Mirage Media Server
Integration Guide for Crestron Control Systems

Version 3.2

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TABLE OF CONTENTS

OVERVIEW 3

SETTING UP THE MMS FOR CRESTRON CONTROL 3

REQUIREMENTS 3
PREPARATION 3
PROGRAMMING THE CRESTRON CONTROL SYSTEM 4
CHANGING THE PROCESSOR TYPE 4
CONFIGURING THE MEDIA SERVER IP ADDRESS 5
CONFIGURING THE IP COMMUNICATIONS PORT NUMBER 6
SIGNAL SPECIFICATIONS 7
INPUTS 7
OUTPUTS 10
PARAMETERS 13
CONFIGURE THE TOUCH PANELS 14
CONFIGURING THE VT-PRO FILES 14

TROUBLESHOOTING 17

CANNOT ESTABLISH A CONNECTION WITH THE MMS 17
NO ALBUM ART IS DISPLAYED 17
TECHNICAL SUPPORT 17

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Overview

This document describes how to integrate the Autonomic Controls MMS into a Crestron control system. This guide assumes that you have setup the MMS on the network and can access and control it from a computer on that network.

For instructions on setting up the MMS, please refer to its documentation.

This module allows for control of all functions of the MMS via an IP connection from the Crestron processor to the MMS. This module will also receive feedback from the module via that connection, including all browsing data, metadata, album art, and interactive prompts when user input is required. You can browse the local media library and any of the server's online radio services. For control of multiple outputs of the MMS, simply use a copy of this module and its corresponding TCP/IP client per output you'd like to control.

Setting up the MMS for Crestron Control

Requirements

The MMS module requires a Crestron 2 or 3 series control processor. In order to browse content by album cover and see now playing art, any touchpanels intended for this purpose must be able to display dynamic graphics and have an IP address on the same network as the MMS. Visit www.crestron.com to determine which touchpanels support these features.

If a touchpanel does not support dynamic graphics or is not IP connected, it can still control the server and receive feedback from it. However, only text feedback will operate.

Preparation

Download the Crestron control module from www.autonomic-controls.com/support_downloads.php. The control module downloads with several sample programs and a number of touchpanel resolutions. There are resolutions available in common touchpanel resolutions, including Mobile G phone and tablet sizes. Pages from these templates can be copied directly into a custom interfaces or used as a basis for such an interface.

Once the module zip file has been downloaded, unzip it to an easy to find location. It contains the sample programs (PRO2 XPanel, PRO2 Mobile G, AES XPanel, MC3 XPanel) as well as a Crosspoint example program, using a PRO2 with an XPanel and a Mobile G interface. You can import any of the sample programs into SIMPL Windows to import all necessary files into your database. However, the important module files are as follows:

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1. **Autonomic MMS v3.2.umc** This is the main module. It wraps all sub-modules and SIMPL+ code into a cohesive, usable set of inputs and outputs for easy integration.
2. **Autonomic MMS IP Processor v3.1.usp** This is where the majority of our logic exists. It is a SIMPL+ module.
3. **Autonomic MMS Keyboard Controller v3.0.usp** This is our keyboard controller. It handles text input for various functions of the server and module.
4. **Autonomic MMS Alpha Search v3.0.umc** This module exists internally in the main module, and handles browsing by letter.

Programming the Crestron Control System

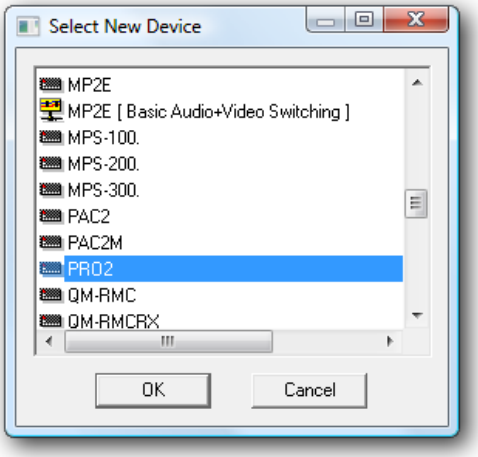
In order to verify that the MMS is operating properly and to reduce the number of variables during the first integration, Autonomic Controls strongly recommends that one of the included sample programs is loaded to a processor for the purposes of familiarization. Afterwards, more in depth integration will be easier.

The first step is to open one of the sample programs in SIMPL Windows and modify the IP address of the TCP/IP Client and the MMS Source parameter of the main module.

Changing the Processor Type

In SIMPL Windows, open the System View by clicking on the configure icon in toolbar.

The sample program has a processor already selected (PRO2, AES, or MC3), but it can be changed to any 2 or 3 series processor. If necessary, change it to the processor in use by right-clicking the processor and selecting Replace Processor.



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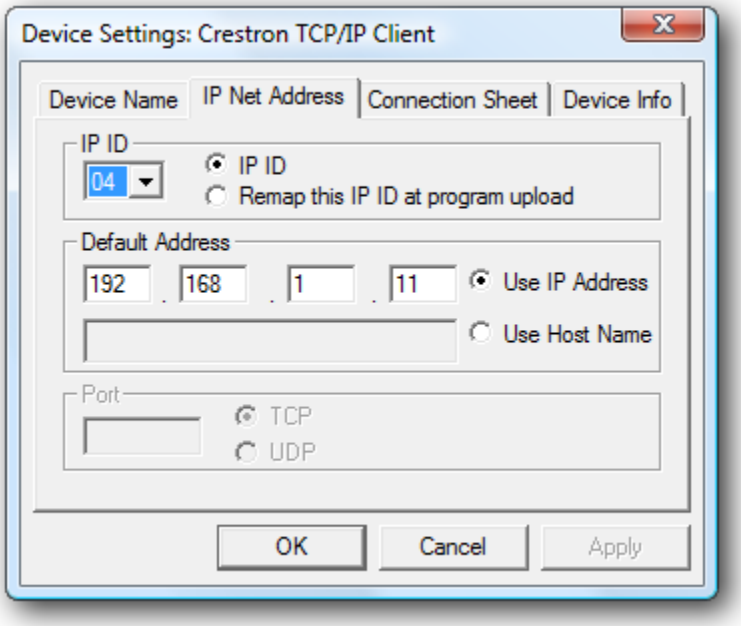
Configuring the Media Server IP Address

Expand the Ethernet card device in the system tree (in the case of the PRO2, the C2ENET-1 or C2ENET-2). Double click on the IP-ID assigned to the TCP/IP client intended for the MMS. Change the IP address in the subsequent windows to match the IP address of the MMS in question. Autonomic Controls strongly recommends that the MMS either be configured with a static IP or that the router is configured with a DHCP reservation for the MMS such that it always receives the same IP address from the router's DHCP server.



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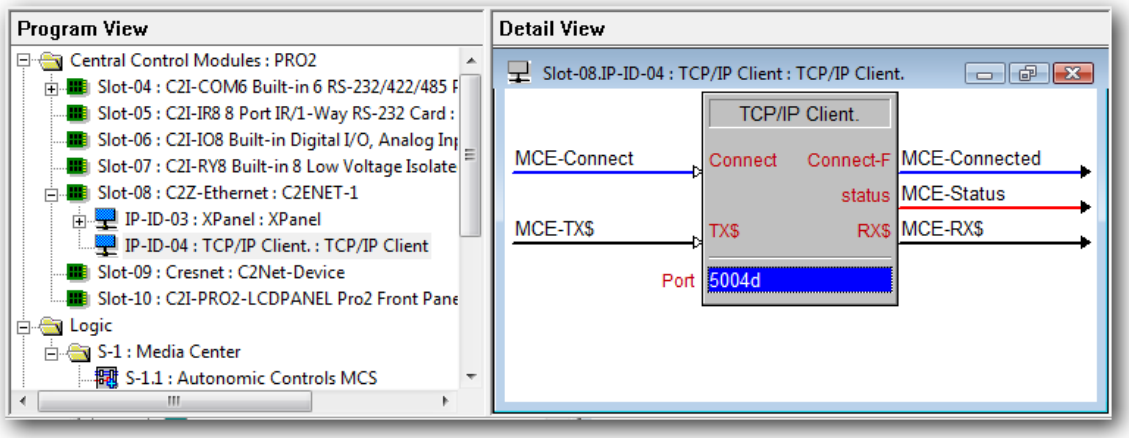
Configuring the IP Communications Port Number

An IP port is a communications "channel" that two devices use to communicate with each other. An MMS uses the inbound port 5004 for IP communications with control clients. Multiple clients can be connected to this port at any given time. The server can distinguish one client from another. If the fully integrated system intends to control multiple outputs, these TCP/IP clients **should all be identical** except for their IP-IDs.

In SIMPL Windows, switch back to the Program View. Open the program tree and select the Ethernet slot, and then open the TCP/IP client symbol configured with the MMS's IP address. Ensure that its 'Port' parameter is set to 5004d.



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Signal Specifications

Inputs

Signal Name	Signal Type	Signal Description
Connect	Digital	Initiates TCP/IP connection while signal is high. High/1: Connect, Low/0: Disconnect (Level Sensitive). Drive this with panel activity or device selection logic (Crosspoint)
Command$	Serial	Input for direct command strings
RX$	Serial	Receive serial data from TCP/IP client
Status	Analog	Analog status input from TCP/IP client
Events_Enabled	Digital	Enables asynchronous messages from server to TCP/IP client. High/1: Enable, Low/0: Disable (Level Sensitive).
Browse_{#}	Digital	Initiates browse command for media types (determined by context) on a rising edge.
Browse_{Category}	Digital	Initiates browsing the given category on a rising edge.
CurrentList_AddQueue	Digital	Adds the currently listed media to the playback queue on a rising edge.
CurrentList_PlayNow	Digital	Adds the currently listed media to the playback queue and begins playback immediately on a rising edge.
PlayPause	Digital	Toggles the play state on a rising edge. Use this signal if there is a single button for Play and Pause on the interface
Play	Digital	Sends a play command on a rising edge. Use this if there is a discrete play button in the interface.
Pause	Digital	Sends a pause command on a rising edge. Use this if there is a discrete pause button in the interface.
Stop	Digital	Sends a stop command on a rising edge.
Skip_Next	Digital	Advance to the next track in the queue on a rising edge. In SiriusXM, this will tune to the next station by station number.
Skip_Prev	Digital	Backtracks to the previous track in the queue on a rising edge. In SiriusXM, this will tune to the previous station by station number.
Seek_Back	Digital	Seek back through the current track in 5-second increments while high. If held high, this will repeat until the beginning of the track.
Seek_Forward	Digital	Seek back through the current track in 5-second increments while high. If held high, this will repeat until the end of the track.
Shuffle_Toggle	Digital	Toggle shuffle state on a rising edge.

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Repeat_Toggle	Digital	Toggle repeat state on a rising edge.
Scrobble_Toggle	Digital	Toggle scrobble state on a rising edge. Scrobbling is only available if the MMS has LastFM credentials
PageFlip_*_From_TP	Digital	Receives page flip presses from interface and executes page logic on a rising edge.
PageFlip_KB	Digital	Displays the keyboard on a rising edge.
PageFlip_KB_Off	Digital	Suppresses the keyboard on a rising edge.
SavePlaylist	Digital	Discrete command to Save the current queue as a playlist. Function also available via contextual buttons.
Search	Digital	Discrete command to search currently browsed media. Function also available via contextual buttons.
Clear_Queue	Digital	Discrete command to remove all songs from the playback queue and stop playback. Function also available via contextual buttons.
Zones	Digital	Discrete command to initiate browsing of zones available to MCS. Function also available via contextual buttons.
Actions	Digital	Discrete command to bring up action list for currently playing media. Function also available via contextual buttons.
Browse_Favorites	Digital	Initiates browsing the server's favorites on a rising edge.
Previous_Page	Digital	Browse previous number of list items.
Next_Page	Digital	Browse next number of list items.
Go_Back	Digital	Initiate last browse command in browse history.
Home	Digital	Browse to top of list
End	Digital	Browse to end of list
Scrollbar_Position	Analog	Send an analog value (0-65535) to scroll through list of media.
Direct_Volume	Analog	Set the volume of current instance directly (0-50)
Volume_Up	Digital	Increment volume of current instance
Volume_Down	Digital	Decrement volume of current instance
Up	Digital	IR emulation Remote Up button.
Down	Digital	IR emulation Remote Down button.
Left	Digital	IR emulation Remote Left button.
Right	Digital	IR emulation Remote Right button.
Select	Digital	IR emulation Select/Ok button.
Thumbs_Up	Digital	Thumbs Up function. This will have a slightly different response depending on which radio service is in use.

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Thumbs_Down	Digital	Thumbs Down function. This will have a slightly different response depending on which radio service is in use.
Dialog_Button_*	Digital	Select buttons for user prompts from interface.
Art_Error_Monitor_*	Analog	Analog from Dynamic Graphic objects' error join for list items. Tracks value of analog and re-propagates album art URL's as needed.
Title_Select_*	Digital	Pulse to select the corresponding title in a list.
Title_AddToPlaylist_*	Digital	Pulse to select the corresponding title in a list and add to the playback queue.
Title_PlayNow_*	Digital	Pulse to select the corresponding title in a list and play back title immediately.
Alpha_Search_Up	Digital	Jump to first letter feature: scroll down alphabet.
Alpha_Search_Down	Digital	Jump to first letter feature: scroll up alphabet.
Context_Button_*	Digital	Pulse to send command for contextual buttons. Buttons 1-4 are multi-function based on current state of MCS. Button 1: Actions when on Now Playing page, PageFlip to Now Playing page when not on the Now Playing page, blank if on Now Playing page but no media is playing. Button 2: Save Playlist when browsing the Queue and there is media in the Queue, blank when browsing the Queue but the queue is empty, otherwise Zones. Button 3: Search when browsing media that is searchable, Clear Queue when on Now Playing or Browsing the Queue, otherwise blank. Button 4: Controls when not on the Remote page, otherwise blank.
Enable_Debugging	Digital	Outputs verbose debugging messages to the debugger while high. High/1 Enable, Low/0 Disable (level sensitive)

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Outputs

Signal Name	Signal Type	Signal Description
To_IP_Connect	Digital	Connection signal to TCP/IP Connect input.
IP_Status_Text$	Serial	TCP/IP Client connection status message.
TX$	Serial	Send serial data to TCP/IP client
List_Position$	Serial	Outputs current position in a list.
List_Caption$	Serial	Outputs title of currently browsed list.
TrackLength_fb$	Serial	Length in minutes:seconds of the currently playing track.
TrackTime_fb$	Serial	Progress in minutes:seconds of the currently playing track.
TrackNumber_fb$	Serial	The number of the currently playing track in the playback queue.
Current_Media_Type	Analog	Analog value indicating the type of media that is currently being browsed.
Browse_Buttons_Mode	Analog	Analog value that determines the format of the browse buttons based on the MMS Configuration. 0 = Windows Media Center, 1 = Windows Media Player and iTunes (music only)
Service_Logo_fb	Analog	Feedback for the current radio service logo. 1 = LastFM, 2 = Pandora, 3 = SiriusXM, 4 = Rhapsody, 5 = Spotify, 6 = TuneIn, 7 = none/local content
Stars_fb	Analog	Feedback for the current Stars value (for Rhapsody ratings). 0d-5d
Transport_fb	Analog	Feedback for the current state of the transport. 0 = Stop, 1 = Play, 2 = Pause, 3 = Forward, 4 = Rewind.
Current_Track_Progress_fb	Analog	Progress of the currently playing media in an analog value (0-65535). For use with a gauge or slider.
Play_fb	Digital	Feedback for play state. 0 = not playing, 1 = playing.
Pause_fb	Digital	Feedback for pause state. 0 = not paused, 1 = paused.
Stop_fb	Digital	Feedback for stop state. 0 = not stopped, 1 = stopped.
Shuffle_fb	Analog	Feedback for state of Shuffle mode. 0 = off, 1 = on.
Repeat_fb	Analog	Feedback for state of Repeat mode. 0 = off, 1 = on

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LastFM_Scrobble_fb	Analog	Feedback for state of Scrobble mode. 0 = off, 1 = on
PageFlip_*_To_TP	Digital	Signals to drive appropriate subpages on interface.
Display_DPad_To_TP	Digital	Signal to drive D_Pad subpage (for smaller format panels)
Search_Enabled	Digital	High/1 if currently browsed media is searchable
Alpha_Enabled	Digital	High/1 if currently browsed media is searchable by first letter
Chapters_Button	Digital	High/1 if current movie title has chapters available
Dialog_Enabled	Digital	High/1 if MCS requires a dialog box for user input.
Actions_Enabled	Analog	High/1 currently playing media has actions associated with it.
Prev_Enabled	Analog	In list browsing = 1 if there is previous media in the list. Use to enable/disable Previous page button on interface.
Next_Enabled	Analog	In list browsing = 1 if there is more media in the list. Use to enable/disable Next page button on interface.
Back_Enabled	Analog	High/1 if there is browse commands available in browse history. Use to enable/disable Back button on interface.
Scroll_Enabled	Analog	High/1 if list contains more items than number that can be displayed. Use to enable/disable scrollbar, Next/Prev page buttons on interface.
ThumbsUp_Enabled	Analog	Equals 1 if Thumbs Up button available (for Pandora, LastFM, and Rhapsody).
ThumbsDown_Enabled	Analog	Equals 1 if Thumbs Down button available (for Pandora, LastFM, and Rhapsody)
ScrollBar_fb	Analog	Value for current position in list.
Volume_fb_Scaled	Analog	Volume level for current instance (0-50).
Mute_fb	Analog	Feedback for current mute status. 1 = Muted, 0 = unmuted.
Now_Playing_Art$	Serial	URL for Now Playing Artwork. Connect to dynamic graphics join. Angled artwork with reflection.
Now_Playing_Art_Small$	Serial	URL for smaller size Now Playing Artwork. Use for smaller resolution panels. Angled artwork with reflection.
Now_Playing_Thumb$	Serial	URL for Now Playing Artwork. Use for

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		smaller resolution files. Flat artwork no reflection.
Now_Playing_Thumb_Full$	Serial	URL for Now Playing Artwork. Uses height/width parameters in module parameters. Flat artwork no reflection.
Browse_Art$	Serial	URL for details artwork.
Browse_Art_Format	Analog	Determines format of artwork for details.
MetaData{#}$	Serial	Contextual media meta data for currently playing media.
MetaLabel{#}$	Serial	Contextual meta data labels for currently playing media.
MediaInfo{#}$	Serial	Contextual information data on currently playing media.
Dialog_Buttons	Analog	Outputs number of dialog buttons needed to be displayed by MCS.
Dialog_Caption$	Serial	Title of Dialog box.
Dialog_Text$	Serial	Instructions for Dialog box.
Dialog_Default_Text$	Serial	Text to display in text field by default when dialog with keyboard entry is invoked.
Button_Text_{#}$	Serial	Labels for each of 3 dialog box response buttons.
List_AlbumArt_{#}$	Serial	URL for artwork for corresponding list item.
Title_Enabled_{#}	Analog	Feedback if particular list field is enabled. (1 enable list field to display media, 0 disable list field to reflect no media ie. At end of list).
Title_Text_{#}$	Serial	Text to display for each corresponding list item.
List_SubText_{#}$	Serial	Sub Text to display for each corresponding list item.
Display_Alpha_Index	Digital	Drives search by first letter display when used.
Alpha_Index_Letter$	Serial	Feedback showing current letter when searching by first letter.
Context_Button_{#}$	Serial	Text label for contextual buttons. Output of each corresponding signal reflects function as outlined in the Inputs section.
Refresh	Digital	Pulsed high when MCS requires a touchpanel refresh. Connect to an Ethernet Offline Manager refresh input or Poll Manager update request for an interface.

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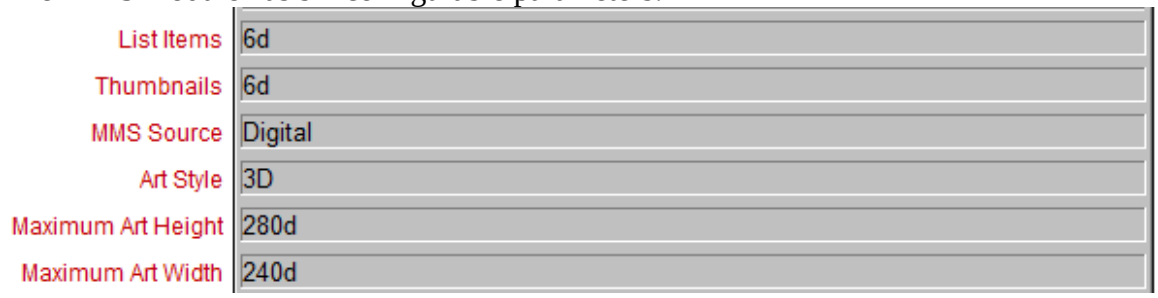
Parameters

The MMS module has six configurable parameters.



List Items – This tells the module how many list items appear on the interface at a given time. If the list view is modified, set this number to the number of list items in that list. This value does not need to be changed for the sample programs.

Thumbnails – This parameter specifies how many thumbnails appear on the interface at a given time. If the thumbnail list view is modified, set this number to the number of list items in that list. This value does not need to be changed for the sample programs.

Art Style – This dropdown parameter defines the style of the Now Playing art. Flat is a simple flat image, while 3D is a slightly angled, reflected image.

MMS Source – This dropdown parameter defines the default MMS output to connect to. This is highly useful if connecting to a specific output and if controlling multiple outputs at the same time from multiple modules. Each module would specify a different output to control.

Maximum Art Height & Width – This allows the size of the Now Playing art to be configured to maximize the picture quality for variously sized touchpanels. These dimensions should match the size of the Now Playing art dynamic graphic object on the interface in question.

At this point, given that all parameters, inputs, and outputs are configured appropriately, it's time to upload the program to the processor. Do this as you would any other SIMPL program.

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Configure the Touch Panels

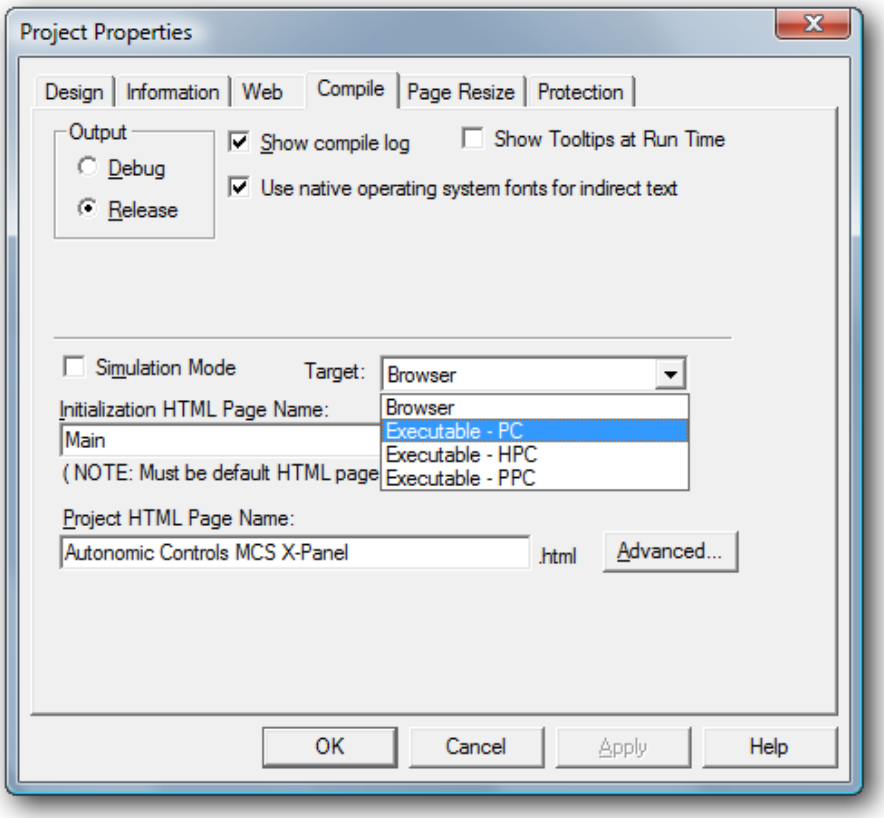
If testing is being done with a physical touchpanel, add that touchpanel to the sample program in use, and copy the digital, analog, and serial joins to it from the XPanel symbol. If testing is being done with the XPanel application, there is no need to modify the sample program further.

Additionally, there must be some logic to drive the Connect input on the MMS module. **For testing purposes, it is acceptable to set this signal to 1. However Autonomic Controls strongly recommends driving this signal with touchpanel activity logic or in use logic from a Crosspoint symbol in your finished program.**

Configuring the VT-Pro Files

This section will assist in configuring the XPanel projects for EXE consumption. If the project has been modified to use a physical touchpanel, no further configuration is required, simply upload the VT-Pro project to that panel.

Open the VT-Pro file suitable for the integration. Our sample interfaces are already configured for EXE XPanel use. Only the IP of the processor must be configured. Select the **Edit** menu, and then select **Properties**. On the subsequent window, on the **Compile** tab, ensure the Target mode is **Executable – PC**.



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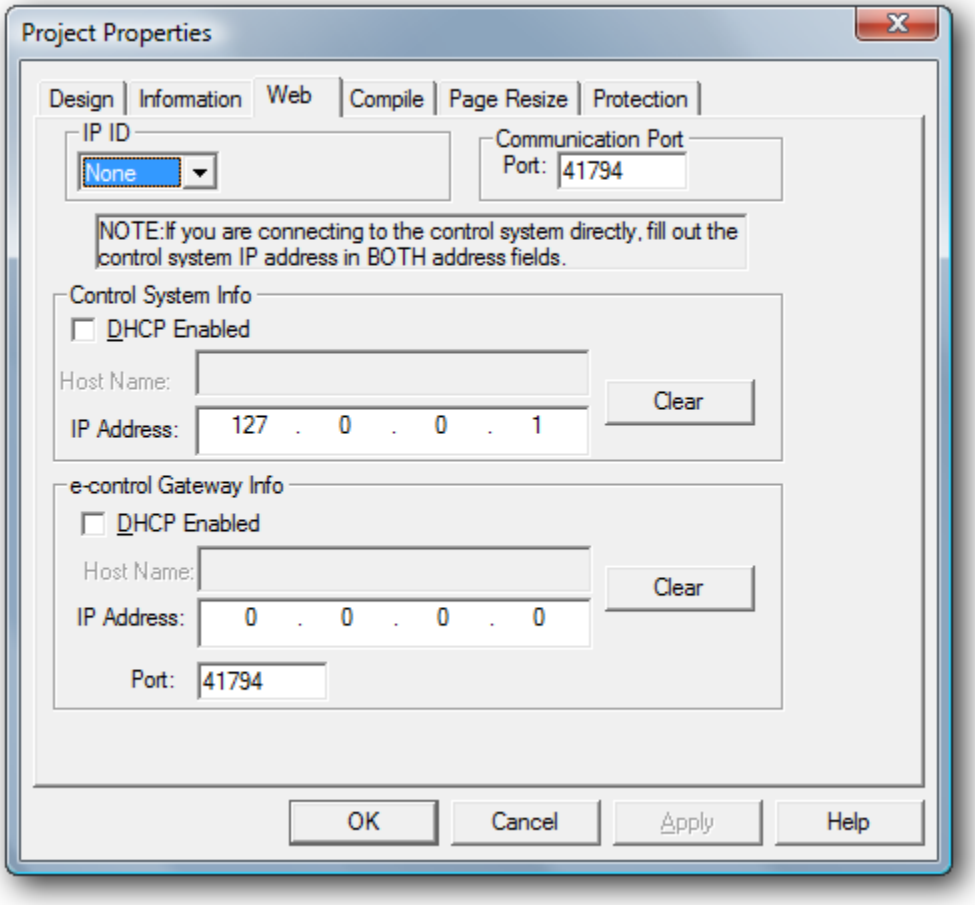
Then, under the **Web** tab, ensure the **Control System IP** and the **e-control Gateway Info IP** are both set to the IP of the processor.



Click OK to close the **Properties** window. To compile the project, open the **File** menu, then select **Compile**. An EXE will be generated in a folder in the same directory as the VT-Pro project. Run that EXE to interface with the program.

Our sample XPanel programs use the *Offline* signal on the XPanel's Ethernet Offline Manager through a NOT (to generate an *Online* signal as opposed to an *Offline* signal). This *Online* signal is tied to the **Connect** input on the MMS module, driving it high whenever the XPanel is online. If everything is configured appropriately, the XPanel should display the interface for the MMS.

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Troubleshooting

Cannot Establish a Connection with the MMS

- Is the server accessible and controllable via a web browser? Try http://<server-ip>/Mirage for control and http://<server-ip>/config for configuration, where <server-ip> is the IP address of the MMS (e.g. http://192.168.1.58/Mirage and http://192.168.1.58/config).
- Can the Crestron processor ping the MMS? Open text console and type 'ping <server-ip>' where <server-ip> is the IP of the MMS (e.g. ping 192.168.1.58). It will respond with an alive or dead notification.
- Is the Connect input on the module being **held** high or only pulsed? It does need to be **held** high for the duration of control.
- Ensure the IP table is properly populated on the Crestron processor in Toolbox.
- Does the issue persist with our sample program and interface?

No Album Art is Displayed

- Does the issue persist with our sample program and interface?
- Use the URL found as the value of the **Now_Playing_Art$** signal in a web browser. If the art works in the browser but not on the touchpanel, there is a route issue between the touchpanel and the MMS.
- Is there an **HTTP** route from the touchpanel to the MMS? If programming remotely, it is unlikely that an XPanel will have access through the job site's firewall. Art is retrieved over port 80.

Technical Support

Technical support is available via phone and email. Our email is support@autonomic-controls.com. Our phone number is 914-598-1647, ext. 2.

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