiting the number of computers or other electronic devices that might connect to the DEVICE to access or utilize other software or SOFTWARE services on the DEVICE, you may permit a maximum of ten (10) computers or other electronic devices to connect to the DEVICE to utilize the services of the SOFTWARE for (a) file and print services, (b) Internet information services, and/or (c) remote access (including connection sharing). The ten (10) connections maximum includes any indirect connections made through "multiplexing" or other software or hardware which pools or aggregates connections.
- If you use the DEVICE to access or utilize the services or functionality of Microsoft Windows Server products (such as Microsoft Windows NT Server 4.0 (all editions) or Microsoft Windows 2000 Server (all editions)), or use the DEVICE to permit workstation or computing devices to access or utilize the services or functionality of Microsoft Windows Server products, you may be required to obtain a Client Access License for the DEVICE and/or each such workstation or computing device. Please refer to the End-User License Agreement for your Microsoft Windows Server product for additional information.
- **Restricted Deployment.** The SOFTWARE is not designed or intended for use or resale in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, or other devices or systems in which a malfunction of the SOFTWARE would result in foreseeable risk of injury or death to the operator of the device or system, or to others.
- **Restricted Functionality.** You are licensed to use the SOFTWARE to provide only the limited functionality (specific tasks or processes) for which the DEVICE has been designed and marketed by Crestron. This license specifically prohibits any other use of the SOFTWARE, or inclusion of additional software programs or functions, on the DEVICE. Subject to the terms of the "Limited Use of Particular Services" paragraph above, you may use the SOFTWARE on the DEVICE to interact with other computers or electronic devices.

- **Maximum Number of Processors.** The SOFTWARE may not be used by more than two (2) processors at any one time on the DEVICE.
- **Remote Boot Feature.** Your DEVICE may be enabled with a Remote Boot feature which includes Remote Boot Installation Services tool. You may use the Remote Boot Installation Services tool only to deploy the SOFTWARE to one or more DEVICEs on which you are licensed to run the SOFTWARE (i.e. DEVICEs to which the appropriate Certificate of Authenticity is affixed). Please refer to the DEVICE documentation, if provided with your DEVICE, or contact Crestron for additional information.
- **Security Updates.** Content providers are using the digital rights management technology ("Microsoft DRM") contained in this SOFTWARE to protect the integrity of their content ("Secure Content") so that their intellectual property, including copyright, in such content is not misappropriated. Owners of such Secure Content ("Secure Content Owners") may, from time to time, request MS, Microsoft Corporation, or their subsidiaries to provide security related updates to the Microsoft DRM components of the SOFTWARE ("Security Updates") that may affect your ability to copy, display, and/or play Secure Content through Microsoft software or third-party applications that utilize Microsoft DRM. You therefore agree that, if you elect to download a license from the Internet, which enables our use of Secure Content, MS, Microsoft Corporation, or their subsidiaries may, in conjunction with such license, also download onto your DEVICE such Security Updates that a Secure Content Owner has requested that MS, Microsoft Corporation, or their subsidiaries distribute. MS, Microsoft Corporation, or their subsidiaries will not retrieve any personally identifiable information, or any other information, from your DEVICE by downloading such Security Updates.
- **NetMeeting/Remote Assistance/Remote Desktop Features.** The SOFTWARE may contain NetMeeting, Remote Assistance, and Remote Desktop technologies that enable the SOFTWARE or other applications installed on the Device to be used remotely between two or more computing devices, even if the SOFTWARE or application is installed on only one Device. You may use NetMeeting, Remote Assistance, and Remote Desktop with all Microsoft products; provided, however, use of these technologies with certain Microsoft products may require an additional license. For both Microsoft products and non-Microsoft products, you should consult the license agreement accompanying the applicable product or contact the applicable licensor to determine whether use of NetMeeting, Remote Assistance, or Remote Desktop is permitted without an additional license.
- **Consent to Use of Data.** You agree that MS, Microsoft Corporation, and their affiliates may collect and use technical information gathered in any manner as part of product support services related to the SOFTWARE. MS, Microsoft Corporation, and their affiliates may use this information solely to improve their products or to provide customized services or technologies to you. MS, Microsoft Corporation, and their affiliates may disclose this information to others, but not in a form that personally identifies you.
- **Internet Gaming/Update Features.** If the SOFTWARE provides, and you choose to utilize, the Internet gaming or update features within the SOFTWARE, it is necessary to use certain computer system, hardware, and software information to implement the features. By using these features, you explicitly authorize MS, Microsoft Corporation, and/or their designated agent to use this information solely to improve their products or to provide customized services or technologies to you. MS or Microsoft Corporation may disclose this information to others, but not in a form that personally identifies you.
- **Internet –Based Services Components.** The SOFTWARE may contain components that enable and facilitate the use of certain Internet-based services. You acknowledge and agree that MS, Microsoft Corporation, or their affiliates may automatically check the version of the SOFTWARE and/or its components that you are utilizing and may provide upgrades or supplements to the SOFTWARE that may be automatically downloaded to your Device.
- **Links to Third-Party Sites.** The SOFTWARE may provide you with the ability to link to third-party sites through the use of the SOFTWARE. The third-party sites are not under the control of MS, Microsoft Corporation, or their affiliates. Neither MS nor Microsoft Corporation nor their affiliates are responsible for (i) the contents of any third-party sites, any links contained in third-party sites, or any changes or updates to third-party sites, or (ii) webcasting or any other form of transmission received from any third-party sites. If the SOFTWARE provides links to third-party sites, those links are provided to you only as a convenience, and the inclusion of any link does not imply an endorsement of the third-party site by MS, Microsoft Corporation, or their affiliates.
- **Additional Software/Services.** The SOFTWARE may permit Crestron, MS, Microsoft Corporation, or their affiliates to provide or make available to you SOFTWARE updates, supplements, add-on components, or Internet-based services components of the SOFTWARE after the date you obtain your initial copy of the SOFTWARE ("Supplemental Components").
  - If Crestron provides or makes available to you Supplemental Components and no other EULA terms are provided along with the Supplemental Components, then the terms of this EULA shall apply.
  - If MS, Microsoft Corporation, or their affiliates make available Supplemental Components, and no other EULA terms are provided, then the terms of this EULA shall apply, except that the MS, Microsoft Corporation, or affiliate entity providing the Supplemental Components(s) shall be the licensor of the Supplemental Component(s).

Crestron, MS, Microsoft Corporation, and their affiliates reserve the right to discontinue any Internet-based services provided to you or made available to you through the use of the SOFTWARE.

This EULA does not grant you any rights to use the Windows Media Format Software Development Kit ("WMFSDK") components contained in the SOFTWARE to develop a software application that uses Windows Media technology. If you wish to use the WMFSDK to develop such an application, visit htt://msdn.Microsoft.com/workshop/imedia/windowsmedia/sdk/wmsdk.asp, accept a separate license for the WMFSDK, download the appropriate WMFSDK, and install it on your system.

INDEX

Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

Operations Guide – DOC. 6276C
(2021119)
04.08
Specifications subject to
change without notice.