Operation/Reference Guide

NXD-CV5

5" Modero® Wall/Flush Mount Touch Panel

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Introduction

The NXD-CV5 5" Modero® Wall/Flush Mount Touch Panels (FG2261-01) are the industry's first widescreen mini-touch panels and are available only through AMX (FIG. 1).

FIG. 1 NXD-CV5 (shown with button ring installed)

This is the first 5" diagonal Widescreen Color Active video-capable touch panel in the control and automation industry. This Color Video (CV) panel displays NTSC/MPAL/PAL/SECAM video formats within variable sized windows up to 800 x 480. It includes a built-in microphone, speakers, audio/headphone connector, and six NetLinx programmable pushbuttons.

This panel currently supports Intercom functionality which allows two communicating CV5 panels (the NetLinx Master must control all intercom and paging) to transmit half-duplex audio signals over a network and be used as an Intercom system. Audio and Video is delivered to the panel via a CAT5 connection from an optional NXA-AVB/ETHERNET Breakout Box.

The NXD-CV5 panel (FG2261) is shipped, by default with a Trim Ring containing buttons. The user can later choose to alter the Faceplate/Trim Ring configuration of the CV5 touch panel by choosing the install the included No-Button Trim RIng.

Key features common to both panels include:

- CV5 panels are based on the latest display technology and support AMX's 4th generation (G4) graphics which provide higher brightness, richer colors, and deeper contrast. The new G4 graphics technology is supported by the latest AMX TPDesign4 Touch Panel Design program.
- CV5 panels display eye-catching images and full-motion video on a large 16:9 image format, while providing a wide 90-degree top-to-bottom viewing angle.
- CV5 panels feature a front panel light sensor, motion sensor, IR receiver and a Sleep/Setup Access combo button.
- CV5 panels support *AMX Computer Control*, which enables remote viewing and control of any networked computer directly from the panel. This gives the user the ability to launch digital music from a PC, cruise the Internet, check and respond to E-mail, open software files, and launch applications. Anything you can do on your PC can be accomplished through these panels.

- CV5 panels feature programmable firmware that can be upgraded via either the Ethernet port or the mini-USB port.

CV5 Specifications

The following table outlines the specifications for the 5" Widescreen Modero panel.

Product Specifications	
Dimensions (HWD):	• NXA-RK5 (*optional*): metal rack-mount with black matte finish: (3 RU - rack units high) 5.22" x 19.0" x 0.50" (13.26 cm x 48.26 cm x 1.27 cm) • NXD-CV5 (with faceplate): 4.15" x 5.59" x 3.23" (10.50 cm x 14.20 cm x 8.20 cm) • CB-TP5 Rough-In/Wallbox (*optional*): 4.27" x 5.14" x 3.40" (10.86 cm x 13.06 cm x 8.64 cm)
Power Requirements (stand-alone CV5):	• Constant current draw: 650 mA @ 12 VDC • Startup current draw: 1.3 A @ 12 VDC
Memory (factory default):	• 64 MB SDRAM • 64 MB Flash Memory (not upgradeable - factory programmed)
Weight:	• 1.76 lbs (0.80 kg)
Certifications:	• FCC Part 15 Class B, CE, and IEC 60950
Panel LCD Parameters:	• Aspect ratio*:* 16 x 9 • Brightness (luminance): 170 cd/m^2 • Channel transparency: 8-bit Alpha blending • Contrast ratio: 250:1 • Display colors: 256 thousand colors (18-bit color depth) • Dot/pixel pitch: 0.14 mm • Panel type: TFT Color Active-Matrix • Screen resolution: 800 x 480 pixels (HV) @ 60 Hz frame frequency • Video format: NTSC, MPAL, PAL, and SECAM • Viewing dimensions: 4.3" x 2.58" (109.2 mm x 65.2 mm)
Active Screen Area:	• 4.25" x 2.55" (10.80cm x 6.48cm)
Viewing Angles:	• 90° total viewing angle: - Horizontal: $\pm$ 45° (left and right from center)
IR Reception Angle:	• Horizontal: $\pm$ 25° (left and right from center) • Vertical: $\pm$ 15° (up and down from center)
Supported Audio Sample Rates:	• 48000Hz, 44100Hz, 32000Hz, 24000Hz, 22050Hz, 16000Hz, 12000Hz, 11025Hz, and 8000Hz.
Front Panel Components:	
Light sensor:	• Photosensitive light detector for automatic adjustment of the panel brightness (a dim room results in a dimmer LCD display, and a bright room results in a brighter LCD display). ***Note***: *The light sensor can be adjusted via the Sensor Setup page (page 72).*
Motion sensor (PIR):	• Proximity Infrared Detector to wake the panel when the panel is approached. • Activation range: $\pm$ 25° (left and right from center) and $\pm$ 15° (up and down from center). ***Note***: *This sensor can be adjusted via the Sensor Setup page (see page 72).*
IR Receiver:	• IR reception 38 KHz and 455 KHz IR frequencies. • The IR receiver is located beneath the translucent Front Setup button. When an IR code is detected it is sent to the NetLinx Master as a push on the appropriate AMX IR channel. • IR receivers and transmitters on G4 panels share the device address number of the panel.

Product Specifications (Cont.)	

Front setup access button:	• Provides both access to the Setup and Calibration page and toggles the panel between a "sleep" or "wake" state.
	  - When wired, "sleep" status means the backlight is Off.
	  - When battery operated, wireless "sleep" status means the touch panel base is either Off or "suspended".

Microphone:	• Used for intercom applications (*requires the NXA-AVB/ETHERNET Breakout Box for analog communication*)
Speakers:	• Stereo output with a frequency response of 500 Hz - 7 KHz
Buttons:	• 6 programmable pushbuttons
Side Panel Components:	
PWR connector:	• 2-pin 3.5 mm mini-Phoenix connector.
Ethernet 10/100 port:	• RJ-45 port for 10/100 Mbps communication. The Ethernet port automatically negotiates the connection speed (10 Mbps or 100 Mbps), and whether to use half duplex or full duplex mode. • CV5 panels communicate with the NetLinx Master using the ICSP protocol over Ethernet.
Ethernet 10/100 LEDs:	• LEDs show communication activity and connection information: **A**-activity - Yellow LED lights when receiving or transmitting Ethernet data packets. **L**-link - Green LED lights when the Ethernet cables are connected and terminated correctly.
Stereo Output connector:	• Stereo output through a 3.5mm mini-jack (for use with external speakers or headphones).
Mini-USB connector:	• 5-pin Mini-USB connector used for programming, firmware update, and touch panel file transfer between the PC and the target panel. *Note: When connecting the panel to PC using a CC-USB (or compatible) cable, be sure to power the panel On before attempting to connect the USB cable from the PC to the mini-USB port on the panel. Refer to the Configuring and Using USB with a Virtual Master section on page 33 for more information.*
USB connector:	• Type-A USB port can connect an external keyboard or mouse device for use with Virtual PC applications. *Note: External USB input devices (keyboard or mouse) must be plugged into the rear/side USB connector before the unit is powered-up. The panel will not detect these USB input devices until the unit cycles power.*
Audio/Video connector:	• RJ-45 connector for communication of differential audio/video signals to/from the touch panel (panel type dependant). This connector receives Composite video, Stereo (left/right) audio, and microphone audio. • Video is received via the NXA-AVB/ETHERNET Breakout Box. Configuring video windows for playback is done using TPDesign4. • In-bound audio (from the breakout box) gets directed to the speakers. • Out-bound audio is sent from the on-board microphone (on the front-panel). Selecting audio files for playback is configured through TPDesign4.
Button Assignments:	Button assignments can only be adjusted in TPD4 and not on the panels. • Button channel range: 1 - 4000 button push and feedback (per address port) • Button variable text range: 1 - 4000 (per address port) • Button states range: 1 - 256 (General Button; 1 = Off State, 2 = On State) • Level range: 1 - 600 (default level value 0-255, can be set up to 1-65535) • Address port range: 1 - 100

Product Specifications (Cont.)	
Operating / Storage Environment:	• Operating Temperature: 0° C (32° F) to 40° C (104° F) • Operating Humidity: 20% - 85% RH • Storage Temperature: -20° C (-4° F) to 60° C (140° F) • Storage Humidity: 5% - 85% RH

Included Accessories:	• Installation Kit for NXD-CV5 panels (KA2261-01):
	  - 2-pin 3.5 mm mini-Phoenix connector
	  - Three Drywall clips (62-5924-05) and #6 - sheet metal screws
	  - Three Phillips-head screws (#4-40 x 0.250 Black)
	• Mounting Template - Flush Mount Drywall Installation
	• Trim Ring with button openings (60-2261-04) (**factory installed**)
	• Trim Ring without button openings (60-2261-05)

Other AMX Equipment:	• CB-TP5 Rough-In/Wallbox (**FG038-10**)
	• NXA-AVB/ETHERNET Breakout Box (**FG2254-10**)
	  - Provides video/audio distribution to the A/V panel over CAT5 cable
	   (up to 200'/60.96 m) and accepts either Composite or S-Video
	• NXA-BEZ-5B, Bezel Kit with buttons for Modero 5" Widescreen Wall/Flush Mount Touch Panel (NXD-CV5)
	  - NXA-BEZ-5B-BG, Beige Faceplate with beige buttons (**FG2261-32**)
	  - NXA-BEZ-5B-BL, Black Faceplate with black buttons (**FG2261-30**)
	  - NXA-BEZ-5B-LA, Light Almond Faceplate with light almond buttons
	   (**FG2261-33**)
	  - NXA-BEZ-5B-WH, White Faceplate with white buttons (**FG2261-31**)
	• NXA-BEZ-5NB, Bezel Kit without buttons for Modero 5" Widescreen Wall/Flush Mount Touch Panel (NXD-CV5)
	  - NXA-BEZ-5NB-BG, Beige Faceplate without buttons (**FG2261-42**)
	  - NXA-BEZ-5NB-BL, Black Faceplate without buttons (**FG2261-40**)
	  - NXA-BEZ-5NB-LA, Light Almond Faceplate without buttons (**FG2261-43**)
	  - NXA-BEZ-5NB-WH, White Faceplate without buttons (**FG2261-41**)
	• NXA-CV5AM, Modero 5" Angle Mount Kit (**FG2904-56**):
	  - Wedge for 5" WallMount
	  - Wedge Mounting Template - Flush Mount Drywall Installation
	  - Three 1/8" diameter by 3" length Toggle Bolts (with wings)
	  - Three 4-20 x.375 LG screws, PPH, Plastite, Black Zinc
	• NXA-RK5 RackMount Kit for 5" Wall Mount panels (**FG2904-55**):
	  - 5" RakMount
	  - Four Screws, #10-32 x.625, PH Truss, BLK
	  - Four Washers, #10, Black Nylon
	  - Three Screws, #4-40 x.250, PPH, BLK

WARNING

It is recommended that firmware KIT files only be transferred over a direct USB or Ethernet connection and only when the panel is connected to a power supply. If battery power fails during a firmware upgrade, the panel flash file system may become corrupted.

CV5 Panels - Connector Layout

FIG. 2 shows the layout of the connectors (located on the left side panel of the NXD-CV5 panel).
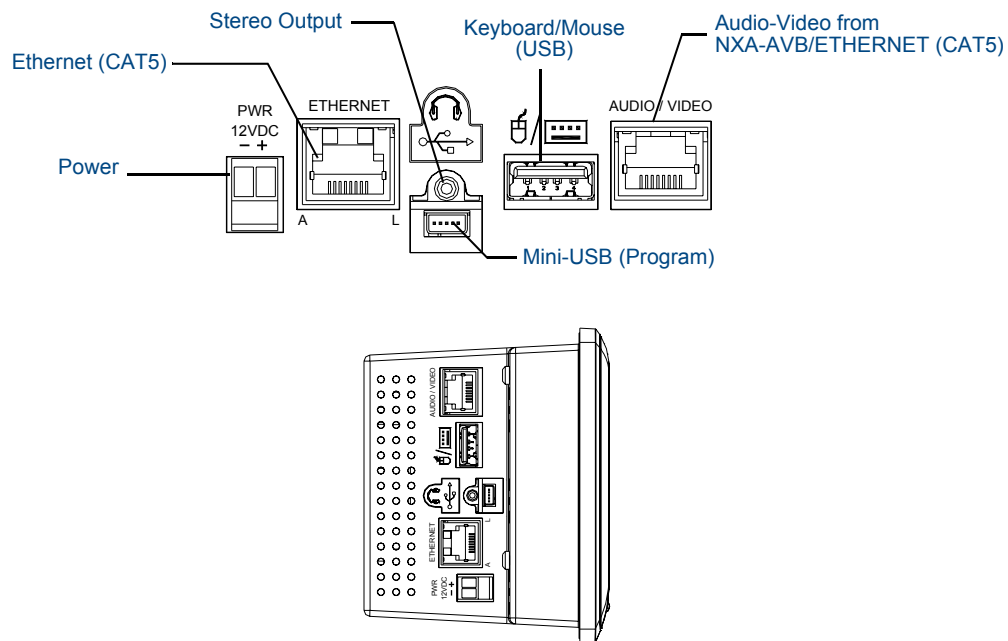
FIG. 2 Connector layout and location on the CV5 touch panel

CV5 Touch Panel Accessories

Overview

The following section outlines and describes both the included accessories and other AMX equipment available for these touch panels.

NXA-AVB/ETHERNET Breakout Box (FG2254-10)

The NXA-AVB/ETHERNET Breakout Box (FIG. 3) is sold as a separate accessory to the CV5 panel and does not come as part of a Kit configuration for this panel. This box facilitates the installation and distribution of video, data, and audio to Modero touch panels located up to 200 feet (60.96 m) from the AVB box. This unit accepts either Composite or S-Video from standard video devices.

This breakout box can be mounted on either a horizontal flat surface or within an equipment rack (by using an optional AC-RK Rack Kit).
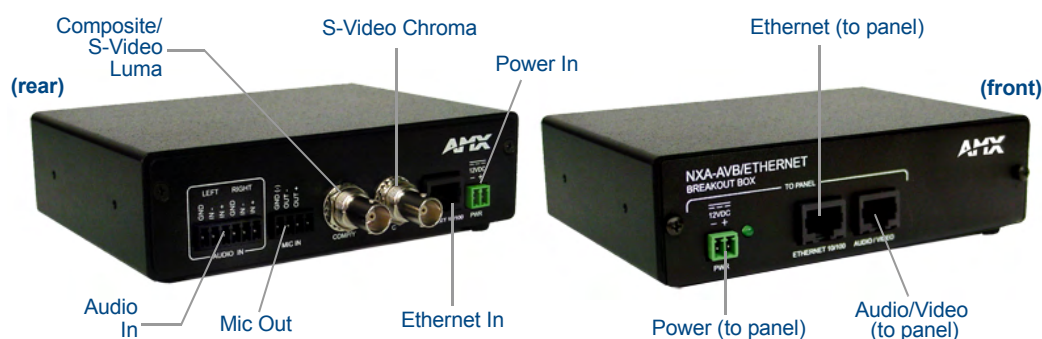
FIG. 3 NXA-AVB/ETHERNET Breakout Box (front and rear views)

Product Specifications

NXA-AVB/ETHERNET Specifications	
Dimensions (HWD):	• 1.50" x 5.55" x 4.88" (3.81 cm x 14.10 cm x 12.40 cm) • Width when attached to mounting ears: 6.65" (16.89 cm)
Power Consumption:	• 50mA (with audio/video input) • 23mA (with no audio/video) • Routed through NXA-AVB/Ethernet using a 12 VDC-compliant power supply
Certifications:	• FCC Part 15 Class B, CE, and EN60950
Features:	• Accepts either Composite or S-Video (*video-capable panels only*) • Provides audio distribution to the non-video touch panels over a CAT5 cable (up to 200 ft.) • Provides video/audio distribution to the video-capable touch panels over CAT5 cable up to 200 ft.(60.9 m)
Availability:	• This unit is included with CV5, CV7, CV10, and 1200V-Series Kit configurations
Front Components:	• 2-pin 3.5 mm Phoenix connector for power to the touch panel • Green LED provides an indication of power status • RJ-45 connector provides Ethernet signals to the touch panel • RJ-45 connector provides differential audio and video signals to the touch panel (panel type dependant)

NXA-AVB/ETHERNET Specifications (Cont.)	
Rear Components:	• 6-pin 3.5 mm Phoenix connector for in-bound (left/right channel) audio • 4-pin 3.5 mm Phoenix connector for out-bound (from microphone) audio • BNC connector (female) for Composite or Chroma (**for video-capable panels only**) • BNC connector (female) for luminance (**for video-capable panels only**) • RJ-45 connector for Ethernet input from the control system • 2-pin 3.5 mm Phoenix connector for in-bound power
Included Accessories:	• Two 2-pin Phoenix connectors (41-5025) • 4-pin Phoenix connector (41-5047) • 6-pin Phoenix connector (41-5063) • Rack Mount Kit (KA2250-40) with mounting bracket (62-2254-02)
Other AMX Equipment:	• AC-RK Accessory RackMount Kit (**FG515**) • Modero Table Top Cable (CA2250-50)

Installing the NXA-AVB/ETHERNET

A 12 VDC-compliant power supply can indirectly provide power to a Modero panel by routing power through the NXA-AVB/ETHERNET Breakout Box. FIG. 4 shows a sample wiring configuration using both an indirect or direct power connection for a video-capable Modero panel.
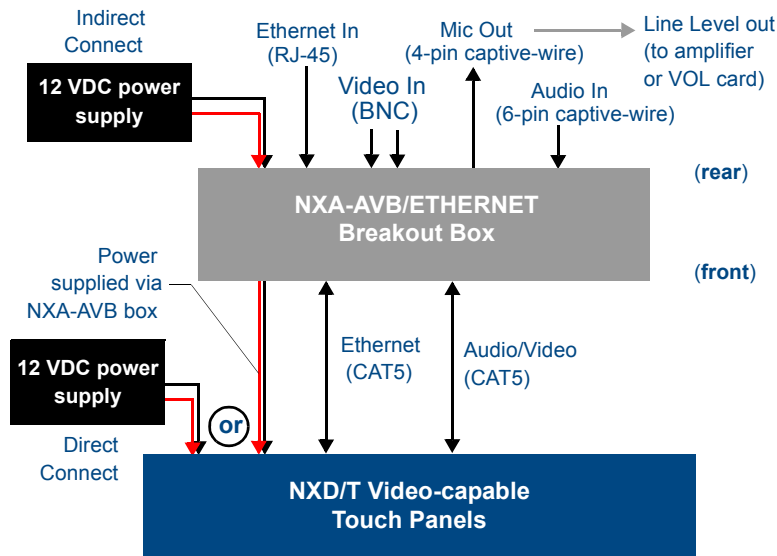
FIG. 4 Sample wiring configuration on video-capable panels using this breakout box

A 12 VDC-compliant power supply can also directly provide power through the unit to a target Modero panel. FIG. 5 shows a sample wiring configuration for a non-video capable Modero panel.
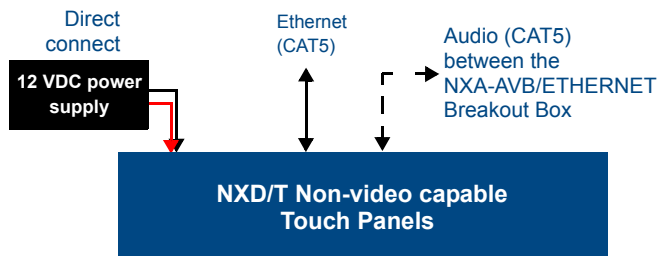
FIG. 5 Sample wiring configuration using non-video capable Modero panels

The breakout box unit can be mounted on either a horizontal flat surface or into an equipment rack (by removing the front screws and attaching it to an optional AC-RK). The power supply being used on the NXA-AVB/ETHERNET is dependant on the power requirements of the target touch panel.

NOTE

Use a standard CAT5 Ethernet cable to provide both communication and 10/100 network connectivity between the panel, NXA-AVB/ETHERNET, NetLinx Master, and the network.

Wiring the NXA-AVB/ETHERNET connectors and cables

The inputs and outputs on the breakout box are separated into front and rear connectors. The rear connectors are used to input external signals. The front connectors are used to communicate signals between the NXA-AVB/ETHERNET and a target Modero panel. FIG. 6 provides a layout of the wiring connection both into and from the breakout box.
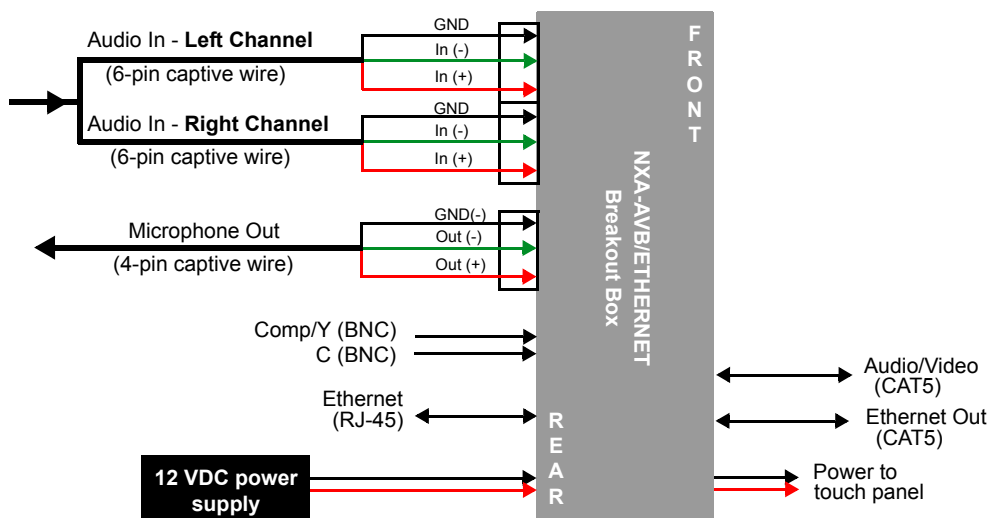
FIG. 6 NXA-AVB/ETHERNET Breakout Box connector wiring diagram

The rear-panel wiring connections are described below (from left to right):

• AUDIO IN:	6-pin mini-Phoenix connector, divided into left and right audio channels. Each channel is divided into GND, IN+, and IN- terminal cable connectors (2 sets of 3 for each channel).
	An example of this cable is to strip the ends of 2 RCA audio cables and insert them into their respective locations on the Audio In port.
	Either a balanced (+, -, and GND) or unbalanced (+ and GND) audio signal can be connected to this input.
• MIC OUT:	4-pin mini-Phoenix connector, divided into GND, OUT-, and OUT+ terminal connectors.
	An example of this cable is to strip the terminal ends of a 3.5mm mini-jack and insert them into their respective locations on the Mic Out port. This signal can be fed as a Line Level In to either an amplifier or an AMX VOL card.
	Either a balanced (+, -, and GND) or unbalanced (+ and GND) audio signal can be connected to this output.
• Video In BNCs:	Feeds either Composite/S-Video Luma or S-Video Chroma signals into the NXA-AVB/ ETHERNET. This feed is then redirected out to a Modero panel through the front Audio/ Video CAT5 port.
• ETHERNET:	RJ-45 connector routes data to the G4 touch panel through the front Ethernet port. These connections use a standard CAT5 Ethernet cable to provide communication between the target touch panel, breakout box, and NetLinx Master.
• PWR:	2-pin mini-Phoenix connector that connects to a 12 VDC-compliant power supply. This port can be used to provide power to a Modero panel by sending it through the NXA-AVB/ETHERNET (rear power connector through to the front power connector).

Wiring the NXA-AVB/ETHERNET for Unbalanced Audio

Most domestic audio equipment has unbalanced audio inputs and outputs. This means that the audio output (left, right, or mono) appears on a single wire, and is referenced to "0 V" or "Ground". Typical connectors used are RCA "phono" connectors, DIN plugs/sockets, and 0.25" (6.3mm) or 3.5mm jack plugs/sockets.

Unbalanced audio is adequate for most domestic environments and for line-level signals in a typical broadcast studio. Problems may occur if the signals are carried over long distances, especially if the source and destination have separate main supplies. Use the following wiring drawing (FIG. 7) to configure an unbalanced audio connection.
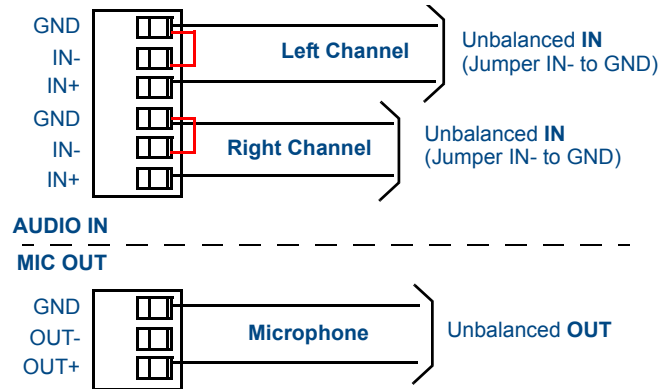
FIG. 7 Wiring the rear AUDIO IN and MIC OUT for use with Unbalanced Audio

When using unbalanced audio for the AUDIO IN connector (FIG. 7), the "-" and the "GND" terminals should be connected together and then connected to the GND of the unbalance audio signal. When connecting to an unbalanced audio input from the MIC OUT connector (FIG. 7), wire the "+" terminal to the signal input, and the "GND" terminal to the signal ground.

Wiring the NXA-AVB/ETHERNET for Balanced Audio

Professional audio equipment will often use balanced audio inputs and outputs, usually on 3-pin "XLR" connectors. A balanced audio signal consists of a pair of wires carrying the audio signal in anti-phase with each other (if one wire carries a positive voltage, the other carries an equal and opposite negative voltage).

The advantage of balanced audio over unbalanced audio is its ability to reject external interference added as the signal is carried over the wire. The receiving equipment takes the voltage difference between the two wires as the input signal. Interference will usually get added to both wires equally, and so gets cancelled by the receiving equipment.

The 3 wires used in a typical XLR lead are often referred to as Ground, Live (Hot) and Return (Cold). "Live" and "Return" carry the "in-phase" and "out-of-phase" versions of the audio respectively. The pins of the XLR plug/socket are as follows:

- X = Ground
- L = Live (Hot)
- R = Return (Cold)

When connecting the MIC OUT connector to a balanced audio input (FIG. 8), use all three audio terminals (+, -, and GND), then connect the "+" terminal to the "live" signal, the "-" terminal to the "return" signal, and the "GND" terminal to the ground signal.
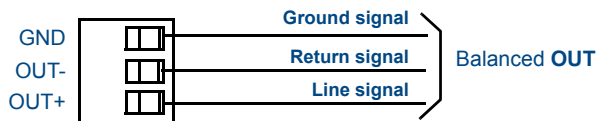
FIG. 8 Wiring the rear MIC OUT connector for use with Balanced Audio

NOTE

Each bundle of 4 twisted pairs includes a colored tape indicator for identification.

Installation

Overview

This NXD panels can be installed into either a pre-wall surface (using a CB-TP5 rough-in/wallbox) or a solid surface (using either solid surface or drywall screws).

Unpacking the Panel

1. Inspect and confirm the contents of the shipment box to verify you have all specified parts. Refer to the *Product Specifications* section on page 2 for more information about included accessories and other AMX equipment.

2. Carefully remove the panel from the shipping box.

3. Carefully peel the protective plastic cover from the LCD.

NOTE

If the protective plastic LCD cover is not removed, the panel may not respond properly to touch points on the LCD or allow proper screen calibration.

Installing the No-Button Trim Ring

The NXD-CV5 panel is shipped from AMX with the default Button Trim Ring already installed. The unit is also shipped with an included Trim Ring containing no button openings (a No-Button Trim Ring) that allows you, if desired, to change the default configuration of the NXD panel Faceplate to that with no-button openings.

In order to install this included No-Button Trim Ring, you must first remove the factory-installed default Button Trim Ring and its six small buttons.

1. The Faceplate is secured to the panel with plastic latches. To remove the Faceplate, simply pull it away from the panel by gently tugging it outwards until the entire Faceplate comes away from the panel.

2. Turn the Faceplate over to expose the inside surface and view the Trim Ring latches (FIG. 9).

3. In a single motion, press down and then outwards on the two Trim Ring latches located along the top of the internal surface of the Faceplate to begin removing the Button Trim Ring. *Removing the Internal Faceplate from the panel exposes the pushbuttons along the inside of the Internal Faceplate.*

4. Gently tug along the edges of the Button Trim Ring and work your way around the edges to remove it from the Faceplate (FIG. 9).
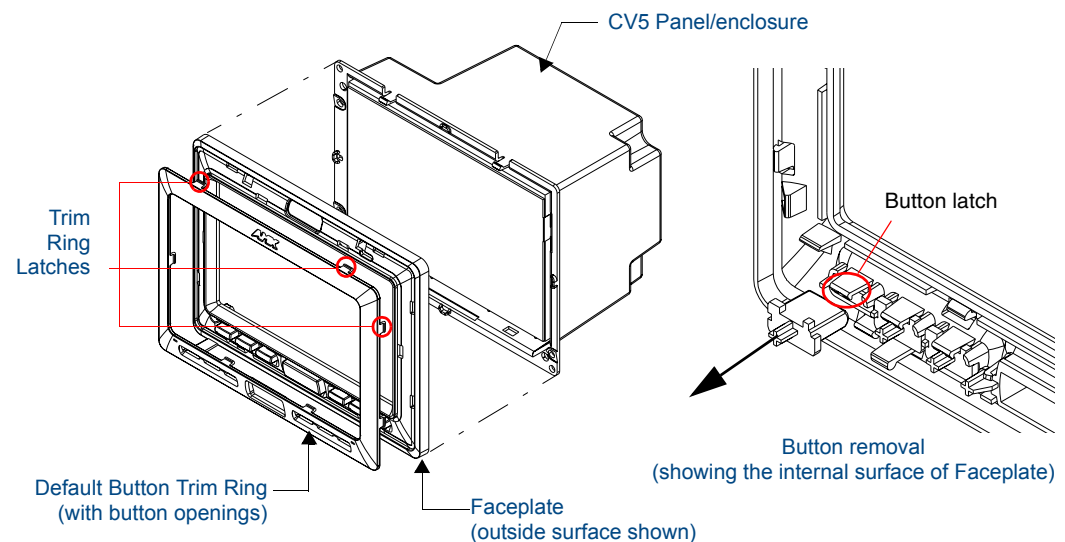
FIG. 9 Removing the default Button Trim Ring

5. From along the internal surface of the Faceplate, remove the six buttons by gently bending each Button latch up and pulling the button outwards.

6. Grasp the No-Button Trim Ring on both sides and fit it into the groove along the outside surface of the Faceplate (made available by the removal of the previous Trim Ring).

7. Gently insert the Trim Ring latches into their corresponding openings on the outer surface of the internal Faceplate (FIG. 10).

No-Button Trim Ring

Hollow button openings

Faceplate (outer surface shown)

FIG. 10 Inserting the No-Button Trim Ring

8. Firmly press down around the No-Button Trim Ring until all of the latches are securely inserted into their openings on the Faceplate, and the No-Button Trim Ring is securely fastened. Verify the No-Button Trim Ring is firmly inserted onto the Faceplate and that there are no gaps between this Trim Ring and the outer surface of the Faceplate.

9. Place the Faceplate back onto the main NXD-CV5 unit. Make sure to align the Microphone, Light, and PIR Motion sensor locations on the main unit to their respective openings on the Faceplate assembly.

Installing the Button Trim Ring

The outer No-Button Trim Ring is secured to the Faceplate with plastic latches. In order to re-install the Button Trim Ring back onto an NXD panel which has had the default Button Trim Ring features removed; you must first remove the No-Button Trim Ring:

1. To remove the Faceplate, simply pull it away from the panel by gently tugging it outwards until the entire Faceplate comes away from the panel.

2. Turn the Faceplate over to expose the inside surface and view the Trim Ring latches.

3. In a single motion, press down and then outwards on the two Trim Ring latches located along the top of the internal surface of the Faceplate to begin removing the Trim Ring. *Removing the Internal Faceplate from the panel exposes the pushbuttons openings left from an earlier removal of the pushbuttons.*

4. Gently tug along the edges of the No-Button Trim Ring and work your way around the edges to remove it from the Faceplate (FIG. 11).
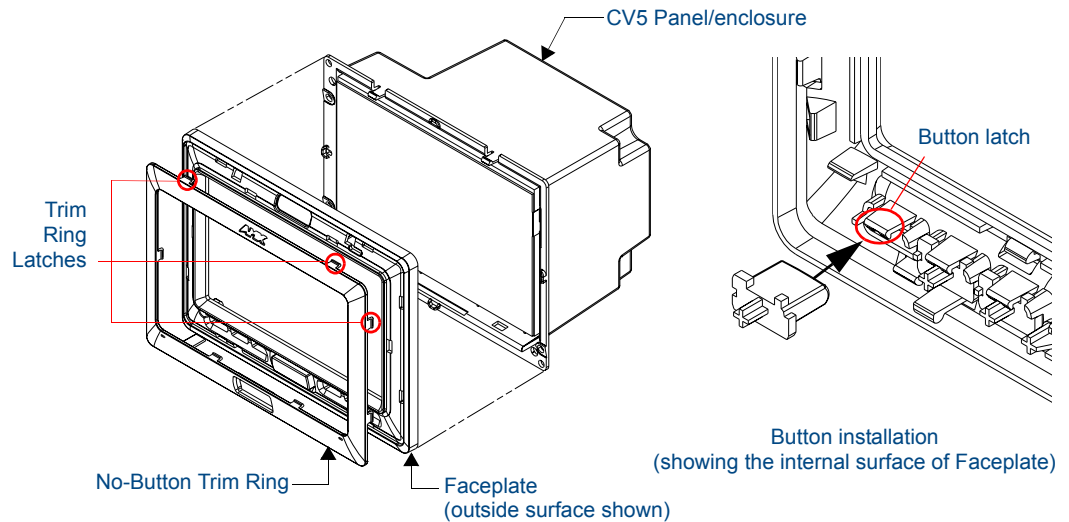
FIG. 11 Removing the No-Button Trim Ring

5. From along the internal surface of the Faceplate, install the six buttons by firmly inserting them into the button openings until the Button latch secures the button in place (FIG. 11).

6. Grasp the Button Trim Ring on both sides and fit it into the groove along the outside surface of the Faceplate (made available by the removal of the previous Trim Ring).

7. Gently insert the Button Trim Ring latches into their corresponding openings on the outer surface of the internal Faceplate (FIG. 12).
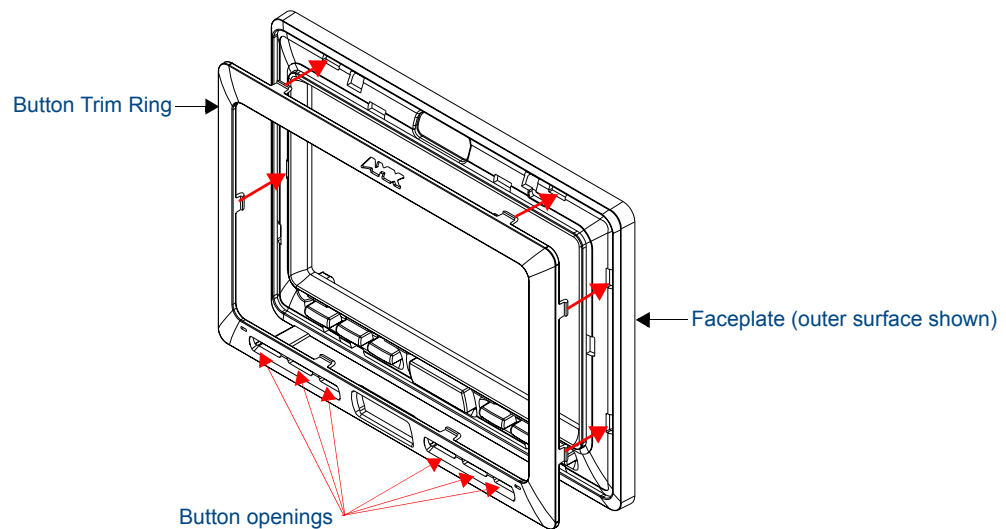
FIG. 12 Inserting the Button Trim Ring

8. Firmly press down around the Button Trim Ring until all of the latches are securely inserted into their openings on the Faceplate, and the Button Trim Ring is securely fastened. Verify the Button Trim Ring is firmly inserted onto the Faceplate and that there are no gaps between this Trim Ring and the outer surface of the Faceplate.

9. Place the Faceplate back onto the main NXD-CV5 unit. Make sure to align the Microphone, Light, and PIR Motion sensor locations on the main unit to their respective openings on the Faceplate assembly.

Installing the Optional NXA-BEZ Colored Trim Ring Kits

The Bezel Trim Ring Kits allow a user to change to both the color of the faceplate and determine whether the panel will or will not use colored pushbuttons. Each grouping has been configured so that the accompanying Faceplate, Trim Ring, and pushbuttons are color matched.

The following table outlines the two different Trim Ring Kits:

NXA-BEZ Trim Ring Kits (CV5)	

NXA-BEZ-5B Trim Ring Kits (with button openings)	• NXA-BEZ-5B-BG, Beige Faceplate with beige buttons (**FG2261-32**)
	  - Two Beige Faceplates/Bezels
	  - Two Beige Button Trim RIngs
	  - Two Self-adhesive AMX labels
	  - 12 Beige Pushbuttons (2 sets of 6)
	
	• NXA-BEZ-5B-BL, Black Faceplate with black buttons (**FG2261-30**)
	  - Two Black Faceplates/Bezels
	  - Two Black Button Trim RIngs
	  - Two Self-adhesive AMX labels
	  - 12 Black Pushbuttons (2 sets of 6)
	
	• NXA-BEZ-5B-LA, Light Almond Faceplate with light almond buttons (**FG2261-33**)
	  - Two Almond Faceplates/Bezels
	  - Two Almond Button Trim RIngs
	  - Two Self-adhesive AMX labels
	  - 12 Almond Pushbuttons (2 sets of 6)
	
	• NXA-BEZ-5B-WH, White Faceplate with white buttons (**FG2261-31**)
	  - Two Almond Faceplates/Bezels
	  - Two Almond Button Trim RIngs
	  - Two Self-adhesive AMX labels
	  - 12 Almond Pushbuttons (2 sets of 6)

NXA-BEZ-5NB Trim Ring Kits (without button openings)	• NXA-BEZ-5NB-BG, Beige Faceplate without buttons (**FG2261-42**)
	  - Two Beige Faceplates/Bezels
	  - Two Beige No-Button Trim RIngs
	  - Two Self-adhesive AMX labels
	
	• NXA-BEZ-5NB-BL, Black Faceplate without buttons (**FG2261-40**)
	  - Two Black Faceplates/Bezels
	  - Two Black No-Button Trim RIngs
	  - Two Self-adhesive AMX labels
	
	• NXA-BEZ-5NB-LA, Light Almond Faceplate without buttons (**FG2261-43**)
	  - Two Almond Faceplates/Bezels
	  - Two Almond No-Button Trim RIngs
	  - Two Self-adhesive AMX labels
	
	• NXA-BEZ-5NB-WH, White Faceplate without buttons (**FG2261-41**)
	  - Two White Faceplates/Bezels
	  - Two White No-Button Trim RIngs
	  - Two Self-adhesive AMX labels

FIG. 13 provides an example of the general contents for each of the two types of Bezel Kit configurations (Button and No-Button).

NXA-BEZ-5B With Buttons

(2 sets)

NXA-BEZ-5NB Without Button

(2 sets)

(2 sets)

(2 sets)

- 2 Colored Faceplate/Bezels
- 2 Colored Button Trim Rings
- 2 Self-adhesive AMX labels
- 12 Colored Pushbuttons (2 sets of 6)

- 2 Colored Faceplate/Bezels
- 2 Colored No-Button Trim Rings
- 2 Self-adhesive AMX labels
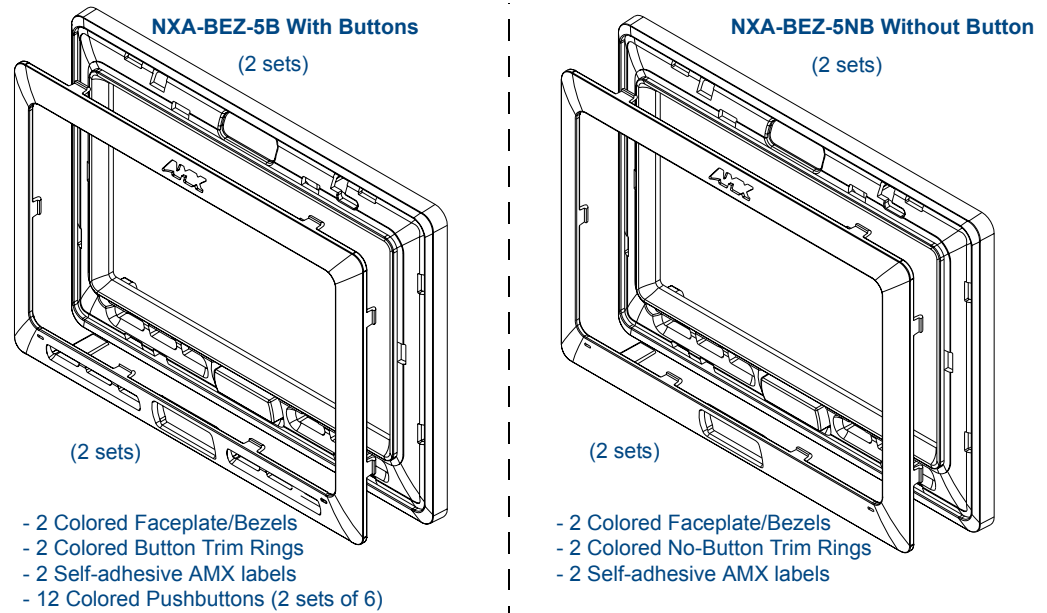
FIG. 13 Trim Ring Kit Contents (Button and No-Button configurations shown)

These Bezel Kits require some assembly prior to installation onto the panel. Once assembled, the pre-existing Faceplate can be removed and upgraded by using the following these steps.

1. To remove the current Faceplate, simply pull it away from the panel by gently tugging it outwards until the entire Faceplate comes away from the panel.

2. Use the above table to determine which of the optional Trim Rings Kits will be used.

3. Assemble the Kit components:

To assemble the Bezel Kit with Buttons (FIG. 14):

CV5 Panel/enclosure

Button latch

Trim Ring Latches

Colored Button Trim Ring

Colored Faceplate
(outside surface shown)

Button installation
(showing the internal surface of Faceplate)
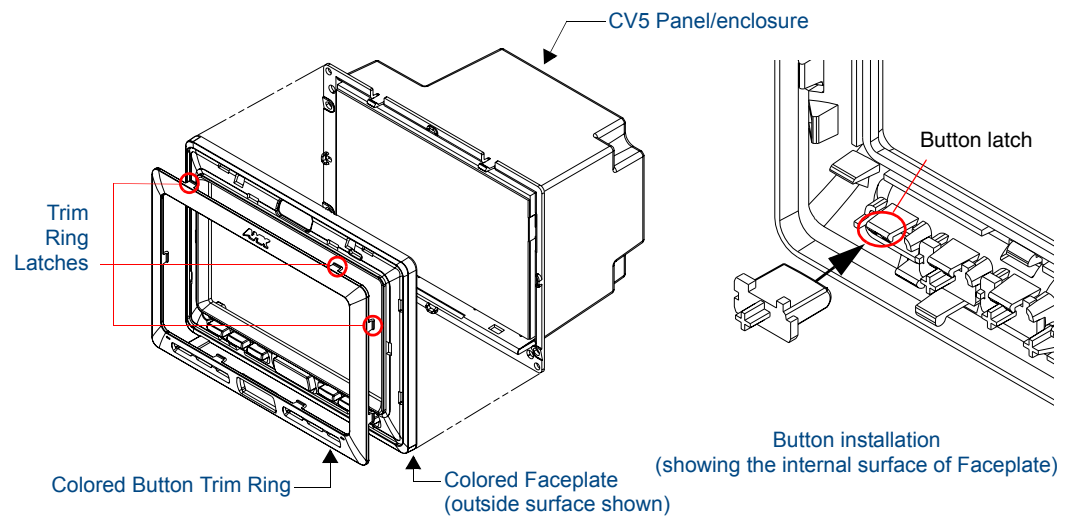
FIG. 14 Installing the Button Bezel Kit (NXA-BEZ-5B)

a. From along the internal surface of the colored Faceplate, install the six colored buttons by firmly inserting them into the button openings until the Button latch secures the button in place (FIG. 14).

b. Grasp the provided Button Trim Ring on both sides and fit it into the groove along the outside surface of the Faceplate.

c. Gently insert the Button Trim Ring latches into their corresponding openings on the outer surface of the internal Faceplate (FIG. 14).
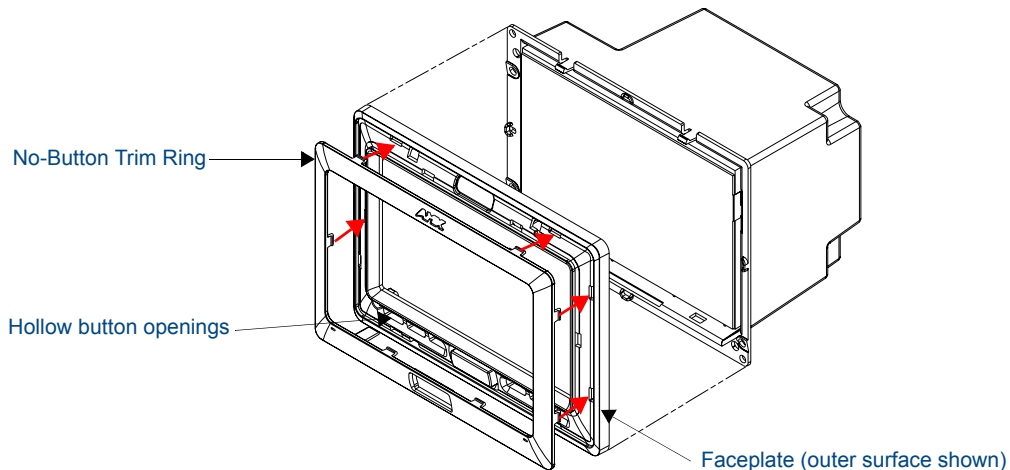
d. Firmly press down around the Button Trim Ring until all of the latches are securely inserted into their openings on the Faceplate, and the Button Trim Ring is securely fastened. Verify the Button Trim Ring is firmly inserted onto the Faceplate and that there are no gaps between this Trim Ring and the outer surface of the Faceplate.

e. Continue on to Step 4 to complete the installation process.

To assemble the Bezel Kit with No-Buttons (FIG. 15):

No-Button Trim Ring

Hollow button openings

Faceplate (outer surface shown)
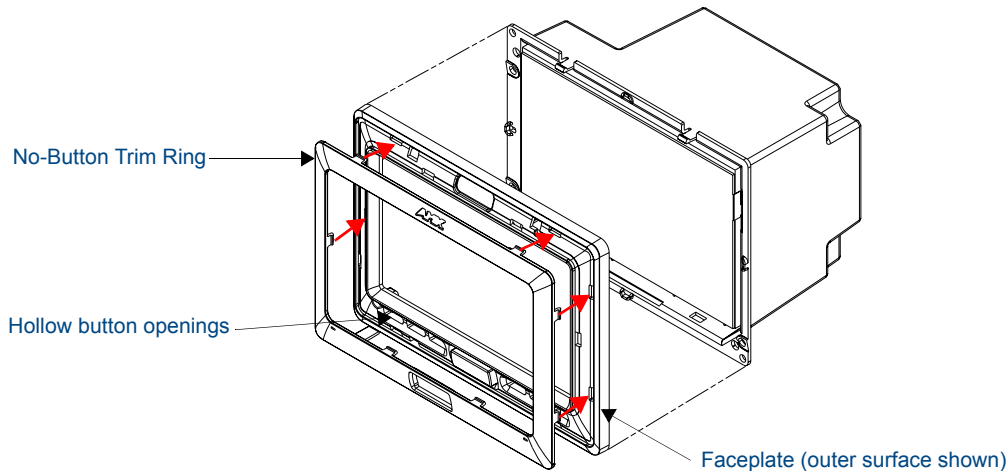
FIG. 15 Installing the No-Button Bezel Kit (NXA-BEZ-5NB)

a. Grasp the provided No-Button Trim Ring on both sides and fit it into the groove along the outside surface of the Faceplate.

b. Firmly press down around the No-Button Trim Ring until all of the latches are securely inserted into their openings on the Faceplate, and the Trim Ring is securely fastened. Verify the No-Button Trim Ring is firmly inserted onto the Faceplate and that there are no gaps between this Trim Ring and the outer surface of the Faceplate.

c. Continue on to Step 4 to complete the installation process.

4. Place that new Faceplate onto the main NXD-CV5 unit. Make sure to align the Microphone, Light, and PIR Motion sensor locations on the main unit to their respective openings on the Faceplate assembly.

Pre-Wall Installation of the Rough-In Box

Wall Mount panels (NXDs) are contained within an outer housing (back box). This back box is **not** removed when installing the NXD into a CB-TP5 Rough-In Box. The back box is *only* removed to gain access for the replacement of the internal components.

⚡ **WARNING**

INSTALLER: LEAVE A GAP BETWEEN THE STUD AND ROUGH-IN BOX MOUNTING TABS TO ACCOMMODATE THE DRYWALL or SHEETROCK.
This gap allows the installation of the drywall or sheetrock after the CB-TP5 Rough-In Box has been installed.

The CB-TP5 is an optional metallic box that is secured onto a stud/beam in a **pre-wall** setting (*where no walls are present*). Installation procedures and configurations can vary depending on the installation environment. This section describes the installation procedures for the most common installation scenario. The most important thing to remember when mounting this rough-in box is that the NXD-CV5 Mounting Tabs must lie flush against the outside of the sheetrock (FIG. 16).

- Refer to **SP-2261-01** for detailed installation dimensions.
- It is recommended that you cut out the surface slightly smaller than what is outlined in the installation drawings so that you can make any necessary cutout adjustments.
- The wiring knockouts on the left side will be used for the NXD-CV5 Wall Mount panel connectors, so always secure the rough-in box to the stud using the Stud Mounting Holes on the right side of the box.

1. Rest the right Stud Mounting tabs onto the stud (keeping the knockouts on the left). **Be sure to leave enough of a gap between the stud and NXD Mounting tabs to accommodate the installation of the drywall or sheetrock after the rough-in box has been mounted. Ultimately, the Mounting Tabs should lie flush against the outside of the sheetrock.**

2. Fasten the CB-TP5 rough-in box to the stud through the holes on the right Stud Mounting tabs (FIG. 16), using either nails or screws.
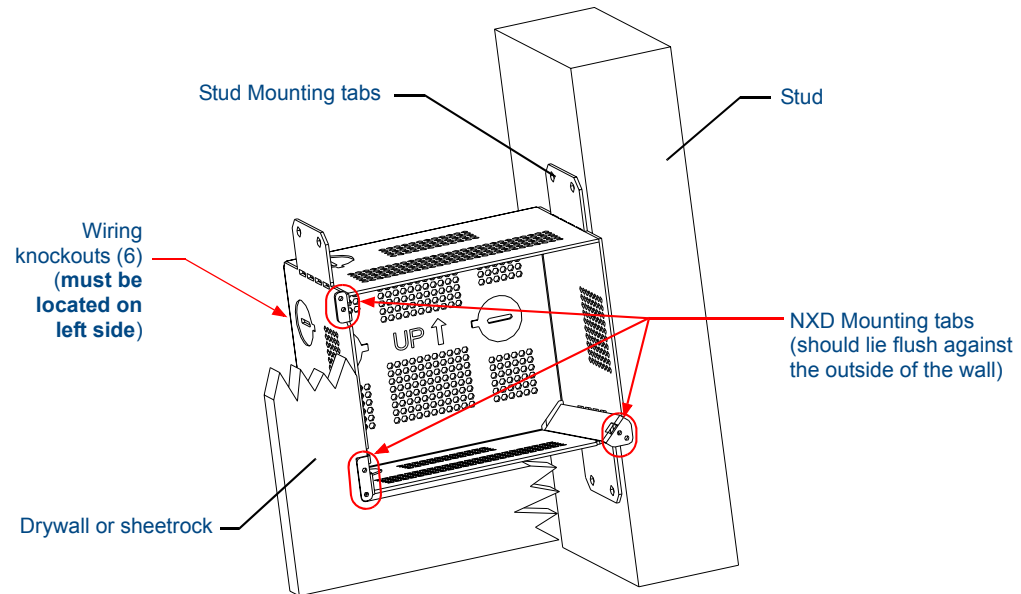
FIG. 16 CB-TP5 rough-in box components

3. Remove the wiring knockouts from the left side of the rough-in box (CB-TP5) (FIG. 16) to accommodate the cables being threaded through to the NXD touch panel.

Remember that when mounting this rough-in box, the NXD mounting tabs must lie flush against the outside of the sheetrock.

NOTE

4. Thread the incoming power, RJ-45 audio/video, Ethernet, and USB wiring through the knockouts (*use of the left wiring knockouts are recommended with this installation*).
   Leave enough slack in the wiring to accommodate any re-positioning of the panel.

5. Install the drywall/sheetrock before inserting the main NXD unit into the CB-TP5.

Installation of an NXD Touch Panel

The NXD-CV5 can be installed either directly into the (optional) CB-TP5 or other solid surface environment using the two different mounting options: drywall clips or solid surface screws. The following sections describe mounting the touch panel directly into a pre-wall rough-in box, a solid surface or drywall, and optional NXA-RK5 Rack Mount Kit.

Installing the NXD panel within a Rough-In Box

The rough-in box must be mounted prior to continuing this section. Refer to the procedures in the *Pre-Wall Installation of the Rough-In Box* section on page 16 for detailed pre-wall installation instructions. *Verify that all necessary cables have been threaded through the knockouts on the left of the rough-in box and the connections have been tested prior to installation of the NXD-CV5.*

1. Remove the Faceplate/bezel (**A** in FIG. 17) from the main NXD unit (**B** in FIG. 17) by gripping the faceplate and pulling with gentle outward force.

C - Optional CB-TP5 rough-in/wallbox

Stud

#4-40 Mounting Screws (three - included) secure the NXD to the Rough-In Box

Mounting Tab

B - Main NXD unit consists of the touch panel and back box housing

A - Faceplate/Trim Ring default Faceplate comes with buttons

FIG. 17 NXD-CV5 panel installation into a CB-TP5 (pre-wall construction)

2. Verify the incoming power, RJ-45 audio/video, Ethernet, and USB cables have been properly threaded through the wiring knockouts on the left of the rough-in box. *Leave enough slack in the wiring to accommodate any re-positioning of the panel.*

3. Connect all data and power wiring connectors to their corresponding locations along the side of the (un-powered) NXD touch panel.
    - Verify that the terminal end of the power cable is not connected to a power source before plugging in the 2-pin power connector.
    - The USB connectors can be from either a USB extension cable, or a wireless USB RF transmitter.

4. Test the incoming wiring by connecting the panel connections to their terminal locations and applying power. Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.

5. Disconnect the terminal end of the power cable from the connected power supply.

Don't disconnect the connectors from the touch panel. The unit must be installed with the attached connectors before being inserted into the rough-in box.

NOTE

6. Carefully slide the main NXD-CV5 unit (**B** in FIG. 17) into the rough-in box, so that all Mounting Tabs lie flush against the rough-in box (**C** in FIG. 17).

7. Insert and secure three #4-40 Mounting Screws (included) into their corresponding holes located along the sides of the NXD.

8. Place the Faceplate/Trim Ring (**A** in FIG. 17) back onto the main NXD unit (**B** in FIG. 17).
Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front faceplate/bezel.

9. Reconnect the terminal RJ-45, Ethernet, USB, and any optional audio/video wiring to their respective locations (*outside the rough-in box*) on either the NXA-AVB/ETHERNET Breakout Box, Ethernet port, or NetLinx Master.

10. Reconnect the terminal power connector on the 12 VDC-compliant power supply and apply power.

Installing the NXD into drywall using Expansion Clips

Expansion clips are mounted through the three oval holes located along the rim of the NXD-CV5. As the screw is tightened, the clip bends toward the insertion hole and into the wall. This bending creates a "grip" on the wall by either pressing onto the wall or by securing the drywall between the housing and the drywall clip.

The most important thing to remember when mounting the NXD is that the outer frame (Mounting Tabs) must be installed flush against the mounting surface.

- Refer to **SP-2261-02** for detailed installation dimensions (reproduced in FIG. 18).
- It is recommended that you cutout the surface slightly smaller than what is outlined in the installation drawings so that you can make any necessary cutout adjustments.

1. Prepare the area by removing any screws or nails from the drywall before beginning the cutout process.

2. Cut out the surface for the NXD Wall Mount unit.
- If installing the panel into a pre-existing wall or surface, place and secure the pre-printed ***Mounting Template for Flush Mount Drywall Installation (62-2261-10)*** onto the surface.
- Trace the required cutout along the drywall. Refer to the dimensions in FIG. 18 for more information.

CAUTION

It is recommended that the actual cutout opening be slightly smaller than the provided dimensions. This action provides the installer with a margin for error if the opening needs to later be expanded.
Be sure to cut out the three notches along the sides to accommodate the three corresponding drywall expansion clips (included within the Installation Kit).

3. Remove the Faceplate/bezel (**A** in FIG. 19) from the main NXD unit (**B** in FIG. 19) by gripping the faceplate and pulling with gentle outward force.
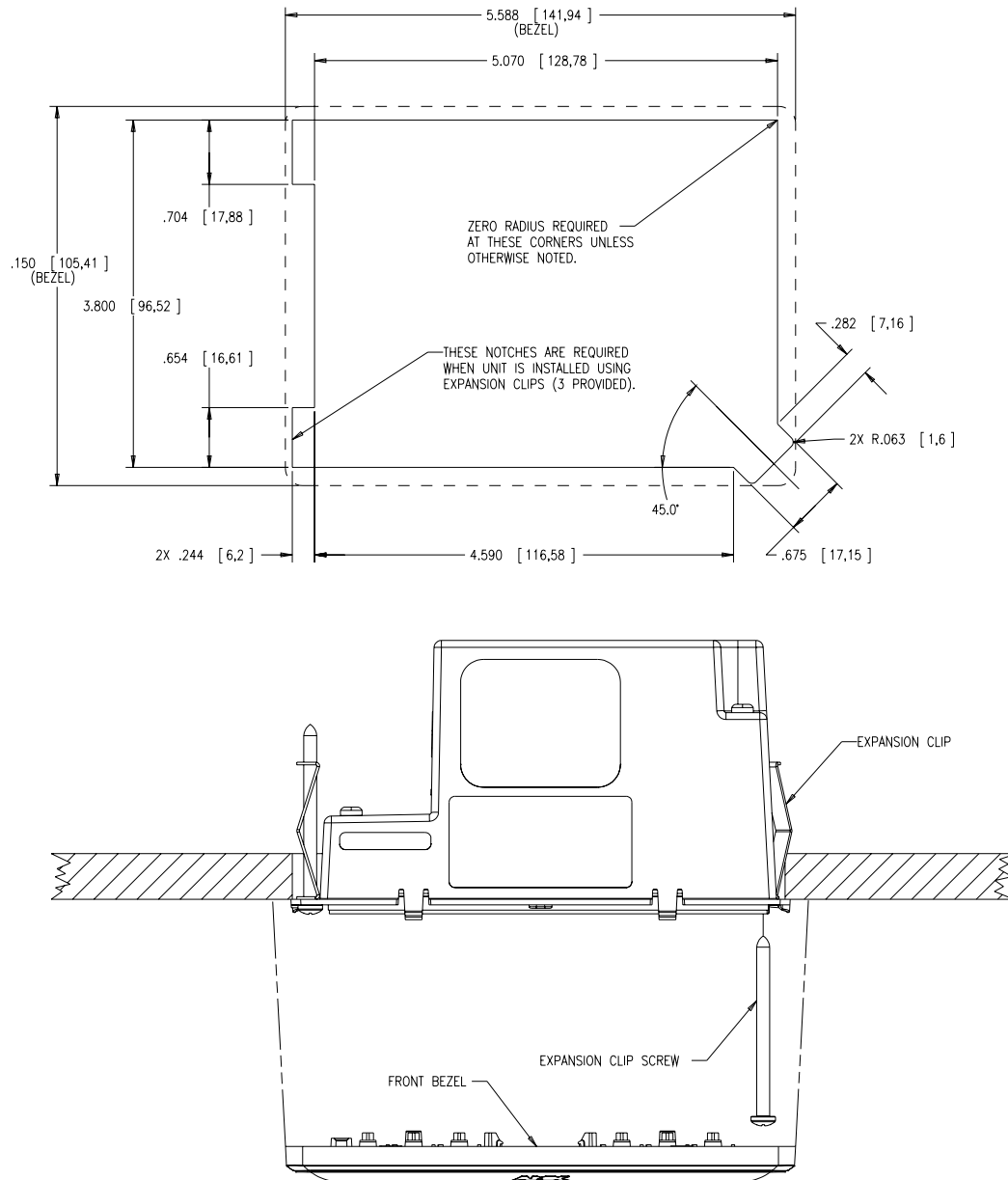
FIG. 18 NXD-CV5 Wall Mount panel dimensions using expansion clips

4. Thread the incoming power, RJ-45, Ethernet, USB, and any optional audio/video wiring (from their terminal locations) through the surface opening. *Leave enough slack in the wiring to accommodate any re-positioning of the panel.*

5. Connect all data and power wiring connectors to their corresponding locations along the left side of the (un-powered) NXD touch panel.
   - Verify that the terminal end of the power cable is not connected to a power source before plugging in the 2-pin power connector.
   - The USB connectors can be from a either a USB extension cable, or a wireless USB RF transmitter.
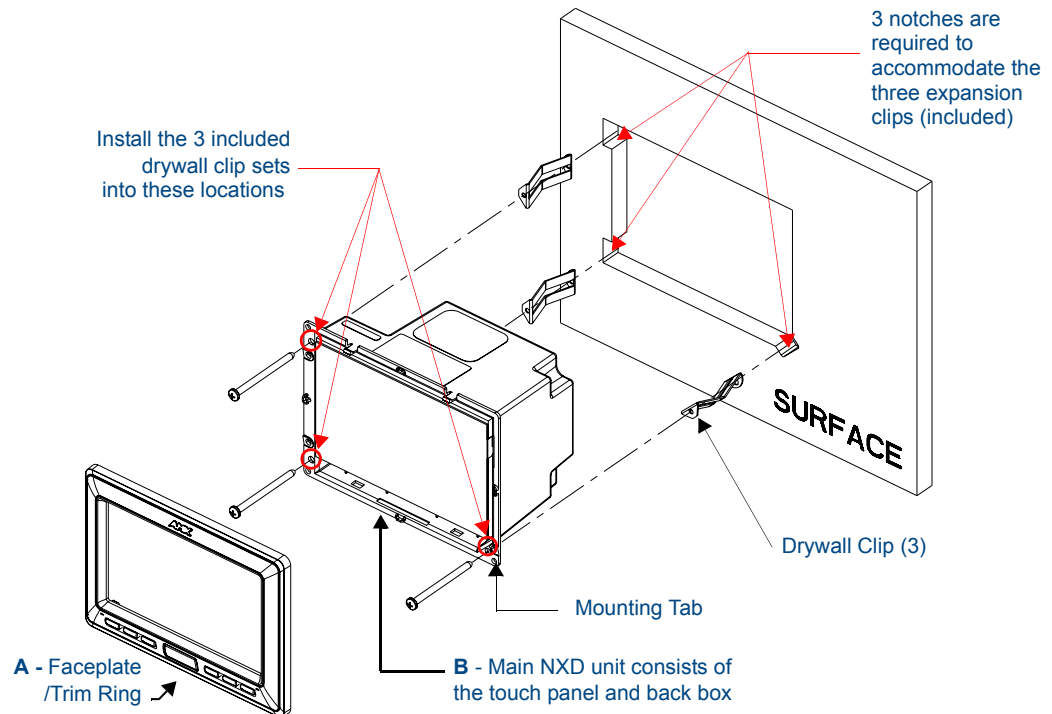
FIG. 19 Wall Mount panel (NXD) installation configuration for drywall surfaces

6. Test the incoming wiring by attaching the panel connections to their terminal locations and applying power. Verify the panel is receiving power and functioning properly to prevent repetition of the installation.

7. Disconnect the terminal end of the power cable from the connected power supply.

Don't disconnect the connectors from the touch panel. The unit must be installed with the attached connectors before being inserted into the drywall.

8. Install the three sets of drywall screws and expansion clips into the three oval notch locations along both sides of the main unit (**B** in FIG. 19).

9. Carefully insert the main unit (with expansion clips) into the cutout until the Mounting Tabs on the NXD unit lie flush against the wall.

The drywall clip set must be re-ordered from AMX if the drywall clip is bent accidentally during an installation or removed during a re-installation.

10. Tighten all three drywall clip sets (screws and clips) until the entire Mounting Tab is securely fastened and flush against the wall.

11. Place the Faceplate/Trim Ring assembly (**A** in FIG. 19) back onto the main NXD unit (**B** in FIG. 19). *Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front faceplate/bezel.*

12. Reconnect the terminal RJ-45, Ethernet, USB, and any optional audio/video wiring to their respective locations on either the NXA-AVB/ETHERNET Breakout Box, Ethernet port, or NetLinx Master.

13. Reconnect the terminal power connector on the 12 VDC-compliant power supply and apply power.

Installing the NXD into a Flat Surface using #4 screws

Mounting screws (#4, not included) are secured through circular holes located at the left and right sides of the NXD-CV5. **The most important thing to remember when mounting the NXD is that the outer frame (Mounting Tabs) must be installed flush against the mounting surface.**

- Refer to **SP-2261-02** for detailed installation dimensions (reproduced in FIG. 20).
- It is recommended that you cutout the surface slightly smaller than what is outlined in the installation drawings so that you can make any necessary cutout adjustments.

1. Prepare the area by removing any screws or nails from the surface before beginning the cutout process.

2. Cut out the surface for the NXD Wall Mount unit using the dimensions shown in FIG. 20.
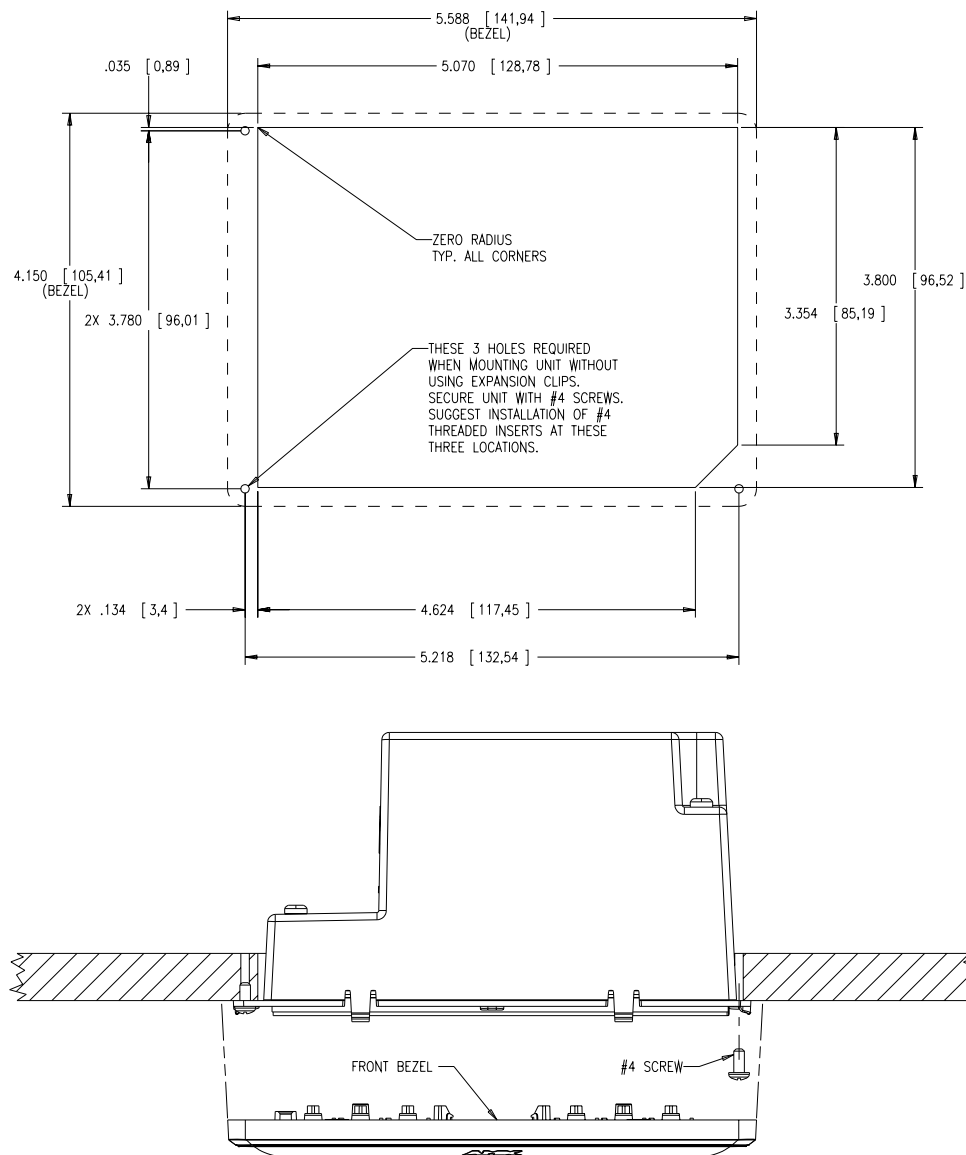
FIG. 20 NXD-CV5 Wall Mount panel dimensions using #4 mounting screws

3. Remove the Faceplate/bezel (**A** in FIG. 21) from the main NXD unit (**B** in FIG. 21) by gripping the faceplate and pulling with gentle outward force.
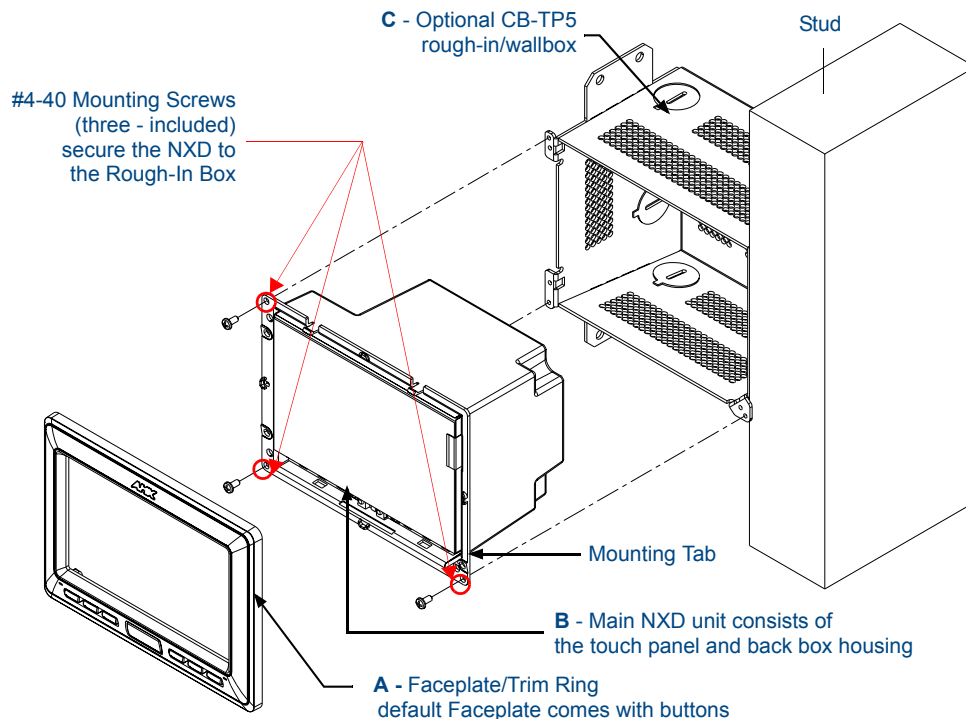
4. Thread the incoming power, RJ-45, Ethernet, USB, and any optional audio/video wiring (from their terminal sources) through the surface opening. *Leave enough slack in the wiring to accommodate any re-positioning of the panel.*

5. Connect all data and power wiring connectors to their corresponding locations along the left side of the (un-powered) NXD touch panel.
    - Verify that the terminal end of the power cable is not connected to a power source before plugging in the 2-pin power connector.
    - The USB connectors can be from a either a USB extension cable, or a wireless USB RF transmitter.

6. Test the incoming wiring by connecting the panel connections to their terminal locations and applying power. Verify that the panel is receiving power and functioning properly before finalizing the installation.
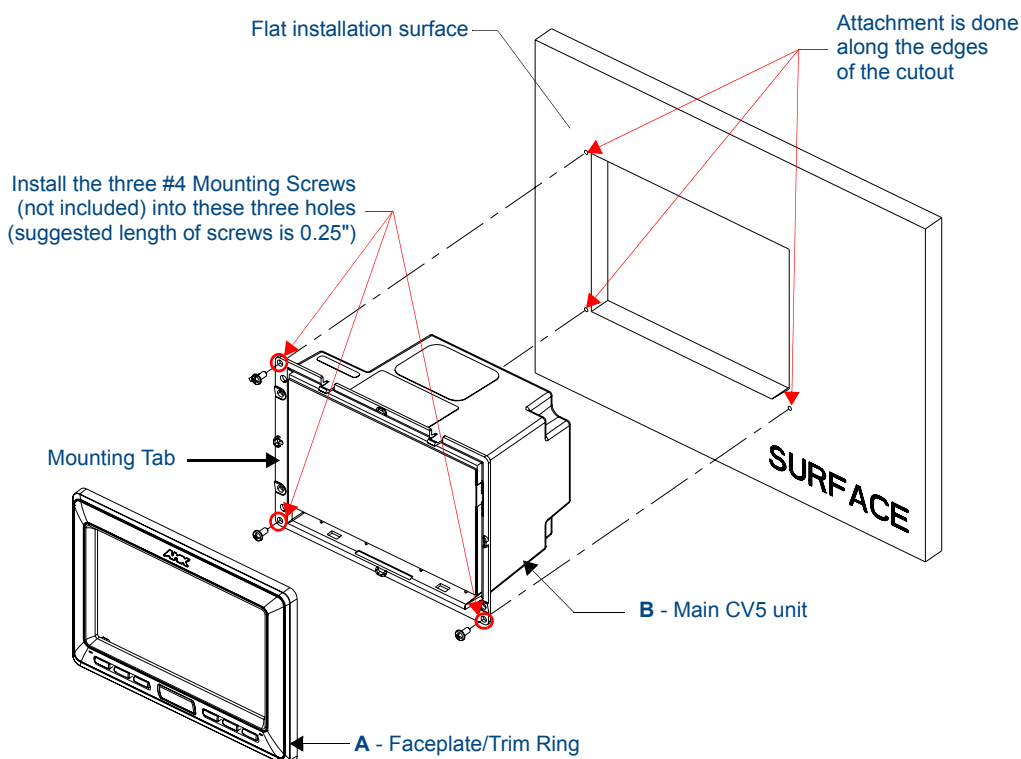
FIG. 21 Wall Mount panel installation configuration for flat surfaces

7. Disconnect the terminal end of the power cable from the power supply.

> *Don't disconnect the connectors from the touch panel. The unit must be installed with the necessary connectors before being inserted into the solid surface.*

8. Carefully slide the main unit into the cutout until the Mounting Tabs of the CV5 unit lie flush against the wall.

9. Insert and secure three #4 Mounting Screws (not included) into their corresponding holes located along the sides of the NXD-CV5 (using a grounded Phillips-head screwdriver) until the unit is secure and flush against the wall (FIG. 21).

10. Place the Faceplate/Trim Ring assembly (**A** in FIG. 21) back onto the main NXD unit (**B** in FIG. 21). *Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front bezel/faceplate.*

11. Reconnect the terminal RJ-45, Ethernet, USB, and any optional audio/video wiring to their respective locations on either the NXA-AVB/ETHERNET Breakout Box, Ethernet port, or NetLinx Master.

12. Reconnect the terminal power connector on the 12 VDC-compliant power supply and apply power.

Installing an NXD-CV5 into a Rack Mount Kit (NXA-RK5)

The NXA-RK5 is a 19" (48.26 cm) wide metal rack-mount (with black matte finish) measuring
3 rack units high.

1. Remove the Faceplate/Trim Ring assembly from the main CV5 unit.

2. Thread the incoming power, RJ-45 audio/video, Ethernet, and USB wiring (from their terminal sources) through the surface opening, leaving enough slack in the wiring to accommodate any re-positioning of the panel.

3. Connect all data and power wiring connectors to their corresponding locations along the left side of the (un-powered) NXD touch panel.
   - Verify that the terminal end of the power cable is not connected to the a power supply before plugging in the 2-pin power connector.
   - The USB connectors can be from a either a USB extension cable, or a wireless USB RF transmitter.

4. Test the incoming wiring by connecting the panel connections to their terminal locations and applying power. Verify that the panel is receiving power and functioning properly to prevent repetition of the installation.

5. Disconnect the terminal end of the power cable from the connected power supply.

Don't disconnect the connectors from the touch panel. The unit must be installed with the necessary connectors before being inserted into the equipment rack.

NOTE

6. Carefully insert the CV5 panel into the NXA-RK5.

7. Secure the panel to the NXA-RK5 mount by first inserting and then tightening the three #4-40 screws (included).

8. Insert the NXA-RK5 (with connected NXD unit) into the equipment rack, making sure to align the screw holes along the sides on the NXA-RK5 with the holes in the equipment rack.

9. Use a grounded Phillips-head screwdriver to secure the NXA-RK5 to the equipment rack using the #10-32 screws (included).

10. Place the Faceplate/Trim Ring assembly back onto the main NXD unit. *Make sure to align the Microphone, Light, and PIR Motion sensor locations to their respective openings on the front faceplate/ bezel.*

11. Reconnect the terminal RJ-45 audio/video, Ethernet, and USB wiring to their respective terminal locations on either the NXA-AVB/ETHERNET Breakout Box, Ethernet port, or NetLinx Master.

12. Reconnect the terminal power connector on the 12 VDC-compliant power supply and apply power.

Wiring Guidelines for the CV5 Panels

The CV5 panel uses a 12 VDC-compliant power supply to provide power to the panel via the 2-pin 3.5 mm mini-Phoenix PWR connector. Use the power requirements information (page 2) to determine the power draw.

The incoming PWR and GND wires from the power supply must be connected to the corresponding locations within the PWR connector.

WARNING

This unit should only have one source of incoming power.
Using more than source of power to the panel can result in damage to the internal components and a possible burn out.
*Apply power to the panels **only after** installation is complete.*

Preparing captive wires

You will need a wire stripper and flat-blade screwdriver to prepare and connect the captive wires.

WARNING

Never pre-tin wires for compression-type connections.

1. Strip 0.25 inch (6.35 mm) of insulation off all wires.
2. Insert each wire into the appropriate opening on the connector (according to the wiring diagrams and connector types described in this section).
3. Tighten the screws to secure the wire in the connector. Do not tighten the screws excessively; doing so may strip the threads and damage the connector.

Wiring a power connection

To use the 2-pin 3.5 mm mini-Phoenix connector with a 12 VDC-compliant power supply, the incoming PWR and GND wires from the external source must be connected to their corresponding locations on the connector (FIG. 22).

1. Insert the PWR and GND wires on the terminal end of the 2-pin 3.5 mm mini-Phoenix cable.
   Match the wiring locations of the +/- on both the power supply and the terminal connector.
2. Tighten the clamp to secure the two wires. *Do not tighten the screws excessively; doing so may strip the threads and damage the connector.*
3. Verify the connection of the 2-pin 3.5 mm mini-Phoenix to the external 12 VDC-compliant power supply.

PWR +
GND -
To the Touch Panel

Power Supply
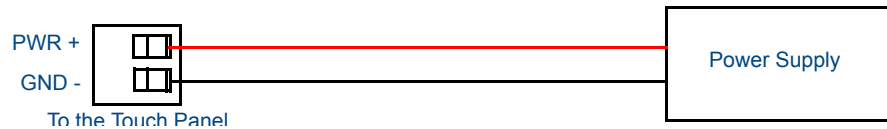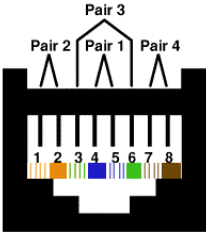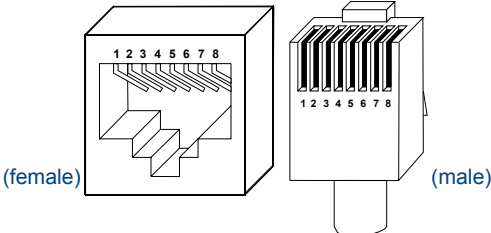
FIG. 22 NetLinx power connector wiring diagram

Audio/Video Port: Connections and Wiring

The following table shows the signal and pinout/pairing information used on the RJ-45 Audio and Video connections.

Audio/Video RJ-45 Pinout Information				
Pin	**Wire Color**	**Function**	**Polarity**	
1	Orange/White	Right Audio In	+	
2	Orange	Right Audio In	-	
3	Green/White	Video In	-	
4	Blue	Mic Out	-	
5	White/Blue	Mic Out	+	
6	Green	Video In	+	
7	White/Brown	Left Audio In	+	
8	Brown	Left Audio In	-	

RJ-45 connector - pin configurations

Ethernet/RJ-45 Port: Connections and Wiring

FIG. 23 describes the blink activity for the Ethernet 10/100 Base-T RJ-45 connector and cable. The Ethernet cable is connected to the side of the Wall Mount panels.

A - Activity LED (yellow) lights when receiving or transmitting Ethernet data packets

L - Link LED (green) lights when the Ethernet cables are connected and terminated correctly.
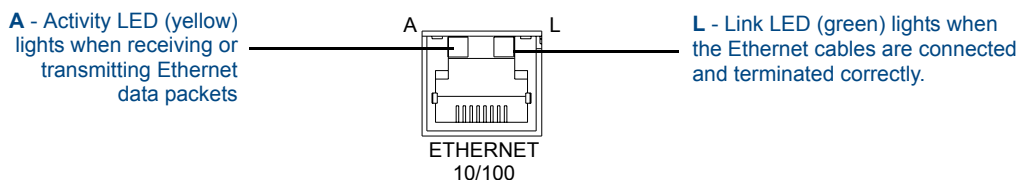
FIG. 23 Ethernet connector (showing communication and connection LEDs)

The following table lists the pinouts, signals, and pairing for the Ethernet connector.

Ethernet RJ-45 Pinouts and Signals					
Pin	**Signals**	**Connections**	**Pairing**	**Color**	
1	TX +	1 --------- 1	1 --------- 2	Orange-White	
2	TX -	2 --------- 2		Orange	
3	RX +	3 --------- 3	3 --------- 6	Green-White	
4	no connection	4 --------- 4		Blue	
5	no connection	5 --------- 5	4 --------- 5	Blue-White	
6	RX -	6 --------- 6		Green	
7	no connection	7 --------- 7	7 --------- 8	Brown-White	
8	no connection	8 --------- 8		Brown	
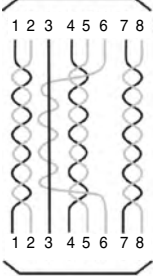
FIG. 24 diagrams the RJ-45 pinouts and signals for the Ethernet RJ-45 connector and cable.
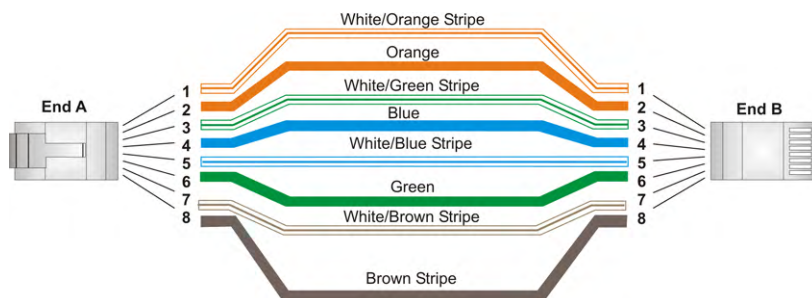
FIG. 24 RJ-45 wiring diagram

USB Port: Connecting and Using Input Devices

The CV5 panel can have up to two USB-capable input devices connected for use on its different firmware and TPD4 panel pages. These input devices can consist of a keyboard or mouse.

> *USB-connected input devices are not detected and recognized by the panel until power is cycled to the unit.*
> ***A mini-USB connection is only detected after it is installed onto an active panel. Connection to a previously powered panel, allows the PC to detect the panel and assign an appropriate USB driver.***

1. Insert the input device USB connectors into the appropriate USB connector on the panel.

2. Press the on-screen **Reboot** button from the Protected Setup page to save any changes and restart the panel.

3. After the panel splash-screen disappears:
   - If a USB mouse has been connected, a mouse cursor appears on the panel screen and its location corresponds to the mouse cursor position sent by the external USB mouse.
   - If a USB keyboard has been connected, only on-screen keyboards and keypads will reflect any external keystrokes sent from the external USB keyboard.

Panel Calibration

Overview

This section outlines the steps for calibrating the touch panel. *It is recommended that you calibrate the panel before its initial use and after completing a firmware download.*

Modero panels are factory setup with specific demo touch panel pages. The first splash screen that appears indicates the panel is receiving power, beginning to load firmware, and preparing to display the default touch panel pages. When the panel is ready, the AMX Splash Screen is replaced by the Initial Panel Page (FIG. 25).

AMX Splash Screen
(appears during power-up)

Initial Panel Page
(AMX Logo Page)
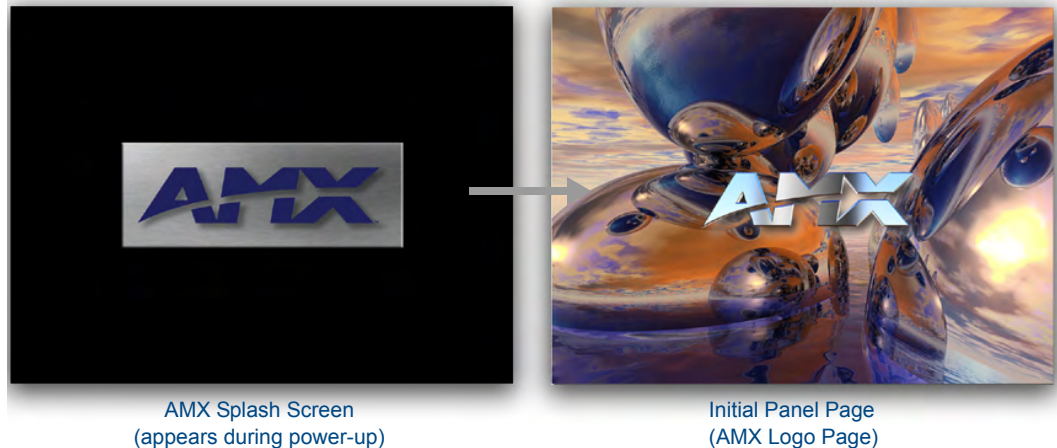
FIG. 25 AMX splash screen and initial Panel Page

Calibrating the Modero Panel

1. Press and hold the grey Front Setup Access button (FIG. 26) for **6 seconds** to pass-over the Setup page and access the Calibration setup page (FIG. 27).

Single press puts
the panel to sleep

3 second press/hold:
Opens the Setup page

6 second press/hold:
Opens the Calibration page

Front Setup Access button (grey)
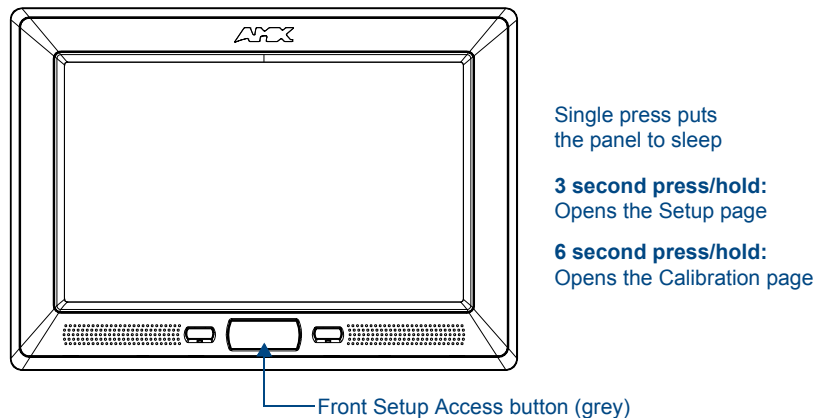
FIG. 26 Location of Front Setup Access button

2. Press the crosshairs (on the Calibration page) to set the calibration points on the LCD (FIG. 27).
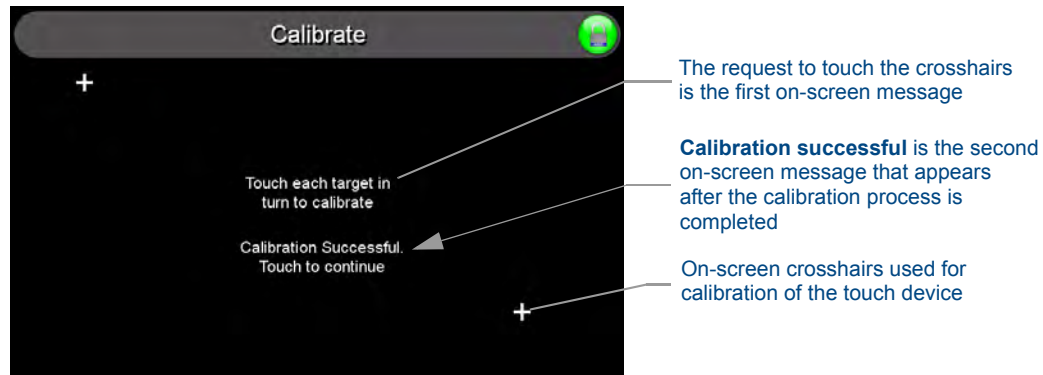
FIG. 27 Touch Panel Calibration Screens

The request to touch the crosshairs is the first on-screen message

Calibration successful is the second on-screen message that appears after the calibration process is completed

On-screen crosshairs used for calibration of the touch device

3. After the "*Calibration Successful..*" message appears, press anywhere on the screen to continue and return to the Setup page.

> **NOTE**
>
> *If the calibration was improperly set and you cannot return to the Calibration page (through the panel's firmware);* *you can then access this firmware page via G4 WebControl where you can navigate to the Protected Setup page and press the Calibrate button through your VNC window.*
> *This action causes the panel to go to the Calibration page seen above, where you can physically recalibrate the actual touch panel again using the above procedures.*

Testing your Calibration

1. Press and hold down the on-screen **Calibration** button for 6 seconds to enter the Calibration Test page (FIG. 28).

FIG. 28 Calibration Test page

On-screen crosshairs is used to verify a proper calibration of the panel
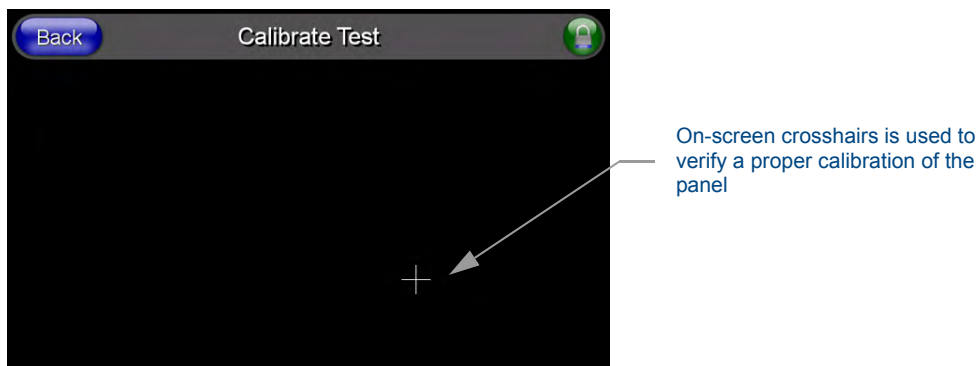
2. Press anywhere on this page to confirm the on-screen crosshairs match your touch points.

3. If the crosshairs do not appear directly below your LCD touch points, press the **Back** button and recalibrate the panel using the above steps.

4. Exit this Calibration Test page by pressing the **Back** button to return to the Protected Setup page.

Configuring Communication

Overview

Communication between the Modero panel and the Master is done using either **USB** or **ETHERNET** (**DHCP or Static IP**). Ethernet communication can only be achieved via a direct Ethernet connection (*the NXA-WC802.11B/CF wireless interface card is not available on the CV5*).

> **WARNING**
>
> *Before commencing, verify you are using the latest NetLinx Master and Modero panel firmware. Verify you are using the latest versions of AMX's NetLinx Studio and TPDesign4 programs.*

> **NOTE**
>
> *USB input devices must be plugged into the rear or side USB connectors before the G4 panel is powered-up. The panel will not detect a USB connection of this type until after the unit cycles power.*

Modero Setup and System Connection

1. Press the grey Front Setup Access button for **3 seconds** to open the Setup page (FIG. 29).
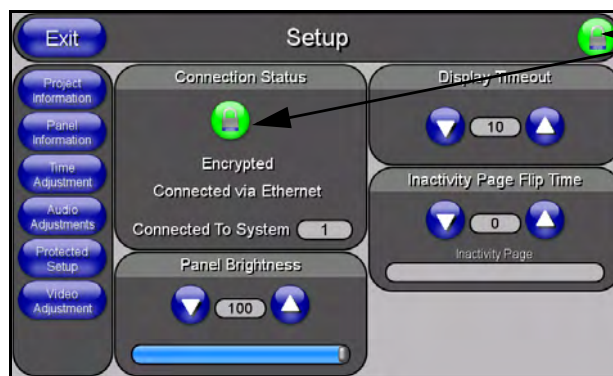
Connection Status

Red Connection Status icon - indicates no connection to a Master

Green Connection Status icon - indicates communication to a Master

FIG. 29 Setup page

2. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the Protected Setup page and display an on-screen keypad.

3. Enter *1988* into the Keypad's password field and press **Done** when finished.

> **NOTE**
>
> *Clearing Password #5, from the initial Password Setup page, removes the need for you to enter the default password before accessing the Protected Setup page.*

4. Press the red *Device Number* field to open the Device Number keypad (FIG. 30).

5. Enter a **Device Number** for the panel into the Device Number Keypad.
   The default is 10001 and the range is from 1 - 32000.

> **NOTE**
>
> *When using multiple panels within a NetLinx System, remember to assign unique Device Number values to each panel so that all assigned panels appear in the System listing for the target Master.*

6. Press **Done** to close the keypad, assign the number, and return to the Protected Setup page.

7. Press the on-screen **Reboot** button to restart the panel and incorporate any changes.
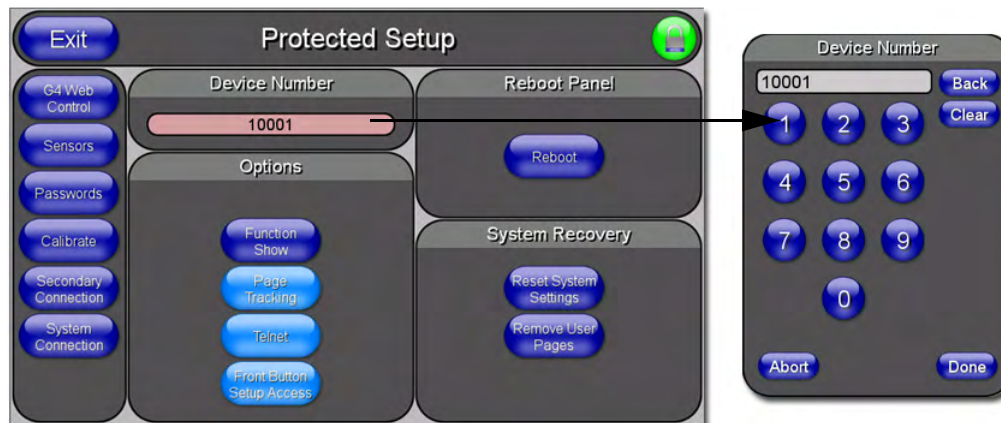
FIG. 30 Protected Setup page

Before continuing, open NetLinx Studio. This program assists in developing a System Number, Master IP/URL, and Master Port number. Refer to your NetLinx Master's instruction manuals for more information.

NOTE

8. Obtain the System Number and Master IP Address from NetLinx Studio. This information must be specific for the system used with the configured Modero panel.

9. Press the grey Front Setup Access button for **3 seconds** to open the Setup page.

10. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the Protected Setup page.

11. Press the **System Connection** button (located on the Protected Setup page) to open the System Connection page (FIG. 31) and begin configuring the communication settings on the panel to match those of the target Master.

Modero connection information

NetLinx Master's connection information

MAC Address from panel is factory set to a unique address
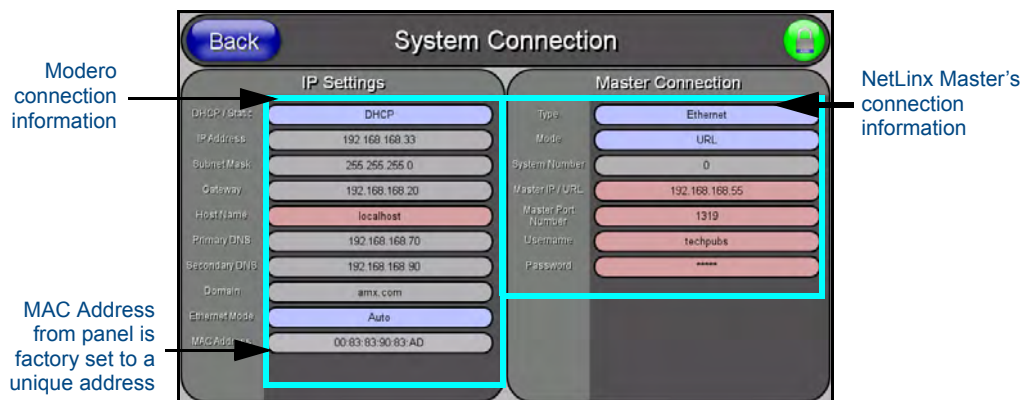
FIG. 31 System Connection page

*There are 2 possible Master Connection Types available: **USB** or **Ethernet**.
A USB connection type is a **direct connection** from the panel's mini-USB port to a corresponding USB port on the PC (acting as a Virtual Master).
An Ethernet connection type involves indirect communication from the panel to a Master via an Ethernet connection to the network.*

NOTE

It is recommended that firmware KIT files only be transferred over a direct connection and only when the panel is connected to a power supply. I

WARNING

*The mini-USB connector **MUST** be plugged into an already active panel before the PC can recognize the connection and assign an appropriate USB driver. This driver is part of both the NetLinx Studio and TPDesign4 software application installations.*

Configuring and Using USB with a Virtual Master

NetLinx Studio can be setup to run a Virtual Master where the PC acts as the Master by supplying its own IP Address for communication to the panel. The PC is first equipped with the USB driver, the panel is then configured for USB communication, and then Studio is configured to act as the Master.

For a personal computer to establish a connection to a Modero panel via USB, the target computer must have the appropriate AMX USB driver installed. This installation is bundled into the latest TPDesign4 software setup process or can be downloaded independently from the main Application Files page on **www.amx.com**.

Step 1: Setup the Panel and PC for USB Communication

1. If you do not currently have the latest version of TPDesign4, navigate to **www.amx.com > Tech Center > Downloadable Files > Application Files > NetLinx Design Tools** section of the website and locate the AMX USB Driver executable (**AMX USBLAN Setup exe**).

2. Download this executable file to a known location on your computer.

3. Launch the Setup.exe and follow the on-screen prompts to complete the installation.

Step 2: Confirm the Installation of the USB Driver on the PC

The first time each AMX touch panel is connected to the PC it is detected as a new hardware device and the USBLAN driver becomes associated with it (**panel specific**). Each time thereafter the panel is "recognized" as a unique USBLAN device and the association to the driver is done in the background. When the panel is detected for the **first time** some user intervention is required during the association between panel and driver.

1. After the installation of the USB driver has been completed, confirm the proper installation of the large Type-A USB connector to the PC's USB port, and restart your machine.

If the panel is already powered, continue with steps 3.
The panel MUST be powered and configured for USB communication before connecting the mini-USB connector to the panel's Program Port.

2. Connect the terminal end of the 12 VDC-compliant power supply cable to the power connector on the rear/side of the touch panel and then apply power.

3. After the CV5 panel powers-up, press and hold the grey Front Setup Access button (**for 3 seconds**) to continue with the setup process and proceed to the Setup page.

4. Select **Protected Setup > System Connection** (located on the lower-left) to open the System Connection page (FIG. 32).
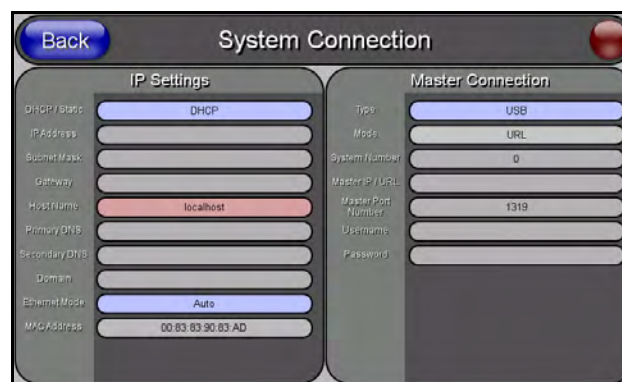
No connection is established until the Virtual Master becomes active within Studio

Red Connection Status icon - indicates no connection to a Virtual Master

Green Connection Status icon - indicates communication to a Virtual Master

FIG. 32 USB System Connection page - using a USB Connection Type

5. Toggle the blue *Type* field (*from the Master Connection section*) until the choice cycles to **USB**. Refer to the *System Settings Page* section on page 68 for more information about the fields on this page.

ALL fields are then greyed-out and read-only, but still display any previous network information.

6. Press the **Back** button on the touch panel to return to the Protected Setup page.

7. Press the on-screen **Reboot** button to both save any changes and **restart the panel.** *Remember that the panel's connection type must be set to USB prior to rebooting the panel and prior to inserting the USB connector.*

8. **ONLY AFTER** the unit displays the first panel page, **THEN** insert the mini-USB connector into the Program Port on the panel. It may take a minute for the panel to detect the new connection and send a signal to the PC (*indicated by a green System Connection icon*). If this is your first time installing the USB driver, a USB driver installation popup window (FIG. 33) appears on the PC.
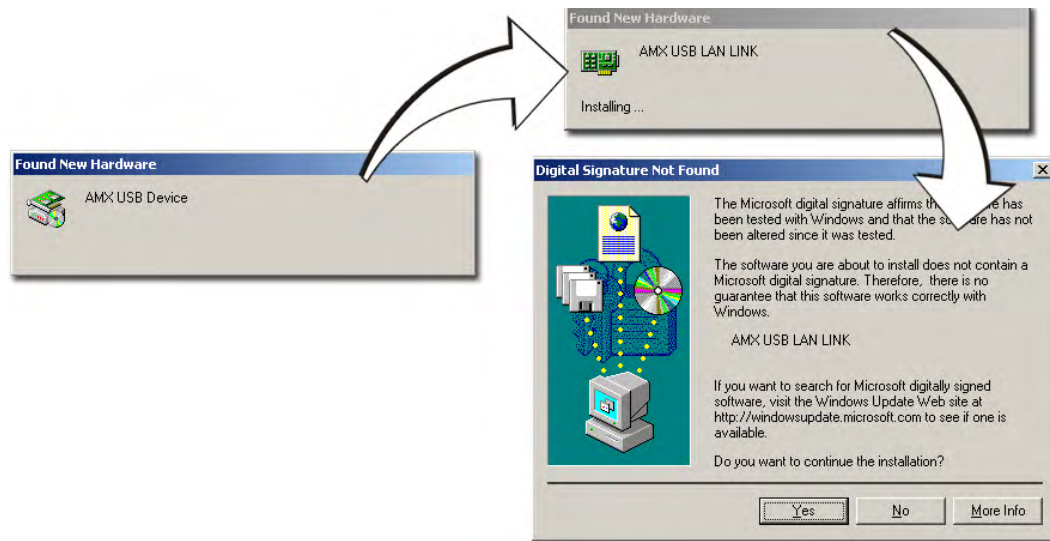
FIG. 33 USB driver installation popup window

- This window notifies you that the panel has been detected by the PC as a USB-compliant device and the PC is installing an appropriate USB driver to establish a proper communication to the panel.
- This driver was installed on your PC during the installation of the latest NetLinx Studio and TPDesign4 software application installations. **These applications should be installed prior to setting up a USB connection to the panel.**
- The driver does not contain a Microsoft® digital signature and Windows® then informs you of such.

9. Click **Yes** when told that a digital signature was not found. This action accepts the installation of the new AMX USB driver. **The panel is now configured to communicate directly with the PC.**

This process completes the association between driver and device.

Each time the same touch panel is connected to the computer the driver is automatically loaded (*using a unique name - example USB LAN LINK #1, #2*)**.**

Each time a different touch panel is connected to the computer, the previous procedures will need to be repeated.

10. Navigate back to the System Connection page.

Step 3: Confirm and View the current AMX USB device connections

The USB driver information can be confirmed via two different methods:

- Via the Control panel (previous steps 1 and 2) or
- Via the **Unplug or Eject Hardware** icon from the Taskbar.

1. Navigate to **Start > Settings > Control Panel >** and double-click the **System** icon to launch the System Properties dialog.

2. Select the **Hardware** tab and click on the **Device Manager** button to launch the Device Manager dialog.

   - Within the *Device Manager* dialog, the AMX USBLAN device appears under Network Adapters (FIG. 34) and has a unique name such as AMX USB LAN LINK #2. The number changes depending on which recognized panel is currently connected.
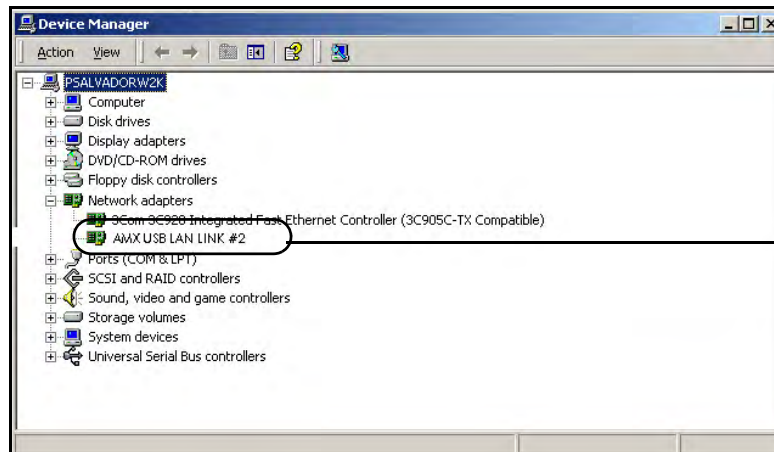
USB connected touch panel (showing the recognized panel)

FIG. 34 Device Manager dialog showing USB device

3. Confirm that a new USB detection icon (FIG. 35) appears in the lower-right taskbar on the PC display window.

4. Double-click on the icon to open the **Unplug or Eject Hardware** window and confirm the AMX USB LAN LINK has been installed and is operating properly.

> *A Virtual NetLinx Master (VNM) is used when the target panel is not connected to a physical NetLinx Master. In this situation, the PC takes on the functions of a Master via a Virtual NetLinx Master.* **This connection is made by either using the PC's Ethernet Address (via TCP/IP using a known PC's IP Address as the Master) or using a direct mini-USB connection to communicate directly to the panel***.*

5. Click the **Properties** button to view further information about the installed USB driver.
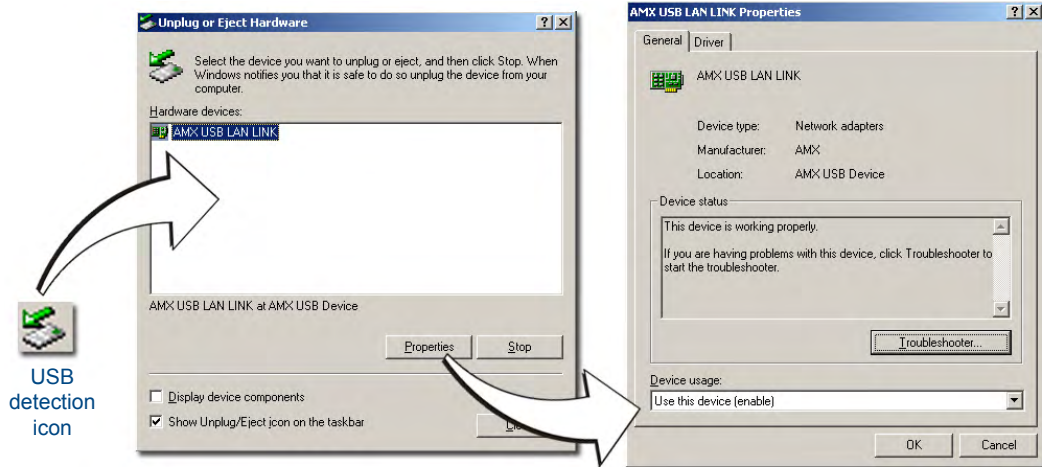
FIG. 35 USB Properties windows

If there is a yellow exclamation point next to the AMX USB LAN LINK device (within the hardware devices section of the Unplug or Eject Hardware window), stop and close the USB operation. Reconnect the USB cable to the panel and repeat the setup procedures. Refer to the Troubleshooting section on page 135 for more detailed information.

To remove the USB driver association from a previously connected touch panel, you must navigate back to the Device Manager, right-click on the panel's USB driver (example AMX USB LAN LINK #2) and select **Uninstall** from the context menu and then **OK**.

- Once the system completes the removal of the device, the Device Manager window will refresh, and the device will no longer appear.
- The next time this device is connected to the computer it will appear as a new hardware device and will need to be associated again with the driver (refer to *Step 2: Confirm the Installation of the USB Driver on the PC* section on page 33.

Step 4: Use the USB to Configure a Virtual Master (using NetLinx Studio)

When configuring your panel to communicate via USB with a Virtual Master (on your PC), ONLY the USB connection option must be selected within the Type field. Since this is a direct connection, the PC's IP Address is not needed.

Before beginning:

1. Verify the panel has been configured to communicate via USB within the System Connection page and that the USB driver has been properly configured. Refer to the previous section for more information.

2. Launch NetLinx Studio 2.x (default location is **Start > Programs > AMX Control Disc > NetLinx Studio 2 > NetLinx Studio 2**).

3. Select **Settings > Master Communication Settings**, from the Main menu to open the Master Communication Settings dialog (FIG. 36).

4. Click the **Communications Settings** button to open the *Communications Settings* dialog.

5. Click on the **NetLinx Master** radio button (*from the Platform Selection section*) to indicate that you are working as a NetLinx Master.

6. Click on the **Virtual Master** radio box (*from the Transport Connection Option section*) to indicate you are wanting to configure the PC to communicate directly with a panel. Everything else such as the Authentication is greyed-out because you are not going through the Master's UI.

7. Click the **Edit Settings** button (*on the Communications Settings dialog*) to open the *Virtual NetLinx Master Settings* dialog (FIG. 36).

8. From within this dialog enter the System number (default is **1**).
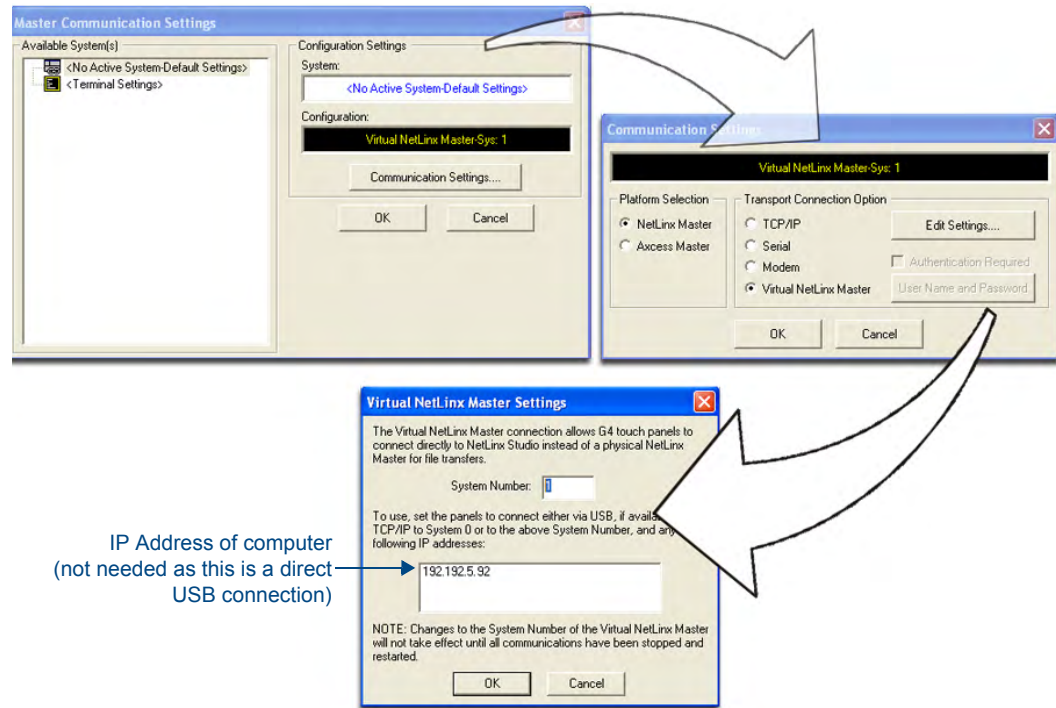
FIG. 36 Assigning Communication Settings for a Virtual Master

9. Click **OK** three times to close the open dialogs, save your settings, and return to the main NetLinx Studio application.

10. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System. *The default System value is one*.

11. Right-click on the *Empty Device Tree/System* entry and select **Refresh System** to re-populate the list. *The panel will not appear as a device below the virtual system number (in the Online Tree tab) until both the system number used in step 7 for the VNM is entered into the Master Connection section of the System Connection page and the panel is restarted.*

- The Connection status turns green after a few seconds to indicate an active USB connection to the PC (Virtual Master). No Lock icon is displayed because this USB connection is not secured (*requiring a username/password*).

NOTE

If the G4 panel does not appear, refer to the Troubleshooting section on page 135 for more information.

- If a few minutes have gone by and the System Connection icon still does not turn green, repeat the USB connection and Virtual Master setup procedures (outlined in this section). Refreshing the System sends out a request to the panel to respond and completes the communication (*turning the System Connection icon green*).

Step 5: Confirm and View the current AMX USB device connections

Use the CC-USB Type-A to Mini-B 5-wire programming cable (**FG10-5965**) to provide communication between the mini-USB Program port on the touch panel and the PC. This method of communication is used to transfer firmware KIT files and TPD4 touch panel files.

A mini-USB connection is only detected after it is installed onto an active panel. Connection to a previously powered panel which then reboots, allows the PC to detect the panel and assign an appropriate USB driver.

1. Verify this direct USB connection (Type-A on the panel to mini-USB on the panel) is configured properly using the steps outlined in the previous two sections.

2. With the panel already configured for USB communication and the Virtual Master setup within NetLinx Studio, its now time to verify the panel is ready to receive files.

3. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System. *The default System value is one*.

4. Right-click on the System entry (**A** in FIG. 37) and select **Refresh System**. This causes a refresh of all project systems, establishes a new connection to the Virtual Master, and populates the System list with devices on your particular system.
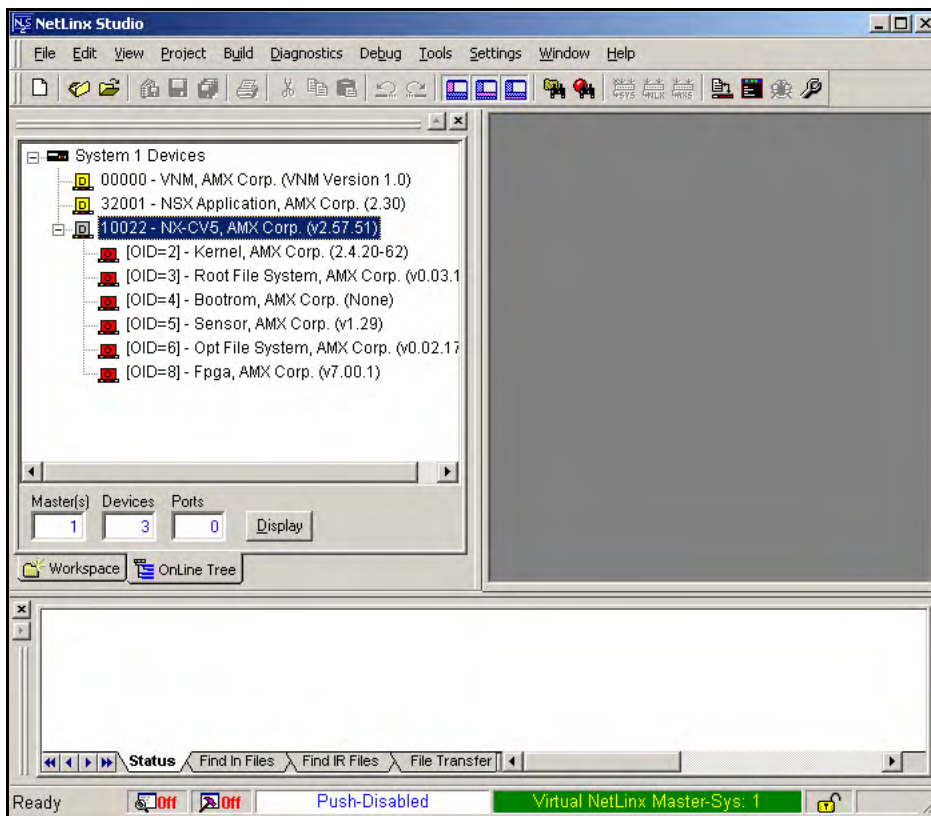
FIG. 37 Using USB for Virtual Master communication

Configuring a Wired Ethernet Connection

It is necessary to tell the panel which Master it should be communicating with. This "pointing to a Master" is done via the System Connection page where you configure the IP Address, System Number and Username/Password information assigned to the target Master. Until those parameters are configured, your Connection Status icon will remain red (*indicating there is no current connection to a Master*).

Step 1: Configure the Panel's Wired IP Settings

This panel has only one method of communicating to a target Master over the Internet: Wired (direct Ethernet connection) (*wireless communication is not available on the CV5*). You can only configure the connection parameters through the System Connection page. This type of communication can be established either via either a Dynamic IP Address (*DHCP*) or via a pre-reserved Static IP Address (*typically provided by your System Administrator*).

IP Settings section - Configuring a DHCP Address over Ethernet

1. Select Protected Setup > System Connection (located on the lower-left) to open the System Connection page.

2. Locate the IP Settings section of this page.

*Even though the Host, Gateway, Primary DNS, Secondary DNS, and Domain fields appear on the two separate System Connection and Secondary Connection pages; **the information populating these fields is identical.***
If the information within one of these fields is altered, the change is reflected on both pages within the altered field.
***Example**: Domain is altered on Secondary Connection page, the value is then also changed within the Domain field of the System Connection page.*

3. Toggle the *DHCP/Static* field (***from the IP Settings section***) until the choice cycles to **DHCP**.

DHCP will register the unique MAC Address (factory assigned) on the panel and once the communication setup process is complete, reserve an IP Address, Subnet Mask, and Gateway values from the DHCP Server.

4. Press the optional *Host Name* field to open a Keyboard and enter the Host Name information.

5. Press **Done** after you are finished assigning the alpha-numeric string of the host name.

6. Do not alter any of the remaining greyed-out fields in the IP Settings section. *Once the panel is rebooted, these values are obtained by the unit and displayed in the DNS fields after power-up*.

This information can be found in either the: Workspace- System name > Define Device section of your code (that defines the properties for your panel), or in the Device Addressing/Network Addresses in the Tools > NetLinx Diagnostics dialog.

7. Press the **Back** button to return to the Protected Setup page.

8. Press the on-screen **Reboot** button to both save any changes and restart the panel.

IP Settings section - Configuring a Static IP Address over Ethernet

1. Select **Protected Setup** > **System Connection** (located on the lower-left) to open the System Connection page.

2. Locate the IP Settings section of this page.

Check with your System Administrator for a pre-reserved Static IP Address assigned to the panel. This address must be obtained before Static assignment of the panel continues.

3. Toggle the *DHCP/Static* field (***from the IP Settings section***) until the choice cycles to **Static**.

4. Press the *IP Address* field to open a Keyboard and enter the Static IP Address (*provided by your System Administrator*).

5. Press **Done** after you are finished entering the IP information.

6. Repeat the same process for the *Subnet Mask* and *Gateway* fields.

7. Press the optional *Host Name* field to open the Keyboard and enter the Host Name information.

8. Press **Done** after you are finished assigning the alpha-numeric string of the host name.

9. Press the Primary DNS field to open a Keyboard, enter the Primary DNS Address (provided by your System Administrator) and press **Done** when compete. Repeat this process for the Secondary DNS field.

10. Press the *Domain* field to open a Keyboard, enter the resolvable domain Address (*this is provided by your System Administrator and equates to a unique Internet name for the panel*), and press **Done** when complete.

11. Navigate to the Master Connection section of this page to begin configuring the communication parameters for the target Master.

Step 2: Choose a Master Connection Mode Setting

There are three Ethernet MODE settings used in the Master Connection section of the System Connection page. **URL is the most common method.**

- **Master Connection MODE** options:
    - **URL** (**Uniform Resource Locator**) is the address that defines the route to a file on the Web or any other Internet facility.
    In this system, the panel acts as a "Client" and the Master acts as a Server (in that Clients attach to it).
    - **LISTEN** sets the Modero panel to "listen" for broadcasts from the Master (using the panel IP from its URL list). In this system, the panel acts as a "Server" (in that Clients attach to it) and the Master acts as a "Client".
    - **AUTO** is used to instruct the Modero to search for a Master that uses the same System Number (assigned within the Master Connection section) and resides on the same Subnet as itself. In this case, the Master has its UDP feature enabled.
    This **UDP** (**User Datagram Protocol**) is a protocol within the TCP/IP protocol suite that is used in place of TCP when a reliable delivery is not required.
    This UDP enabling is done through a Telnet session on the Master. Refer to the particular NetLinx Master manual for more detailed information.

Step 3: Configure an Ethernet Connection Type

When using Ethernet as your communication method, the NetLinx Master must first be setup with either a Static IP or DHCP Address obtained from either NetLinx Studio or your System Administrator.

Before beginning:

1. Verify the panel has been configured to communicate through an Ethernet cable (connected from either the panel to a valid Ethernet Hub).

Before commencing, verify you are using the latest NetLinx Master firmware.

2. Verify that the NetLinx Master is receiving power and is communicating via an Ethernet connection with the PC running NetLinx Studio.

3. Connect the terminal end of the 12 VDC-compliant power supply cable to the power connector on the rear/side of the touch panel.

4. Verify the green Ethernet LED (from the rear Ethernet port on the Master) is illuminated (indicating a proper connection).

5. Verify the yellow LED (from the rear Ethernet port on the Master) is blinking (indicating communication).

6. After the panel powers-up, press and hold the grey Front Setup Access button (**for 3 seconds**) to proceed to the Setup page.

7. Select **Protected Setup** > **System Connection** (located on the lower-left) to open the System Connection page (FIG. 38).

FIG. 38 System Connection page

Master Connection section - Virtual Master communication over Ethernet

When configuring your panel to communicate with a Virtual Master (on your PC) via Ethernet, the Master IP/URL field must be configured to match the IP Address of the PC and make sure to use the Virtual System value assigned to the Virtual Master within NetLinx Studio.

Before beginning:

1. Verify the panel has been configured to communicate through an Ethernet cable (connected from either the panel to a valid Ethernet Hub).

2. Launch NetLinx Studio 2.x (default location is **Start** > **Programs** > **AMX Control Disc** > **NetLinx Studio 2** > **NetLinx Studio 2**).

3. Select **Settings** > **Master Communication Settings**, from the Main menu to open the Master Communication Settings dialog (FIG. 39).

4. Click the **Communications Settings** button to open the Communications Settings dialog.

5. Click on the **NetLinx Master** radio button (*from the Platform Selection section*) to indicate that you are working as a NetLinx Master.

6. Click on the **Virtual Master** radio box (*from the Transport Connection Option section*) to indicate you are wanting to configure the PC to communicate with a panel. Everything else such as the Authentication is greyed-out because you are not going through the Master's UI.

7. Click the **Edit Settings** button (*on the Communications Settings dialog*) to open the Virtual NetLinx Master Settings dialog (FIG. 39).

8. From within this dialog enter the System number (***default is 1***) and note the IP Address of the target PC being used as the Virtual Master. This IP Address can also be obtained by following these procedures:
   - On your PC, click **Start** > **Run** to open the Run dialog.
   - Enter **cmd** into the Open field and click **OK** to open the command DOS prompt.
   - From the **C:\>** command line, enter **ipconfig** to display the IP Address of the PC. This information is entered into the *Master IP/URL* field on the panel.

9. Click **OK** three times to close the open dialogs, save your settings, and return to the main NetLinx Studio application.

10. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System. *The default System value is one*.

IP Addresses of computer
(also obtained by using the
Start > **Run** > **cmd** command)

Enter this IP
into the
Master IP/URL
field on the
System Settings
page
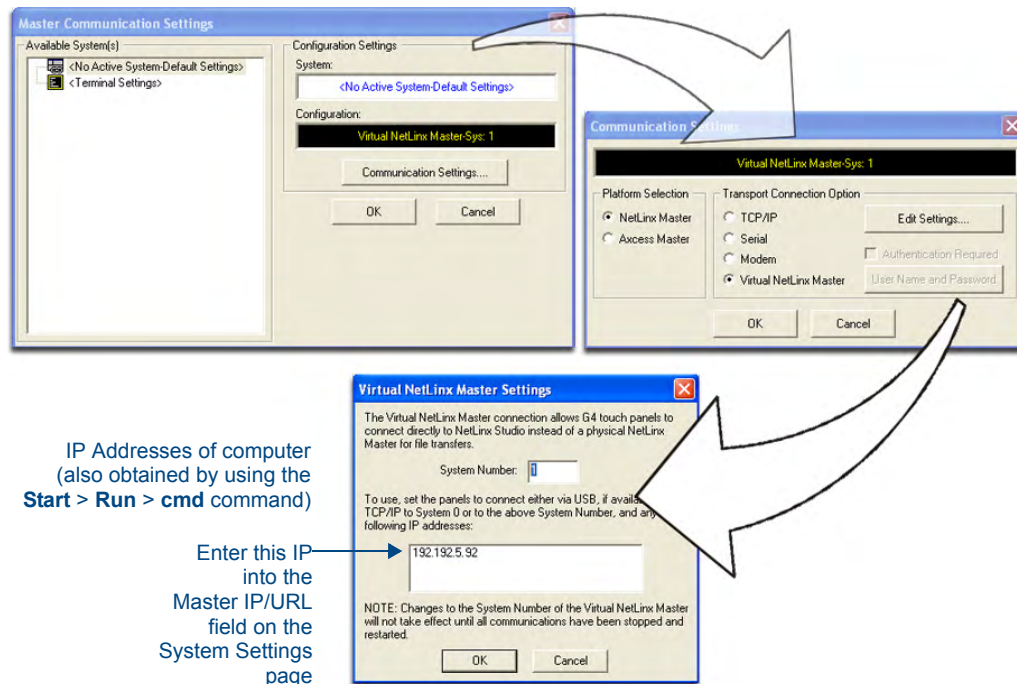
FIG. 39 Assigning Communication Settings and TCP/IP Settings for a Virtual Master

11. Right-click on the *Empty Device Tree/System* entry and select **Refresh System** to re-populate the list.

12. Power-up your panel and press and hold the grey **Front Setup Access** button (**for 3 seconds**) to continue with the setup process and proceed to the Setup page.

13. Select **Protected Setup > System Connection** (located on the lower-left) to open the System Connection page (FIG. 40).
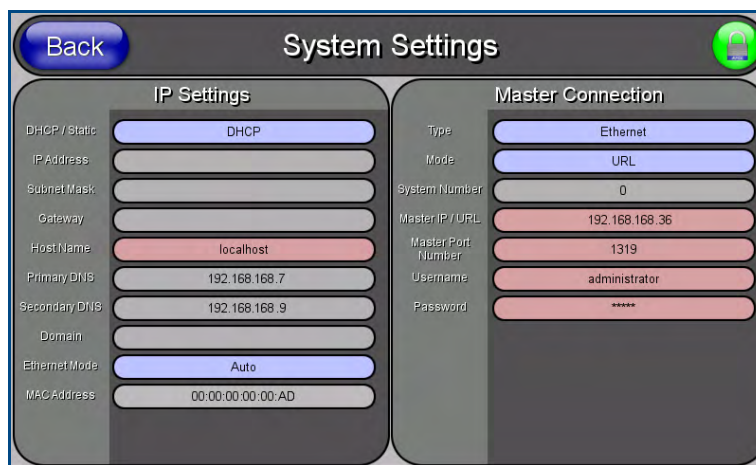
The System Number is
assigned to the Master
within the AMX
software application
(these must match)

Enter the IP Address
information of the PC
used as a Virtual
Master

When using a Virtual Master,
there is no need to enter a
username and/or password

FIG. 40 Sample System Connection page (for Virtual Master communication)

14. Press the blue *Type* field (*from the Master Connection section*) until the choice cycles to the word **Ethernet**.

15. Press the *Mode* field until the choice cycles to the word **URL**.

By selecting **URL**, the System Number field becomes read-only (grey) because the panel pulls this value directly from the communicating target Master (virtual or not). A Virtual Master system value can be set within the active AMX software applications such as: NetLinx Studio, TPD4, or IREdit.

16. Press the *Master IP/URL* field to open a Keyboard and enter the IP Address of the PC used as the Virtual Master.

17. Click **Done** to accept the new value and return to the System Connection page.

18. Do not alter the Master Port Number value (*this is the default value used by NetLinx*).

19. Press the **Back** button to open the Protected Setup page.

20. Press the on-screen **Reboot** button to both save any changes and restart the panel.

Master Connection section - NetLinx Master Ethernet IP Address - URL Mode

In this mode, enter the System Number (**zero** for an unknown System Number) and the IP/URL of the Master (Master Port Number is defaulted to **1319**).

1. Press the blue *Type* field (*from the Master Connection section*) until the choice cycles to the word **Ethernet** (FIG. 40). Refer to the *System Settings Page* section on page 68 for more information about the fields on this page.

2. Press the *Mode* field until the choice cycles to the word **URL**.

By selecting **URL**, the System Number field becomes read-only (grey) because the panel pulls this value directly from the communicating target Master (virtual or not). A Virtual Master system value can be set within the active AMX software applications such as: NetLinx Studio, TPD4, or IREdit.

> *If the panel does not appear within the OnLine Tree tab of the Workspace window of NetLinx Studio, check to make sure that the NetLinx Master System Number (from within the Device Addressing dialog) is correctly assigned.*

3. Press the *Master IP/URL* field to open a Keyboard and enter the Master IP Address **(obtained from the Diagnostics - Networking Address dialog of the NetLinx Studio application)**.

4. Click **Done** to accept the new value and return to the System Connection page.

5. Do not alter the Master Port Number value (*this is the default value used by NetLinx*).

6. Enter a username and password (*into their respective fields*) if the target Master has been previously secured.

7. Press the **Back** button to open the Protected Setup page.

8. Press the on-screen **Reboot** button to both save any changes and restart the panel.

Master Connection section - NetLinx Master Ethernet IP Address - Listen Mode

In this mode, you must add the Modero panel IP Address into the URL List of the Master (using NetLinx Studio). This mode sets the Modero panel to "listen" for broadcasts from the Master (using the panel IP from its URL list).

1. Obtain either a Static IP for the Modero panel (from your System Administrator) or a DHCP Address from the IP Settings of the System Connection page.

- The *DHCP/Static* field (in the IP Settings section of the System Connection page) must be set to **DHCP** to get Dynamic IP information for the panel.
- Press the on-screen **Reboot** (from the Protected Setup page) to both save any changes and restart the panel.
- After power-up, press the grey Front Setup Access button for **3 seconds** to access the Setup page.
- Navigate to the **Setup > Protected Setup > System Connection** page and note the newly obtained Dynamic IP Address information from the IP Settings section. This information is then entered into the URL List for the connected NetLinx Master.

2. Toggle the *Type* field until **Ethernet** is selected (*from the Master Connection section of the System Connection page*).

3. Press the *Mode* field (to set the connection Mode) until the choice cycles to the word **Listen**. *The System Number and Master IP/URL fields are then greyed-out.*

4. Enter a username and password (*into their respective fields*) if the target Master has been previously secured.

5. Select the **OnLine Tree** tab from the Workspace window.

6. Select **Diagnostics > URL Listing** from the Main menu (FIG. 41).

System Address reflects the value set in the Device Addressing tab

Used to obtain an existing URL List from Master

Used to set the URL List on Master
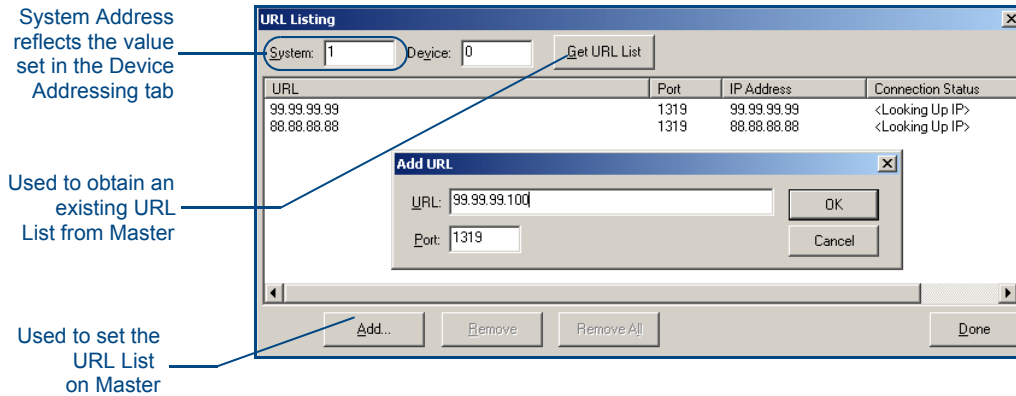
FIG. 41 URL List dialog

7. Enter the **System** and **Device** number for the specific Master associated with your panel (*as seen in the OnLine Tree tab*).

8. Click **Add** and enter the IP Address of the Modero touch panel into the *Add URL* dialog.

9. Click **OK** to enter your IP Address and add it to the list.

10. Click **Done** once you are finished adding your panel information to the list.

11. Press the on-screen **Reboot** button to save any changes and restart the panel.

Master Connection section - NetLinx Master Ethernet IP Address - Auto Mode

In this mode, enter the System Number of the NetLinx Master. This mode instructs the Modero to search for a Master that uses the same System Number (assigned within the Master Connection section) and **resides on the same Subnet as itself.**

1. Toggle the blue *Type* field until **Ethernet** is selected (*from the Master Connection section of the System Connection page*).

2. Press the *Mode* field until the choice cycles to the word **Auto**.

3. Press the *System Number* field to launch a Keypad and enter the value for the system number of the NetLinx Master. *This value can be obtained from the NetLinx Studio program > OnLine Tree of the Workspace window.*

4. Do not alter the IP Settings section, of the System Connection page, as these fields are not applicable to this connection mode.

5. Enter a username and password (*into their respective fields*) if the target Master has been previously secured.

6. Press the on-screen **Reboot** button to both save any changes and restart the panel.

7. Press the grey Front Setup Access button for **3 seconds** to open the Setup page and confirm there is an active connection.

The NetLinx Master and the Modero panel must both be on the same Subnet.

NOTE

Using G4 Web Control to Interact with a G4 Panel

The G4 Web Control feature allows you to use a PC to interact with a G4 enabled panel via the web. This feature works in tandem with the new browser-capable NetLinx Security firmware update (**build 300 or higher**). G4 Web Control is only available with the latest Modero panel firmware.

Refer to the *G4 Web Control Page* section on page 70 for more detailed field information.

*Verify your NetLinx Master (ME260/64 or NI-Series) has been installed with the latest firmware KIT file from **www.amx.com**. Refer to your NetLinx Master instruction manual for more detailed information on the use of the new web-based NetLinx Security.*

1. Press the grey Front Setup Access button for **3 seconds** to open the Setup page.

2. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the Protected Setup page and display an on-screen keypad.

3. Enter *1988* into the Keypad's password field (*1988 is the default password*).

Clearing Password #5, from the initial Password Setup page, removes the need for you to enter the default password before accessing the Protected Setup page.

4. Press **Done** when finished.

5. Press the **G4 WebControl** button to open the G4 Web Control page (FIG. 42).

FIG. 42 G4 Web Control page

6. Press the **Enable/Enabled** button until it toggles to **Enabled** (*light blue color*).

7. The *Network Interface Select* field is read-only and displays the method of communication to the web. **Verify you have selected the proper interface connection as this field does not auto-detect the connection type being used (*see below*).**
   - **Wired** is used when a direct Ethernet connection is being used for communication to the web. *This is the default setting if either no wireless interface card is detected or if both an Ethernet and wireless card connection is detected by the panel.*
   - **Wireless** is used when a wireless card is detected within the internal card slot. *The CV5 panel does not provide wireless communication and therefore this option is not available.*

8. Press the *Web Control Name* field to open the Web Name keyboard.

9. From the Web Name keyboard, enter a unique alpha-numeric string to identify this panel. This information is used by the NetLinx Security Web Server to display on-screen links to the panel. *The on-screen links use the IP Address of the panel and not the name for communication* (FIG. 43).
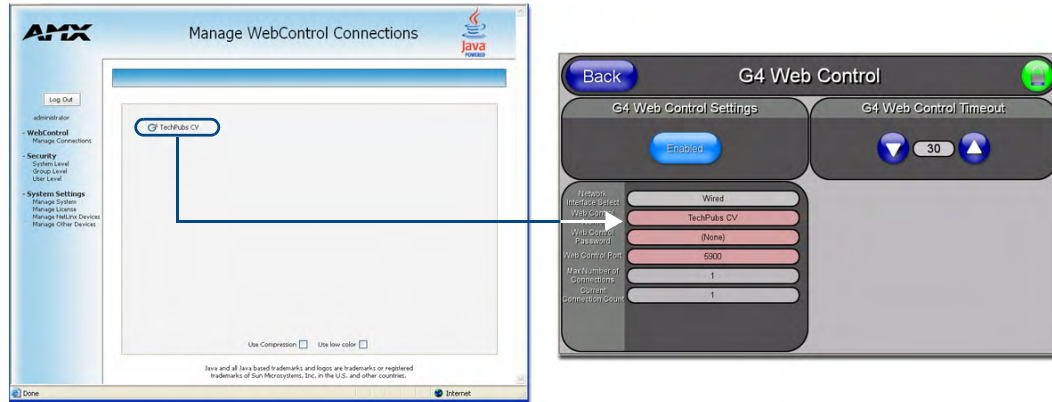
FIG. 43 Sample relationship between G4 Web Control and Mange WebControl Connections window

10. Press **Done** after you are finished assigning the alpha-numeric string for the Web Control name.

11. Press the *Web Control Password* field to open the Web Password keyboard.

12. From the Web Password keyboard, enter a unique alpha-numeric string to be assigned as the G4 Authentication session password associated with VNC web access of this panel.

13. Press **Done** after you are finished assigning the alpha-numeric string for the Web Control password.

14. Press the *Web Control Port* field to open the Web Port Number keypad.

15. Within the keypad, enter a unique numeric value to be assigned to the port the VNC Web Server is running on. The default value is *5900*.

16. Press **Done** when you are finished entering the value. *The remaining fields within the G4 Web Control Settings section of this page are read-only and cannot be altered.*

17. Press the **Up/Down** arrows on either sides of the G4 Web Control *Timeout* field to increase or decrease the amount of time the panel can remain idle (*no cursor movements*) before the session is closed and the user is disconnected.

18. Press the **Back** button to open the Protected Setup page.

19. Press the on-screen **Reboot** button to save any changes and restart the panel.

Verify your NetLinx Master's IP Address and System Number have been properly entered into the Master Connection section of the System Connection page.

Using Your NetLinx Master To Control the G4 Panel

Refer to your particular NetLinx Master's instruction manual for detailed information on how to download the latest firmware from **www.amx.com**. This firmware build enables SSL certificate identification and encryption, HTTPS communication, ICSP data encryption, and disables the ability to alter the Master security properties via a TELNET session.

In order to fully utilize the SSL encryption, your web browser should incorporate the an encryption feature. This encryption level is displayed as a Cipher strength.

Once the Master's IP Address has been set through NetLinx Studio version 2.x or higher:

1. Launch your web browser.

2. Enter the IP Address of the target Master (*ex: http://198.198.99.99*) into the web browser's *Address* field.

3. Press the **Enter** key on your keyboard to begin the communication process between the target Master and your computer.
   ● Initially, the Master Security option is disabled (from within the **System Security** page) and no username and password is required for access or configuration.

- Both HTTP and HTTPS Ports are enabled by default (via the **Manage System > Server** page).
- If the Master has been previously configured for secured communication, click **OK** to accept the AMX SSL certificate (*if SSL is enabled*) and then enter a valid username and password into the fields within the *Login* dialog.

4. Click **OK** to enter the information and proceed to the Master's Manage WebControl Connections window.

5. This Manage WebControl Connections page (FIG. 44) is accessed by clicking on the **Manage connections** link (*within the Web Control section within the Navigation frame*). Once activated, this page displays links to G4 panels running the latest G4 Web Control feature (*previously setup and activated on the panel*).
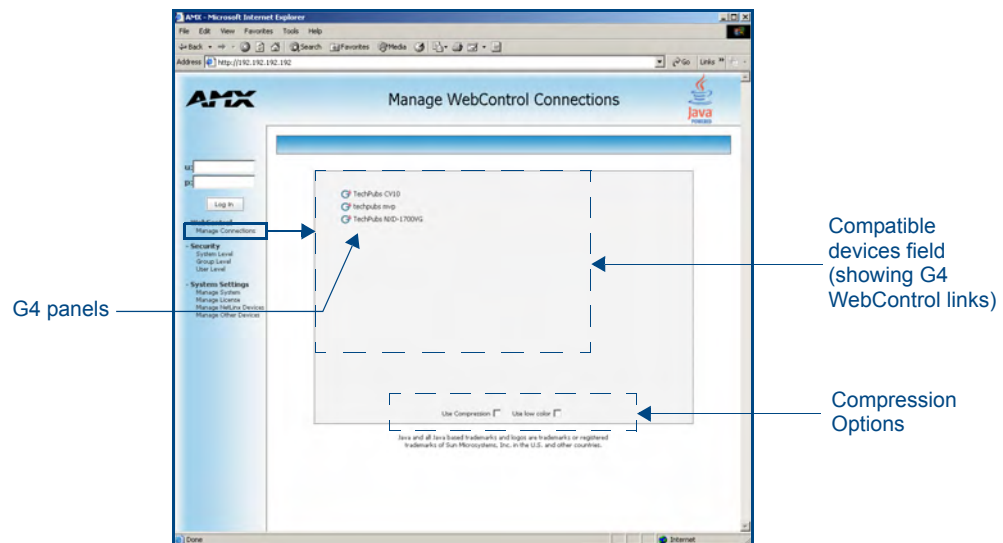
FIG. 44 Manage WebControl Connections page (populated with compatible panels)

6. Click on the G4 panel name link associated with the target panel. A secondary web browser window appears on the screen (FIG. 45).
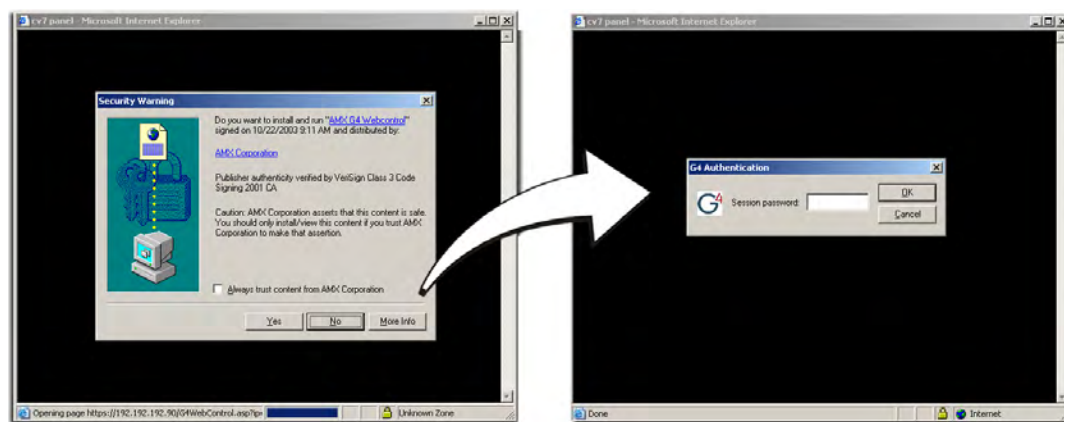
FIG. 45 Web Control VNC installation and Password entry screens

7. Click **Yes** from the Security Alert popup window to agree to the installation of the G4 WebControl application on your computer. This application contains the necessary Active X and VNC client applications necessary to properly view and control the panel pages from your computer.

The G4 Web Control application is sent by the panel to the computer that is used for communication. Once the application is installed, this popup will no longer appear. This popup will only appear if you are connecting to the target panel using a different computer.

8. In some cases, you might get a *Connection Details* dialog (FIG. 46) requesting a VNC Server IP Address. This is the IP Address not the IP of the Master but of the target touch panel. Depending on which method of communication you are using, it can be found in either the:

    - **Wired Ethernet** - System Connection > IP Settings section within the *IP Address* field.
    - **Wireless** - *Not available with the CV5 panel.*
    - If you do not get this field continue to step 9.

IP Address of touch panel
- obtained from IP Settings section of the System/Wireless Settings page
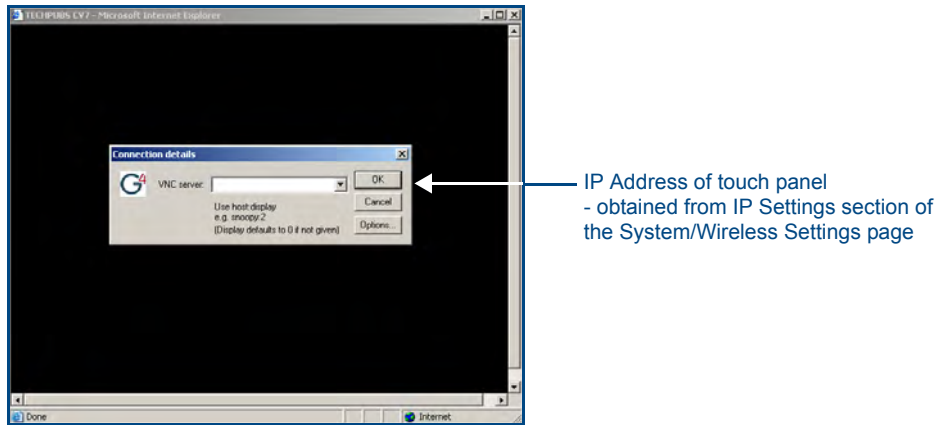
FIG. 46 Connection Details dialog

9. If a WebControl password was setup on the G4 WebControl page, a G4 Authentication Session password dialog box appears on the screen within the secondary browser window.

10. Enter the Web Control session password into the *Session Password* field (FIG. 45). *This password was previously entered into the Web Control Password field within the G4 Web Control page on the panel.*

11. Click **OK** to send the password to the panel and begin the session. A confirmation message appears stating *"Please wait, Initial screen loading.."*.

The secondary window then becomes populated with the same G4 page being displayed on the target G4 panel. A small circle appears within the on-screen G4 panel page and corresponds to the location of the mouse cursor. A left-mouse click on the computer-displayed panel page equates to an actual touch on the target G4 panel page.

Upgrading Modero Firmware

Before beginning the Upgrade process:

- Setup and configure your NetLinx Master. Refer to the your particular NetLinx Master Instruction Manual for detailed setup procedures.
- Calibrate and prepare the communication pages on the Modero panel for use. Refer to the *Panel Calibration* section on page 29.
- Refer to the NetLinx Studio version 2.x or higher Help file for more information on uploading files via Ethernet.
- Configure your panel for a direct connection. Refer to the *Configuring Communication* section on page 31 for more information.

It is recommended that firmware Kit files only be transferred over a direct Ethernet connection and only when the panel is connected to a power supply.

The process of updating firmware involves the use of a communicating NetLinx Master. The required steps for updating firmware to a Modero panel are virtually identical to those necessary for updating Kit files to a NetLinx Master (*except the target device is a panel instead of a Master*). Refer to either your Master's literature or Studio 2.x Help file for those procedures.

A touch panel which is not using a valid username and password will not be able to communicate with a secured Master. If you are updating the firmware on or through a panel which is not using a username or password field, you must first remove the Master Security feature to establish an unsecured connection.

Upgrading the Modero Firmware via the USB port

Before beginning with this section, verify your panel is both powered and the Type-A USB connector is securely inserted into the PC's USB port. **The panel must be powered-on before connecting the mini-USB connector to the panel.**

Establishing a USB connection between the PC and the panel, prior to installing the latest NetLinx Studio and TPDesign4 applications will cause a failure in the USB driver installation.
This driver must first be saved to the PC as part of the new NetLinx Studio and TPDesign4 application installations.

Step 1: Configure the panel for a USB Connection Type

1. After the installation of the USB driver has been completed; confirm the proper installation of the large Type-A USB connector to the PC's USB port, and restart your machine.
2. After the CV5 panel powers-up, press and hold the grey Front Setup Access button (**for 3 seconds**) to continue with the setup process and proceed to the Setup page.
3. Select **Protected Setup > System Settings** (located on the lower-left) to open the System Settings page.
4. Toggle the blue *Type* field (*from the Master Connection section*) until the choice cycles to **USB**.

ALL fields are then greyed-out and read-only, but still display any previous network information.

5. Press the **Back** button on the touch panel to return to the Protected Setup page.
6. Press the on-screen **Reboot** button to both save any changes and **restart the panel.** *Remember that the panel's connection type must be set to **USB** prior to rebooting the panel and prior to inserting the USB connector.*

7. **ONLY AFTER** the unit displays the first panel page, **THEN** insert the mini-USB connector into the Program Port on the panel. It may take a minute for the panel to detect the new connection and send a signal to the PC (*indicated by a green System Connection icon*).

- If a few minutes have gone by and the System Connection icon still does not turn green, complete the procedures in the following section to setup the Virtual Master and refresh the System from the Online Tree. This action sends out a request to the panel to respond and completes the communication (turning the System Connection icon green).

8. Navigate back to the System Connection page.

Step 2: Prepare NetLinx Studio for communication via the USB port

1. Launch NetLinx Studio 2.x (default location is **Start > Programs > AMX Control Disc > NetLinx Studio 2 > NetLinx Studio 2**).

2. Select **Settings > Master Communication Settings**, from the Main menu to open the Master Communication Settings dialog (FIG. 47).

IP Address of computer (not needed as this is a direct USB connection)
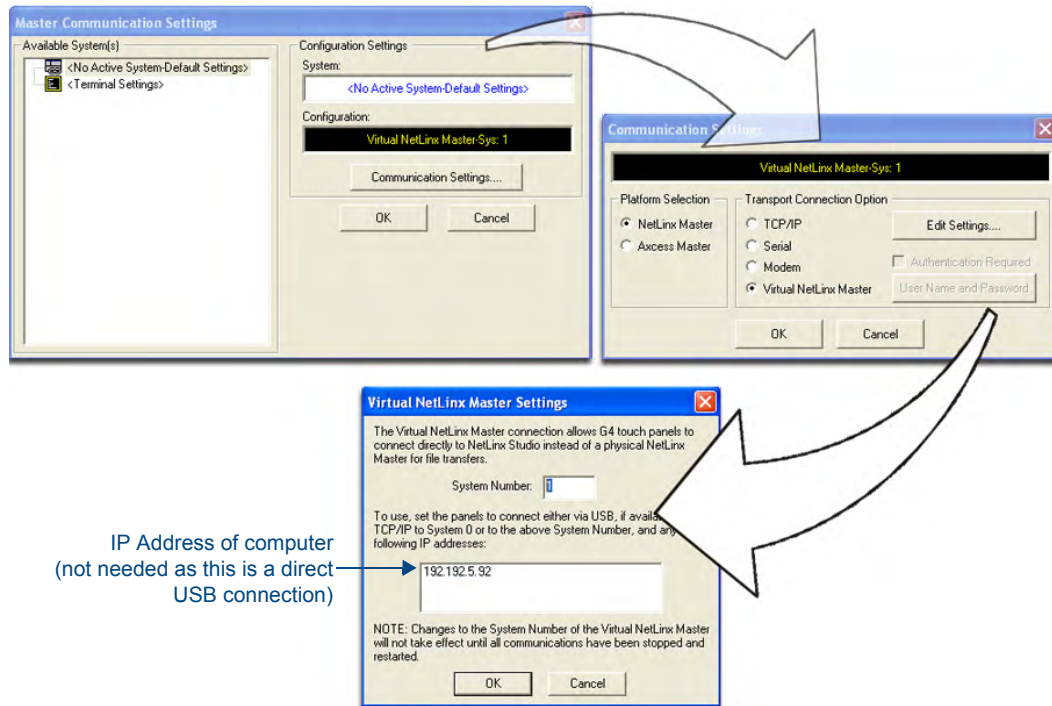
FIG. 47 Assigning Communication Settings for a Virtual Master

3. Click the **Communications Settings** button to open the *Communications Settings* dialog.

4. Click on the **NetLinx Master** radio button (*from the Platform Selection section*) to indicate that you are working as a NetLinx Master.

5. Click on the **Virtual Master** radio box (*from the Transport Connection Option section*) to indicate you are wanting to configure the PC to communicate directly with a panel. Everything else such as the Authentication is greyed-out because you are not going through the Master's UI.

6. Click the **Edit Settings** button (*on the Communications Settings dialog*) to open the *Virtual NetLinx Master Settings* dialog (FIG. 47).

7. From within this dialog enter the System number (default is **1**).

8. Click **OK** three times to close the open dialogs, save your settings, and return to the main NetLinx Studio application.

9. Click the **OnLine Tree** tab in the Workspace window to view the devices on the Virtual System. *The default System value is one*.

10. Right-click on the *Empty Device Tree/System* entry and select **Refresh System** to re-populate the list.

The panel will not appear as a device below the virtual system number (in the Online Tree tab) until both the system number used in step 7 for the Virtual NetLinx Master (VNM) is entered into the Master Connection section of the System Connection page and the panel is restarted.

NOTE *If the G4 panel does not appear, refer to the Troubleshooting section on page 135 for more information.*

Step 3: Confirm and Upgrade the firmware via the USB port

Use the CC-USB Type-A to Mini-B 5-wire programming cable (**FG10-5965**) to provide communication between the mini-USB Program port on the touch panel and the PC. This method of communication is used to transfer firmware Kit files and TPD4 touch panel files.

NOTE *A mini-USB connection is only detected after it is installed onto an active panel. Connection to a previously powered panel which then reboots, allows the PC to detect the panel and assign an appropriate USB driver.*

1. Verify this direct USB connection (Type-A on the panel to mini-USB on the panel) is configured properly using the steps outlined in the previous two sections.

2. With the panel already configured for USB communication and the Virtual Master setup within NetLinx Studio, its now time to verify the panel is ready to receive files.

3. After the Communication Verification dialog window verifies active communication between the Virtual Master and the panel, click the **OnLine Tree** tab in the Workspace window (FIG. 48) to view the devices on the Virtual System. *The default System value is one*.

4. Right-click on the System entry (FIG. 48) and select **Refresh System** to re-populate the list. Verify the panel appears in the **OnLine Tree** tab of the Workspace window. *The default Modero panel value is 10001*.

FIG. 48 NetLinx Workspace window (showing the panel connection via a Virtual NetLinx Master)

NOTE *The panel firmware is shown on the right of the listed panel. Download the latest firmware file from **www.amx.com** and then save the Kit file to your computer.*

5. If the panel firmware being used is not current, download the latest Kit file by first logging in to **www.amx.com** and then navigate to **Tech Center > Firmware Files** and from within the **Modero** section of the web page locate your Modero panel.

6. Click on the desired Kit file link and after you've accepted the Licensing Agreement, verify you have downloaded the Modero Kit file to a known location.

7. From within Studio, select **Tools > Firmware Transfers > Send to NetLinx Device** from the Main menu to open the Send to NetLinx Device dialog (**B** in FIG. 49). Verify the panel's System and Device number values match those values listed within the System folder in the **OnLine Tree** tab of the Workspace window (**A** in FIG. 49).
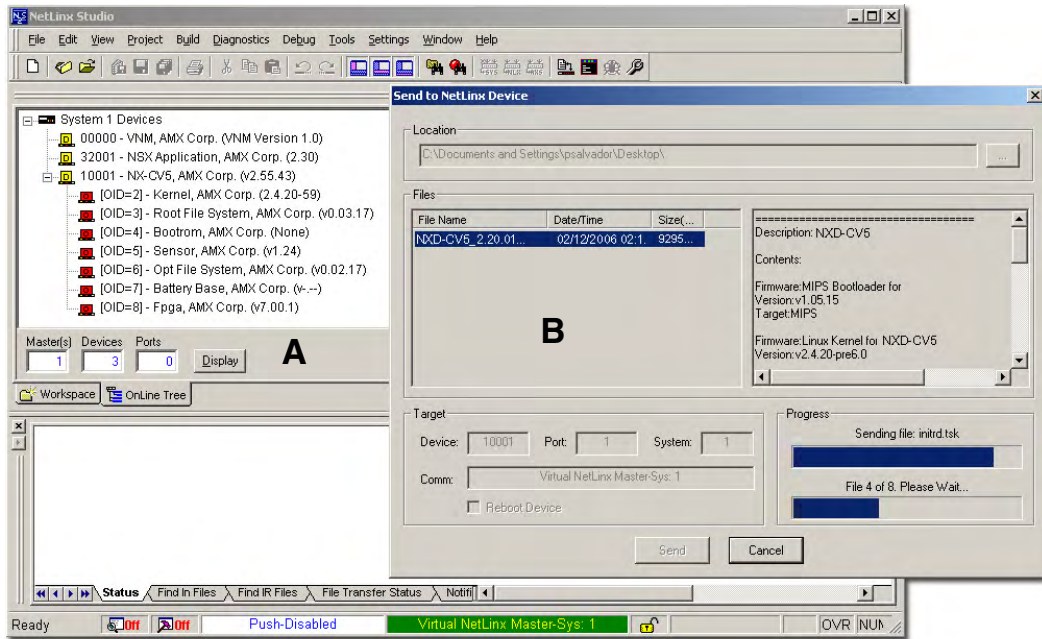
FIG. 49 Using USB for a Virtual Master transfer

8. Select the panel's Kit file from the **Files** section.

9. Enter the **Device** value associated with the panel and the **System** number associated with the Master (*listed in the OnLine Tree tab of the Workspace window*). *The Port field is greyed-out.*

10. Click the **Reboot Device** checkbox. This causes the touch panel to reboot after the firmware update process is complete. *The reboot of the panel can take up 30 seconds after the firmware process has finished.*

11. Click **Send** to begin the transfer. The file transfer progress is indicated on the bottom-right of the dialog (**B** in FIG. 49).

12. As the panel is rebooting, temporarily unplug the USB connector on the panel until the panel has completely restarted.

13. Once the first panel page has been displayed, reconnect the USB connector to the panel.

14. Right-click the associated System number and select **Refresh System**. This causes a refresh of all project systems, establishes a new connection to the Master, and populates the System list with devices on your particular system.

15. Confirm the panel has been properly updated to the correct firmware version.

Upgrading the Modero Firmware via Ethernet (IP Address)

Before beginning with this section, verify that your panel is powered and connected to the NetLinx Master through an Ethernet connection.

Step 1: Prepare the Master for communication via an IP

1. Obtain the IP Address of the NetLinx Master from your System Administrator. If you do not have an IP Address for the Master, refer to your particular Master's instruction manual for more information on obtaining this IP Address using NetLinx Studio 2.x or higher.
   - From the **Online Tree** tab of the Workspace window, select the NetLinx Master.
   - Follow steps outlined in either the *Obtaining or Assigning the Master's IP Address* sections from your particular NetLinx Master instruction manual to use an address.
   - Note the IP Address and Gateway information.

2. Launch NetLinx Studio 2.x (default location is **Start > Programs > AMX Control Disc > NetLinx Studio 2 > NetLinx Studio 2**).

3. Select **Settings > Master Communication Settings** from the Main menu to open the Master Communication Settings dialog (FIG. 50).
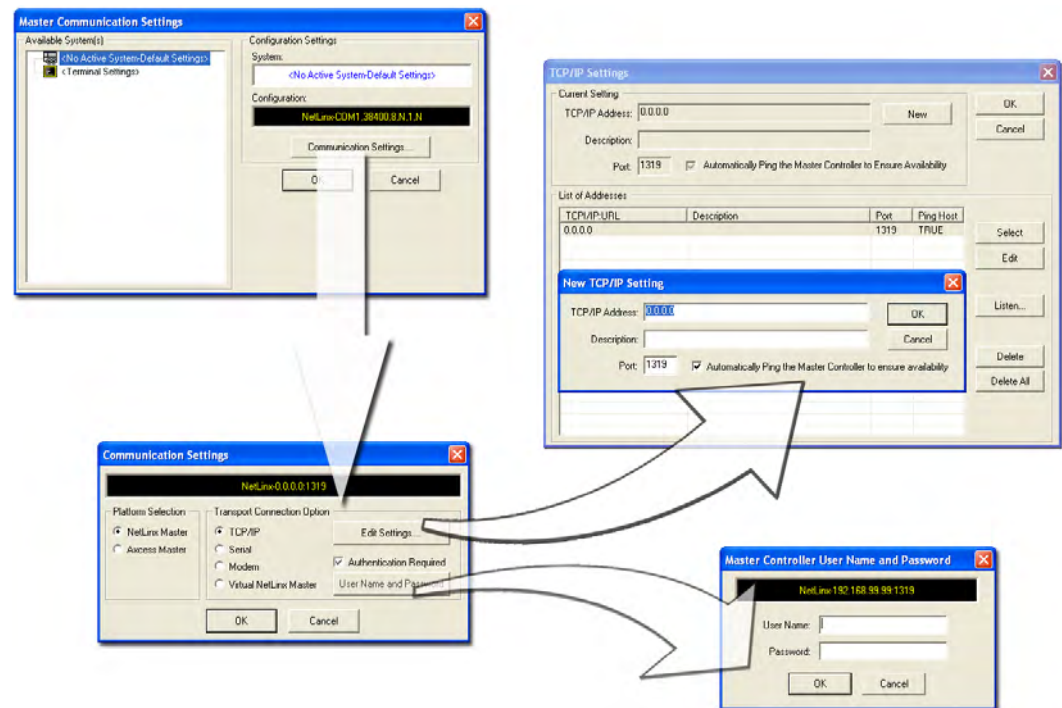
FIG. 50 Assigning Master Communication Settings and TCP/IP Settings

4. Click the **Communications Settings** button to open the Communications Settings dialog.

5. Click on the **NetLinx Master** radio button (*from the Platform Selection section*) to indicate you are working with a NetLinx Master (such as the NXC-ME260/64 or NI-Series of Integrated Controllers).

6. Click on the **TCP/IP** radio button (*from the Transport Connection Option section*) to indicate you are connecting to the Master through an IP Address.

7. Click the **Edit Settings** button (*on the Communications Settings dialog*) to open the TCP/IP Settings dialog (FIG. 50). This dialog contains a series of previously entered IP Address/URLs and their associated names, all of which are stored within Studio and are user-editable.

8. Click the **New** button to open the New TCP/IP Settings dialog where you can enter both a previously obtained DHCP or Static IP Address and an associated description for the connection into their respective fields.

9. Place a checkmark within the *Automatically Ping the Master Controller to ensure availability* radio box to make sure the Master is initially responding online before establishing full communication.

10. Click **OK** to close the current New TCP/IP Settings dialog and return to the previous TCP/IP Settings dialog where you must locate your new entry within the List of Addresses section.

11. Click the **Select** button to make that the currently used IP Address communication parameter.

12. Click **OK** to return to the Communications Settings dialog and place a checkmark within the *Authentication Required* radio box if your Master has been previously secured with a username/password.

13. Click on the **Authentication Required** radio box (if the Master is secured) and then press the **User Name and Password** button to open the Master Controller User Name and Password dialog.

14. Within this dialog, you must enter a previously configured username and password (with sufficient rights) before being able to successfully connect to the Master.

15. Click **OK** to save your newly entered information and return to the previous Communication Settings dialog where you must click **OK** again to begin the communication process to your Master.

> **NOTE** *If you are currently connected to the assigned Master, a popup asks whether you would want to temporarily stop communication to the Master and apply the new settings.*

16. Click **Yes** to interrupt the current communication from the Master and apply the new settings.

17. Click **Reboot** (*from the Tools > Reboot the Master Controller dialog*) and wait for the System Master to reboot. *The STATUS and OUTPUT LEDs should begin to alternately blink during the incorporation. Wait until the STATUS LED is the only LED to blink.*

18. Press **Done** once until the *Master Reboot Status* field reads **Reboot of System Complete**.

19. Click the **OnLine Tree** tab in the Workspace window to view the devices on the System. *The default System value is one (1).*

20. Right-click the associated System number and select **Refresh System**. This establishes a new connection to the specified System and populates the list with devices on that system. *The communication method is then highlighted in green on the bottom of the NetLinx Studio window.*

Step 2: Prepare the panel for communication via an IP

1. Press the blue *Type* field (*from the Master Connection section*) until the choice cycles to the word **Ethernet**.

2. Press the blue *Mode* field until the choice cycles to the word **URL**.
   - By selecting **URL**, the System Number field becomes read-only (grey) because the panel pulls this value directly from the communicating target Master (virtual or not). A Virtual Master system value can be set within the active AMX software applications such as: NetLinx Studio, TPD4, or IREdit.

3. Press the red *Master IP/URL* field to open a Keyboard and enter the NetLinx Master's IP Address **(obtained from the Diagnostics - Networking Address dialog of the NetLinx Studio application)**.

4. Click **Done** to accept the new value and return to the System Configuration page.

5. Do not alter the Master Port Number value (*this is the default value used by NetLinx*).

6. Press the **Back** button to return to the Protected Setup page and press the on-screen **Reboot** button to restart the panel and save any changes.

Step 3: Verify and Upgrade the panel firmware via an IP

1. Click the **OnLine Tree** tab in the Workspace window to view the devices on the System. *The default System value is one.*

2. Right-click the associated System number (from the Workspace window) and select **Refresh System** to detect of all devices on the current system, establish a new connection to the Master, and refresh the System list with devices on that system.

3. After the Communication Verification dialog window verifies active communication between the PC and the Master, verify the panel appears in the **OnLine Tree** tab of the Workspace window (FIG. 51). *The default Modero panel value is 10001.*
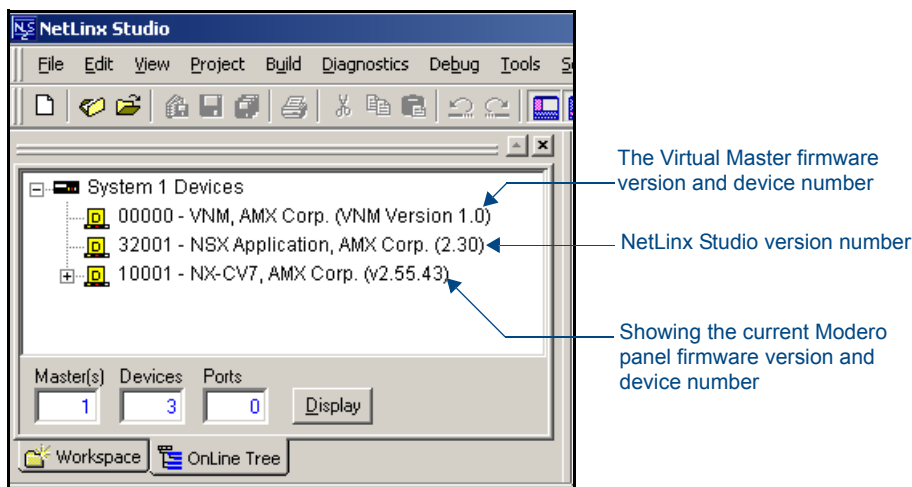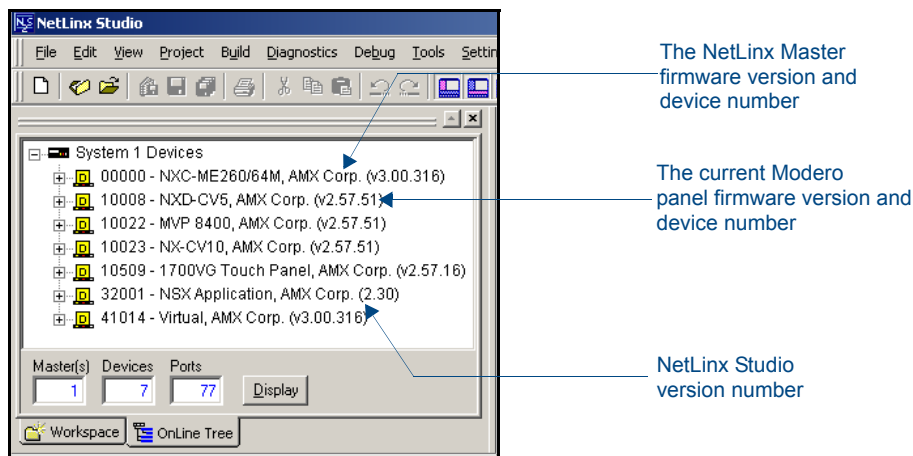
FIG. 51 NetLinx Workspace window (showing connected Modero panel)

The NetLinx Master firmware version and device number

The current Modero panel firmware version and device number

NetLinx Studio version number

The panel firmware is shown on the right of the listed panel.

4. If the panel firmware being used is not current, download the latest Kit file by first logging in to **www.amx.com** and then navigate to **Tech Center > Firmware Files** and from within the **Modero** section of the web page locate your Modero panel.

5. Click on the desired Kit file link and after you've accepted the Licensing Agreement, verify you have downloaded the Modero Kit file to a known location.

6. From within Studio, select **Tools > Firmware Transfers > Send to NetLinx Device** from the Main menu to open the Send to NetLinx Device dialog (FIG. 52). Verify the panel's System and Device number values match those values listed within the System folder in the **OnLine Tree** tab of the Workspace window.

Selected Firmware file

Description field for selected Kit file

Firmware download status

Device and System values listed in the Workspace window must match the System and Device values
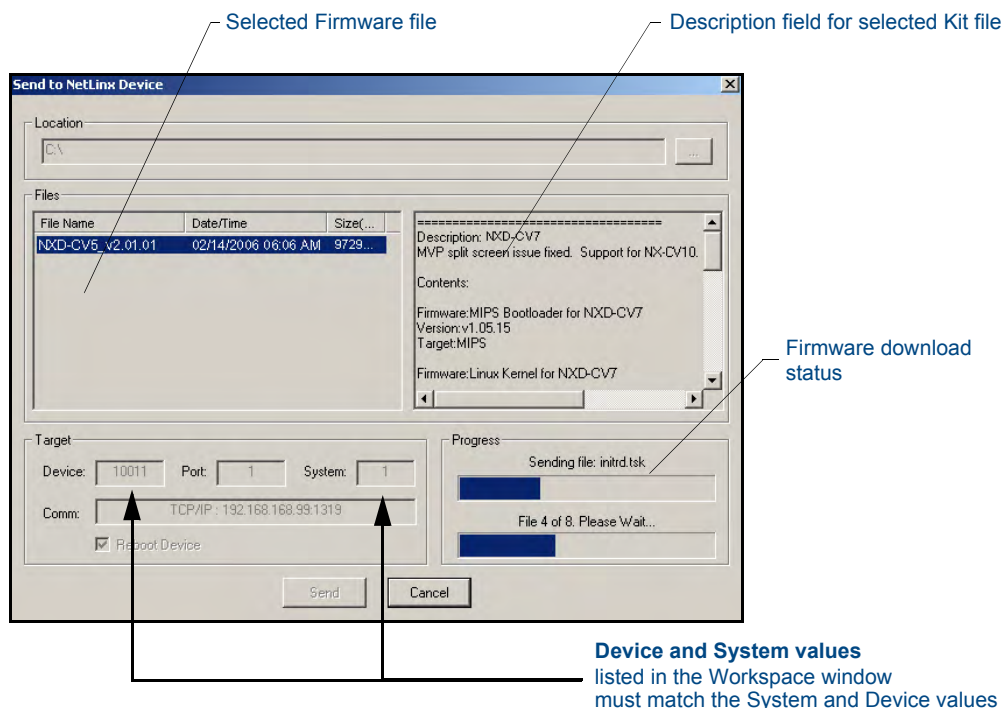
FIG. 52 Send to NetLinx Device dialog (showing Modero firmware update via IP)

7. Select the panel's Kit file from the **Files** section (FIG. 52).

8. Enter the **Device** value associated with the panel and the **System** number associated with the Master (*listed in the OnLine Tree tab of the Workspace window*). *The Port field is greyed-out.*

9. Click the **Reboot Device** checkbox. This causes the touch panel to reboot after the firmware update process is complete. *The reboot of the panel can take up 30 seconds after the firmware process has finished.*

10. Click **Send** to begin the transfer. The file transfer progress is indicated on the bottom-right of the dialog (FIG. 52).

11. Click **Close** (*after the panel reboots*) to return to the main program.

12. Right-click the associated System number and select **Refresh System**. This causes a refresh of all project systems, establishes a new connection to the Master, and populates the System list with devices on your particular system.

13. Confirm the panel has been properly updated to the correct firmware version.

Firmware Pages and Descriptions

Overview

This section describes each firmware page and their specific functional elements.

Setup Navigation Buttons

These Setup Navigation Buttons (FIG. 53) appear on the left of the panel screen when the Setup page is currently active.

Exit → Closes the Setup page

Protected Setup → Press to access the **Protected Setup** page for panel calibration and to access security release passwords and connection settings.

Information → Press to access the **Information** menu and select either **Project Information** or **Panel Information**.

Time → Press to access the **Time** Adjustment page where you can alter the time and date settings on the Master.

Audio → Press the **Audio** Adjustments button to access the Audio Settings page where you can alter the audio parameters on the Modero panel.

Video → Press the **Video** Adjustment button to access the Video Adjustment page where you can set the video properties for incoming video.
This button only appears on Color Video (CV) capable touch panels.

FIG. 53 Setup Navigation Buttons

Protected Setup

This button opens the Protected Setup page which centers around the properties used by the panel to properly communicate with the NetLinx Master. Refer to both the *Protected Setup Navigation Buttons* section on page 66 and the *Protected Setup* section on page 57 for more detailed information.

Setup Page

This page (FIG. 54) centers around basic Modero panel properties such as: Connection Status of the panel, Display Timeout, Inactivity Page Flip Time, Inactivity page file, and the Panel Brightness.

Connection Status

Red Connection Status icon - indicates no connection to a Master

Green Connection Status icon - indicates communication to a Master
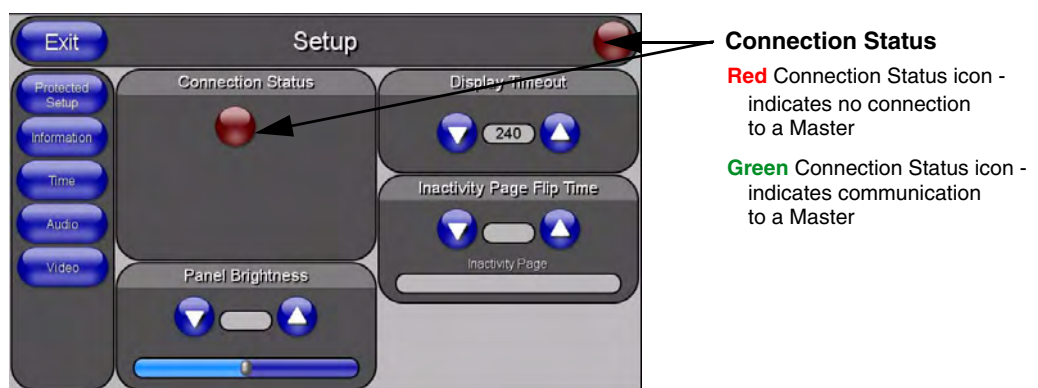
FIG. 54 Setup page

The elements of the Setup page are described in the table below:

Setup Page Elements	
Exit:	Returns you to the Main touch panel page. In this case, the previous page is the default Main page.
Connection Status icon:	This visual display of the connection status allows the user to have a current update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Connection Status:	Displays whether the panel is communicating externally, the encryption status of the communicating Master, what connection type is being used (*Ethernet or USB*), and what System the panel is a part of. This visual display of the connection status is also reflected at the upper-right of each firmware page. This allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • When a connection is established, the message displayed is either: "*Connected via Ethernet* " or "*Connected via USB* ". • If no connection can be established by the Modero panel, it will continue to try and establish a connection while displaying: "*Attempting via ...*". • The word "*Encrypted*" appears only when an encrypted connection is established with a target Master. • The panel must be rebooted before incorporating any panel communication changes and detecting any active Ethernet connections. ***The Ethernet connection is not detected until after a reboot.***
Display/Panel Timeout:	Sets the length of time the panel can remain idle before activating the sleep mode. When the device goes into sleep mode, the LCD is powered-down. • Press the UP/DN buttons to increase/decrease the time until the panel times out. Range = 0 - 240 minutes. • Use this button to set the timeout value to zero and disable the sleep mode. • Note: Display timeout values affect battery performance. Small timeout values increase the life of the battery charge. Greater timeout values may require more frequent battery charging.
Inactivity Page Flip Timeout:	Sets the number of minutes of inactivity before the panel automatically flips to a pre-selected touch panel page. When the device goes into this inactivity mode, the LCD does not power-down. • Press the UP/DN buttons to increase/decrease the time the panel can remain inactive before it flips to the preset page. Range = 0 - 240 minutes. • Use this button to set the timeout value to zero and disable the inactivity page flip mode. • The touch panel page used for the Inactivity page flip is shown within a small Inactivity Page field.
Panel Brightness:	Sets the display brightness level of the panel. • Press the UP/DN buttons to adjust the brightness level. Range = 0 - 100. • The on-screen bargraph can be dragged to adjust the Brightness level which is then reflected as a corresponding numeric value within the *Panel Brightness* field.

Information

The **Information** button provides a menu to select either the *Project Information Page* section on page 59 or the *Panel Information Page* section on page 61. Select either option to access that page.

FIG. 55 Information menu

Project Information Page

The Project Information page displays the TPDesign4 (TPD4) project file properties currently loaded on the selected Modero panel (FIG. 56). Refer to the *TPDesign4 Touch Panel Program* instruction manual for more specific information on uploading TPDesign4 files to a panel.
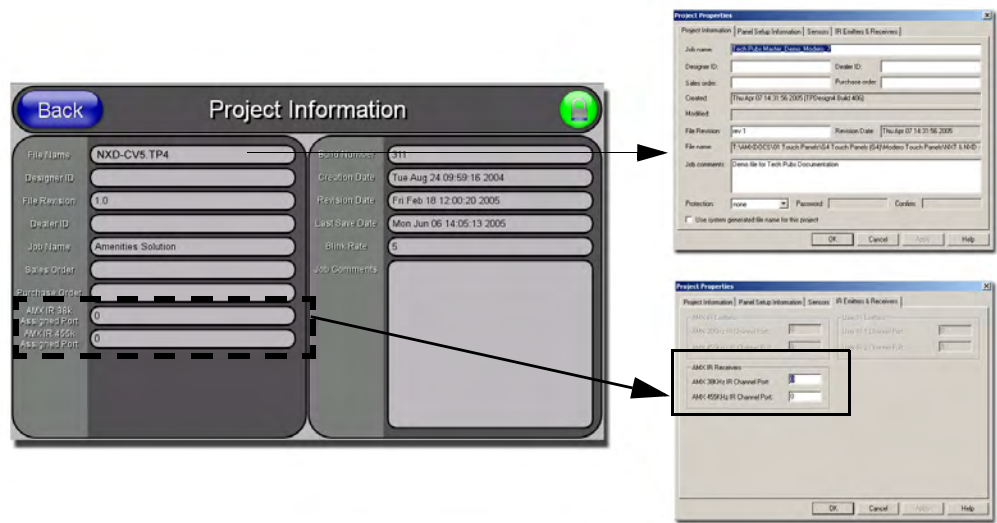
FIG. 56 Project Information page (showing the TPD4 project properties tabs)

The elements of the Project Information page are described in the table below:

Project Information Page Elements	
Back:	Returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
File Name:	Displays the name of the TPDesign4 project file downloaded to the panel.
Designer ID:	Displays the designer information.
File Revision:	Displays the revision number of the file.
Dealer ID:	Displays the dealer ID number (*unique to every dealer and entered in TPD4*).
Job Name:	Displays the job name.
Sales Order:	Displays the sales order information.
Purchase Order:	Displays the purchase order information.
AMX IR 38k Assigned Port:	Displays the AMX 38 kHz IR channel port used by the IR receiver on the panel. • This information is pulled by the panel from *AMX IR Receivers* section of the TPD4 Project Properties > IR Emitters & Receivers tab. • For IR reception, this is the port that reports a push on for the corresponding IR code. • IR receivers and transmitters on G4 panels share the device address number of the panel.
AMX IR 455k Assigned Port:	Displays the AMX 455 kHz IR channel port used by the IR receiver on the panel. This information is pulled by the panel from *AMX IR Receivers* section of the TPD4 Project Properties > IR Emitters & Receivers tab. • For IR reception, this is the port that reports a push on for the corresponding IR code. • IR receivers and transmitters on G4 panels share the device address number of the panel.
Build Number:	Displays the build number information of the TPD4 software used to create the project file.
Creation Date:	Displays the project creation date.
Revision Date:	Displays the last revision date for the project.
Last Save Date:	Displays the last date the project was saved.
Blink Rate:	Displays the feedback blink rate (10th of second).
Job Comments:	Displays any comments associated to the job. These comments are taken from the TPD4 project file.

Panel Information Page

The Panel Information page (FIG. 57) centers around Modero panel properties such as: resolution used, on-board memory, firmware, address/channel information, and string information.
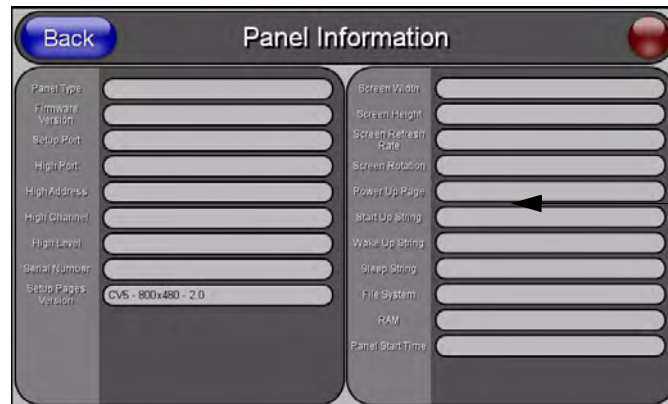
This information is retrieved from the Modero panel

FIG. 57 Panel Information page (takes its' information from the touch panel)

The elements of the Panel Information page are described in the table below:

Panel Information Page Elements	
Back:	Returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Panel Type:	Displays the model of the Modero panel being used.
Firmware Version:	Displays the G4 firmware version being used by the panel. • Verify you have the latest version from **www.amx.com**.
Setup Port:	Displays the setup port information/value being used by the panel.
High Port:	Displays the high port (port count) value for the panel.
High Address:	Displays the high address (address count) value for the panel.
High Channel:	Displays the high channel (channel count) value for the panel.
High Level:	Displays the high level (level count) value being used by the panel.
Serial Number:	Displays the specific serial number value assigned to the panel.
Setup Pages Version:	Displays the type and version of the Setup pages being used by the panel.
Screen Width:	Displays the pixel width being used to display the incoming video signal on the Modero panel. • Maximum available screen width on a CV5 Modero panel is 800 pixels.
Screen Height:	Displays the pixel height being used to display the incoming video signal on the Modero panel. • Maximum available screen height on a CV5 Modero panel is 480 pixels.
Screen Refresh Rate:	Displays the video refresh rate applied to the incoming video signal from the panel. *Default rate is 60.*
Screen Rotation:	Displays the degree of rotation applied to the on-screen image.
Power Up Pages:	Displays the first touch panel page assigned for display after the device is powered-up. • This information is taken from the TPD4 project file. • Most projects begin with a Main page.
Start Up String:	Displays the start-up string.
Wake Up String:	Displays the wake up string used after an activation from a timeout.

Panel Information Page Elements (Cont.)	
Sleep String:	Displays the sleep string used during a panel's sleep mode.
File System:	Displays the amount of Flash memory available on the Modero panel.
RAM:	Displays the available RAM (or Extended Memory module) on the Modero panel.
Panel Start Time:	Displays the last time the panel booted.

Time & Date Setup Page

The Time & Date Setup page (FIG. 58) allows you to alter/set the time and date information on the NetLinx Master. If either the Time/Date is modified on this page (*then updated to the Master by pressing the Set Time button*), all devices communicating to that target Master will then be updated to reflect the new information.
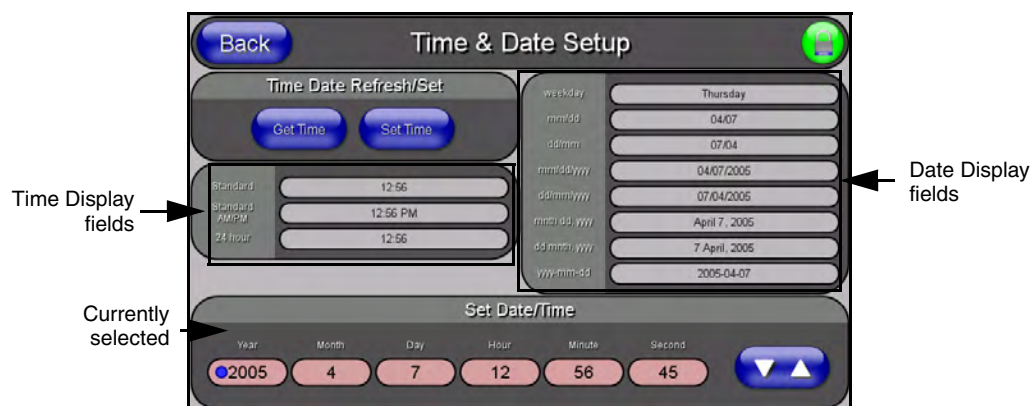
FIG. 58 Time and Date Setup page

The only way to modify a panel's time, without altering the Master, is to use NetLinx Code.

NOTE

The elements of the Time & Date Setup page are described in the table below:

Time & Date Setup Page Elements	
Back:	Returns you to the previously active touch panel page without saving changes (*to save changes, use the Set Time button*).
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Time Date Refresh/Set:	This section provides you with two options: • The **Get Time/Date** button retrieves the Time and Date information from the Master. • The **Set Time/Date** button sets the Master to retain and save any time/date modifications made on the Time and Date Setup page.
Time Display fields:	• These fields display the time in three formats: STANDARD, STANDARD AM/PM, and 24 HOUR.
Date Display fields:	• These fields display the calendar date information in several different formats.

Time & Date Setup Page Elements (Cont.)	
Set Date/Time:	This section provides a user with both UP/DN arrow buttons to alter the Master's calendar date and time. The blue circle indicates which field is currently selected. • Select the **Year** field and use the UP/DN buttons to alter the year value (range = 2000 - 2037). • Select the **Month** field and use the UP/DN buttons to alter the month value (range = 1 - 12). • Select the **Day** field and use the UP/DN buttons to alter the day value (range = 1 - 31). • Select the **Hour** field and use the UP/DN buttons to alter the hour value (24-hour military). • Select the **Minute** field and use the UP/DN buttons to alter the minute value (range = 0 - 59). • Select the **Second** field and use the UP/DN buttons to alter the second value (range = 0 - 59).

CV5 touch panels do not have an on-board clock. This page both receives and sets the time/date of the NetLinx Master.

Audio Settings Page

The Audio Settings page (FIG. 59) (*accessed by pressing the Audio button on the Setup page*) allows you to adjust the master volume parameters and default panel sounds on the panel.

FIG. 59 Audio Settings page

The elements of the Audio Settings page are described in the table below:

Audio Settings Page Elements	
Back:	Saves the changes and returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Master Volume:	This section allows you to alter the current master volume level: • Use the UP/DN buttons to adjust the volume level (range = 0 - 100). • The Master Volume bargraph indicates the current volume level. • The **Mute** button toggles the Mute feature.

Volume Page Elements (Cont.)	
Internal Sound Level:	This section allows you to adjust the current sound level on the internal panel speaker: • Use the UP/DN buttons to adjust the volume output on the internal speakers (range = 0 - 100). • The Internal Sound Level bargraph indicates the current sound level. • The **Mute** button mutes the volume.
Default Panel Sounds:	Sets the Modero panel to play various sounds. • Activating the **Button Hit** button plays a default sound when you touch an active button. • Activating the **Button Miss** button plays a default sound when you touch a non-active button or any area outside of the active button • The **Play Test Sound** button plays a test WAV/MP3 file over the panel's internal speakers.
Line In Level:	Allows you to adjust the current Line-In volume level (being received from the communicating breakout box). • Use the UP/DN buttons to adjust the Line-In volume level (range = 0 - 100). • The Line-In Level bargraph indicates the current Line-In level. • The **Mute** button mutes the Line-In volume.
Mic Out Level:	Allows you to adjust the current Microphone volume level (being received from the communicating breakout box). • Use the UP/DN buttons to adjust the Microphone volume level (range = 0 - 100). • The Mic Out Level bargraph indicates the current Mic Out level.

Supported sampling rates for WAV

The following is a listing of supported sampling rates associated for WAV files played on a CV5 panel. Some WAV files currently played on Modero's may not work on these panels. The supported sampling rates for WAV files are:

Supported WAV Sampling Rates	
• 48000 Hz	• 16000 Hz
• 44100 Hz	• 12000 Hz
• 32000 Hz	• 11025 Hz
• 24000 Hz	• 8000 Hz
• 22050 Hz	

Video Adjustment Page

The Video Setup page (FIG. 60) (*accessed by pressing the Video Adjustment button on the Setup page*) sets the Video properties of the incoming video signal from an **NXA-AVB/ETHERNET** Breakout Box.

Incoming Video signal

Once done making your screen adjustments, SAVE SETTINGS.

FIG. 60 Video Setup page (showing default values)

The elements of the Video Setup page are described in the table below:

Video Setup Page Elements	
Back:	Saves the changes and returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Settings:	• The **Default Settings** button sets the video settings to their default values (indicated in this table). • The **Undo Changes** button disregards any changes made on the page since the last settings were saved. • The **Save Settings** button saves any changes made to this page.
Video Settings:	• The **Black & White** button toggles the Black & White display mode. Default = Off. • The **Sharpness** button toggles the Interpolate (Sharpness) feature. Default = Off. • The **Interlace** button toggles the Interlacing feature. Default = On.
Status:	Displays whether or not a video-sync signal is detected.
Format:	Allows you to press this blue field and cycle through a choice of available video formats (**NTSC**, **MPAL**, **PAL**, **SECAM**, or **Auto detect**). • Default = Auto.
Brightness:	Use the UP/DN buttons to alter the brightness level of the incoming signal. • Range = 0 - 255, default = 128.
Contrast:	Use the UP/DN buttons to alter the contrast level of the incoming signal. • Range = 0 - 255, default = 128.
Saturation:	Use the UP/DN buttons to alter the color saturation level of the incoming signal. • Range = 0 - 255, default = 128.
Hue:	Use the UP/DN buttons to alter the hue level of the incoming signal. • Range = 0 - 255, default = 128.

Protected Setup Navigation Buttons

The Protected Setup Navigation Buttons (FIG. 61) appear on the left of the panel screen when the Protected Setup page is currently active.

Press to access the **System Settings** page where you can configure communication settings for the NetLinx Master and the panel.

Press to access the **Calibration** page where you can calibrate the panel.

Press to access the **G4 Web Control** page where you can enable or disable remote display and control of the panel via a web-enabled PC running a VNC client.

Press the Sensors button to access the **Sensors Setup** page where you can modify/monitor both the light and motion sensor settings.

Press to access the **Other Settings** menu and select either **Cache** or **Passwords**.

Press to access the **Tools** menu and select either, **Panel Logs**, **Panel Statistics**, (**Connection Utility**.

FIG. 61 Protected Setup Navigation Buttons

Protected Setup Page

The Protected Setup page (FIG. 62) centers around the properties used by the panel to properly communicate with the NetLinx Master. Enter the factory default password (*1988)* into the password keypad to access this page.

Provides access to the panel firmware pages by enabling the grey front setup access button:

- Setup page (after a **3 second** press/hold)
- Calibration page (after a **6 second** press/hold)
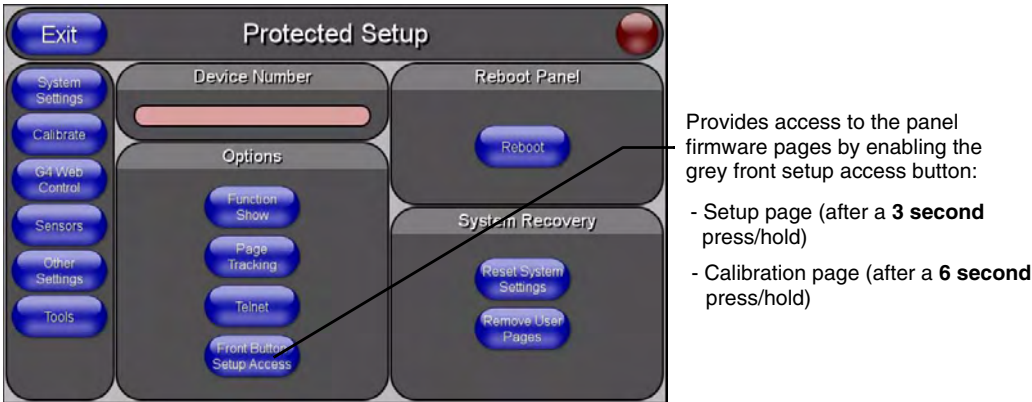
FIG. 62 Protected Setup page-showing default values

The elements of the Protected Setup page are described in the table below:

Protected Setup Page Elements	
Back:	Saves the changes and returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active.
	• A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Device Number:	Opens a keypad that is used to set and display the current device number.

Protected Setup Page Elements (Cont.)	

Options:	Allows you to select various touch panel features:
	
	• The **Function Show** button enables the display of the channel port and channel code in the top left corner of the button, the level port and level code in the bottom left corner, and the address port and address code in the bottom right corner (see FIG. 64 for an example of the function locations).
	
	• Use the **Page Tracking** button to toggle page tracking. When enabled, the touch panel sends page data back to the NetLinx Master, or vice versa depending on the touch panel settings.
	
	• Use the **Telnet** button to enable or disable the telnet server on the panel. This feature focuses on direct telnet communication to the panel.
	
	• Use the **Front Button Setup Access** button to activate the grey Front Setup Access button (located below the LCD) to access the firmware pages.
	  - Default condition is On.
	  - Press and hold this grey button for **3 seconds** to access the Setup page.
	  - Press and hold this grey button for **6 seconds** to access the Calibration page.

Reboot Panel:	Pressing this button causes the panel to restart after saving any changes.

System Recovery:	Allows you to either reset the touch panel to factory default settings and/or wipe out all existing touch panel pages:
	
	• The **Reset System Settings** button allows a user to wipe out all current configuration parameters on the touch panel (such as IP Addresses, Device Number assignments, Passwords, and other presets).
	  - Pressing this button launches a Confirmation dialog (FIG. 63) which asks you to confirm your selection.
	  - This dialog is configured with a delay timer that does not enable the YES button for 5 seconds. This delay provides an additional amount of time for the user to confirm their decision.
	
	• The **Remove User Pages** button allows you remove all current TPD4 touch panel pages currently on the panel (*including the pre-installed AMX Demo pages*).
	  - Pressing this button launches a Confirmation dialog (FIG. 63) which asks you to confirm your selection.
	  - This dialog is configured with a delay timer that does not enable the YES button for 5 seconds. This delay provides an additional amount of time for the user to confirm their decision.

You have a wait time of 5 seconds before the YES option is enabled.

FIG. 63 Protected Setup page-System Recovery confirmation dialog
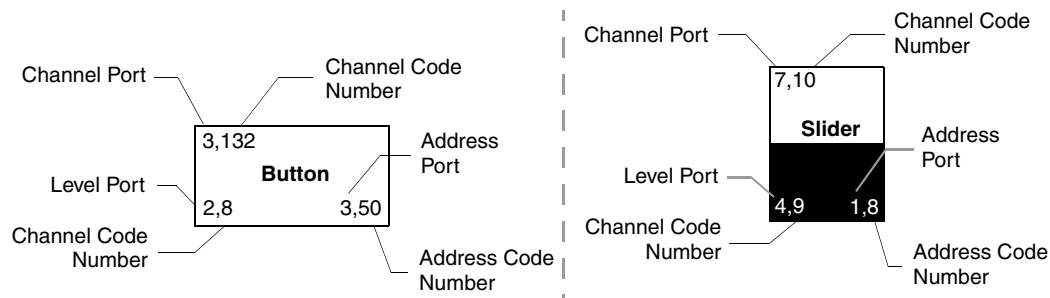
FIG. 64 Button/slider Function Show example

System Settings Page

The System Settings page (FIG. 65) sets the Secondary DNS Address information with its corresponding IP communication parameters, NetLinx Master communication settings, and reads the device number assigned to the Modero panel.

IP Settings section

Master Connection section
(NetLinx Master properties)

Master Connection features are not saved until the panel is rebooted

Red fields are user-editable
Blue fields cycle through choices
Grey fields are read-only
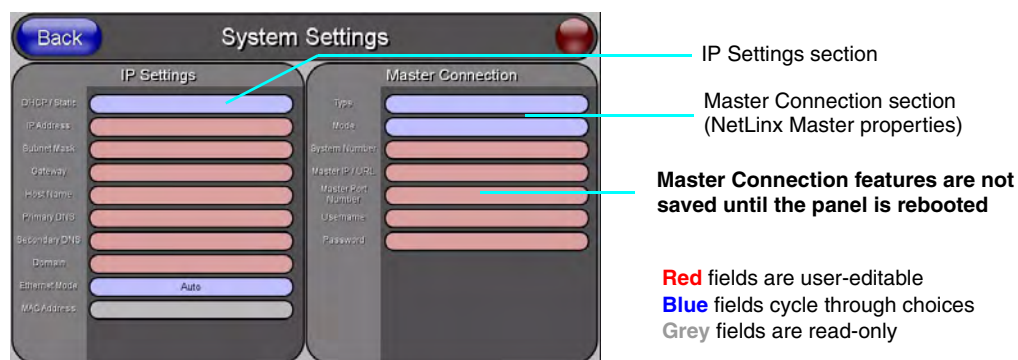
FIG. 65 System Settings page showing default values (reads and assigns values to the panel and Master)

The elements of the System Settings page are described in the table below:

System Settings Page Elements	
Back:	Saves the changes and returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active.
	• A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
IP Settings:	Sets the IP communication values for the panel and contains:
DHCP/Static	Sets the panel to either DHCP or Static communication modes.
	• *DHCP (Dynamic Host Configuration Protocol)* assigns IP Addresses from client stations logging onto a TCP/IP network via a DHCP server.
	• *Static IP* is a permanent IP Address that is assigned to a node in a TCP/IP network.
IP Address	Sets the secondary IP Address assigned to the panel.
Subnet Mask	Sets a subnetwork address to the panel.
	• *Subnetwork mask* is the technique used by the IP protocol to filter messages into a particular network segment (Subnet).
Gateway	Sets a gateway value to the panel.
	• *Gateway* is a computer that either performs protocol conversion between different types of networks/applications or acts as a go-between two or more networks that use the same protocols.
Host Name	Sets the host name of the panel.

System Settings Page Elements (Cont.)	
Primary DNS	Sets the address of the primary DNS server used for host name lookups.
	• *DNS (Domain Name System)* is software that lets users locate computers on a local network or the Internet (TCP/IP network) by host and domain. The DNS server maintains a database of host names for its' domain and their corresponding IP Addresses.
Secondary DNS	Sets a secondary DNS value to the panel.
Domain	Sets the unique name on the Internet to the panel for DNS look-up.
	• The panel belongs to the DNS domain.
Ethernet Mode	Sets the speed of the Ethernet connection to the panel.
	• Choices are: **Auto**, **10 Half Duplex**, **10 Full Duplex**, **100 Half Duplex,** or **100 Full Duplex.**
MAC Address	Displays a read-only field that is factory set by AMX for the built-in Ethernet interface.
Master Connection:	Sets the NetLinx Master communication values:
Type	Sets the NetLinx Master to communicate with the panel via either USB or Ethernet. This is based on the cable connection from the rear. ***ICSNet is not a supported option on this panel.***
	• *Ethernet* is a CAT-5 cable (10/100Base T terminated in an RJ-45 connector) used to network computers together and is used in most LAN (local area networks). This description is also used to refer to both wired and wireless communication.
	• *USB* option cannot be used on Modero panels which are not equipped with a USB port.
Mode	Cycles between the different connection modes (URL, Listen, and Auto) *(ETHERNET Only - disabled when USB is selected)*
	• **URL** - In this mode, enter the IP/URL, Master Port Number, and username/password (if used) on the Master. - The System Number field is read-only because the panel obtains this information from the communicating Master.
	• **Listen** - In this mode, add the Modero panel address into the URL List in NetLinx Studio and set the connection mode to Listen. This mode allows the Modero touch panel to "listen" for the Master's communication signals. - The System Number and Master IP/URL fields are red-only.
	• **Auto** - In this mode, enter the System Number and a username/password (if applicable). This mode is used when both the panel and the NetLinx Master are on the same Subnet and the Master has its UDP feature enabled. - Master IP/URL field is read-only.
System Number	Allows you to enter a system number. Default value is 0 (zero). *(ETHERNET Only - disabled when USB is selected)*
Master IP/URL	Sets the Master IP or URL of the NetLinx Master. *(ETHERNET Only - disabled when USB is selected)*
Master Port Number	Allows you to enter the port number used with the NetLinx Master.
	• Default value is 1319. *(ETHERNET Only - disabled when USB is selected)*
Username/Password	If the target Master has been previously secured, enter the alpha-numeric string (into each field) assigned to a pre-configured user profile on the Master. This profile should have the pre-defined level of access/configuration rights.

Calibration Page

This page (FIG. 66) allows you to calibrate the touch panel using the pre-selected touch driver.

- Press and hold the grey Front Setup Access button (below the Modero LCD) for 6 seconds to access the Calibration page.
- **Press the crosshairs to calibrate the panel and return to the last active firmware page.**

The request to touch the crosshairs is the first on-screen message

Calibration successful is the second on-screen message that appears after the calibration process is completed

On-screen crosshairs used for calibration of the touch device
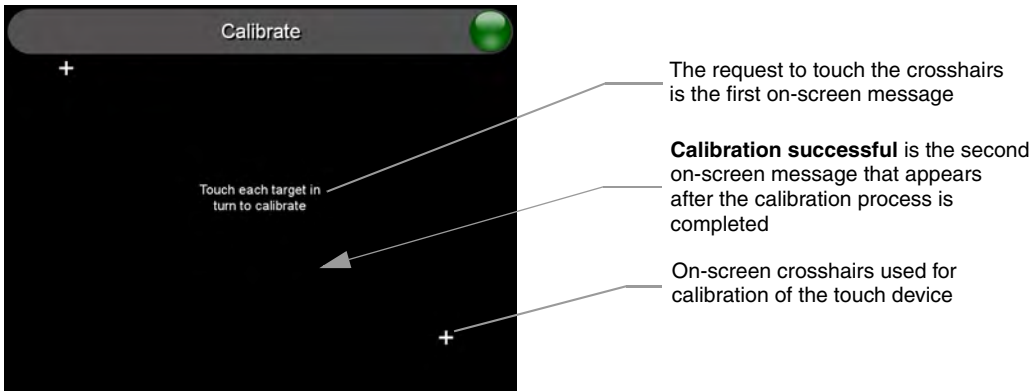
FIG. 66 Calibration page (actually 3 separate screens)

If the calibration was improperly set and you cannot return to the Calibration page (through the panel's firmware); you can access this firmware page via G4 WebControl where you can navigate to the Protected Setup page and press the Calibrate button through your VNC window.
This action causes the panel to go to the Calibration page seen above, where you can physically recalibrate the actual touch panel again using the above procedures.

G4 Web Control Page

The G4 Web Control page (FIG. 67) centers around enabling and disabling both the display and control of your panel (via the web). An external PC running a VNC client (*installed during the initial communication to the G4 panel*) makes this possible.

FIG. 67 G4 Web Control page

Each panel supports the open standard Virtual Network Computing (VNC) interface. These panels contain a VNC server that allows them to accept a connection from any other device running a VNC client.

Once a connection is established to that target device, the client can control the touch panel remotely.

The elements of the G4 Web Control page are described in the table below:

G4 Web Control Page Elements	
Back:	Saves the changes and returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active. • A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
G4 Web Control Settings:	Sets the IP communication values for the touch panel and contains:

Enable/Enabled	• The Enable/Enabled button allows you to toggle between the two G4 activation settings:
	  - **Enable** - deactivates the G4 Web Control feature on the panel.
	  - **Enabled** - activates the G4 Web Control feature on the panel and allows an external PC running a VNC client to access the panel (*after the remaining fields are configured*).

Network Interface Select	Displays the detected method of communication to the web: • **Wired** is used when a direct Ethernet connection is being used for communication to the web. *This is a default setting if no wireless interface card is detected by the panel.* • **Wireless** is used when a wireless card is detected within the internal card slot. *This method is disable for the CV5 which does not provide wireless communcation.*
Web Control Name	Allows you to enter a unique alpha-numeric string that is used as the display name of the panel within the Manage WebControl Connections window of the new NetLinx Security browser window. • This Web Control tab displays a G4 icon alongside the link to the Web Control Name given to this panel (FIG. 68).
Web Control Password	Allows you to enter the G4 Authentication session password associated for VNC web access of this panel.
Web Control Port	Allows you to enter the port value that the VNC Web Server runs on. • Default value is 5900.
Maximum Number of Connections	This read-only field displays the maximum number of users that can be simultaneously connected to the target panel via the web. • Default value is 1.
Current Connection Count	This read-only field displays the current number of users connected to the target panel via the web. *This value cannot exceed the Maximum number field.*
G4 Web Control Timeout:	Sets the length of time (in minutes) the panel can remain idle (no cursor movements) before the session is closed and the user is disconnected. • Minimum value = 0 minutes (panel never times-out) • Maximum value = 240 minutes (panel times-out after 240 minutes/4hours)
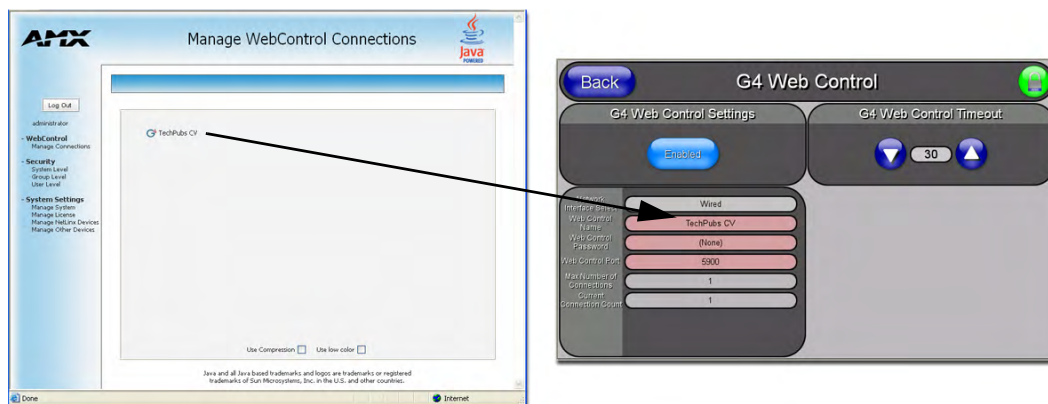
FIG. 68 Sample relationship between G4 Web Control and Mange WebControl Connections window

Refer to the *Using G4 Web Control to Interact with a G4 Panel* section on page 45 for more detailed instructions on how to use the G4 Web Control page with the new web-based NetLinx Security application.

Sensor Setup

The Sensor Setup page (FIG. 69) allows you to adjust the Light and Motion Sensor parameters on a Modero touch panel.
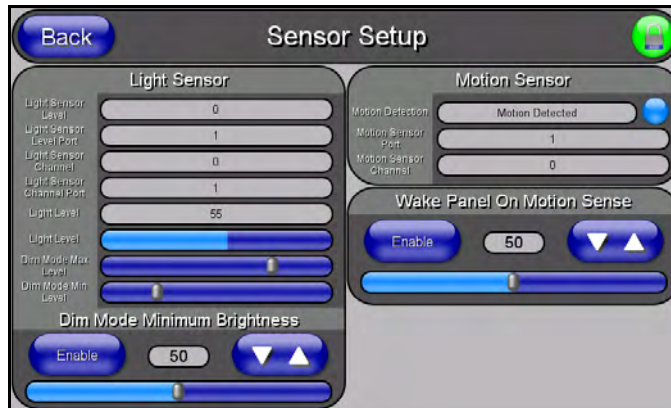
FIG. 69 Sensor Setup page

A light level value between the Minimum and Maximum DIM Mode values delivers an average light level. The DIM mode Min Level can never exceed the DIM Mode Max Level.

The elements of the Sensor Setup page are described in the table below:

Sensor Setup Page Elements	
Back:	Saves the changes and returns you to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current visual update of the panel's connection status regardless of what page is currently active.
	• A Lock only appears on the icon if the panel has established a connection with a currently secured target Master (*requiring a username and password*).
Light Sensor:	Allows you to monitor and alter the sensitivity of the Modero panel light sensor:
	• The **Light Sensor Level** field indicates the level used to report the light sensor level back to the NetLinx Master (set in TPD4) *(read-only).*
	• The **Light Sensor Level Port** field indicates the port used to report the light sensor level back to the NetLinx Master (set in TPD4) *(read-only).*
	• The **Light Sensor Channel** field indicates the level used to report the sensor channel back to the NetLinx Master (set in TPD4). It is On when you are below the Maximum dim mode level *(read-only)*.
	• The **Light Sensor Channel Port** field indicates the port used to report the sensor channel back to the NetLinx Master (set in TPD4) *(read-only).*
	• The **Light Level** field provides a numeric value representing the current value of the light level detected by the on-board photo-sensor.
	• The Light Level bargraph displays a horizontal bargraph indicating the current value of the light level detected by the on-board photo-sensor. This bargraph provides a visual representation of the numeric value displayed within the **Light Level** field.
	• Use the **Dim Mode Max Level** bargraph to alter the Maximum DIM level value used to activate the DIM Mode Brightness Level (range = 0 - 100).
	• Use the **Dim Mode Min Level** bargraph to alter the Minimum DIM level value used to activate the DIM Mode Brightness Level (range = 0 - 100). - The position of this bargraph can never exceed that of the Dim Mode Max Level.

Sensor Setup Page Elements (Cont.)	

Dim Mode Minimum Brightness:	Allows you to alter the sensitivity of the Modero panel light sensor:
	• Toggle the **Enable**/**Enabled** button to either active/inactive the DIM Mode feature:
	  - **Enable** - activates this feature. Once active (by receiving a value below the Dim Mode Min Level value), the current light level ramps to the DIM Mode value within a few seconds.
	  - **Enabled** - (*illuminated when selected*) deactivates this feature.
	• Use the **DIM Mode Brightness** UP/DN buttons to alter the DIM level.
	  - Range = 0 - 100.
	  - The lower the value, the darker a room must be before the LCD Brightness value changes to conform to a DIM room (and vice versa with a higher value).
	• The **DIM Mode Minimum Brightness** bargraph indicates the current DIM Mode Brightness level.
	  - This level corresponds to the brightness level of the LCD used when the DIM Mode is active.
	  - The Brightness value of the panel in a DIM room (low-light) is much less than that of a Non-DIM (well to brightly-lit) where the LCD Brightness must be higher to display the screen content clearly.

Motion Sensor:	Provides the following fields: • The **Motion Detection** field displays a reactive button that changes color (illuminates) and displays the words "Motion Detected" when motion is detected by the Modero panel's front motion sensor. • The **Motion Sensor Port** field indicates the port used to report the motion sensor channel back to the NetLinx Master (set in TPD4) *(read-only).* • The **Motion Sensor Channel** field indicates the channel used to report the motion sensor channel back to the NetLinx Master (set in TPD4) *(read-only).*

Wake Panel On Motion Sense:	The Wake Panel Sensitivity relates to the sensitivity of the motion sensor to detect motion and wake the panel accordingly.
	• Toggle the **Enable**/**Enabled** button to either active/inactive this feature:
	  - **Enable** - activates this feature. Activating this feature reactivates the panel from a panel timeout (sleep) mode.
	  - **Enabled** - (*illuminated when selected*) deactivates this feature and makes the panel use the specified Display Timeout value set on the Setup Page.
	• Use the **Wake Panel** UP/DN buttons to alter the sensitivity value.
	  - Range = 0 - 100.
	• The horizontal WAKE PANEL SENSITIVITY bargraph indicates the current motion sensitivity value associated with waking the panel from a timeout.

There is a relationship between the motion sensor and the panel sleep feature. If a panel is set to Sleep Mode, there is a time delay before the motion sensor is activated to detect motion. By creating a time delay to the detection, this allows a user to set the sleep mode and leave the panels' detection range. In this way, the panel doesn't awake immediately after the sleep is active and you move away.

Making the most of the Automated Brightness Control feature (DIM Mode)

Please follow the steps below to set up Automated Brightness Control:

1. Set the lighting conditions in the room to maximum (turn On all the lights).

2. Set the Maximum Panel Brightness, from the Setup page, to a comfortable level.

Sitting in front of the panel, you should be able to comfortably see someone sitting behind the panel without being "blinded" by the panel.

3. Open the Sensors Setup page (FIG. 69) from the Protected Setup menu section.

4. Move around the panel and block the direct or indirect light from the room fixtures with your body. Take note of the drop in the lighting level being detected by the panel in response to your movements.

5. Set the Maximum brightness of the Dimmer (*Dim Mode Max Level*) below the detected drop. This will make sure that the panel does not react to variations in the lighting conditions of a normal working environment.

> *The maximum (upper level) of the dimmer should be at least 15% lower than the maximum detected level.*

6. Set the minimum lighting conditions in the room (not complete darkness but the minimal lighting setup, unless complete darkness is an "operational option" for the room).

7. Set the Minimum Dimmer Brightness (*Dim Mode Min Level*) to a comfortable level by sitting in front of the panel. You should be able to comfortably see someone sitting behind the panel without being "blinded" by the panel.

8. Move around the panel and block the direct or indirect light from the room fixtures with your body. Take note of the drop in the lighting level being detected by the panel in response to your movements.

9. Set the Minimum brightness of the Dimmer (*Dim Mode Max Level*) below the detected drop. This will make sure that the panel does not react to variations in the lighting conditions of a normal working environment.

> *The minimum (lower level) of the dimmer should be at least 10% lower than the minimum detected level (ex: lower dimmer level at 30% if the detected lighting of the room is at 40%).*

Other Settings

The Other Settings button provides a menu to select either the *Image Caching Page* section on page 75 or the *Password Settings Page* section on page 77. Select either option to access that page.
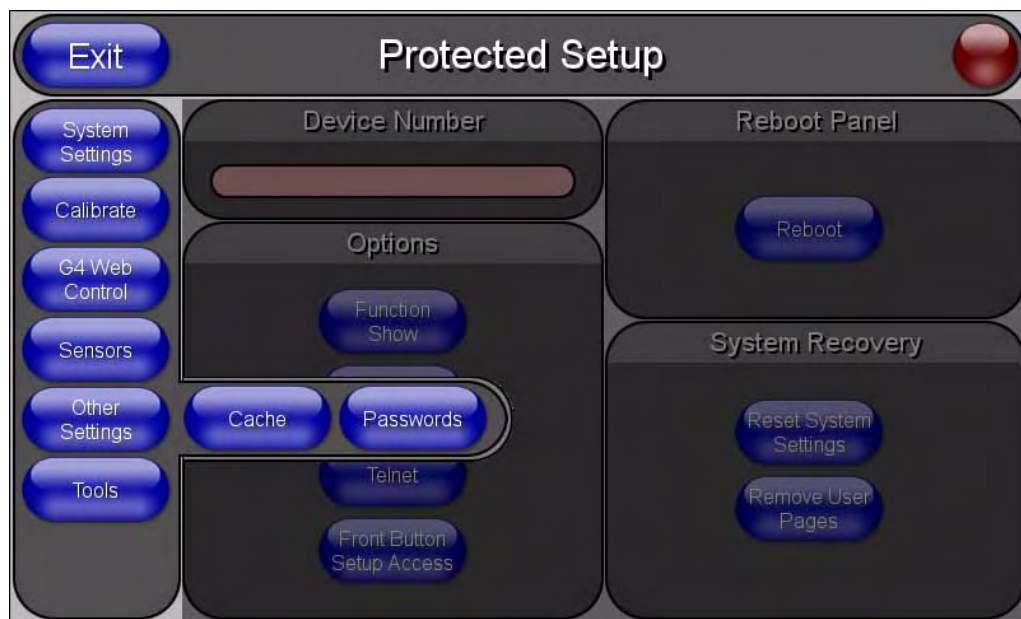
FIG. 70 Other Settings menu

Image Caching Page

The Image Caching page (FIG. 71) configures the allocation of memory for image caching. The G4 graphics engine caches images to decrease load time of previously viewed images. RAM caching is always enabled, and images (both static and dynamic) are stored in the RAM cache as they are viewed. The size of RAM cache is automatically configured to take into account available memory versus memory that may be needed by the panel later. As the RAM cache approaches its maximum size, the oldest items in the cache may be discarded to make room for newer items. If Flash caching is enabled, dynamic images that would have been discarded will actually be moved to Flash, since it is typically faster to retrieve images on Flash than across a network (although it is slower than RAM cache). Note that since static images are already stored on Flash, they are never moved to the Flash cache, so Flash caching applies only to dynamic images. Images in Flash cache are moved back to RAM cache the next time they are viewed. As the Flash cache approaches its maximum size, the least recently used items may be discarded to make room for new items.
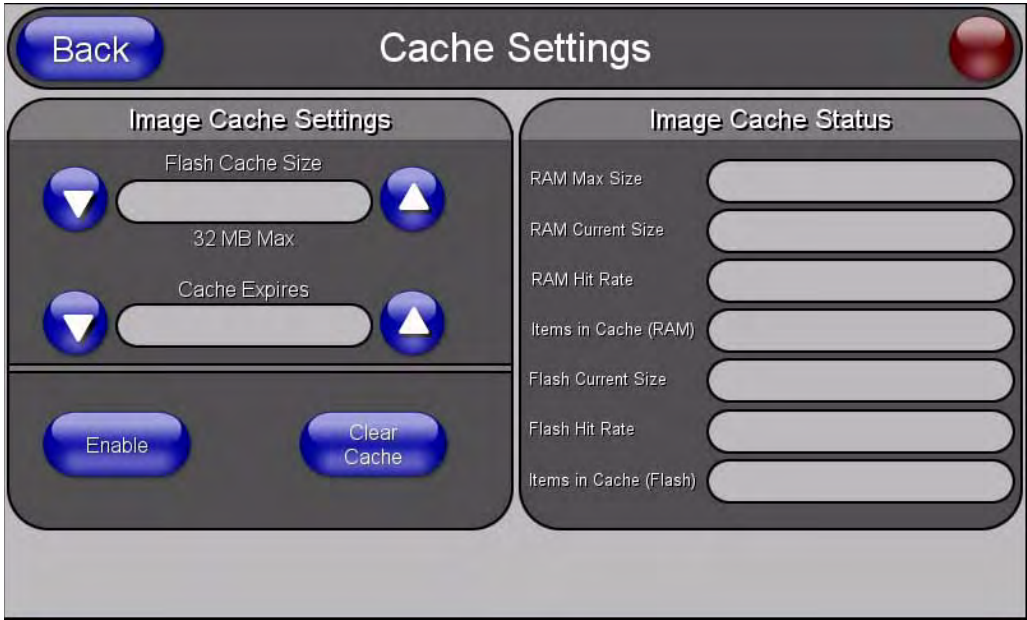
FIG. 71 Image Caching Page

The elements of this page include:

Image Caching Page Elements	
Back:	Saves all changes and returns to the previous page.
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master.
	• Bright red - disconnected
	• Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green.
	• Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received.
	Note: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.
Image Cache Settings:	Allocates Flash memory for image caching.
Flash Cache Size	Press the Up and Down arrows to add and remove memory. Flash memory allocation cannot exceed the amount of Flash memory on the panel.

Image Caching Page Elements (Cont.)	
Flash/RAM Cache Expires	Press the Up and Down arrows to change the amount of time the images stay in cache memory. The options are: • Never • 2 Hours • 8 Hours • 1 Day • 2 Days • 5 Days
Enable:	Press this button to toggle the image Flash cache option On and Off.
Clear Cache:	Press this button to clear both the Flash and RAM cache of all stored images.
Image Cache Status:	The status of the memory available versus in use.
RAM Max Size	The maximum amount of memory available for all image caching.
RAM Current Size	The memory that is currently in use for caching static and dynamic images.
RAM Hit Rate	The percentage of image requests (static and dynamic) satisfied by accessing the cache. 100 * (# of cache hits) / (# of cache hits + # of cache misses) # of cache hits - the number of times an image was requested that the image was found in the cache # of cache misses - the number of times an image was requested that the image could not be found in the cache, and the image had to either be loaded from flash or obtained via the network (for dynamic images). It is considered a RAM Cache Miss even if the image is subsequently found in flash cache.
Items in Cache (RAM)	The number of images that are currently stored in the RAM cache.
Flash Current Size	The maximum flash space allocated for image caching. Flash space is used for caching only when there is not enough available memory in the RAM cache for a newly requested image (it is used only for dynamic images).
Flash Hit Rate	The percentage of image requests (dynamic only) that are satisfied by accessing the flash cache. 100 * (# of flash cache hits) / (# of flash cache hits + # of flash cache misses) # of flash cache hits - # of times a dynamic image could not be found in RAM cache but was found in flash cache # of flash cache misses - # of times a dynamic image could not be found in either RAM or flash cache. RAM cache hits are not relevant in this calculation.
Items in Cache (Flash)	The number of images that are currently stored in the Flash cache.

Setting the image cache

In the *Protected Setup* page:

1. Press the **Cache** button in the *Protected Setup Navigation Buttons* section. This opens the *Image Cache* page.

2. Set the cache expiration in the field *Flash/RAM Cache Expires*. The Up and Down arrows increment through the available time frames.

3. Press the **Enable** button to turn on image caching. The button appears illuminated when enabled.

You can allocate Flash memory for image caching, but RAM cache is always enabled.

Select the Up and Down arrows for the field *Flash Cache Size* to increase or reduce the amount of Flash memory used; the maximum amount of flash that can be allocated for caching is 75% of available flash.

Clearing the image cache

In the *Protected Setup* page:

1. Press the **Cache** button in the *Protected Setup Navigation Buttons* section. This opens the *Image Cache* page.

2. Press **Clear Cache**. This clears all image cache currently stored on the panel (both Flash and RAM).

Checking image cache status

In the *Protected Setup* page:

Press the **Cache** button in the *Protected Setup Navigation Buttons* section. This opens the *Image Cache* page. All status information is located in the *Image Cache Status* section of the page.

Password Settings Page

The options on the Password Settings page allow you to assign the passwords required for users to access the Protected Setup page (FIG. 72).
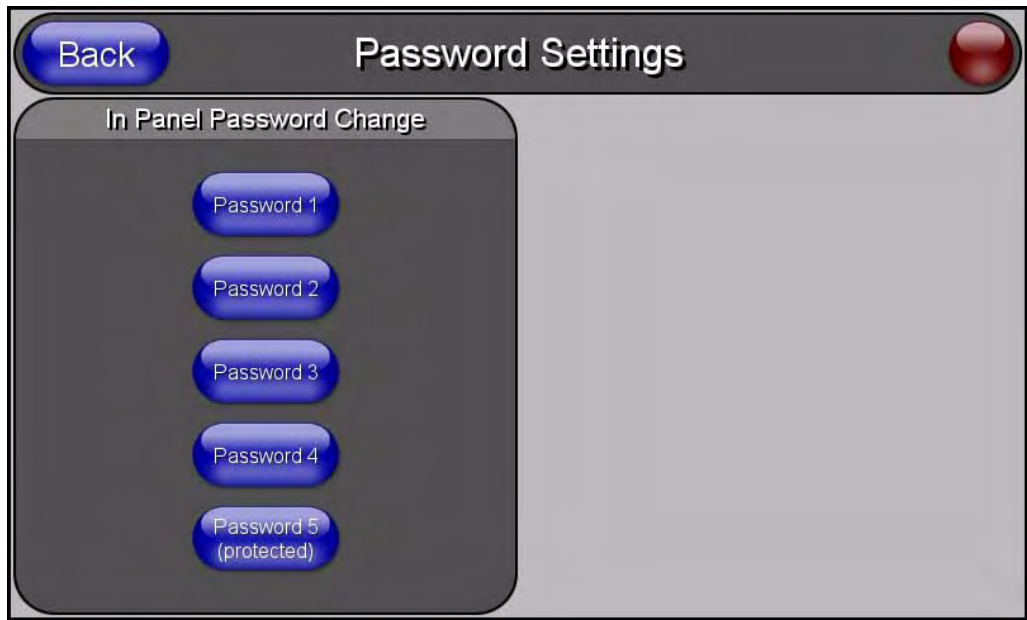
FIG. 72 Password Setttings page

Features on this page include:

Password Settings Page	
Back:	Saves all changes and returns to the previous page.
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*
In Panel Password Change:	Accesses the alphanumeric values associated to particular password sets. • The PASSWORD 1, 2, 3, 4 and 5 (protected) buttons open a keyboard to enter alphanumeric values associated to the selected password group. ***Note**: Clearing Password #5 removes the need to enter a password before accessing the Protected Setup page.*

Tools

The Tools button provides a menu to select either the *Panel Logs Page* section on page 78, the *Panel Statistics Page* section on page 80, or the *Connection Utility Page* section on page 81. Select any of the options to access that page.
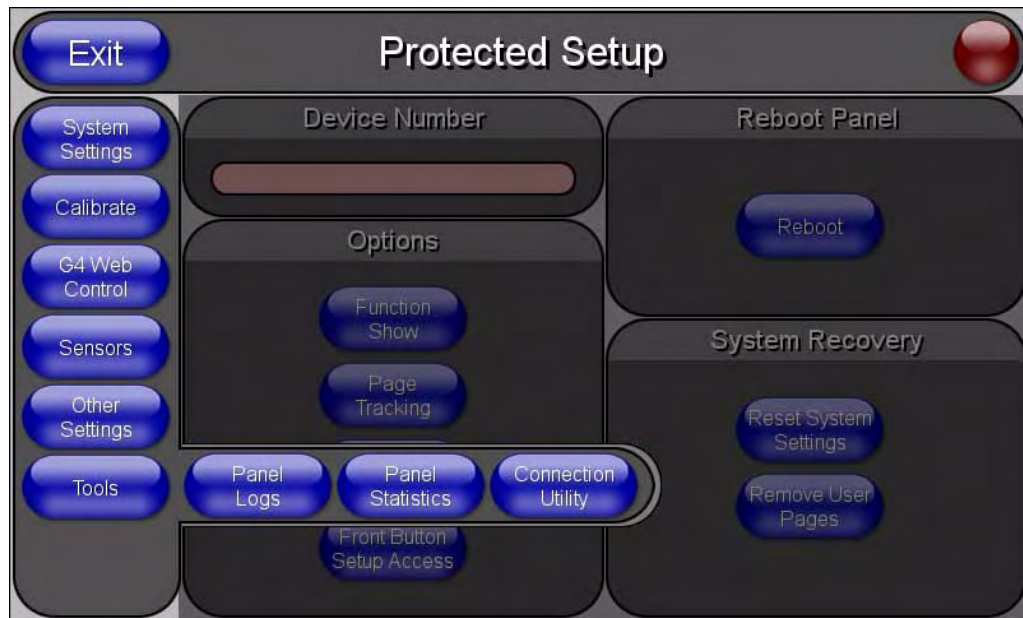
FIG. 73 Tools menu

Panel Logs Page

The options on the Panel Logs page allow you to view and track the connection history of the panel (FIG. 74).
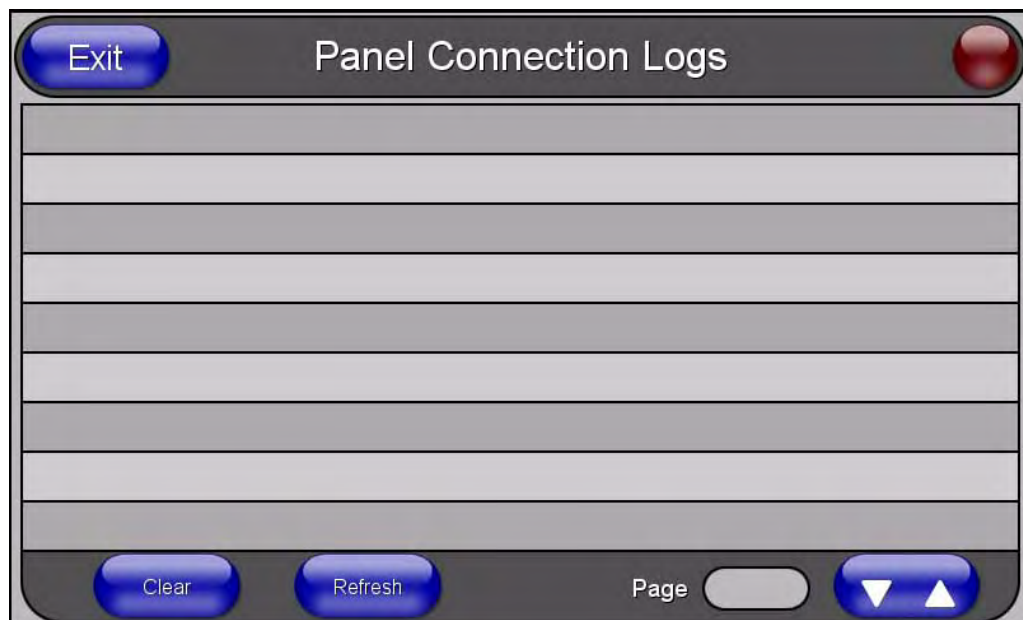
FIG. 74 Panel Logs page

Features on this page include:

Panel Logs Page	
Back:	Saves all changes and returns to the previous page.
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note***: *a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*
Connection Logs	A history of all connections, attempts, and failures for the panel.
Clear	Clears the Connection Logs history.
Refresh	Refreshes the Connection Logs history.
Page	Indicates the current page of the Connection Logs. Use the Up and Down arrows to move from one page to the next.

Checking the Panel Connection Logs

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Logs** button. All connection data is contained in the section *Connection Logs*.

Refreshing the Panel Connections Log

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Logs** button.
3. Push the **Refresh** button.

Clearing the Panel Connections Log

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.
2. Within the *Tools* menu, press the **Panel Logs** button.
3. Push the **Clear** button.
4. Confirm your selection.

Panel Statistics Page

The options on the Panel Statistics page allow you to track the connection status for the panel. The *Panel Statistics* page tracks ICSP messages, Blink messages, and Ethernet connection statistics (FIG. 75).
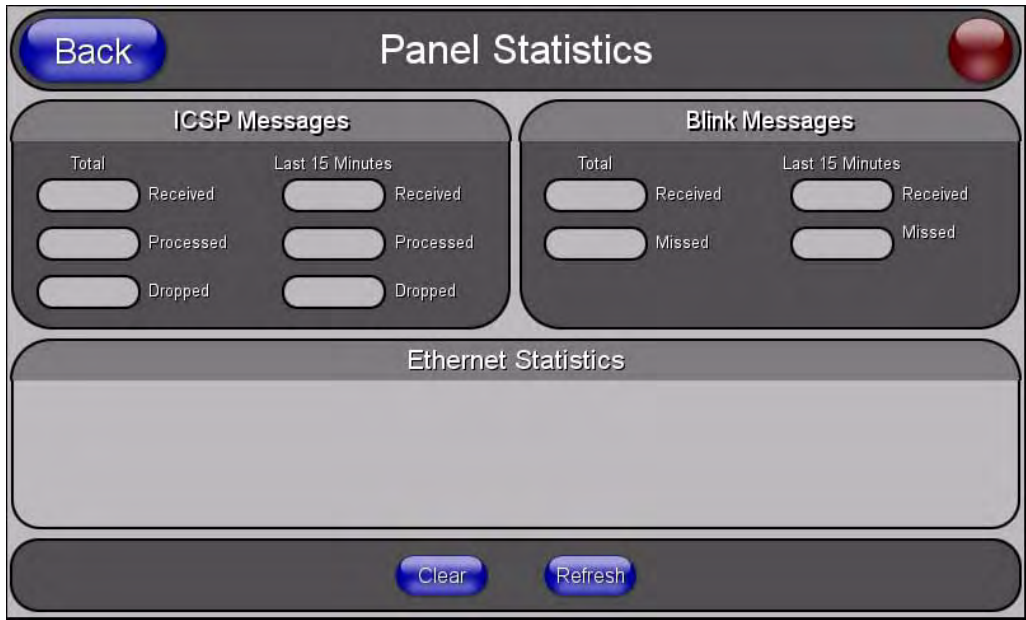
FIG. 75 Panel Statistics page

Features on this page include:

Panel Statistics Page	
Back:	Saves all changes and returns to the previous page.
Connection Status icon:	The icon in the upper-right corner of each Setup page shows online/offline state of the panel to the master. • Bright red - disconnected • Bright green - connected. Blinks when a blink message is received to dark green every 5 seconds for half a second then go back to bright green. • Bright yellow - panel missed a blink message from the master. It will remain yellow for 3 missed blink messages and then turn red. It will return to green when a blink message is received. ***Note**: a Lock appears on the icon if the panel is connected to a secured NetLinx Master.*
ICSP Messages	Messages sent between the master and the touch panel; it is the protocol they use to communicate to each other.
Total	• Received - The total ICSP messages received by the panel. • Processed - The total ICSP messages processed by the panel. • Dropped - The total ICSP messages dropped by the panel.
Last 15 Minutes	• Received - The total ICSP messages received by the panel in the last 15 minutes. • Processed - The total ICSP messages processed by the panel in the last 15 minutes. • Dropped - The total ICSP messages dropped by the panel in the last 15 minutes.
Blink Messages	The master sends this message once every 5 seconds to all connected devices.

Panel Statistics Page (Cont.)	
Total	• Received - The total Blink messages received by the panel.
	• Missed - The total Blink messages missed by the panel.
Last 15 Minutes	• Received - The total Blink messages received by the panel in the last 15 minutes.
	• Missed - The total Blink messages missed by the panel in the last 15 minutes.
Ethernet Statistics	The Ethernet connection statistics for the panel.
Clear	Clears all panel connection statistics.
Refresh	Refreshes all panel connection statistics.

Checking the Panel Statistics

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.

2. Within the *Tools* menu, press the **Panel Statistics** button. All connection statistics are contained on this page, e.g., *Received, Processed, and Dropped ICSP Messages*.

Refreshing the Panel Statistics

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.

2. Within the *Tools* menu, press the **Panel Statistics** button.

3. Push the **Refresh** button.

Clearing the Panel Statistics

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.

2. Within the *Tools* menu, press the **Panel Statistics** button.

3. Push the **Clear** button.

4. Confirm your selection.

Connection Utility Page

The options on the Connection Utility page allow you to utilize your panel as a site survey tool. While in this page, move around your wireless network coverage area and see if there are any weak points within the spaces between your WAPs (FIG. 76).
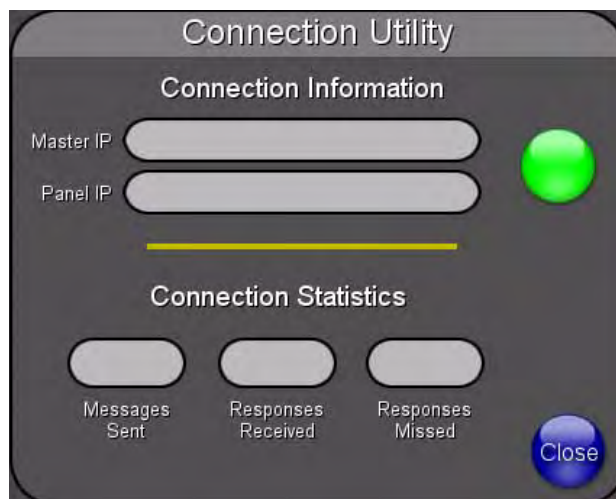
FIG. 76 Connection Utility page

Features on this page include:

Connection Utility Page	
Close:	Closes the *Connection Utility* popup.
Connection Status icon:	The icon in the upper-right corner of the utility provides a constant visual i indication of current connection status.
	A message is sent to the master once per second and expects a response.
	• If it is received the button stays green.
	• If it is missed the button goes yellow.
	• After three misses (3 seconds) it will go red until a response from the master is received, and then it will be green again.
	Once per second, a user can know whether they are standing in a good wireless area (all green), an area of limited coverage (lots of yellow, some green, some red), or an area with no coverage (all red).
Connection Information	
Master IP	The IP Address for the connected master.
Panel IP	The IP Address for the panel.
Connection Statistics	
Messages Sent	The number of messages sent from the panel to the master.
Responses Received	The number of responses the panel has received from the master.
Responses Missed	The number of expected responses from the master to the panel missed.

Using the Connection Utility

1. Press the **Tools** button in the *Protected Setup Navigation Buttons* section. This opens the *Tools* menu.

2. Within the *Tools* menu, press the **Connection Utility** button. This launches the *Connection Utility* popup.

3. Move the panel within your network. The *Connection Information* notes the IP of the connected master and the IP of your panel. The *Connection Statistics* show the current quality of the panel connection.

4. Push **Close** when you are done using the site survey tool.

Secondary Connection Page

The Secondary Connection page sets the communication information for an installed wireless interface card. The NXD-CV5 Touch panel is not enabled for wireless communication and therefore, this page is not user-editable.

Programming

Overview

You can program the touch panel, using the commands in this section, to perform a wide variety of operations using Send_Commands and variable text commands.

A device must first be defined in the NetLinx programming language with values for the Device: Port: System (in all programming examples - *Panel* is used in place of these values and represents all Modero panels).

Verify you are using the latest NetLinx Master and Modero firmware.
Verify you are using the latest version of NetLinx Studio and TPD4.

Button Assignments

- Button Channel Range: 1 - 4000 Button push and Feedback (per address port)
- Button Variable Text range: 1 - 4000 (per address port)
- Button States Range: 1 - 256 (0 = All states, for General buttons 1 = Off state and 2 = On state).
- Level Range: 1 - 600 (Default level value 0 - 255, can be set up to 1 - 65535)
- Address port Range: 1 - 100

These button assignments can only be adjusted in TPD4 and not on the panels themselves.

Page Commands

These Page Commands are used in NetLinx Programming Language and are case insensitive.

Page Commands	

@APG
Add a specific popup page to a specified popup group.
	Add the popup page to a group if it does not already exist. If the new popup is added to a group which has a popup displayed on the current page along with the new pop-up, the displayed popup will be hidden and the new popup will be displayed.
	Syntax:
	`"'@APG-<popup page name>;<popup group name>'"`
	Variable:
	  popup page name = 1 - 50 ASCII characters. Name of the popup page.
	  popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@APG-Popup1;Group1'"`
	Adds the popup page 'Popup1' to the popup group 'Group1'.

@CPG
Clear all popup pages from specified popup group.
	Syntax:
	`"'@CPG-<popup group name>'"`
	Variable:
	  popup group name = 1 - 50 ASCII characters. Name of the popup group.
	Example:
	`SEND_COMMAND Panel,"'@CPG-Group1'"`
	Clears all popup pages from the popup group 'Group1'.

Page Commands (Cont.)

@DPG
 	
Delete a specific popup page from specified popup group if it exists.
	Syntax:
	
	`"'@DPG-<popup page name>;<popup group name>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	
	popup group name = 1 - 50 ASCII characters. Name of the popup group.
	
	Example:
	
	`SEND_COMMAND Panel,"'@DPG-Popup1;Group1'"`
	
	Deletes the popup page 'Popup1' from the popup group 'Group1'.

@PDR
 	
Set the popup location reset flag.
	If the flag is set, the popup will return to its default location on show instead of its last drag location.
	
	Syntax:
	
	`"'@PDR-<popup page name>;<reset flag>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	reset flag = 1 = Enable reset flag
	        0 = Disable reset flag
	
	Example:
	
	`SEND_COMMAND Panel,"'@PDR-Popup1;1'"`
	
	Popup1 will return to its default location when turned On.

@PHE
 	
Set the hide effect for the specified popup page to the named hide effect.
	Syntax:
	
	`"'@PHE-<popup page name>;<hide effect name>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	hide effect name = Refers to the popup effect names being used.
	
	Example:
	
	`SEND_COMMAND Panel,"'@PHE-Popup1;Slide to Left'"`
	
	Sets the Popup1 hide effect name to 'Slide to Left'.

@PHP
 	
Set the hide effect position.
	Only 1 coordinate is ever needed for an effect; however, the command will specify both. This command sets the location at which the effect will end at.
	
	Syntax:
	
	`"'@PHP-<popup page name>;<x coordinate>,<y coordinate>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	Example:
	
	`SEND_COMMAND Panel,"'@PHP-Popup1;75,0'"`
	
	Sets the Popup1 hide effect x-coordinate value to 75 and the y-coordinate value to 0.

@PHT
 	
Set the hide effect time for the specified popup page.
	Syntax:
	
	`"'@PHT-<popup page name>;<hide effect time>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	hide effect time = Given in 1/10ths of a second.
	
	Example:
	
	`SEND_COMMAND Panel,"'@PHT-Popup1;50'"`
	
	Sets the Popup1 hide effect time to 5 seconds.

Page Commands (Cont.)

@PPA
 	
Close all popups on a specified page.
	If the page name is empty, the current page is used. Same as the 'Clear Page' command in TPDesign4.
	Syntax:
	`"'@PPA-<page name>'"`
	Variable:
	  page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPA-Page1'"`
	Close all popups on Page1.

@PPF
 	
Deactivate a specific popup page on either a specified page or the current page.
	If the page name is empty, the current page is used (see example 2). If the popup page is part of a group, the whole group is deactivated. This command works in the same way as the 'Hide Popup' command in TPDesign4.
	Syntax:
	`"'@PPF-<popup page name>;<page name>'"`
	Variable:
	  popup page name = 1 - 50 ASCII characters. Name of the popup page.
	  page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPF-Popup1;Main'"`
	Deactivates the popup page 'Popup1' on the Main page.
	Example 2:
	`SEND_COMMAND Panel,"'@PPF-Popup1'"`
	Deactivates the popup page 'Popup1' on the current page.

@PPG
 	
Toggle a specific popup page on either a specified page or the current page.
	If the page name is empty, the current page is used (see example 2). Toggling refers to the activating/deactivating (On/Off) of a popup page. This command works in the same way as the 'Toggle Popup' command in TPDesign4.
	Syntax:
	`"'@PPG-<popup page name>;<page name>'"`
	Variable:
	  popup page name = 1 - 50 ASCII characters. Name of the popup page.
	  page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPG-Popup1;Main'"`
	Toggles the popup page 'Popup1' on the 'Main' page from one state to another (On/Off).
	Example 2:
	`SEND_COMMAND Panel,"'@PPG-Popup1'"`
	Toggles the popup page 'Popup1' on the current page from one state to another (On/Off).

@PPK
 	
Kill a specific popup page from all pages.
	Kill refers to the deactivating (Off) of a popup window from all pages. If the pop-up page is part of a group, the whole group is deactivated. This command works in the same way as the 'Clear Group' command in TPDesign 4.
	Syntax:
	`"'@PPK-<popup page name>'"`
	Variable:
	  popup page name = 1 - 50 ASCII characters. Name of the popup page.
	Example:
	`SEND_COMMAND Panel,"'@PPK-Popup1'"`
	Kills the popup page 'Popup1' on all pages.

Page Commands (Cont.)

@PPM
 	
Set the modality of a specific popup page to Modal or NonModal.
	A Modal popup page, when active, only allows you to use the buttons and features on that popup page. All other buttons on the panel page are inactivated.
	Syntax:
	`"'@PPM-<popup page name>;<mode>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	mode = NONMODAL converts a previously Modal popup page to a NonModal.
	MODAL converts a previously NonModal popup page to Modal.
	modal = 1 and non-modal = 0
	Example:
	`SEND_COMMAND Panel,"'@PPM-Popup1;Modal'"`
	Sets the popup page 'Popup1' to Modal.
	`SEND_COMMAND Panel,"'@PPM-Popup1;1'"`
	Sets the popup page 'Popup1' to Modal.

@PPN
 	
Activate a specific popup page to launch on either a specified page or the current page.
	If the page name is empty, the current page is used (see example 2). If the popup page is already on, do not re-draw it. This command works in the same way as the 'Show Popup' command in TPDesign4.
	Syntax:
	`"'@PPN-<popup page name>;<page name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	`SEND_COMMAND Panel,"'@PPN-Popup1;Main'"`
	Activates 'Popup1' on the 'Main' page.
	Example 2:
	`SEND_COMMAND Panel,"'@PPN-Popup1'"`
	Activates the popup page 'Popup1' on the current page.

@PPT
 	
Set a specific popup page to timeout within a specified time.
	If timeout is empty, popup page will clear the timeout.
	Syntax:
	`"'@PPT-<popup page name>;<timeout>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	timeout = Timeout duration in 1/10ths of a second.
	Example:
	`SEND_COMMAND Panel,"'@PPT-Popup1;30'"`
	Sets the popup page 'Popup1' to timeout within 3 seconds.

@PPX
 	
Close all popups on all pages.
	This command works in the same way as the 'Clear All' command in TPDesign 4.
	Syntax:
	`"'@PPX'"`
	Example:
	`SEND_COMMAND Panel,"'@PPX'"`
	Close all popups on all pages.

@PSE
 	
Set the show effect for the specified popup page to the named show effect.
	Syntax:
	`"'@PSE-<popup page name>;<show effect name>'"`
	Variable:
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	show effect name = Refers to the popup effect name being used.
	Example:
	`SEND_COMMAND Panel,"'@PSE-Popup1;Slide from Left'"`
	Sets the Popup1 show effect name to 'Slide from Left'.

Page Commands (Cont.)

@PSP
 	
Set the show effect position.
	Only 1 coordinate is ever needed for an effect; however, the command will specify both. This command sets the location at which the effect will begin at.
	Syntax:
	
	`"'@PSP-<popup page name>;<x coordinate>,<y coordinate>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	Example:
	
	`SEND_COMMAND Panel,"'@PSP-Popup1;100,0'"`
	
	Sets the Popup1 show effect x-coordinate value to 100 and the y-coordinate value to 0.

@PST
 	
Set the show effect time for the specified popup page.
	Syntax:
	
	`"'@PST-<popup page name>;<show effect time>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	show effect time = Given in 1/10ths of a second.
	
	Example:
	
	`SEND_COMMAND Panel,"'@PST-Popup1;50'"`
	
	Sets the Popup1 show effect time to 5 seconds.

PAGE
 	
Flip to a specified page.
	Flips to a page with a specified page name. If the page is currently active, it will not redraw the page.
	Syntax:
	
	`"'PAGE-<page name>'"`
	
	Variable:
	
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	Example:
	
	`SEND_COMMAND Panel,"'PAGE-Page1'"`
	
	Flips to page1.

PPOF
 	
Deactivate a specific popup page on either a specified page or the current page.
	If the page name is empty, the current page is used (see example 2). If the popup page is part of a group, the whole group is deactivated. This command works in the same way as the 'Hide Popup' command in TPDesign4.
	Syntax:
	
	`"'PPOF-<popup page name>;<page name>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	
	Example:
	
	`SEND_COMMAND Panel,"'PPOF-Popup1;Main'"`
	
	Deactivates the popup page 'Popup1' on the Main page.
	
	Example 2:
	
	`SEND_COMMAND Panel,"'PPOF-Popup1'"`
	
	Deactivates the popup page 'Popup1' on the current page.

Page Commands (Cont.)	

PPOG
 	
Toggle a specific popup page on either a specified page or the current page.
	If the page name is empty, the current page is used (see example 2). Toggling refers to the activating/deactivating (On/Off) of a popup page. This command works in the same way as the 'Toggle Popup' command in TPDesign4.
	Syntax:
	
	`"'PPOG-<popup page name>;<page name>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	
	`SEND_COMMAND Panel,"'PPOG-Popup1;Main'"`
	
	Toggles the popup page 'Popup1' on the Main page from one state to another (On/Off).
	Example 2:
	
	`SEND_COMMAND Panel,"'PPOG-Popup1'"`
	
	Toggles the popup page 'Popup1' on the current page from one state to another (On/Off).

PPON
 	
Activate a specific popup page to launch on either a specified page or the current page.
	If the page name is empty, the current page is used (see example 2). If the popup page is already On, do not re-draw it. This command works in the same way as the 'Show Popup' command in TPDesign4.
	Syntax:
	
	`"'PPON-<popup page name>;<page name>'"`
	
	Variable:
	
	popup page name = 1 - 50 ASCII characters. Name of the popup page.
	
	page name = 1 - 50 ASCII characters. Name of the page the popup is displayed On.
	Example:
	
	`SEND_COMMAND Panel,"'PPON-Popup1; Main'"`
	
	Activates the popup page 'Popup1' on the Main page.
	Example 2:
	
	`SEND_COMMAND Panel,"'PPON-Popup1'"`
	
	Activates the popup page 'Popup1' on the current page.

Programming Numbers

The following information provides the programming numbers for colors, fonts, and borders.

Colors can be used to set the colors on buttons, sliders, and pages. The lowest color number represents the lightest color-specific display; the highest number represents the darkest display. For example, 0 represents light red, and 5 is dark red.

RGB Triplets and Names For Basic 88 Colors

RGB Values for all 88 Basic Colors				
Index No.	**Name**	**Red**	**Green**	**Blue**
00	Very Light Red	255	0	0
01	Light Red	223	0	0
02	Red	191	0	0
03	Medium Red	159	0	0
04	Dark Red	127	0	0
05	Very Dark Red	95	0	0
06	Very Light Orange	255	128	0
07	Light Orange	223	112	0
08	Orange	191	96	0
09	Medium Orange	159	80	0
10	Dark Orange	127	64	0
11	Very Dark Orange	95	48	0
12	Very Light Yellow	255	255	0
13	Light Yellow	223	223	0
14	Yellow	191	191	0
15	Medium Yellow	159	159	0

RGB Values for all 88 Basic Colors (Cont.)				
Index No.	**Name**	**Red**	**Green**	**Blue**
16	Dark Yellow	127	127	0
17	Very Dark Yellow	95	95	0
18	Very Light Lime	128	255	0
19	Light Lime	112	223	0
20	Lime	96	191	0
21	Medium Lime	80	159	0
22	Dark Lime	64	127	0
23	Very Dark Lime	48	95	0
24	Very Light Green	0	255	0
25	Light Green	0	223	0
26	Green	0	191	0
27	Medium Green	0	159	0
28	Dark Green	0	127	0
29	Very Dark Green	0	95	0
30	Very Light Mint	0	255	128
31	Light Mint	0	223	112
32	Mint	0	191	96
33	Medium Mint	0	159	80
34	Dark Mint	0	127	64
35	Very Dark Mint	0	95	48
36	Very Light Cyan	0	255	255
37	Light Cyan	0	223	223
38	Cyan	0	191	191
39	Medium Cyan	0	159	159
40	Dark Cyan	0	127	127
41	Very Dark Cyan	0	95	95
42	Very Light Aqua	0	128	255
43	Light Aqua	0	112	223
44	Aqua	0	96	191
45	Medium Aqua	0	80	159
46	Dark Aqua	0	64	127
47	Very Dark Aqua	0	48	95
48	Very Light Blue	0	0	255
49	Light Blue	0	0	223
50	Blue	0	0	191
51	Medium Blue	0	0	159
52	Dark Blue	0	0	127
53	Very Dark Blue	0	0	95
54	Very Light Purple	128	0	255
55	Light Purple	112	0	223
56	Purple	96	0	191
57	Medium Purple	80	0	159
58	Dark Purple	64	0	127
59	Very Dark Purple	48	0	95
60	Very Light Magenta	255	0	255
61	Light Magenta	223	0	223
62	Magenta	191	0	191
63	Medium Magenta	159	0	159
64	Dark Magenta	127	0	127
65	Very Dark Magenta	95	0	95
66	Very Light Pink	255	0	128
67	Light Pink	223	0	112
68	Pink	191	0	96
69	Medium Pink	159	0	80
70	Dark Pink	127	0	64
71	Very Dark Pink	95	0	48

RGB Values for all 88 Basic Colors (Cont.)				
Index No.	Name	Red	Green	Blue
72	White	255	255	255
73	Grey1	238	238	238
74	Grey3	204	204	204
75	Grey5	170	170	170
76	Grey7	136	136	136
77	Grey9	102	102	102
78	Grey4	187	187	187
79	Grey6	153	153	153
80	Grey8	119	119	119
81	Grey10	85	85	85
82	Grey12	51	51	51
83	Grey13	34	34	34
84	Grey2	221	221	221
85	Grey11	68	68	68
86	Grey14	17	17	17
87	Black	0	0	0
255	TRANSPARENT	99	53	99

Font styles and ID numbers

Font styles can be used to program the text fonts on buttons, sliders, and pages. The following chart shows the default font type and their respective ID numbers generated by TPDesign4.

Default Font Styles and ID Numbers					
Font ID #	Font type	Size	Font ID #	Font type	Size
1	Courier New	9	19	Arial	9
2	Courier New	12	20	Arial	10
3	Courier New	18	21	Arial	12
4	Courier New	26	22	Arial	14
5	Courier New	32	23	Arial	16
6	Courier New	18	24	Arial	18
7	Courier New	26	25	Arial	20
8	Courier New	34	26	Arial	24
9	AMX Bold	14	27	Arial	36
10	AMX Bold	20	28	Arial Bold	10
11	AMX Bold	36	29	Arial Bold	8
			32 - Variable Fonts start at 32.		

*You must import fonts into a TPDesign4 project file. The font ID numbers are assigned by TPDesign4. These values are also listed in the **Generate Programmer's Report**.*

Border Styles and Programming Numbers

Border styles can be used to program borders on buttons, sliders, and popup pages.

No.	Border styles	No.	Border styles
Border Styles and Programming Numbers			
0-1	No border	10-11	Picture frame
2	Single line	12	Double line
3	Double line	20	Bevel-S
4	Quad line	21	Bevel-M
5-6	Circle 15	22-23	Circle 15
7	Single line	24-27	Neon inactive-S
8	Double line	40-41	Diamond 55
9	Quad line		

The TPDesign4 Touch Panel Design program has pre-set border styles that are user selectable.

You cannot use the following number values for programming purposes when changing border styles. TPD4 border styles can ONLY be changed by using the name.

No.	Border styles	No.	Border styles
TPD4 Border Styles by Name			
1	None	22	Circle 155
2	AMX Elite -L	23	Circle 165
3	AMX Elite -M	24	Circle 175
4	AMX Elite -S	25	Circle 185
5	Bevel -L	26	Circle 195
6	Bevel -M	27	Cursor Bottom
7	Bevel -S	28	Cursor Bottom with Hole
8	Circle 15	29	Cursor Top
9	Circle 25	30	Cursor Top with Hole
10	Circle 35	31	Cursor Left
11	Circle 45	32	Cursor Left with Hole
12	Circle 55	33	Cursor Right
13	Circle 65	34	Cursor Right with Hole
14	Circle 75	35	Custom Frame
15	Circle 85	36	Diamond 15
16	Circle 95	37	Diamond 25
17	Circle 105	38	Diamond 35
18	Circle 115	39	Diamond 45
19	Circle 125	40	Diamond 55
20	Circle 135	41	Diamond 65
21	Circle 145	42	Diamond 75
43	Diamond 85	85	Menu Bottom Rounded 65
44	Diamond 95	86	Menu Bottom Rounded 75
45	Diamond 105	87	Menu Bottom Rounded 85
46	Diamond 115	88	Menu Bottom Rounded 95
47	Diamond 125	89	Menu Bottom Rounded 105
48	Diamond 135	90	Menu Bottom Rounded 115
49	Diamond 145	91	Menu Bottom Rounded 125
50	Diamond 155	92	Menu Bottom Rounded 135
51	Diamond 165	93	Menu Bottom Rounded 145
52	Diamond 175	94	Menu Bottom Rounded 155

53	Diamond 185	95	Menu Bottom Rounded 165
54	Diamond 195	96	Menu Bottom Rounded 175
55	Double Bevel -L	97	Menu Bottom Rounded 185
56	Double Bevel -M	98	Menu Bottom Rounded 195
57	Double Bevel -S	99	Menu Top Rounded 15
58	Double Line	100	Menu Top Rounded 25
59	Fuzzy	101	Menu Top Rounded 35
60	Glow-L	102	Menu Top Rounded 45
61	Glow-S	103	Menu Top Rounded 55
62	Help Down	104	Menu Top Rounded 65
63	Neon Active -L	105	Menu Top Rounded 75
64	Neon Active -S	106	Menu Top Rounded 85
65	Neon Inactive -L	107	Menu Top Rounded 95
66	Neon Inactive -S	108	Menu Top Rounded 105
67	Oval H 60x30	109	Menu Top Rounded 115
68	Oval H 100x50	110	Menu Top Rounded 125
69	Oval H 150x75	111	Menu Top Rounded 135
70	Oval H 200x100	112	Menu Top Rounded 145
71	Oval V 30x60	113	Menu Top Rounded 155
72	Oval V 50x100	114	Menu Top Rounded 165
73	Oval V 75x150	115	Menu Top Rounded 175
74	Oval V 100x200	116	Menu Top Rounded 185
75	Picture Frame	117	Menu Top Rounded 195
76	Quad Line	118	Menu Right Rounded 15
77	Single Line	119	Menu Right Rounded 25
78	Windows Style Popup	120	Menu Right Rounded 35
79	Windows Style Popup (Status Bar)	121	Menu Right Rounded 45
80	Menu Bottom Rounded 15	122	Menu Right Rounded 55
81	Menu Bottom Rounded 25	123	Menu Right Rounded 65
82	Menu Bottom Rounded 35	124	Menu Right Rounded 75
83	Menu Bottom Rounded 45	125	Menu Right Rounded 85
84	Menu Bottom Rounded 55	126	Menu Right Rounded 95
127	Menu Right Rounded 105	145	Menu Left Rounded 95
128	Menu Right Rounded 115	146	Menu Left Rounded 105
129	Menu Right Rounded 125	147	Menu Left Rounded 115
130	Menu Right Rounded 135	148	Menu Left Rounded 125
131	Menu Right Rounded 145	149	Menu Left Rounded 135
132	Menu Right Rounded 155	150	Menu Left Rounded 145
133	Menu Right Rounded 165	151	Menu Left Rounded 155
134	Menu Right Rounded 175	152	Menu Left Rounded 165
135	Menu Right Rounded 185	153	Menu Left Rounded 175
136	Menu Right Rounded 195	154	Menu Left Rounded 185
137	Menu Left Rounded 15	155	Menu Left Rounded 195
138	Menu Left Rounded 25		

"^" Button Commands

These Button Commands are used in NetLinx Studio and are case insensitive.

All commands that begin with "^" have the capability of assigning a variable text address range and button state range. **A device must first be defined in the NetLinx programming language with values for the Device: Port : System** (in all programming examples - *Panel* is used in place of these values).

- **Variable text ranges** allow you to target 1 or more variable text channels in a single command.
- **Button State ranges** allow you to target 1 or more states of a variable text button with a single command.
- **"."** Character is used for the 'through' notation, also the "**&**" character is used for the 'And' notation.

"^" Button Commands	

^ANI
 	
Run a button animation
(in 1/10 second).
	Syntax:
	`"'^ANI-<vt addr range>,<start state>,<end state>,<time>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    start state = Beginning of button state (0= current state).
	    end state = End of button state.
	    time = In 1/10 second intervals.
	Example:
	`SEND_COMMAND Panel,"'^ANI-500,1,25,100'"`
	Runs a button animation at text range 500 from state 1 to state 25 for 10 second.

^APF
 	
Add page flip action to a button if it does not already exist.
	Syntax:
	`"'^APF-<vt addr range>,<page flip action>,<page name>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    page flip action =
	    Stan[dardPage] - Flip to standard page
	    Prev[iousPage] - Flip to previous page
	    Show[Popup] - Show Popup page
	    Hide[Popup] - Hide Popup page
	    Togg[lePopup] - Toggle popup state
	    ClearG[roup] - Clear popup page group from all pages
	    ClearP[age] - Clear all popup pages from a page with the specified page name
	    ClearA[ll] - Clear all popup pages from all pages
	    page name = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^APF-400,Stan,Main Page'"`
	Assigns a button to a standard page flip with page name 'Main Page'.

^BAT
 	
Append non-unicode text.
	Syntax:
	`"'^BAT-<vt addr range>,<button states range>,<new text>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	    new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BAT-520,1,Enter City'"`
	Appends the text 'Enter City' to the button's OFF state.

"^" Button Commands (Cont.)	

^BAU
 	
Append unicode text.
	Same format as ^UNI.
	
	Syntax:
	
	`"'^BAU-<vt addr range>,<button states range>,<unicode text>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	unicode text = 1 - 50 ASCII characters. Unicode characters must be entered in Hex format.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BAU-520,1,00770062'"`
	
	Appends Unicode text '00770062' to the button's OFF state.

^BCB
 	
Set the border color to the specified color.
	Only if the specified border color is not the same as the current color.
	
	Note: Color can be assigned by color name (without spaces), number or R,G,B value (RRGGBB or RRGGBBAA).
	
	Syntax:
	
	`"'^BCB-<vt addr range>,<button states range>,<color value>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 88 for more information.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BCB-500.504&510,1,12'"`
	
	Sets the Off state border color to 12 (Yellow). Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB).
	Refer to theRGB Values for all 88 Basic Colors table on page 88.

^BCF
 	
Set the fill color to the specified color.
	Only if the specified fill color is not the same as the current color.
	
	***Note**: Color can be assigned by color name (without spaces), number or R,G,B value (RRGGBB or RRGGBBAA).*
	
	Syntax:
	
	`"'^BCF-<vt addr range>,<button states range>,<color value>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 88 for more information.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,12'"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,Yellow'"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,#F4EC0A63''"`
	`SEND_COMMAND Panel,"'^BCF-500.504&510.515,1,#F4EC0A'"`
	
	Sets the Off state fill color by color number. Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB).

"^" Button Commands (Cont.)	

^BCT
 	
Set the text color to the specified color.
	Only if the specified text color is not the same as the current color.
	
	***Note**: Color can be assigned by color name (without spaces), number or R,G,B value (RRGGBB or RRGGBBAA).*
	
	Syntax:
	
	`"'^BCT-<vt addr range>,<button states range>,<color value>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	color value = Refer to theRGB Values for all 88 Basic Colors table on page 88 for more information.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BCT-500.504&510,1,12'"`
	
	Sets the Off state border color to 12 (Yellow). Colors can be set by Color Numbers, Color name, R,G,B,alpha colors (RRGGBBAA) and R, G & B colors values (RRGGBB).

^BDO
 	
Set the button draw order.
	Determines what order each layer of the button is drawn.
	
	Syntax:
	
	`"'^BDO-<vt addr range>,<button states range>,<1-5><1-5><1-5><1-5><1-5>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	layer assignments = Fill Layer = 1
	Image Layer = 2
	Icon Layer = 3
	Text Layer = 4
	Border Layer = 5
	
	***Note**: The layer assignments are from bottom to top. The default draw order is **12345**.*
	
	Example:
	
	`SEND_COMMAND Panel,"'^BDO-530,1&2,51432'"`
	
	Sets the button's variable text 530 ON/OFF state draw order (from bottom to top) to Border, Fill, Text, Icon, and Image.
	
	Example 2:
	
	`SEND_COMMAND Panel,"'^BDO-1,0,12345'"`
	
	Sets all states of a button back to its default drawing order.

^BFB
 	
Set the feedback type of the button.
	ONLY works on General-type buttons.
	
	Syntax:
	
	`"'^BFB-<vt addr range>,<feedback type>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	feedback type = (None, Channel, Invert, On (Always on), Momentary, and Blink).
	
	Example:
	
	`SEND_COMMAND Panel,"'^BFB-500,Momentary'"`
	
	Sets the Feedback type of the button to 'Momentary'.

"^" Button Commands (Cont.)	

^BIM
 	
Set the input mask for the specified address.
	Syntax:
	`"'^BIM-<vt addr range>,<input mask>'"`
	Variable:
	variable text address range = 1 - 4000.
	input mask = Refer to the *Text Area Input Masking* section on page 130 for character types.
	Example:
	`SEND_COMMAND Panel,"'^BIM-500,AAAAAAAAAA'"`
	Sets the input mask to ten 'A' characters, that are required, to either a letter or digit **(entry is required).**

^BLN
 	
Set the number of lines removed equally from the top and bottom of a composite video signal.
	The maximum number of lines to remove is 240. A value of 0 will display the incoming video signal unaffected. This command is used to scale non 4x3 video images into non 4x3 video buttons.
	Syntax:
	`"'^BLN-<vt addr range>,<button states range>,<number of lines>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	number of lines = 0 - 240.
	Example:
	`SEND_COMMAND Panel,"'^BLN-500,55'"`
	Equally removes 55 lines from the top and 55 lines from the bottom of the video button.

^BMC	Note that the source is a single button state. Each state must be copied as a separate command. The <codes> section represents what attributes will be copied. All codes are 2 char pairs that can be separated by comma, space, percent or just ran together.

Button copy command. Copy attributes of the source button to all the destination buttons.	Syntax:
	
	`"'^BMC-<vt addr range>,<button states range>,<source`
	`port>,<source address>,<source state>,<codes>'"`
	
	Variable:
	
	  variable text address range = 1 - 4000.
	
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	  source port = 1 - 100.
	
	  source address = 1 - 4000.
	
	  source state = 1 - 256.
	
	  codes:
	
	BM - Picture/Bitmap
	BR - Border
	CB - Border Color
	CF - Fill Color
	CT - Text Color
	EC - Text effect color
	EF - Text effect
	FT - Font
	IC - Icon
	JB - Bitmap alignment
	JI - Icon alignment
	JT - Text alignment
	LN - Lines of video removed
	OP - Opacity
	SO - Button Sound
	TX - Text
	VI - Video slot ID
	WW - Word wrap on/off
	
	Example:
	
	`SEND_COMMAND Panel,"'^BMC-425,1,1,500,1,BR'"`
	
	`or`
	
	`SEND_COMMAND Panel,"'^BMC-425,1,1,500,1,%BR'"`
	
	Copies the OFF state border of button with a variable text address of 500 onto the OFF state border of button with a variable text address of 425.
	
	Example 2:
	
	`SEND_COMMAND Panel,"'^BMC-150,1,1,315,1,%BR%FT%TX%BM%IC%CF%CT'"`
	
	Copies the OFF state border, font, Text, bitmap, icon, fill color and text color of the button with a variable text address of 315 onto the OFF state border, font, Text, bitmap, icon, fill color and text color of the button with a variable text address of 150.

^BMF
 	
Set any/all button parameters by sending embedded codes and data.
	Syntax:
	
	`"'^BMF-<vt addr range>,<button states range>,<data>'"`
	
	Variables:
	
	  variable text address char array = 1 - 4000.
	
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	  level range = 1 - 600 (level value is 1 - 65535).
	
	  data:
	
	'%B<border style>' = Set the border style name. See theBorder Styles and Programming Numbers table on page 91.
	
	'%B',<border 0-27,40,41> = Set the borer style number. See theBorder Styles and Programming Numbers table on page 91.
	
	'%DO<1-5><1-5><1-5><1-5><1-5> = Set the draw order. Listed from bottom to top. Refer to the ^BDO command on page 95 for more information.
	
	'%F',<font 1-8,10,11,20-29,32-xx> = Set the font. See theDefault Font Styles and ID Numbers table on page 90.

"^" Button Commands (Cont.)	

BMF (Cont.)	'%MI<mask image>' = Set the mask image. Refer to the ^BMI command on page 99 for more information.
	
	'%T<text >' = Set the text using ASCII characters (empty is clear).
	
	'%P<bitmap>' = Set the picture/bitmap filename (empty is clear).
	
	'%I',<icon 01-9900, 0-clear>' = Set the icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section).
	
	'%I<icon 01-9900, 0-clear>' = Set the icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section).
	
	'%J',<alignment of text 1-9> = As shown the following telephone keypad alignment chart:
	
	0
	
	    | 1 | 2 | 3 |
	    | 4 | 5 | 6 | Zero can be used for an absolute position
	    | 7 | 8 | 9 |
	
	'%JT<alignment of text 0-9>' = As shown the above telephone keypad alignment chart, **BUT** the 0 (zero) is absolute and followed by **',<left>,<top>'**
	
	'%JB<alignment of bitmap/picture 0-9>' = As shown the above telephone keypad alignment chart BUT the 0 (zero) is absolute and followed by **',<left>,<top>'**
	
	'%JI<alignment of icon 0-9>' = As shown the above telephone keypad alignment chart, **BUT** the 0 (zero) is absolute and followed by **',<left>,<top>'**
	
	For some of these commands and values, refer to theRGB Values for all 88 Basic Colors table on page 88.
	
	'%CF<on fill color>' = Set Fill Color.
	
	'%CB<on border color>' = Set Border Color.
	
	'%CT<on text color>' = Set Text Color.
	
	'%SW<1 or 0>' = Show/hide a button.
	
	'%SO<sound>' = Set the button sound.
	
	'%EN<1 or 0>' = Enable/disable a button.
	
	'%WW<1 or 0>' = Word wrap On/Off.
	
	'%GH<bargraph hi>' = Set the bargraph upper limit.
	
	'%GL<bargraph low>' = Set the bargraph lower limit.
	
	'%GN<bargraph slider name>' = Set the bargraph slider name/Joystick cursor name.
	
	'%GC<bargraph slider color>' = Set the bargraph slider color/Joystick cursor color.
	
	'%GI<bargraph invert>' = Set the bargraph invert/noninvert or joystick coordinate (0,1,2,3). See the ^GIV command on page 104 for more information.
	
	'%GU<bargraph ramp up>' = Set the bargraph ramp up time in intervals of 1/10 second.
	
	'%GD<bargraph ramp down>' = Set the bargraph ramp down time in 1/10 second.
	
	'%GG<bargraph drag increment> = Set the bargraph drag increment. Refer to the ^GDI command on page 104 for more information.
	
	'%VI<video ON/OFF>' = Set the Video either ON (value=1) or OFF (value=0).
	
	'%OT<feedback type>' = Set the Feedback (Output) Type to one of the following: None, Channel,Invert, ON (Always ON), Momentary, or Blink.
	
	'%SM' = Submit a text for text area button.
	
	'%SF<1 or 0>' = Set the focus for text area button.
	
	'%OP<0-255>' = Set the button opacity to either Invisible (value=0) or Opaque (value=255).
	
	'%OP#<00-FF>' = Set the button opacity to either Invisible (value=00) or Opaque (value=FF).
	
	'%UN<Unicode text>' = Set the Unicode text. See the *^UNI* section on page 109 for the text format.
	
	'%LN<0-240>' = Set the lines of video being removed. See the *^BLN* section on page 96 for more information.

"^" Button Commands (Cont.)

^BMF (Cont.)	'%EF\<text effect name>' = Set the text effect.
	'%EC\<text effect color>' = Set the text effect color.
	'%ML\<max length>' = Set the maximum length of a text area.
	'%MK\<input mask>' = Set the input mask of a text area.
	'%VL\<0-1>' = Log-On/Log-Off the computer control connection
	'%VN\<network name>' = Set network connection name.
	'%VP\<password>' = Set the network connection password.
	Example:
	```SEND_COMMAND Panel,"'^BMF-500,1,%B10%CFRed%CB Blue %CTBlack%Ptest.png'"```
	Sets the button OFF state as well as the Border, Fill Color, Border Color, Text Color, and Bitmap.

^BMI
 	
Set the button mask image.
	Mask image is used to crop a borderless button to a non-square shape. This is typically used with a bitmap.
	Syntax:
	```"'^BMI-<vt addr range>,<button states range>,<mask image>'"```
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	mask image = Graphic file used.
	Example:
	```SEND_COMMAND Panel,"'^BMI-530,1&2,newMac.png'"```
	Sets the button with variable text 530 ON/OFF state mask image to 'newmac.png'.

^BML
 	
Set the maximum length of the text area button.
	If this value is set to zero (0) there is no max length. The maximum length available is 2000. This is only for a Text area input button and not for a Text area input masking button.
	Syntax:
	```"'^BML-<vt addr range>,<max length>'"```
	Variable:
	variable text address range = 1 - 4000.
	max length = 2000 (0=no max length).
	Example:
	```SEND_COMMAND Panel,"'^BML-500,20'"```
	Sets the maximum length of the text area input button to 20 characters.

^BMP
 	
Assign a picture to those buttons with a defined address range.
	Syntax:
	```"'^BMP-<vt addr range>,<button states range>,<name of bitmap/ picture>'"```
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	name of bitmap/picture = 1 - 50 ASCII characters.
	Example:
	```SEND_COMMAND Panel,"'^BMP-500.504&510.515,1,bitmap.png'"```
	Sets the OFF state picture for the buttons with variable text ranges of 500-504 & 510-515.

^BNC
 	
Clear current TakeNote annotations.
	Syntax:
	```"'^BNC-<vt addr range>,<command value>'"```
	Variable:
	variable text address range = 1 - 4000.
	command value = (0= clear, 1= clear all).
	Example:
	```SEND_COMMAND Panel,"'^BNC-973,0'"```
	Clears the annotation of the TakeNote button with variable text 973.

"^" Button Commands (Cont.)

^BNN
 	
Set the TakeNote network name for the specified Addresses.
	Syntax:
	`"'^BNN-<vt addr range>,<network name>'"`
	Variable:
	variable text address range = 1 - 4000.
	network name = Use a valid IP Address.
	Example:
	`SEND_COMMAND Panel,"'^BNN-973,192.168.169.99'"`
	Sets the TakeNote button network name to 192.168.169.99.

^BNT
 	
Set the TakeNote network port for the specified Addresses.
	Syntax:
	`"'^BNT-<vt addr range>,<network port>'"`
	Variable:
	variable text address range = 1 - 4000.
	network port = 1 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^BNT-973,5000'"`
	Sets the TakeNote button network port to 5000.

^BOP
 	
Set the button opacity.
	The button opacity can be specified as a decimal between 0 - 255, where zero (0) is invisible and 255 is opaque, or as a HEX code, as used in the color commands by preceding the HEX code with the # sign. In this case, #00 becomes invisible and #FF becomes opaque. If the opacity is set to zero (0), this does not make the button inactive, only invisible.
	Syntax:
	`"'^BOP-<vt addr range>,<button states range>,<button opacity>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	button opacity = 0 (invisible) - 255 (opaque).
	Example:
	`SEND_COMMAND Panel,"'^BOP-500.504&510.515,1,200'"`
	Example 2:
	`SEND_COMMAND Panel,"'^BOP-500.504&510.515,1,#C8'"`
	Both examples set the opacity of the buttons with the variable text range of 500-504 and 510-515 to 200.

^BOR
 	
Set a border to a specific border style associated with a border value for those buttons with a defined address range.
	Refer to theBorder Styles and Programming Numbers table on page 91 for more information.
	Syntax:
	`"'^BOR-<vt addr range>,<border style name or border value>'"`
	Variable:
	variable text address range = 1 - 4000.
	border style name = Refer to the Border Styles and Programming Numbers table on page 91.
	border value = 0 - 41.
	Examples:
	`SEND_COMMAND Panel,"'^BOR-500.504&510.515,10'"`
	Sets the border by number (#10) to those buttons with the variable text range of 500-504 & 510-515.
	`SEND_COMMAND Panel,"'^BOR-500.504&510,AMX Elite -M'"`
	Sets the border by name (AMX Elite) to those buttons with the variable text range of 500-504 & 510-515.
	The border style is available through the TPDesign4 border-style drop-down list. Refer to theTPD4 Border Styles by Name table on page 91 for more information.

"^" Button Commands (Cont.)	

^BOS
 	
Set the button to display either a Video or Non-Video window.
	Syntax:
	
	`"'^BOS-<vt addr range>,<button states range>,<video state>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	video state = Video Off = 0 and Video On = 1.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BOS-500,1,1'"`
	
	Sets the button to display video.

^BPP
 	
Set or clear the protected page flip flag of a button.
	Zero clears the flag.
	
	Syntax:
	
	`"'^BPP-<vt addr range>,<protected page flip flag value>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	protected page flip flag value range = 0 - 4 (**0 clears the flag**).
	
	Example:
	
	`SEND_COMMAND Panel,"'^BPP-500,1'"`
	
	Sets the button to protected page flip flag 1 (sets it to password 1).

^BRD
 	
Set the border of a button state/ states.
	Only if the specified border is not the same as the current border. The border names are available through the TPDesign4 border-name drop-down list.
	
	Syntax:
	
	`"'^BRD-<vt addr range>,<button states range>,<border name>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	border name = Refer toBorder Styles and Programming Numbers table on page 91.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BRD-500.504&510.515,1&2,Quad Line'"`
	
	Sets the border by name (Quad Line) to those buttons with the variable text range of 500-504 & 510-515.
	
	Refer to theTPD4 Border Styles by Name table on page 91.

^BSF
 	
Set the focus to the text area.
	Note: Select one button at a time (single variable text address). Do not assign a variable text address range to set focus to multiple buttons. Only one variable text address can be in focus at a time.
	
	Syntax:
	
	`"'^BSF-<vt addr range>,<selection value>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	selection value = Unselect = 0 and select = 1.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BSF-500,1'"`
	
	Sets the focus to the text area of the button.

^BSM
 	
Submit text for text area buttons.
	This command causes the text areas to send their text as strings to the NetLinx Master.
	
	Syntax:
	
	`"'^BSM-<vt addr range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BSM-500'"`
	
	Submits the text of the text area button.

"^" Button Commands (Cont.)	

^BSO
 	
Set the sound played when a button is pressed.
	If the sound name is blank the sound is then cleared. If the sound name is not matched, the button sound is not changed.
	Syntax:
	`"'^BSO-<vt addr range>,<button states range>,<sound name>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	    sound name = (**blank** - sound cleared, **not matched** - button sound not changed).
	Example:
	`SEND_COMMAND Panel,"'^BSO-500,1&2,music.wav'"`
	Assigns the sound 'music.wav' to the button Off/On states.

^BVL
 	
Log-On/Log-Off the computer control connection.
	Syntax:
	`"'^BVL-<vt addr range>,<connection>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    connection = 0 (Log-Off connection) and 1 (Log-On connection).
	Example:
	`SEND_COMMAND Panel,"'^BVL-500,0'"`
	Logs-off the computer control connection of the button.

^BVN
 	
Set the computer control remote host for the specified address.
	Syntax:
	`SEND_COMMAND <DEV>,"'^BVN-<vt addr range>,<remote host>'"`
	Variables:
	    variable text address range = 1 - 4000.
	    remote host = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BVN-500,191.191.191.191'"`
	Sets the remote host to '191.191.191.191' for the specific computer control button.

^BVP
 	
Set the network password for the specified address.
	Syntax:
	`"'^BVP-<vt addr range>,<network password>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    network password = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^BVP-500,PCLOCK'"`
	Sets the password to PCLOCK for the specific PC control button.

^BVT
 	
Set the computer control network port for the specified address.
	Syntax:
	`"'^BVT-<vt addr range>,<network port>'"`
	Variable:
	    variable text address range = 1 - 4000.
	    network port = 1 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^BVT-500,5000'"`
	Sets the network port to 5000.

"^" Button Commands (Cont.)	

^BWW
 	
Set the button word wrap feature to those buttons with a defined address range.
	By default, word-wrap is Off.
	Syntax:
	`"'^BWW-<vt addr range>,<button states range>,<word wrap>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  word wrap = (0=Off and 1=On). Default is Off.
	Example:
	`SEND_COMMAND Panel,"'^BWW-500,1,1'"`
	Sets the word wrap on for the button's Off state.

^CPF
 	
Clear all page flips from a button.
	Syntax:
	`"'^CPF-<vt addr range>'"`
	Variable:
	  variable text address range = 1 - 4000.
	Example:
	`SEND_COMMAND Panel,"'^CPF-500'"`
	Clears all page flips from the button.

^DPF
 	
Delete page flips from button if it already exists.
	Syntax:
	`"'^DFP-<vt addr range>,<actions>,<page name>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  actions =
	  Stan[dardPage] - Flip to standard page
	  Prev[iousPage] - Flip to previous page
	  Show[Popup] - Show Popup page
	  Hide[Popup] - Hide Popup page
	  Togg[lePopup] - Toggle popup state
	  ClearG[roup] - Clear popup page group from all pages
	  ClearP[age] - Clear all popup pages from a page with the specified page name
	  ClearA[ll] - Clear all popup pages from all pages
	  page name = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^DPF-409,Prev'"`
	Deletes the assignment of a button from flipping to a previous page.

^ENA
 	
Enable or disable buttons with a set variable text range.
	Syntax:
	`"'^ENA-<vt addr range>,<command value>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  command value = (0= disable, 1= enable)
	Example:
	`SEND_COMMAND Panel,"'^ENA-500.504&510.515,0'"`
	Disables button pushes on buttons with variable text range 500-504 & 510-515.

"^" Button Commands (Cont.)	

^FON
 	
Set a font to a specific Font ID value for those buttons with a defined address range.
	Font ID numbers are generated by the TPDesign4 programmers report.
	Syntax:
	`"'^FON-<vt addr range>,<button states range>,<font value>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  font value = Range = 1 - XXX. Refer to theDefault Font Styles and ID Numbers table on page 90.
	Example:
	`SEND_COMMAND Panel,"'^FON-500.504&510.515,1&2,4'"`
	Sets the font size to font ID #4 for the On and Off states of buttons with the variable text range of 500-504 & 510-515.
	Note: The Font ID is generated by TPD4 and is located in TPD4 through the Main menu. Panel > Generate Programmer's Report >Text Only Format >Readme.txt.

^GDI
 	
Change the bargraph drag increment.
	Syntax:
	`"'^GDI-<vt addr range>,<bargraph drag increment>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  bargraph drag increment = The default drag increment is 256.
	Example:
	`SEND_COMMAND Panel,"'^GDI-7,128'"`
	Sets the bargraph with variable text 7 to a drag increment of 128.

^GIV
 	
Invert the joystick axis to move the origin to another corner.
	Parameters 1,2, and 3 will cause a bargraph or slider to be inverted regardless of orientation. Their effect will be as described for joysticks.
	Syntax:
	`"'^GIV-<vt addr range>,<joystick axis to invert>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  joystick axis to invert = 0 - 3.
	
	       0 1 0 = Normal
	                    1 = Invert horizontal axis
	                    2 = Invert vertical axis
	       2 3 3 = Invert both axis locations
	
	For a bargraph 1 = Invert , 0 = Non Invert
	Example:
	`SEND_COMMAND Panel,"'^GIV-500,3'"`
	Inverts the joystick axis origin to the bottom right corner.

^GLH
 	
Change the bargraph upper limit.
	Syntax:
	`"'^GLH-<vt addr range>,<bargraph hi>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  bargraph limit range = 1 - 65535 (*bargraph upper limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLH-500,1000'"`
	Changes the bargraph upper limit to 1000.

"^" Button Commands (Cont.)	

^GLL
 	
Change the bargraph lower limit.
	Syntax:
	
	`"'^GLL-<vt addr range>,<bargraph low>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  bargraph limit range = 1 - 65535 (*bargraph lower limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLL-500,150'"`
	Changes the bargraph lower limit to 150.

^GRD
 	
Change the bargraph ramp-down time in 1/10th of a second.
	Syntax:
	
	`"'^GRD-<vt addr range>,<bargraph ramp down time>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  bargraph ramp down time = In 1/10th of a second intervals.
	Example:
	`SEND_COMMAND Panel,"'^GRD-500,200'"`
	Changes the bargraph ramp down time to 20 seconds.

^GRU
 	
Change the bargraph ramp-up time in 1/10th of a second.
	Syntax:
	
	`"'^GRU-<vt addr range>,<bargraph ramp up time>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  bargraph ramp up time = In 1/10th of a second intervals.
	Example:
	`SEND_COMMAND Panel,"'^GRU-500,100'"`
	Changes the bargraph ramp up time to 10 seconds.

^GSC
 	
Change the bargraph slider color or joystick cursor color.
	A user can also assign the color by Name and R,G,B value (RRGGBB or RRGGBBAA).
	Syntax:
	
	`"'^GSC-<vt addr range>,<color value>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  color value = Refer to theRGB Values for all 88 Basic Colors table on page 88.
	Example:
	`SEND_COMMAND Panel,"'^GSC-500,12'"`
	Changes the bargraph or joystick slider color to Yellow.

"^" Button Commands (Cont.)	

^GSN
 	
Change the bargraph slider name or joystick cursor name.
	Slider names and cursor names can be found in the TPDesign4 slider name and cursor drop-down list.
	Syntax:
	`"'^GSN-<vt addr range>,<bargraph slider name>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  bargraph slider name = See table below.
	
	<table><tr><td colspan="3">Bargraph Slider Names:</td></tr><tr><td>None</td><td>Ball</td><td>Circle -L</td></tr><tr><td>Circle -M</td><td>Circle -S</td><td>Precision</td></tr><tr><td>Rectangle -L</td><td>Rectangle -M</td><td>Rectangle -S</td></tr><tr><td>Windows</td><td>Windows Active</td><td></td></tr><tr><td colspan="3">Joystick Cursor Names:</td></tr><tr><td>None</td><td>Arrow</td><td>Ball</td></tr><tr><td>Circle</td><td>Crosshairs</td><td>Gunsight</td></tr><tr><td>Hand</td><td>Metal</td><td>Spiral</td></tr><tr><td>Target</td><td>View Finder</td><td></td></tr></table>
	Example:
	`SEND_COMMAND Panel,"'^GSN-500,Ball'"`
	Changes the bargraph slider name or the Joystick cursor name to 'Ball'.

^ICO
 	
Set the icon to a button.
	Syntax:
	`"'^ICO-<vt addr range>,<button states range>,<icon index>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  icon index range = 0 - 9900 (**a value of 0 is clear**).
	Example:
	`SEND_COMMAND Panel,"'^ICO-500.504&510.515,1&2,1'"`
	Sets the icon for On and Off states for buttons with variable text ranges of 500-504 & 510-515.

^JSB
 	
Set bitmap/ picture alignment using a numeric keypad layout for those buttons with a defined address range.
	The alignment of 0 is followed by ',<left>,<top>'. The left and top coordinates are relative to the upper left corner of the button.
	Syntax:
	`"'^JSB-<vt addr range>,<button states range>,<new text alignment>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  new text alignment = Value of 1 - 9 corresponds to the following locations:
	
	0
	<table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>7</td><td>8</td><td>9</td></tr></table> Zero can be used for an absolute position
	
	Example:
	`SEND_COMMAND Panel,"'^JSB-500.504&510.515,1&2,1'"`
	Sets the off/on state picture alignment to upper left corner for those buttons with variable text ranges of 500-504 & 510-515.

"^" Button Commands (Cont.)

^JSI Set icon alignment using a numeric keypad layout for those buttons with a defined address range.	The alignment of 0 is followed by ',\<left\>,\<top\>'. The left and top coordinates are relative to the upper left corner of the button. Syntax: `"'^JSI-<vt addr range>,<button states range>,<new icon alignment>'"` Variable: variable text address range = 1 - 4000. button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state). new icon alignment = Value of 1 - 9 corresponds to the following locations: 0 | 1	2	3 | |---|---|---| | 4 | 5 | 6 | | 7 | 8 | 9 | Zero can be used for an absolute position Example: `SEND_COMMAND Panel,"'^JSI-500.504&510.515,1&2,1'"` Sets the Off/On state icon alignment to upper left corner for those buttons with variable text range of 500-504 & 510-515.
^JST Set text alignment using a numeric keypad layout for those buttons with a defined address range.	The alignment of 0 is followed by ',\<left\>,\<top\>'. The left and top coordinates are relative to the upper left corner of the button. Syntax: `"'^JST-<vt addr range>,<button states range>,<new text alignment>'"` Variable: variable text address range = 1 - 4000. button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state). new text alignment = Value of 1 - 9 corresponds to the following locations: 0 | 1	2	3 | |---|---|---| | 4 | 5 | 6 | | 7 | 8 | 9 | Zero can be used for an absolute position Example: `SEND_COMMAND Panel,"'^JST-500.504&510.515,1&2,1'"` Sets the text alignment to the upper left corner for those buttons with variable text ranges of 500-504 & 510-515.

^MBT
 	
Set the Mouse Button mode On for the virtual PC.
	Syntax:
	
	`"'^MBT-<pass data>'"`
	
	Variable:
	
	pass data:
	
	0 = None
	
	1 = Left
	
	2 = Right
	
	3 = Middle
	
	Example:
	
	`SEND COMMAND Panel,"'^MBT-1'"`
	
	Sets the mouse button mode to 'Left Mouse Click'.

"^" Button Commands (Cont.)	

^MDC
 	
Turn On the 'Mouse double-click' feature for the virtual PC.
	Syntax:
	`"'^MDC'"`
	Example:
	`SEND COMMAND Panel,"'^MDC'"`
	Sets the mouse double-click for use with the virtual PC.

^SHO
 	
Show or hide a button with a set variable text range.
	Syntax:
	`"'^SHO-<vt addr range>,<command value>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  command value = (0= hide, 1= show).
	Example:
	`SEND_COMMAND Panel,"'^SHO-500.504&510.515,0'"`
	Hides buttons with variable text address range 500-504 & 510-515.

^TEC
 	
Set the text effect color for the specified addresses/states to the specified color.
	The Text Effect is specified by name and can be found in TPD4. You can also assign the color by name or RGB value (RRGGBB or RRGGBBAA).
	Syntax:
	`"'^TEC-<vt addr range>,<button states range>,<color value>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  color value = Refer to theRGB Values for all 88 Basic Colors table on page 88.
	Example:
	`SEND_COMMAND Panel,"'^TEC-500.504&510.515,1&2,12'"`
	Sets the text effect color to Very Light Yellow on buttons with variable text 500-504 and 510-515.

^TEF
 	
Set the text effect.
	The Text Effect is specified by name and can be found in TPD4.
	Syntax:
	`"'^TEF-<vt addr range>,<button states range>,<text effect name>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  text effect name = **Refer to theText Effects table on page 109 for a listing of text effect names**.
	Example:
	`SEND_COMMAND Panel,"'^TEF-500.504&510.515,1&2,Soft Drop Shadow 3'"`
	Sets the text effect to Soft Drop Shadow 3 for the button with variable text range 500-504 and 510-515.

^TXT
 	
Assign a text string to those buttons with a defined address range.
	Sets Non-Unicode text.
	Syntax:
	`"'^TXT-<vt addr range>,<button states range>,<new text>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  new text = 1 - 50 ASCII characters.
	Example:
	`SEND_COMMAND Panel,"'^TXT-500.504&510.515,1&2,Test Only'"`
	Sets the On and Off state text for buttons with the variable text ranges of 500-504 & 510-515.

"^" Button Commands (Cont.)	

^UNI
 	
Set Unicode text.
	For the ^UNI command (%UN and ^BMF command), the Unicode text is sent as ASCII-HEX nibbles.
	Syntax:
	`"'^UNI-<vt addr range>,<button states range>,<unicode text>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	unicode text = Unicode HEX value.
	Example:
	`SEND_COMMAND Panel,"'^UNI-500,1,0041'"`
	Sets the button's unicode character to 'A'.
	Note: To send the variable text 'A' in unicode to all states of the variable text button 1, (for which the character code is 0041 Hex), send the following command:
	`SEND_COMMAND TP,"'^UNI-1,0,0041'"`
	Note: Unicode is always represented in a HEX value. TPD4 generates (through the Text Enter Box dialog) unicode HEX values. Refer to the TPDesign4 Instruction Manual for more information.

Text Effect Names

The following is a listing of text effects names. This list is associated with the **^TEF** command on page 108.

Text Effects	
• Glow -S	• Hard Drop Shadow 6
• Glow -M	• Hard Drop Shadow 7
• Glow -L	• Hard Drop Shadow 8
• Glow -X	• Soft Drop Shadow 1 with outline
• Outline -S	• Soft Drop Shadow 2 with outline
• Outline -M	• Soft Drop Shadow 3 with outline
• Outline -L	• Soft Drop Shadow 4 with outline
• Outline -X	• Soft Drop Shadow 5 with outline
• Soft Drop Shadow 1	• Soft Drop Shadow 6 with outline
• Soft Drop Shadow 2	• Soft Drop Shadow 7 with outline
• Soft Drop Shadow 3	• Soft Drop Shadow 8 with outline
• Soft Drop Shadow 4	• Medium Drop Shadow 1 with outline
• Soft Drop Shadow 5	• Medium Drop Shadow 2 with outline
• Soft Drop Shadow 6	• Medium Drop Shadow 3 with outline
• Soft Drop Shadow 7	• Medium Drop Shadow 4 with outline
• Soft Drop Shadow 8	• Medium Drop Shadow 5 with outline
• Medium Drop Shadow 1	• Medium Drop Shadow 6 with outline
• Medium Drop Shadow 2	• Medium Drop Shadow 7 with outline
• Medium Drop Shadow 3	• Medium Drop Shadow 8 with outline
• Medium Drop Shadow 4	• Hard Drop Shadow 1 with outline
• Medium Drop Shadow 5	• Hard Drop Shadow 2 with outline
• Medium Drop Shadow 6	• Hard Drop Shadow 3 with outline
• Medium Drop Shadow 7	• Hard Drop Shadow 4 with outline
• Medium Drop Shadow 8	• Hard Drop Shadow 5 with outline
• Hard Drop Shadow 1	• Hard Drop Shadow 6 with outline
• Hard Drop Shadow 2	• Hard Drop Shadow 7 with outline
• Hard Drop Shadow 3	• Hard Drop Shadow 8 with outline
• Hard Drop Shadow 4	
• Hard Drop Shadow 5	

Button Query Commands

Button Query commands reply back with a custom event. There will be one custom event for each button/state combination. Each query is assigned a unique custom event type. **The following example is for debug purposes only:**

```
NetLinx Example: CUSTOM_EVENT[device, Address, Custom event type]


DEFINE_EVENT
CUSTOM_EVENT[TP,529,1001]        // Text
CUSTOM_EVENT[TP,529,1002]        // Bitmap
CUSTOM_EVENT[TP,529,1003]        // Icon
CUSTOM_EVENT[TP,529,1004]        // Text Justification
CUSTOM_EVENT[TP,529,1005]        // Bitmap Justification
CUSTOM_EVENT[TP,529,1006]        // Icon Justification
CUSTOM_EVENT[TP,529,1007]        // Font
CUSTOM_EVENT[TP,529,1008]        // Text Effect Name
CUSTOM_EVENT[TP,529,1009]        // Text Effect Color
CUSTOM_EVENT[TP,529,1010]        // Word Wrap
CUSTOM_EVENT[TP,529,1011]        // ON state Border Color
CUSTOM_EVENT[TP,529,1012]        // ON state Fill Color
CUSTOM_EVENT[TP,529,1013]        // ON state Text Color
CUSTOM_EVENT[TP,529,1014]        // Border Name
CUSTOM_EVENT[TP,529,1015]        // Opacity


{
    Send_String 0,"'ButtonGet Id=',ITOA(CUSTOM.ID),' Type=',ITOA(CUSTOM.TYPE)"
    Send_String 0,"'Flag   =',ITOA(CUSTOM.FLAG)"
    Send_String 0,"'VALUE1 =',ITOA(CUSTOM.VALUE1)"
    Send_String 0,"'VALUE2 =',ITOA(CUSTOM.VALUE2)"
    Send_String 0,"'VALUE3 =',ITOA(CUSTOM.VALUE3)"
    Send_String 0,"'TEXT   =',CUSTOM.TEXT"
    Send_String 0,"'TEXT LENGTH =',ITOA(LENGTH_STRING(CUSTOM.TEXT))"
}
```

All custom events have the following 6 fields:

Custom Event Fields	
Field	**Description**
Uint Flag	0 means text is a standard string, 1 means Unicode encoded string
slong value1	button state number
slong value2	actual length of string (this is not encoded size)
slong value3	index of first character (usually 1 or same as optional index
string text	the text from the button
text length (string encode)	button text length

These fields are populated differently for each query command. The text length (String Encode) field is not used in any command.

Button Query Commands

Button Query Commands	

?BCB
 	
Get the current border color.
	Syntax:
	
	`"'?BCB-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1011:**
	
	Flag - zero
	
	Value1 - Button state number
	
	Value2 - Actual length of string (should be 9)
	
	Value3 - Zero
	
	Text - Hex encoded color value (ex: #000000FF)
	
	Text length - Color name length (should be 9)
	
	Example:
	
	`SEND COMMAND Panel,"'?BCB-529,1'"`
	
	Gets the button 'OFF state' border color. information.
	
	The result sent to the Master would be:
	
	`ButtonGet Id = 529 Type = 1011`
	`  Flag   = 0`
	`  VALUE1 = 1`
	`  VALUE2 = 9`
	`  VALUE3 = 0`
	`  TEXT   = #222222FF`
	`  TEXT LENGTH = 9`

?BCF
 	
Get the current fill color.
	Syntax:
	
	`"'?BCF-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1012:**
	
	Flag - Zero
	
	Value1 - Button state number
	
	Value2 - Actual length of string (should be 9)
	
	Value3 - Zero
	
	Text - Hex encoded color value (ex: #000000FF)
	
	Text length - Color name length (should be 9)
	
	Example:
	
	`SEND COMMAND Panel,"'?BCF-529,1'"`
	
	Gets the button 'OFF state' fill color information.
	
	The result sent to the Master would be:
	
	`ButtonGet Id = 529 Type = 1012`
	`  Flag   = 0`
	`  VALUE1 = 1`
	`  VALUE2 = 9`
	`  VALUE3 = 0`
	`  TEXT   = #FF8000FF`
	`  TEXT LENGTH = 9`

Button Query Commands (Cont.)	

?BCT
 	
Get the current text color.
	Syntax:
	`"'?BCT-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1013:**
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - Actual length of string (should be 9)
	  Value3 - Zero
	  Text - Hex encoded color value (ex: #000000FF)
	  Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BCT-529,1'"`
	Gets the button 'OFF state' text color information.
	The result sent to Master would be:
	<pre>ButtonGet Id = 529 Type = 1013
	 Flag = 0
	 VALUE1 = 1
	 VALUE2 = 9
	 VALUE3 = 0
	 TEXT = #FFFFFEFF
	 TEXT LENGTH = 9</pre>

?BMP
 	
Get the current bitmap name.
	Syntax:
	`"'?BMP-<vt addr range>,<button states range>'"`
	Variable:
	variable text address range = 1 - 4000.
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	custom event type **1002:**
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - Actual length of string
	  Value3 - Zero
	  Text - String that represents the bitmap name
	  Text length - Bitmap name text length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?BMP-529,1'"`
	Gets the button 'OFF state' bitmap information.
	The result sent to the Master would be:
	<pre>ButtonGet Id = 529 Type = 1002
	Flag = 0
	VALUE1 = 1
	VALUE2 = 9
	VALUE3 = 0
	TEXT = Buggs.png
	TEXT LENGTH = 9</pre>

Button Query Commands (Cont.)	

?BOP
 	
Get the overall button opacity.
	Syntax:
	
	`"'?BOP-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1015:**
	
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - Opacity
	  Value3 - Zero
	  Text - Blank
	  Text length - Zero
	
	Example:
	
	`SEND COMMAND Panel,"'?BOP-529,1'"`
	
	Gets the button 'OFF state' opacity information.
	
	The result sent to the Master would be:
	
	`      ButtonGet Id = 529 Type = 1015`
	`       Flag   = 0`
	`       VALUE1 = 1`
	`       VALUE2 = 200`
	`       VALUE3 = 0`
	`       TEXT   =`
	`       TEXT LENGTH = 0`

?BRD
 	
Get the current border name.
	Syntax:
	
	`"'?BRD-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1014:**
	
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - Actual length of string
	  Value3 - Zero
	  Text - String that represents border name
	  Text length - Border name length
	
	Example:
	
	`SEND COMMAND Panel,"'?BRD-529,1'"`
	
	Gets the button 'OFF state' border information.
	
	The result sent to the Master would be:
	
	`      ButtonGet Id = 529 Type = 1014`
	`       Flag   = 0`
	`       VALUE1 = 1`
	`       VALUE2 = 22`
	`       VALUE3 = 0`
	`       TEXT   = Double Bevel Raised -L`
	`       TEXT LENGTH = 22`

Button Query Commands (Cont.)	

?BWW
 	
Get the current word wrap flag status.
	Syntax:
	
	`"'?BWW-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1010:**
	
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - 0 = no word wrap, 1 = word wrap
	  Value3 - Zero
	  Text - Blank
	  Text length - Zero
	
	Example:
	
	`SEND COMMAND Panel,"'?BWW-529,1'"`
	
	Gets the button 'OFF state' word wrap flag status information.
	
	The result sent to the Master would be:
	
	`    ButtonGet Id = 529 Type = 1010`
	`     Flag   = 0`
	`     VALUE1 = 1`
	`     VALUE2 = 1`
	`     VALUE3 = 0`
	`     TEXT   =`
	`     TEXT LENGTH = 0`

?FON
 	
Get the current font index.
	Syntax:
	
	`"'?FON-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1007:**
	
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - Font index
	  Value3 - Zero
	  Text - Blank
	  Text length - Zero
	
	Example:
	
	`SEND COMMAND Panel,"'?FON-529,1'"`
	
	Gets the button 'OFF state' font type index information.
	
	The result sent to the Master would be:
	
	`    ButtonGet Id = 529 Type = 1007`
	`     Flag   = 0`
	`     VALUE1 = 1`
	`     VALUE2 = 72`
	`     VALUE3 = 0`
	`     TEXT   =`
	`     TEXT LENGTH = 0`

Button Query Commands (Cont.)

?ICO
 	
Get the current icon index.
	Syntax:
	`"'?ICO-<vt addr range>,<button states range>'"`
	Variable:
	 variable text address range = 1 - 4000.
	 button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	 custom event type **1003:**
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - Icon Index
	  Value3 - Zero
	  Text - Blank
	  Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?ICO-529,1&2'"`
	Gets the button 'OFF state' icon index information.
	The result sent to the Master would be:
	<pre> ButtonGet Id = 529 Type = 1003
	       Flag = 0
	       VALUE1 = 2
	       VALUE2 = 12
	       VALUE3 = 0
	       TEXT =
	       TEXT LENGTH = 0</pre>

?JSB
 	
Get the current bitmap justification.
	Syntax:
	`"'?JSB-<vt addr range>,<button states range>'"`
	Variable:
	 variable text address range = 1 - 4000.
	 button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	 custom event type **1005:**
	  Flag - Zero
	  Value1 - Button state number
	  Value2 - 1 - 9 justify
	  Value3 - Zero
	  Text - Blank
	  Text length - Zero
	Example:
	`SEND COMMAND Panel,"'?JSB-529,1'"`
	Gets the button 'OFF state' bitmap justification information.
	The result sent to the Master would be:
	<pre> ButtonGet Id = 529 Type = 1005
	       Flag = 0
	       VALUE1 = 1
	       VALUE2 = 5
	       VALUE3 = 0
	       TEXT =
	       TEXT LENGTH = 0</pre>

Button Query Commands (Cont.)	

?JSI
 	
Get the current icon justification.
	Syntax:
	
	`"'?JSI-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1006:**
	
	   Flag - Zero
	   Value1 - Button state number
	   Value2 - 1 - 9 justify
	   Value3 - Zero
	   Text - Blank
	   Text length - Zero
	
	Example:
	
	`SEND COMMAND Panel,"'?JSI-529,1'"`
	
	Gets the button 'OFF state' icon justification information.
	
	The result sent to the Master would be:
	
	`    ButtonGet Id = 529 Type = 1006`
	`     Flag   = 0`
	`     VALUE1 = 1`
	`     VALUE2 = 6`
	`     VALUE3 = 0`
	`     TEXT   =`
	`     TEXT LENGTH = 0`

?JST
 	
Get the current text justification.
	Syntax:
	
	`"'?JST-<vt addr range>,<button states range>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	custom event type **1004:**
	
	   Flag - Zero
	   Value1 - Button state number
	   Value2 - 1 - 9 justify
	   Value3 - Zero
	   Text - Blank
	   Text length - Zero
	
	Example:
	
	`SEND COMMAND Panel,"'?JST-529,1'"`
	
	Gets the button 'OFF state' text justification information.
	
	The result sent to the Master would be:
	
	`    ButtonGet Id = 529 Type = 1004`
	`     Flag   = 0`
	`     VALUE1 = 1`
	`     VALUE2 = 1`
	`     VALUE3 = 0`
	`     TEXT   =`
	`     TEXT LENGTH = 0`

Button Query Commands (Cont.)	

?TEC
 	
Get the current text effect color.
	Syntax:
	`"'?TEC-<vt addr range>,<button states range>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  custom event type **1009:**
	    Flag - Zero
	    Value1 - Button state number
	    Value2 - Actual length of string (should be 9)
	    Value3 - Zero
	    Text - Hex encoded color value (ex: #000000FF)
	    Text length - Color name length (should be 9)
	Example:
	`SEND COMMAND Panel,"'?TEC-529,1'"`
	Gets the button 'OFF state' text effect color information.
	The result sent to the Master would be:
	<pre> ButtonGet Id = 529 Type = 1009
	     Flag = 0
	     VALUE1 = 1
	     VALUE2 = 9
	     VALUE3 = 0
	     TEXT = #5088F2AE
	     TEXT LENGTH = 9</pre>

?TEF
 	
Get the current text effect name.
	Syntax:
	`"'?TEF-<vt addr range>,<button states range>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  custom event type **1008:**
	    Flag - Zero
	    Value1 - Button state number
	    Value2 - Actual length of string
	    Value3 - Zero
	    Text - String that represents the text effect name
	    Text length - Text effect name length
	Example:
	`SEND COMMAND Panel,"'?TEF-529,1'"`
	Gets the button 'OFF state' text effect name information.
	The result sent to the Master would be:
	<pre> ButtonGet Id = 529 Type = 1008
	     Flag = 0
	     VALUE1 = 1
	     VALUE2 = 18
	     VALUE3 = 0
	     TEXT = Hard Drop Shadow 3
	     TEXT LENGTH = 18</pre>

Button Query Commands (Cont.)	

?TXT
 	
Get the current text information.
	Syntax:
	
	`"'?TXT-<vt addr range>,<button states range>,<optional index>'"`
	Variable:
	  variable text address range = 1 - 4000.
	  button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	  optional index = This is used if a string was too long to get back in one command. The reply will start at this index.
	  custom event type **1001:**
	    Flag - Zero
	    Value1 - Button state number
	    Value2 - Actual length of string
	    Value3 - Index
	    Text - Text from the button
	    Text length - Button text length
	Example:
	`SEND COMMAND Panel,"'?TXT-529,1'"`
	Gets the button 'OFF state' text information.
	The result sent to the Master would be:
	
	      `ButtonGet Id = 529 Type = 1001`
	      `Flag  = 0`
	      `VALUE1 = 1`
	      `VALUE2 = 14`
	      `VALUE3 = 1`
	      `TEXT   = This is a test`
	      `TEXT LENGTH = 14`

Panel Runtime Operations

Serial Commands are used in the AxcessX Terminal Emulator mode. These commands are case insensitive.

Panel Runtime Operation Commands	

ABEEP
 	
Output a single beep even if beep is Off.
	Syntax:
	`"'ABEEP'"`
	Example:
	`SEND COMMAND Panel,"'ABEEP'"`
	Outputs a beep of duration 1 beep even if beep is Off.

ADBEEP
 	
Output a double beep even if beep is Off.
	Syntax:
	`"'ADBEEP'"`
	Example:
	`SEND COMMAND Panel,"'ADBEEP'"`
	Outputs a double beep even if beep is Off.

@AKB
 	
Pop up the keyboard icon and initialize the text string to that specified.
	Keyboard string is set to null on power up and is stored until power is lost. The Prompt Text is optional.
	Syntax:
	`"'@AKB-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@AKB-Texas;Enter State'"`
	Pops up the Keyboard and initializes the text string 'Texas' with prompt text 'Enter State'.

Panel Runtime Operation Commands (Cont.)

AKEYB
 	
Pop up the keyboard icon and initialize the text string to that specified.
	Keyboard string is set to null on power up and is stored until power is lost.
	Syntax:
	`"'AKEYB-<initial text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'AKEYB-This is a Test'"`
	Pops up the Keyboard and initializes the text string 'This is a Test'.

AKEYP
 	
Pop up the keypad icon and initialize the text string to that specified.
	The keypad string is set to null on power up and is stored until power is lost.
	Syntax:
	`"'AKEYP-<number string>'"`
	Variables:
	`number string = 0 - 9999.`
	Example:
	`SEND COMMAND Panel,"'AKEP-12345'"`
	Pops up the Keypad and initializes the text string '12345'.

AKEYR
 	
Remove the Keyboard/ Keypad.
	Remove keyboard or keypad that was displayed using 'AKEYB', 'AKEYP', 'PKEYP', @AKB, @AKP, @PKP, @EKP, or @TKP commands.
	Syntax:
	`"'AKEYR'"`
	Example:
	`SEND COMMAND Panel,"'AKEYR'"`
	Removes the Keyboard/Keypad.

@AKP
 	
Pop up the keypad icon and initialize the text string to that specified.
	Keypad string is set to null on power up and is stored until power is lost. The Prompt Text is optional.
	Syntax:
	`"'@AKP-<initial text>;<prompt text>'"`
	Variables:
	`initial text = 1 - 50 ASCII characters.`
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@AKP-12345678;ENTER PASSWORD'"`
	Pops up the Keypad and initializes the text string '12345678' with prompt text 'ENTER PASSWORD'.

@AKR
 	
Remove the Keyboard/ Keypad.
	Remove keyboard or keypad that was displayed using 'AKEYB', 'AKEYP', 'PKEYP', @AKB, @AKP, @PKP, @EKP, or @TKP commands.
	Syntax:
	`"'@AKR'"`
	Example:
	`SEND COMMAND Panel,"'@AKR'"`
	Removes the Keyboard/Keypad.

BEEP
 	
Output a beep.
	Syntax:
	`"'BEEP'"`
	Example:
	`SEND COMMAND Panel,"'BEEP'"`
	Outputs a beep.

Panel Runtime Operation Commands (Cont.)	

BRIT
 	
Set the panel brightness.
	Syntax:
	`"'BRIT-<brightness level>'"`
	Variable:
	  brightness level = 0 - 100.
	Example:
	`SEND COMMAND Panel,"'BRIT-50'"`
	Sets the brightness level to 50.

@BRT
 	
Set the panel brightness.
	Syntax:
	`"'@BRT-<brightness level>'"`
	Variable:
	  brightness level = 0 - 100.
	Example:
	`SEND COMMAND Panel,"'@BRT-70'"`
	Sets the brightness level to 70.

DBEEP
 	
Output a double beep.
	Syntax:
	`"'DBEEP'"`
	Example:
	`SEND COMMAND Panel,"'DBEEP'"`
	Outputs a double beep.

@EKP
 	
Extend the Keypad.
	Pops up the keypad icon and initializes the text string to that specified. The Prompt Text is optional.
	Syntax:
	`"'@EKP-<initial text>;<prompt text>'"`
	Variables:
	  initial text = 1 - 50 ASCII characters.
	  prompt text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@EKP-33333333;Enter Password'"`
	Pops up the Keypad and initializes the text string '33333333' with prompt text 'Enter Password'.

PKEYP
 	
Present a private keypad.
	Pops up the keypad icon and initializes the text string to that specified. Keypad displays a '*' instead of the numbers typed. The Prompt Text is optional.
	Syntax:
	`"'PKEYP-<initial text>'"`
	Variables:
	  initial text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'PKEYP-123456789'"`
	Pops up the Keypad and initializes the text string '123456789' in '*'.

@PKP
 	
Present a private keypad.
	Pops up the keypad icon and initializes the text string to that specified. Keypad displays a '*' instead of the numbers typed. The Prompt Text is optional.
	Syntax:
	`"'@PKP-<initial text>;<prompt text>'"`
	Variables:
	  initial text = 1 - 50 ASCII characters.
	  prompt text = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'@PKP-1234567;ENTER PASSWORD'"`
	Pops up the Keypad and initializes the text string 'ENTER PASSWORD' in '*'.

Panel Runtime Operation Commands (Cont.)	

SETUP
 	
Send panel to SETUP page.
	Syntax:
	
	`"'SETUP'"`
	Example:
	
	`SEND COMMAND Panel,"'SETUP'"`
	Sends the panel to the Setup Page.

SLEEP
 	
Force the panel into screen saver mode.
	Syntax:
	
	`"'SLEEP'"`
	Example:
	
	`SEND COMMAND Panel,"'SLEEP'"`
	Forces the panel into screen saver mode.

@SOU
 	
Play a sound file.
	Syntax:
	
	`"'@SOU-<sound name>'"`
	Variables:
	
	`sound name = Name of the sound file. Supported sound file formats are: WAV & MP3.`
	Example:
	
	`SEND COMMAND Panel,"'@SOU-Music.wav'"`
	Plays the 'Music.wav' file.

@TKP
 	
Present a telephone keypad.
	Pops up the keypad icon and initializes the text string to that specified. The Prompt Text is optional.
	Syntax:
	
	`"'@TKP-<initial text>;<prompt text>'"`
	Variables:
	
	`initial text = 1 - 50 ASCII characters.`
	
	`prompt text = 1 - 50 ASCII characters.`
	Example:
	
	`SEND COMMAND Panel,"'@TKP-999.222.1211;Enter Phone Number'"`
	Pops-up the Keypad and initializes the text string '999.222.1211' with prompt text 'Enter Phone Number'.

TPAGEON
 	
Turn On page tracking.
	This command turns On page tracking, whereby when the page or popups change, a string is sent to the Master. This string may be captured with a CREATE_BUFFER command for one panel and sent directly to another panel.
	Syntax:
	
	`"'TPAGEON'"`
	Example:
	
	`SEND COMMAND Panel,"'TPAGEON'"`
	Turns On page tracking.

TPAGEOFF
 	
Turn Off page tracking.
	Syntax:
	
	`"'TPAGEOFF'"`
	Example:
	
	`SEND COMMAND Panel,"'TPAGEOFF'"`
	Turns Off page tracking.

@VKB
 	
Popup the virtual keyboard.
	Syntax:
	
	`"'@VKB'"`
	Example:
	
	`SEND COMMAND Panel,"'@VKB'"`
	Pops-up the virtual keyboard.

WAKE
 	
Force the panel out of screen saver mode.
	Syntax:
	
	`"'WAKE'"`
	Example:
	
	`SEND COMMAND Panel,"'WAKE'"`
	Forces the panel out of the screen saver mode.

Input Commands

These Send Commands are case insensitive.

Input Commands	

^CAL
 	
Put panel in calibration mode.
	Syntax:
	`"'^CAL'"`
	Example:
	`SEND COMMAND Panel,"'^CAL'"`
	Puts the panel in calibration mode.

^KPS
 	
Set the keyboard passthru.
	Syntax:
	`"'^KPS-<pass data>'"`
	Variable:
	pass data:
	<blank/empty> = Disables the keyboard.
	0 = Pass data to G4 application (default). This can be used with VPC or text areas.
	1 - 4 = Not used.
	5 = Sends out data to the Master.
	Example:
	`SEND COMMAND Panel,"'^KPS-5'"`
	Sets the keyboard passthru to the Master. Option 5 sends keystrokes directly to the Master via the Send Output String mechanism. This process sends a virtual keystroke command (^VKS) to the Master.
	Example 2:
	`SEND COMMAND Panel,"'^KPS-0'"`
	Disables the keyboard passthru to the Master.
	The following point defines how the parameters within this command work:
	• Accepts keystrokes from any of these sources: attached USB keyboard or Virtual keyboard.

^VKS
 	
Send one or more virtual key strokes to the G4 application.
	Key presses and key releases are not distinguished except in the case of CTRL, ALT, and SHIFT.
	Refer to the Embedded Codes table on page 122 that define special characters which can be included with the string but may not be represented by the ASCII character set.
	Syntax:
	`"'^VKS-<string>'"`
	Variable:
	string = Only 1 string per command/only one stroke per command.
	Example:
	`SEND COMMAND Panel,"'^VKS-'8"`
	Sends out the keystroke 'backspace' to the G4 application.

Embedded codes

The following is a list of G4 compatible embedded codes:

Embedded Codes		
Decimal numbers	**Hexidecimal values**	**Virtual keystroke**
8	($08)	Backspace
13	($0D)	Enter
27	($1B)	ESC
128	($80)	CTRL key down
129	($81)	ALT key down
130	($82)	Shift key down
131	($83)	F1
132	($84)	F2

Embedded Codes (Cont.)		
Decimal numbers	**Hexidecimal values**	**Virtual keystroke**
133	($85)	F3
134	($86)	F4
135	($87)	F5
136	($88)	F6
137	($89)	F7
138	($8A)	F8
139	($8B)	F9
140	($8C)	F10
141	($8D)	F11
142	($8E)	F12
143	($8F)	Num Lock
144	($90)	Caps Lock
145	($91)	Insert
146	($92)	Delete
147	($93)	Home
148	($94)	End
149	($95)	Page Up
150	($96)	Page Down
151	($97)	Scroll Lock
152	($98)	Pause
153	($99)	Break
154	($9A)	Print Screen
155	($9B)	SYSRQ
156	($9C)	Tab
157	($9D)	Windows
158	($9E)	Menu
159	($9F)	Up Arrow
160	($A0)	Down Arrow
161	($A1)	Left Arrow
162	($A2)	Right Arrow
192	($C0)	CTRL key up
193	($C1)	ALT key up
194	($C2)	Shift key up

Panel Setup Commands

These commands are case insensitive.

Panel Setup Commands	

^MUT
 	
Set the panel mute state.
	Syntax:
	`"'^MUT-<mute state>'"`
	Variable:
	  mute state= 0 = Mute Off and 1 = Mute On.
	Example:
	`SEND_COMMAND Panel,"'^MUT-1''"`
	Sets the panel's master volume to mute.

Panel Setup Commands (Cont.)	

@PWD
 	
Set the page flip password.
	@PWD sets the level 1 password only.
	Syntax:
	`"'@PWD-<page flip password>'"`
	Variables:
	`page flip password = 1 - 50 ASCII characters.`
	Example:
	`SEND COMMAND Panel,"'@PWD-Main'"`
	Sets the page flip password to 'Main'.

^PWD
 	
Set the page flip password.
	Password level is required and must be 1 - 4.
	Syntax:
	`"'^PWD-<password level>,<page flip password>'"`
	Variables:
	`password level = 1 - 4.`
	page flip password = 1 - 50 ASCII characters.
	Example:
	`SEND COMMAND Panel,"'^PWD-1,Main'"`
	Sets the page flip password on Password Level 1 to 'Main'.

@RPP
 	
Reset the protected password.
	@RPP resets the protected password to its default (1988).
	Syntax:
	`"'@RPP'"`
	Example:
	`SEND COMMAND Panel,"'@RPP'"`
	Resets the protected Setup page password to '1988'.

^VOL
 	
Set the panel volume.
	Syntax:
	`"'^VOL-<volume level>'"`
	Variable:
	volume level = 0 - 100. ***100 is maximum volume setting.***
	Example:
	`SEND_COMMAND Panel,"'^VOL-50'"`
	Set the panel volume to 50.

Dynamic Image Commands

The following table describes Dynamic Image Commands.

Dynamic Image Commands	

^BBR
 	
Set the bitmap of a button to use a particular resource.
	Syntax:
	
	`"'^BBR-<vt addr range>,<button states range>,<resource name>'"`
	
	Variable:
	
	variable text address range = 1 - 4000.
	
	button states range = 1 - 256 for multi-state buttons (0 = All states, for General buttons 1 = Off state and 2 = On state).
	
	resource name = 1 - 50 ASCII characters.
	
	Example:
	
	`SEND_COMMAND Panel,"'^BBR-700,1,Sports_Image'"`
	
	Sets the resource name of the button to 'Sports_Image'.

^RAF
 	
Add new resources.
	Adds any and all resource parameters by sending embedded codes and data.
	
	Since the embedded codes are preceded by a '%' character, any '%' character contained in the URL must be escaped with a second '%' character (see example).
	
	The file name field (indicated by a **%F** embedded code) may contain special escape sequences as shown in the *^RAF, ^RMF - Embedded Codes* table below.
	
	Syntax:
	
	`"'^RAF-<resource name>,<data>'"`
	
	Variables:
	
	• resource name = 1 - 50 ASCII characters.
	
	• data = Refers to the embedded codes, see the *^RAF, ^RMF - Embedded Codes* section on page 126.
	
	Example:
	
	`SEND_COMMAND Panel,"'^RAF-New Image,%P0%HAMX.COM%ALab/`
	`Test%%5Ffile%Ftest.jpg'"`
	
	Adds a new resource.
	
	• The resource name is 'New Image'
	
	• %P (protocol) is an HTTP
	
	• %H (host name) is ***AMX.COM***
	
	• %A (file path) is ***Lab/Test_file***
	
	• %F (file name) is ***test.jpg***.
	
	Note that the **%%5F** in the file path is actually encoded as **%5F**.

^RFR
 	
Force a refresh for a given resource.
	Syntax:
	
	`"'^RFR-<resource name>'"`
	
	Variable:
	
	resource name = 1 - 50 ASCII characters.
	
	Example:
	
	`SEND_COMMAND Panel,"'^RFR-Sports_Image'"`
	
	Forces a refresh on 'Sports_Image'.

Dynamic Image Commands (Cont.)	

^RMF
 	
Modify an existing resource.
	Modifies any and all resource parameters by sending embedded codes and data.
	
	Since the embedded codes are preceded by a '%' character, any '%' character contained in the URL must be escaped with a second '%' character (see example).
	
	The file name field (indicated by a **%F** embedded code) may contain special escape sequences as shown in the *^RAF, ^RMF - Embedded Codes* section on page 126.
	
	Syntax:
	`"'^RMF-<resource name>,<data>'"`
	
	Variables:
	• resource name = 1 - 50 ASCII characters
	• data = Refers to the embedded codes, see the *^RAF, ^RMF - Embedded Codes* section on page 126.
	
	Example:
	`SEND_COMMAND Panel,"'^RMF-Sports_Image,%ALab%%5FTest/`
	`Images%Ftest.jpg'"`
	
	Changes the resource 'Sports_Image' file name to 'test.jpg' and the path to 'Lab_Test/Images'.
	
	Note that the **%%5F** in the file path is actually encoded as **%5F**.

^RSR
 	
Change the refresh rate for a given resource.
	Syntax:
	`"'^RSR-<resource name>,<refresh rate>'"`
	
	Variable:
	  resource name = 1 - 50 ASCII characters.
	  refresh rate = Measured in seconds.
	
	Example:
	`SEND_COMMAND Panel,"'^RSR-Sports_Image,5'"`
	
	Sets the refresh rate to 5 seconds for the given resource ('Sports_Image').

^RAF, ^RMF - Embedded Codes

The ^RAF and ^RMF commands add and modify any and all resource parameters by sending embedded codes and data:

`"'^RAF-<resource name>,<data>'"`

`"'^RMF-<resource name>,<data>'"`

The <data> variable uses the embedded codes described in the following table:

^RAF, ^RMF - Embedded Codes		
Parameter	**Embedded Code**	**Description**
protocol	`'%P <0-1>'`	Set protocol. HTTP (0) or FTP (1).
user	`'%U <user>'`	Set Username for authentication.
password	`'%S <password>'`	Set Password for authentication.
host	`'%H <host>'`	Set Host Name (fully qualified DNS or IP Address).
file	`'%F <file>'`	Full path to the location of the file or program that will return the resource. The path must be a valid HTTP URL minus the protocol and host. The only exception to this is the inclusion of special escape sequences and in the case of FTP protocol, regular expressions.
path	`'%A <path>'`	Set Directory path. The path must be a valid HTTP URL minus the protocol, host and filename. The only exception to this is the inclusion of special escape sequences and in the case of FTP protocol, regular expressions.

^RAF, ^RMF - Embedded Codes (Cont.)

Parameter	Embedded Code	Description
refresh	`'%R <refresh 1-65535>'`	The number of seconds between refreshes in which the resource is downloaded again. Refreshing a resource causes the button displaying that resource to refresh also. The default value is 0 (only download the resource once).
newest	`'%N <0-1>'`	Set the newest file. A value of 1 means that only the most recent file matching the pattern is downloaded. *Note: The 'newest file' option only applies to FTP Dynamic Images, and only those that have pattern matching as part of their filename. Neither 'newest file' nor pattern matching apply to HTTP Dynamic Images.* *When set, the panel will first pull a list of files matching the given pattern from the specified FTP server and path. The timestamps of the items in the list will be compared, with the newest one being displayed on the panel. This is useful for source devices that place a uniquely named still image in a folder at constant intervals, allowing the panel always to display the most recent one.*
preserve	`'%V <0-1>'`	Set the value of the preserve flag. Default is 0. Currently preserve has no function.

Escape Sequences

The ^RAF and ^RMF commands support the replacement of any special escape sequences in the filename (specified by the **%F** embedded code) with the corresponding data obtained from the system as outlined in the table below:

Escape Sequences

Sequence	Panel Information
$DV	Device Number
$SY	System Number
$IP	IP Address
$HN	Host Name
$MC	Mac Address
$ID	Neuron ID (*Only supported on panels that use ICSNet; ignored on all other panels*)
$PX	X resolution of current panel mode/file
$PY	Y resolution of current panel mode/file
$ST	Current state
$AC	Address code
$AP	Address port
$CC	Channel code
$CP	Channel port
$LC	Level code
$LP	Level port
$BX	X Resolution of Current button
$BY	Y Resolution of Current button
$BN	Name of Button

For instance, **http://www.amx.com/img.asp?device=$DV**

would become

http://www.amx.com/img.asp?device=10001.

Appendix A

Text Formatting Codes for Bargraphs/Joysticks

Text formatting codes for bargraphs provide a mechanism to allow a portion of a bargraphs text to be dynamically provided information about the current status of the level (multistate and traditional). These codes would be entered into the text field along with any other text.

The following is a code list used for bargraphs:

Bargraph Text Code Inputs		
Code	**Bargraph**	**Multi-State Bargraph**
$P	Display the current percentage of the bargraph (derived from the Adjusted Level Value as it falls between the Range Values)	Display the current percentage of the bargraph (derived from the Adjusted Level Value as it falls between the Range Values)
$V	Raw Level Value	Raw Level Value
$L	Range Low Value	Range Low Value
$H	Range High Value	Range High Value
$S	N/A	Current State
$A	Adjusted Level Value (Range Low Value subtracted from the Raw Level Value)	Adjusted Level Value (Range Low Value subtracted from the Raw Level Value)
$R	Low Range subtracted from the High Range	Low Range subtracted from the High Range
$$	Dollar sign	Dollar sign

Buy changing the text on a button (via a VT command) you can modify the codes on a button. When one of the Text Formatting Codes is encountered by the firmware it is replaced with the correct value. These values are derived from the following operations:

Formatting Code Operations	
Code	**Operation**
$P	(Current Value - Range Low Value / Range High Value - Range Low Value) x 100
$V	Current Level Value
$L	Range Low Value
$H	Range High Value
$S	Current State (if regular bargraph then resolves to nothing)
$A	Current Value - Range Low Value
$R	Range High Value - Range Low Value

Given a current raw level value of 532, a range low value of 500 and a high range value of 600 the following text formatting codes would yield the following strings as shown in the table below:

Example	
Format	**Display**
$P%	32%
$A out of $R	32 out of 100
$A of 0 - $R	32 of 0 - 100
$V of $L - $H	532 of 500 - 600

Text Area Input Masking

Text Area Input Masking can be used to limit the allowed/correct characters that are entered into a text area. For example, in working with a zip code, a user could limit the entry to a max length of only 5 characters but, with input masking, you could limit them to 5 mandatory numerical digits and 4 optional numerical digits. A possible use for this feature is to enter information into form fields. The purpose of this feature is to:

- Force you to use correct type of characters (i.e. numbers vs. characters)
- Limit the number of characters in a text area
- Suggest proper format with fixed characters
- Right to Left
- Required or Optional
- Change/Force a Case
- Create multiple logical fields
- Specify range of characters/number for each field

With this feature, it is NOT necessary to:

- Limit you to a choice of selections
- Handle complex input tasks such as names, days of the weeks or months by name
- Perform complex validation such as Subnet Mask validation

Input mask character types

These character types define what information is allowed to be entered in any specific instance. The following table lists what characters in an input mask will define what characters are allowed in any given position.

Character Types	
Character	**Masking Rule**
0	Digit (0 to 9, entry required, plus [+] and minus [-] signs not allowed)
9	Digit or space (entry not required, plus and minus signs not allowed)
#	Digit or space (entry not required; plus and minus signs allowed)
L	Letter (A to Z, entry required)
?	Letter (A to Z, entry optional)
A	Letter or digit (entry required)
a	Letter or digit (entry optional)
&	Any character or a space (entry required)
C	Any character or a space (entry optional)

The number of the above characters used determines the length of the input masking box. Example: 0000 requires an entry, requires digits to be used, and allows only 4 characters to be entered/used.

Refer to the following Send Commands for more detailed information:

- `^BIM` - Sets the input mask for the specified addresses. (see the *^BIM* section on page 96).
- `^BMF` subcommand **%MK** - sets the input mask of a text area (see the *^BMF* section on page 97).

Input mask ranges

These ranges allow a user to specify the minimum and maximum numeric value for a field.
Only one range is allowed per field. Using a range implies a numeric entry ONLY.

Input Mask Ranges	
Character	**Meaning**
[	Start range
]	End range
		Range Separator

An example from the above table:

[0|255] This allows a user to enter a value from 0 to 255.

Input mask next field characters

These characters allow you to specify a list of characters that cause the keyboard to move the focus to the next field when pressed instead of inserting the text into the text area.

Input Mask Next Field Char	
Character	**Meaning**
{	Start Next Field List
}	End Next Field List

An example from the above table:

{.} or {:} or {.:} Tells the system that after a user hits any of these keys, proceed to the next text area input box.

Input mask operations

Input Mask Operators change the behavior of the field in the following way:

Input Mask Operators	
Character	**Meaning**
<	Forces all characters to be converted to lowercase
>	Forces all characters to be converted to uppercase
^	Sets the overflow flag for this field

Input mask literals

To define a literal character, enter any character, other than those shown in the above table *(including spaces, and symbols)*. A back-slash ('\') causes the character that follows it to be displayed as the literal character. For example, **\A** is displayed just as the letter **A**. To define one of the following characters as a literal character, precede that character with a back-slash. Text entry operation using Input Masks.

A keyboard entry using normal text entry is straightforward. However, once an input mask is applied, the behavior of the keyboard needs to change to accommodate the input mask's requirement. When working with masks, any literal characters in the mask will be "skipped" by any cursor movement including cursor keys, backspace, and delete.

When operating with a mask, the mask should be displayed with placeholders. The "-" character should display where you should enter a character. The arrow keys will move between the "-" characters and allow you to replace them. The text entry code operates as if it is in the overwrite mode. If the cursor is positioned on a character already entered and you type in a new (and valid) character, the new character replace the old character. There is no shifting of characters.

When working with ranges specified by the [] mask, the keyboard allows you to enter a number between the values listed in the ranges. If a user enters a value that is larger than the max, the maximum number of right-most characters is used to create a new, acceptable value.

- **Example 1**: If you type "125" into a field accepting 0-100, then the values displayed will be "1", "12", "25".
- **Example2**: If the max for the filed was 20, then the values displayed will be "1", "12", "5".

When data overflows from a numerical field, the overflow value is added to the previous field on the chain, **if** the overflow character was specified. In the above example, if the overflow flag was set, the first example will place the "1" into the previous logical field and the second example will place "12" in the previous logical field. If the overflow filed already contains a value, the new value will be inserted to the right of the current characters and the overflow field will be evaluated. Overflow continues to work until a filed with no overflow value is set or there are no more fields left (i.e. reached first field).

If a character is typed and that characters appear in the Next Field list, the keyboard should move the focus to the next field. For example, when entering time, a **":"** is used as a next field character. If you hit "1:2", the 1 is entered in the current field (hours) and then the focus is moved to the next field and 2 is entered in that field.

When entering time in a 12-hour format, entry of AM and PM is required. Instead of adding AM/PM to the input mask specification, the AM/PM should be handled within the NetLinx code. This allows a programmer to show/hide and provide discrete feedback for AM and PM.

Input mask output examples

The following are some common input masking examples:

Output Examples		
Common Name	**Input Mask**	**Input**
IP Address Quad	[0|255]{.}	Any value from 0 to 255
Hour	[1|12]{:}	Any value from 1 to 12
Minute/Second	[0|59]{:}	Any value from 0 to 59
Frames	[0|29]{:}	Any value from 0 to 29
Phone Numbers	(999) 000-0000	(555) 555-5555
Zip Code	00000-9999	75082-4567

URL Resources

A URL can be broken into several parts. For example: the URL *http://www.amx.com/company-info-home.asp*. This URL indicates that the protocol in use is **http** (HyperText Transport Protocol) and that the information resides on a host machine named **www.amx.com**. The image on that host machine is given an assignment (*by the program*) name of **company-info-home.asp** *(Active Server Page)*.

The exact meaning of this name on the host machine is both protocol dependent and host dependent. The information normally resides in a file, but it could be generated dynamically. This component of the URL is called the file component, even though the information is not necessarily in a file.

A URL can optionally specify a port, which is the port number to which the TCP connection is made on the remote host machine. If the port is not specified, the default port for the protocol is used instead. For example, the default port for http is 80. An alternative port could be specified as: http://www.amx.com:8080/company-info-home.asp.

Any legal HTTP syntax can be used.

Special escape sequences

The system has only a limited knowledge of URL formats in that it transparently passes the URL information onto the server for translation. A user can then pass any parameters to the server side programs such as CGI scripts or active server pages. However; the system will parse the URL looking for special escape codes. When it finds an escape code it replaces that code with a particular piece of panel, button, or state information. For example, "http://www.amx.com/img.asp?device=$DV" would become "http://www.amx.com/img.asp?device=10001". Other used escape sequences include:

Escape Sequences	
Sequence	**Panel Information**
$DV	Device Number
$SY	System Number
$IP	IP Address
$HN	Host Name
$MC	Mac Address
$ID	Neuron ID
$PX	X Resolution of current panel mode/file
$PY	Y Resolution of current panel mode/file
$BX	X Resolution of current button
$BY	Y Resolution of current button
$BN	Name of button
$ST	Current state
$AC	Address Code
$AP	Address Port
$CC	Channel Code
$CP	Channel Port
$LC	Level Code
$LP	Level Port

Troubleshooting

This section describes the solutions to possible hardware/firmware issues that could arise during the common operation of a Modero touch panel.

Troubleshooting Information	
Symptom	**Solution**
My USB drivers has a yellow exclamation point and doesn't appear to be working.	The USB driver was incorrectly installed and should be re-installed: • Power up the panel without the USB cable connected to the panel. • Plug in the USB cable into the G4 panel. You should see a USB icon show up in the System Tray. • Double click on the icon to bring up the list of USB devices (you should see the "AMX USB LAN LINK" device in the list). • If the "Install Driver" dialog doesn't appear automatically, select the "Properties" button and then the "Update Driver" button. • When the Install Driver dialog does appear, click Next to accept all the default prompts. • The OS will notify you that the driver you are installing/updating does not have a digital signature. This is acceptable, agree to continue the installation. • After installation is complete, the exclamation point should disappear.
When using G4 WebControl to communicate with a target panel, a VNC Server dialog appears on my screen.	• During a WebControl connection to a target panel you are prompted with a G4 Authentication dialog which asks you to enter the assigned password for the panel (before gaining access). • If you are ever prompted with a VNC Server dialog, you must enter the IP Address of the target panel. This can be found within the **Setup** > **Protected Setup** > System Connection page. - This IP Address of the panel appears within the IP Settings section of this page • Enter the IP Address and click **OK**. You will then be prompted with the G4 Authentication popup where you must enter the panel's WebControl password.
While attempting to communicate directly with the Virtual Master (on the PC) via a USB connection, I can't get my communication icon to turn Green.	• A Green communication icon indicates that a connection has been established to the target Master or target Virtual Master. • Launch NetLinx Studio and configure the Master Connection communication settings for a Virtual Master. • Navigate to the System connection page and toggle the *Type* field to **USB**. • Make sure the Type-A USB connector is securely connected to the PC. • Make sure the panel DOESN'T have the mini-USB connected and TURN OFF the panel. • Once the panel has turned ON THEN connect the mini-USB to the Program Port. The USB icon should appear in your system tray. If it doesn't, refer to the *Configuring and Using USB with a Virtual Master* section on page 33. • The panel can take a few minutes to detect the connection to the PC.

Troubleshooting Information (Cont.)	
Symptom	**Solution**
My Modero panel isn't appearing in my Workspace window.	• Verify that the System number is the same on both the NetLinx Workspace window and the System Connection page on the Modero panel. • Verify you have entered the proper NetLinx Master IP and connection methods into the Master Connection section of the System Connection page.
My Modero panel can't obtain a DHCP Address	In requesting a DHCP Address, the DHCP Server can take up to a few minutes to provide the address. • Verify there is an active Ethernet connection attached to the rear of the Modero before beginning these procedures. • Select **Diagnostics** > **Network Address**, from the Main menu and verify the System number. • If the IP Address field is still empty, give the Modero a few minutes to negotiate a DHCP Address and try again.
My panel is not showing up in the Virtual Master's System list of connected devices.	If you a Virtual Master has already connected to the target panel, the G4 device retains the information of the previous Virtual Master System number. • Reboot the panel without the USB cable plugged into the panel. • Configure NetLinx Studio for a Virtual Master connection. Note the System Number used in the Edit Settings window. • Stop communication on the Virtual Master by going to **Settings** > **Stop Communications**. • Click **Yes** to stop communication. • Select the System Number (from the Online Tree tab) and use a right mouse click to select **Refresh System**. This re-establishes communication with the Virtual Master. • Plug-in the mini-USB cable into the corresponding port on the panel. • Wait a few seconds and refresh the system. This re-establishes communication with the Virtual Master. The panel should now appear in the list of available devices.
My Connection Status button isn't blinking and it says the USB is connecting.	"USB Connecting" is displayed when the panel is trying to establish USB communication with the PC (either within the NetLinx Studio or TPDesign4 applications). • Remove the USB connector from the panel and close any AMX applications. • Reboot the panel. • Launch the AMX application and attempt reconnect to the panel. • If using Studio for Virtual Master communication, establish a Virtual Master connection, verify the correct System number, stop communication with the Virtual Master, and then re-establish communication by refreshing the system. • After the panel powers-up, reconnect the USB connector to the panel. • Verify that you have a valid USB connection from within your System Tray.

Troubleshooting Information (Cont.)	
Symptom	**Solution**
My on-screen mouse cursor doesn't appear.	• The USB connections are not detected until after the particular USB connection plugged into the corresponding port on the panel and power is cycled to the panel.
Calibration is not working.	• After the Modero touch panel has been updated with a new firmware kit (downloaded to the panel through NetLinx Studio), the calibration could need to be reset. • Cycling power to the panel should provide a baseline calibration for the particular touch panel. Proceed to the Calibration page and reset the on-screen calibration.
Panel doesn't respond to my touches	• The protective cover acts to press on the entire LCD and makes calibration difficult because the user can't calibrate on specific crosshairs when the sheet is pressing on the whole LCD. • Verify that the protective laminate coating on the LCD is removed before beginning any calibration process.
There is a crawling, dashed line on the left border of the graphics.	• On some units at some resolutions, there are wavy lines across the entire screen. This has been seen on middle resolutions and is referred to as the "Mid Range Fallout" problem. • This is due to the graphics controller settings in the firmware. • Update to the latest v2.XX.XX firmware. • Visit the **www.amx.com** > T**ech Center** > **Downloadable Files** > **Firmware Files** > **Modero panels**. Then Download the KIT file to your computer.
NetLinx Studio only detects one of my connected Masters.	Each Master is give a Device Address of 00000. • Only one Master can be assigned to a particular System number. If you want to work with multiple Masters, open different instances of NetLinx Studio and assign each Master its own System value. • Example: a site has an NXC-ME260/64 and an NI-4000. In order to work with both units. The ME260/64 can be assigned System #1 and the NI-4000 can then be assigned System #2 using two open sessions of NetLinx Studio 2.
I can't seem to connect to a NetLinx Master using my NetLinx Studio 2.	• From the **Settings** > **Master Comm Settings** > **Communication Settings** > **Settings (for TCP/IP)**, uncheck the "**Automatically Ping the Master Controller** to ensure availability". • The pinging is to determine if the Master is available, and to reply with a connection failure instantly if it is not. Without using the ping feature, you will still attempt to make a connection, but a failure will take longer to be recognized. Some firewalls and networks do not allow pinging, though, and the ping will then always result in a failure. • When connecting to a NetLinx Master controller via TCP/IP, the program will first try to ping the controller before attempting a connection. Pinging a device is relatively fast and will determine if the device is off-line, or if the TCP/IP address that was entered was incorrect. If you decide NOT to ping for availability and the controller is off-line, or you have an incorrect TCP/IP address, the program will try for 30-45 seconds to establish a connection. **Note**: If you are trying to connect to a master controller that is behind a firewall, you may have to uncheck this option. Most firewalls will not allow ping requests to pass through for security reasons.

Troubleshooting Information (Cont.)	
Symptom	**Solution**
I have more that one Modero panel connected to my System Master and only one shows up.	Multiple NetLinx Compatible devices (such as Modero panels) can be associated for use with a single Master. Each Modero panel comes with a defaulted Device Number value of 10001. When using multiple panels, it can become very easy to overlook the need to assign different Device Number values to each panel.
	• Press and hold the grey Front Setup Access button for 3 seconds to open the Setup page.
	• Press the **Protected Setup** button (located on the lower-left of the panel page), enter *1988* into the on-screen Keypad's password field, and press **Done** when finished.
	• Enter a Device Number value for the panel into the Device Number Keypad. *The default is 10001 and the range is from 1 - 32000*.
After downloading a panel file or firmware to a G4 device, the panel behaves strangely.	Symptoms include:
	• Having to repeat the download.
	• Inability to make further downloads to the panel. May get "directory" errors, "graphics hierarchy" errors, etc.… indicating problems with the Flash memory.
	• Panel will not boot, or gets stuck on "AMX" splash screen.
	• Other problems also started after downloading to a new panel or a panel with a TPD4 file that takes up a considerable amount of the available Flash memory.
	Cause:
	• If the G4 device already contains a large enough file, subsequent downloads will take up more space than is available and could often corrupt the Flash memory. The demo file that typically ships with G4 panels is one such file.
	Solution:
	• DO NOT download TPD4 files (of large size) over the demo pages, or any other large TPD4 file.
	• First download a small blank one page file to the G4 panel using the Normal Transfer option to send/download the page. Reboot the device, then do your regular file or firmware download.

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3000 RESEARCH DRIVE, RICHARDSON, TX 75082 USA • 800.222.0193 • 469.624.8000 • 469-624-7153 fax • 800.932.6993 technical support • www.amx.com