INSTRUCTION MANUAL

TPI-PRO-DVI
TOTAL PRESENTATION INTERFACE WITH DVI

TPI-PRO-DVI-2
TPI-PRO-DVI-4

AV FOR AN IT WORLD

IMPORTANT SAFETY INSTRUCTIONS

1. READ these instructions.
2. KEEP these instructions.
3. HEED all warnings.
4. FOLLOW all instructions.
5. DO NOT use this apparatus near water.
6. CLEAN ONLY with dry cloth.
7. DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. DO NOT install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. DO NOT defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. PROTECT the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. ONLY USE attachments/accessories specified by the manufacturer.

12. USE ONLY with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. UNPLUG this apparatus during lightning storms or when unused for long periods of time.
14. REFER all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. DO NOT expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
16. To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
17. Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
18. DO NOT overload wall outlets or extension cords beyond their rated capacity as this can cause electric shock or fire.

The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to persons.

ESD Warning: The icon to the left indicates text regarding potential danger associated with the discharge of static electricity from an outside source (such as human hands) into an integrated circuit, often resulting in damage to the circuit.

WARNING: To reduce the risk of fire or electrical shock, do not expose this apparatus to rain or moisture.

WARNING: No naked flame sources - such as candles - should be placed on the product.

WARNING: Equipment shall be connected to a MAINS socket outlet with a protective earthing connection.

CAUTION: To reduce the risk of electric shock, grounding of the center pin of this plug must be maintained.

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AMX WARRANTY AND RETURN POLICY

The AMX Warranty and Return Policy and related documents can be viewed/downloaded at www.amx.com.

ESD WARNING

To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded before touching any internal materials.

When working with any equipment manufactured with electronic devices, proper ESD grounding procedures must be followed to make sure people, products, and tools are as free of static charges as possible. Grounding straps, conductive smocks, and conductive work mats are specifically designed for this purpose.

Anyone performing field maintenance on AMX equipment should use an appropriate ESD field service kit complete with at least a dissipative work mat with a ground cord and a UL listed adjustable wrist strap with another ground cord

WARNING: Do Not Open! Risk of Electrical Shock. Voltages in this equipment are hazardous to life. No user-serviceable parts inside. Refer all servicing to qualified service personnel.

Place the equipment near a main power supply outlet and make sure that you can easily access the power breaker switch.

WARNING: This product is intended to be operated ONLY from the voltages listed on the back panel or the recommended, or included, power supply of the product. Operation from other voltages other than those indicated may cause irreversible damage to the product and void the products warranty. The use of AC Plug Adapters is cautioned because it can allow the product to be plugged into voltages in which the product was not designed to operate. If the product is equipped with a detachable power cord, use only the type provided with your product or by your local distributor and/or retailer. If you are unsure of the correct operational voltage, please contact your local distributor and/or retailer.

FCC AND CANADA EMC COMPLIANCE INFORMATION:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

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

Approved under the verification provision of FCC Part 15 as a Class B Digital Device.

Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this device.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

EU COMPLIANCE INFORMATION:

Eligible to bear the CE mark; Conforms to European Union Low Voltage Directive 2006/95/EC; European Union EMC Directive 2004/108/EC; European Union Restriction of Hazardous Substances Recast (RoHS2) Directive 2011/65/EU; European Union WEEE (recast) Directive 2012/19/EU; European Union Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Directive 2006/121/EC.

You may obtain a free copy of the Declaration of Conformity by visiting http://www.amx.com/techcenter/certifications.asp.

WEEE NOTICE:

This appliance is labeled in accordance with European Directive 2012/19/EU concerning waste of electrical and electronic equipment (WEEE). This label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.

Table of Contents

TPI-PRO-DVI (Total Presentation Interface-DVI)

Overview

The TPI-PRO-DVI (*Total Presentation Interface-DVI*) transforms third party touch screens into interactive displays with stunning control graphics and animation just like AMX Modero Touch Panels.

Using the TPI-PRO-DVI, third party touch screens can simultaneously display up to 4 fully-scalable video windows, each supporting Composite, S-Video, Component, VGA and DVI signals. Classrooms, courtrooms and conference rooms can use the TPI-PRO-DVI to easily switch between any of the four simultaneously displayed sources on the fly, as well as control content in real-time.

The TPI-PRO-DVI is the perfect tool to use with any large plasma or LCD display equipped with a touch overlay. Alternatively, the TPI-PRO-DVI output can be displayed on any monitor or projector and a USB keyboard/mouse can be used to navigate the system.

CAUTION: *With incorporated scaling, the original video sources can be anything from Composite to DVI, future proofing your facility for the eventual changeover to all digital video.*

The TPI-PRO-DVI receives control and touch point information from a variety of pointing devices (i.e. touch screen, mouse, or keyboard), and connects to the control system via Ethernet.

FIG. 1 TPI-PRO-DVI-4 and TPI-PRO-DVI-2

The TPI-PRO-DVI is available in two versions:

- The TPI-PRO-DVI-4 (**FG2275-114**) supports up to four DVI inputs.
- The TPI-PRO-DVI-2 (**FG2275-112**) supports up to two DVI inputs.

Both TPI-PRO-DVIs support high resolution inputs/outputs:

- **Inputs (2 or 4)**: Accepts S-Video, Composite, VGA (up to 1920x1200), Component (up to 1080p) and DVI (up to 1920x1200, single-link DVI only). Inputs can be scaled to fit into independent windows or viewed full-screen.
- **Outputs (2)**: VGA or DVI up to 1920x1200 (WUXGA) at 60 Hz.

NOTE: *In order to connect non-DVI input source devices (S-Video, Composite, VGA or Component) to the TPI-PRO-DVI's DVI Input connectors, the (optional) adapter cables are required. See the DVI Input Adapter Cables section on page 17 for details.*

Basic features of both include:

- Up to 4 video or graphics windows can be simultaneously displayed and controlled
- USB (wired and wireless) mouse pass-through allows the presenter to view and control up to four computers from one display

NOTE: *HDMI graphics / video capability is only possible when using an HDMI-to-DVI adapter. The TPI-PRO-DVI does not support HDMI HDCP or audio.*

TPI-PRO-DVI Specifications

The following table lists the specifications for the TPI-PRO-DVI-4 and TPI-PRO-DVI-2. Note that the primary difference between the TPI-PRO-DVI-4 and TPI-PRO-DVI-2 is in the number of inputs. In terms of functionality and specifications, they are otherwise identical. Therefore, the specifications listed below apply to both versions, unless specifically noted.

TPI-PRO-DVI Specifications	
• Power Requirements:	• Constant current draw: 2.6 A @ 12 VDC • The PSN6.5 Power Supply (FG423-41 - *not included*) is recommended, to accommodate all possible configurations and respective power draws.
• Memory:	• 256 MB SDRAM • 256 MB disk memory

TPI-PRO-DVI Specifications (Cont.)	
• Supported Video Resolutions:	Input DVI Video: • up to 1920x1200 • single-link DVI only Input Composite Video and S-Video: • NTSC M/J • NTSC 4.43 • PAL B/D/I/G/H • PAL 60 • PAL M • PAL N • PAL Nc • SECAM B/D/G/K/L Input Component Video: • NTSC 480i, 480p • PAL 576i, 576p • 720p, 1080i, 1080p
• Supported Audio Sample Rates:	48000Hz, 44100Hz, 32000Hz, 24000Hz, 22050Hz, 16000Hz, 12000Hz, 11025Hz, and 8000Hz.
• Supported Input and Output Modes:	See *Appendix A: Supported Input and Output Modes* on page 155.
Front Panel Components	
• Power button/LED:	Toggles the unit off and on. *Note: The TPI will power ON when the power supply is connected. Once power is applied, use the Power button to toggle the unit off and on.* • Light Off: Power to the unit is either not plugged in, below approximately 10VDC, above approximately 19VDC, or cross-wired. • Constant Green: Power to the unit is within nominal voltage limits (between 10VDC and 19VDC, approximately), the unit is on, and all internal power supplies are operating normally. • Constant Yellow: Power to the unit is within nominal voltage limits (between 10VDC and 19VDC, approximately) and the unit has been turned off by pressing the power switch for more than two seconds. • Flashing Yellow: Power to the unit is within nominal voltage limits (between 10VDC and 19VDC, approximately), but one or more of the internal power supplies are not operating correctly. The unit needs to be serviced. Contact AMX Technical Support for further instructions.
• USB Type-A Host ports:	2 USB Type A ports for connecting up to one annotation touch monitor and up to one keyboard/mouse. *Note: Do not use a USB hub to connect multiple USB devices to the TPI.*
• Serial port:	DB9 connector (male) connects to a DB9 serial port on a PC, for serial communication.
• Status LED:	• Constant ON: No communication with the NetLinx Master • Blinking: In communication with the NetLinx Master
• Input LEDs:	Yellow LEDs indicate a valid input signal on each source input (1-4 on the TPI-PRO-DVI-4, 1-2 on the TPI-PRO-DVI-2).
• Buttons:	Four white buttons provide access to the following configuration options: • RESOLUTION: Opens a screen used to select the TPI output video signal resolution, ranging from 640 x 480@60Hz to 1920 x 1200@60Hz. This output resolution setting must not be greater than the resolution on the connected panel. Refer to the *Setting the Output Resolution* section on page 38. • TOUCH: Opens the *Panel Information* page, where you can select from a series of serial touch panel drivers, and select the driver that corresponds to the serial touch panel connected to the TPI (via the TOUCH INPUT connector). Refer to the *Setting the Touch Drivers (Serial Touch Monitors Only)* section on page 38 for more information. • CALIBRATE: Opens the *Calibration* page, displaying a series of crosshairs. These crosshairs are used to calibrate the touch device being used. Refer to the *Calibrating the TPI* section on page 39. • SETUP: Opens the TPI firmware setup menu. Refer to the *TPI Configuration Pages* section on page 52.
Rear Panel Components	
• DVI-I Inputs:	DVI-I input connectors, one per input source (1-4 on the TPI-PRO-DVI-4, 1-2 on the TPI-PRO-2). Each input connector supports VGA graphics, S-video, composite video, component video, and DVI input.

TPI-PRO-DVI Specifications (Cont.)	
• DVI-I Outputs:	2 DVI-I (VESA/EIA compatible) output connectors. Both outputs support DVI-D and analog VGA (RGBHV) outputs. • Maximum output resolution = 1920 x 1200@60 Hz • Default output resolution = 1280 x 1024@60 Hz *Note: The TPI does not provide Component (YPbPr) or Interlaced outputs.* These connectors display video feeds, G4 graphics and external windowed video/graphics inputs. The DVI-I Outputs can be connected to either: • The touch-panel control display • The public-view non-touch monitor *Note: G4 graphics can be turned off under program control: use the ^TPO SEND_COMMAND to select which of the 2 outputs will display G4 graphics (see page 110).*
• Source TOUCH, KEYBOARD/MOUSE USB ports:	2 or 4 USB Type-B device ports, one per source computer—for source USB Touch Monitor, mouse/keyboard control (1-4 on the TPI-PRO-DVI-4, 1-2 on the TPI-PRO-DVI-2). *Note: Do not use a USB hub to connect multiple USB devices to the TPI.*
• Host USB Touch Monitor KEYBOARD/ MOUSE USB ports:	2 USB Type-A ports that can be used for a keyboard, mouse, external storage unit, or USB-capable touch panel interface. *Note: Do not use a USB hub to connect multiple USB devices to the TPI.*
• ETHERNET 10/100 port:	RJ-45 port provides 10/100 Mbps communication with the NetLinx Master (via ICSP protocol over Ethernet). • The Ethernet port automatically negotiates the connection speed (10 Mbps or 100 Mbps), and whether to use half duplex or full duplex mode. • This communication is reflected via the front ICSP LED.
• TOUCH INPUT port:	RS-232 (DB9) 9-pin serial port provides connectivity to a pointer device (i.e. touch screen) that requires a serial connection.
• AUDIO OUT connector:	3.5mm mini-jack provides stereo output - for use with line-level (0.707 VRMS) non-amplified stereo output only.
• Power connector:	2-pin 3.5 mm mini-Phoenix connector.
• Serial Touch Drivers:	Go to http://www.amx.com//assets/manuals/TPI-PRO.Supported.Touch.Monitors.zip to view/download the most recent list of Touch Monitors and USB Touch Drivers tested with the TPI (including the most current listing of tested serial touch panel drivers). *Note: The listing of compatible touch monitors is subject to change due to undocumented changes that 3rd-party touch monitor manufacturers make to their products over time. Compatibility at a past date does not guarantee compatibility in the future, and should be verified before deployment.*
• USB Drivers:	USB Touch drivers are automatically loaded when the USB Touch Monitor is detected. Go to http://www.amx.com//assets/manuals/TPI-PRO.Supported.Touch.Monitors.zip to view/download the most recent List of Touch Monitors and USB / Serial Touch Drivers Tested with the TPI (including the most current listing of tested USB touch panel drivers).
• Button Assignments:	Button assignments can be modified in TPD4 (not on the TPIs.) • 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
• Communication/ Programming:	Master communication and programming is available via an Ethernet connection. Refer to the *Configuring the Ethernet Connection on the NetLinx Master* section on page 46 for more information. There are several methods of TPI communication and programming available: • DHCP - Refer to the *Configuring a DHCP Address* section on page 44 for more information. • Static IP - Refer to the *Configuring a Static IP Address* section on page 44. • URL - Refer to the *NetLinx Master IP Address - URL Mode* section on page 46. • Listen - Refer to the *NetLinx Master IP Address - Listen Mode* section on page 47. • Auto - Refer to the *NetLinx Master Ethernet IP Address - Auto Mode* on page 48. • NPD (UPD) - Refer to the *NetLinx Master Ethernet IP Address - NDP (UDP) Mode* on page 48. • URL (UPD) - Refer to the *NetLinx Master Ethernet IP Address - URL (UDP) Mode* on page 51.
• Enclosure:	Metal with black matte finish
• Operating/Storage Environment:	• Operating Temperature: 0° C (32° F) to 40° C (104° F) • Operating Humidity: 5% to 85% RH Non-Condensing • Storage Temperature: -10° C (14° F) to 70° C (158° F) • Storage Humidity: 0% to 85% RH Non-Condensing
• Dimensions (HWD):	1.72" x 17.00" x 10.54" (4.37 cm x 43.18 cm x 26.77 cm)
• Weight:	8.25 lbs (3.74 kg)

TPI-PRO-DVI Specifications (Cont.)	
• Certifications:	• RoHS • FCC (Class B) • CE • IEC/EN60950
• Included Accessories:	• 2-pin PWR connector (41-5025) • Assembly Kit - Four screws and washers (KA0001) • Rack Ear brackets (60-0900-03)
• Other AMX Equipment:	• PSN6.5: Power Supply with 3.5 mm mini-Phoenix connector (FG423-41) • CC-DVI-5BNCM: DVI-to-5 BNC Male Adapter Cable (FG10-2170-08) • CC-DVI-RCA3M: DVI-to-3 RCA Male Adapter Cable (FG10-2170-09) • CC-DVI-SVID: DVI-to-S-Video Adapter Cable (FG10-2170-10) • CC-DVIM-VGAF: DVI-to-VGA Adapter Cable (FG10-2170-13)

Supported Input and Output Modes

Refer to the *Appendix A: Supported Input and Output Modes* section on page 155 for a detailed listing of Input and Output modes supported by the TPI-PRO-DVI.

Supported Touch Monitors and USB Touch Drivers

Go to http://www.amx.com//assets/manuals/TPI-PRO.Supported.Touch.Monitors.zip to view/download the most recent list of Touch Monitors and USB Touch Drivers tested with the TPI (including the most current listing of tested serial touch panel drivers).

NOTE: *The listing of compatible touch monitors is subject to change due to hidden changes that touch monitor manufacturers make to their products over time. Compatibility at a past date does not guarantee compatibility in the future, and should be verified before deployment.*

A Note About Wall and Rack Installation

Some products are installed in areas of differing temperature and cooling methodologies. These include products installed in walls, racks, cabinets, etc. Those areas may have different temperatures and/or cooling approaches that must be taken into consideration to maintain the product within the specified operating temperature.

In FIG. 2, the diagram displays an AMX device in a typical rack mounting, with full air circulation around the front and back of the device. In this case, the main concern is with heat building up between components, possibly to levels that may affect device operation.

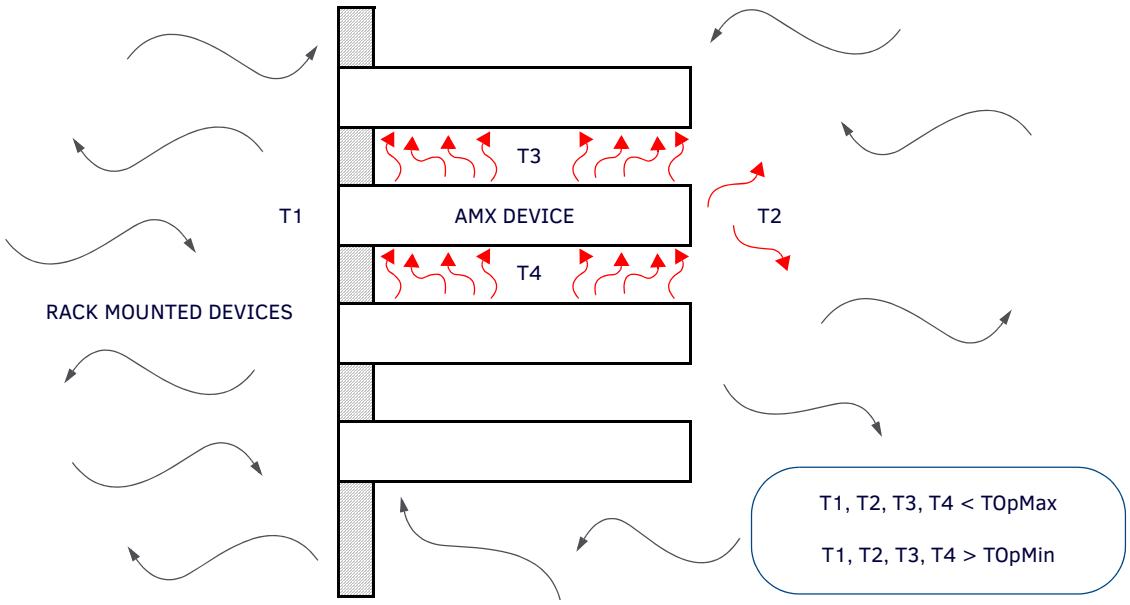


FIG. 2 Heat convection in rack-mounted devices

Installation Recommendations

During any installation, a lack of ventilation may produce conditions that may adversely affect the device's operation. In these circumstances, special care must be made to make sure that temperatures within enclosed areas do not exceed the device's maximum rated temperature.

NOTE: *While the outside temperature of the device may be at or below its maximum operating temperature, special care must be taken before and during installation to ensure that the maximum operating temperature is not exceeded within wall or rack installation spaces.*

Rack-Mounting the TPI-PRO-DVI

NOTE: *Read the Safety Instructions before rack-mounting the TPI.*

Safety Instructions

- Connect the unit only to a properly-rated supply circuit.
- DO NOT stand other units directly on top of the TPI when it is rack mounted, as this will place excessive strain on the mounting brackets.
- **ALWAYS** ensure that the rack enclosure is adequately ventilated. Adequate ventilation is critical for proper operation of the TPI.
  - The TPI uses the bottom cover as a heat sink. In most installations it will be necessary to have some amount of airflow across the bottom cover.
  - It is good practice to leave 1 RU of empty space above and below the unit.
  - Placing the unit low in the rack, using vented spacer panels and keeping other heat-generating equipment away from the unit can also be beneficial.
  - Depending on the rack enclosure and the surrounding air temperature, it may also be necessary to incorporate rack fans to increase air flow across the bottom of the unit.

The TPI occupies one rack unit in a standard 19" equipment rack. The included mounting brackets can be rotated 90° in any direction to accommodate several different mounting options, including tabletop, under/over the table, and vertical wall mounting. The following steps apply to all of these mounting options.

1. Discharge any static electricity from your body by touching a grounded metal object.
2. Position and install the mounting brackets, as shown in FIG. 3 on page 17, using the supplied mounting screws.

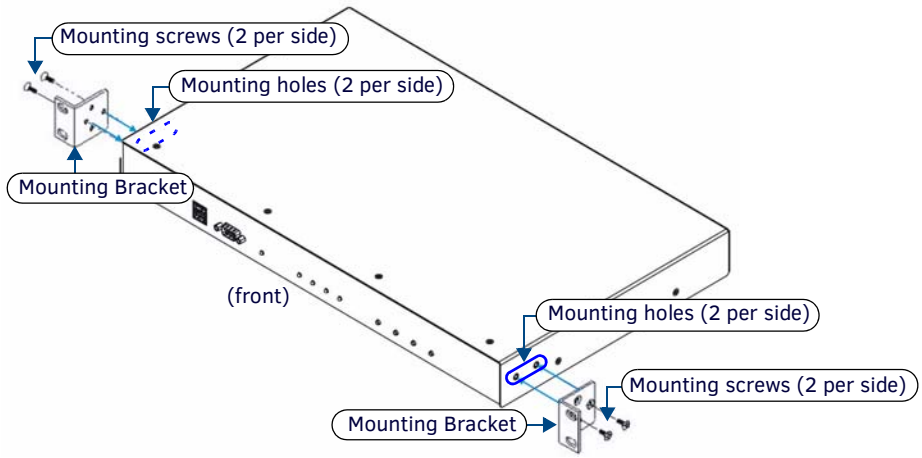


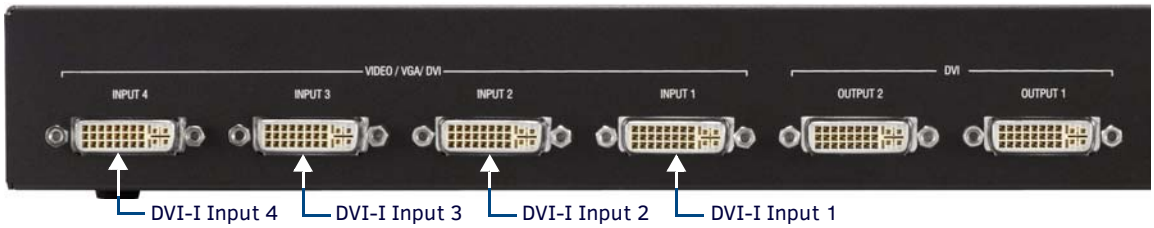
FIG. 3 Rack-Mounting the TPI-PRO-DVI

3. Connect any applicable wires to the TPI.
   Refer to the *Rear Panel Connectors* section on page 26 for wiring diagrams and pinout descriptions.

Cable Details and Pinout Information

Overview

The DVI-I Input connectors on the rear panel (labeled "VIDEO/VGA/DVI Inputs") are used to connect source input devices to the TPI-PRO-DVI (FIG. 4). The TPI-PRO-DVI routes video from connected source input devices to the connected output devices. Each connector supports DVI as well as VGA, S-video, Composite and Component inputs.



Note: The TPI-PRO-DVI-4 (shown here) has four DVI-I Inputs, the TPI-PRO-DVI-2 has two DVI-I Inputs

FIG. 4 VIDEO/VGA/DVI Inputs

In order to connect non-DVI input source devices (S-Video, Composite, VGA, and Component) to the DVI Input connectors, the following (optional) adapter cables are required:

DVI Input Adapter Cables			
Name	**Description**	**Length**	**FG#**
• CC-DVI-DVI	DVI-to-DVI	9' (2.743m)	FG10-2170-06
• CC-DVI-5BNCM	DVI-to-5 BNC Male	6' (1.828m)	FG10-2170-08
• CC-DVI-RCA3M	DVI-to-3 RCA Male *Note: Used for Component and Composite inputs*	6' (1.828m)	FG10-2170-09
• CC-DVI-SVID	DVI-to-S-Video	9' (2.743m)	FG10-2170-10
• CC-DVIM-VGAF	DVI-to-VGA (up to 1920x1200)	6' (1.828m)	FG10-2170-13

DVI-D Male to DVI-D Male Single-Link Cable

NOTE: *This cable corresponds to the CC-DVI-DVI DVI-to-DVI adapter cable (FG10-2170-06), available from AMX.*

Cable to be composed of:

- Four UL20276 (28AWG twisted pair + drain wire + aluminum foil/mylar shield) for TMDS signals and shields
- Five UL1589 (28AWG) for DDC_CLK, DDC_DATA, Hot_Plug_Detect, +5VDC and GROUND
- The above bundles jacketed together in aluminum foil shield and 85% (minimum) braid
- EMI shield metal can on both DVI connectors and connected to braid

DVI-to-DVI Cable Pinout Information

DVI-to-DVI Cable Pinout Information				
DVI-D Connector Pin	**Signal Name**	**Signal Name**	**DVI-D Connector Pin**	**Notes:**
1	TMDS DATA 2 N	TMDS DATA 2 N	1	28AWG twisted pair 2
2	TMDS DATA 2 P	TMDS DATA 2 P	2	28AWG twisted pair 2
3	TMDS SHIELD 2/4	TMDS SHIELD 2/4	3	28AWG twisted pair 2 drain
4	TMDS DATA 4 N	TMDS DATA 4 N	4	Pin not populated in DVI-D connector
5	TMDS DATA 4 P	TMDS DATA 4 P	5	Pin not populated in DVI-D connector
6	DDC CLOCK	DDC CLOCK	6	28AWG
7	DDC DATA	DDC DATA	7	28AWG
8	ANALOG VERTICAL SYNC	ANALOG VERTICAL SYNC	8	Pin populated in DVI-D connector, but not connected for this cable
9	TMDS DATA 1 N	TMDS DATA 1 N	9	28AWG twisted pair 1
10	TMDS DATA 1 P	TMDS DATA 1 P	10	28AWG twisted pair 1
11	TMDS SHIELD 1/3	TMDS SHIELD 1/3	11	28AWG twisted pair 1 drain
12	TMDS DATA 3 N	TMDS DATA 3 N	12	Pin not populated in DVI-D connector
13	TMDS DATA 3 P	TMDS DATA 3 P	13	Pin not populated in DVI-D connector
14	+5VDC	+5VDC	14	28AWG
15	GROUND	GROUND	15	28AWG
16	HOT PLUG DETECT	HOT PLUG DETECT	16	28AWG
17	TMDS DATA 0 N	TMDS DATA 0 N	17	28AWG twisted pair 0
18	TMDS DATA 0 P	TMDS DATA 0 P	18	28AWGtwisted pair 0
19	TMDS SHIELD 0/5	TMDS SHIELD 0/5	19	28AWGtwisted pair 0 drain
20	TMDS DATA 5 N	TMDS DATA 5 N	20	Pin not populated in DVI-D connector
21	TMDS DATA 5 P	TMDS DATA 5 P	21	Pin not populated in DVI-D connector
22	TMDS CLOCK SHIELD	TMDS CLOCK SHIELD	22	28AWG twisted pair CLK drain
23	TMDS CLOCK P	TMDS CLOCK P	23	28AWGtwisted pair CLK
24	TMDS CLOCK N	TMDS CLOCK N	24	28AWGtwisted pair CLK
C1	C1 ANALOG RED	C1 ANALOG RED	C1	Pin not populated in DVI-D connector
C2	C2 ANALOG GREEN	C2 ANALOG GREEN	C2	Pin not populated in DVI-D connector
C3	C3 ANALOG BLUE	C3 ANALOG BLUE	C3	Pin not populated in DVI-D connector
C4	C4 ANALOG HSYNC	C4 ANALOG HSYNC	C4	Pin not populated in DVI-D connector
C5	C5 ANALOG GROUND	C5 ANALOG GROUND	C5	Pin populated in DVI-D connector, but not connected for this cable
BACKSHELL	SHIELD	SHIELD	BACKSHELL	Outer braid

DVI-A Male to 5-BNC Male Cable

NOTE: *This cable type corresponds to the CC-DVI-5BNCM DVI-to-Component cable (FG10-2170-08), available from AMX.*

Cable to be composed of:

- Five 75ohm 28 AWG mini-coax cables for the Red, Green, Blue, VSync and HSync signals and returns
- EMI shield metal can on DVI connector

DVI-to-5-BNC Cable Pinout Information

DVI-to-5-BNC Cable Pinout Information				
DVI-A Connector Pin	**Signal Name**	**Signal Name**	**BNC connector pin**	**Notes:**
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK			Pin populated in DVI-A connector, but not connected for this cable
7	DDC DATA			Pin populated in DVI-A connector, but not connected for this cable
8	ANALOG VERTICAL SYNC	VSync Signal	Black BNC center pin	
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC			Pin populated in DVI-A connector, but not connected for this cable
15	GROUND	VSync, HSync Returns (shields)	Black/Grey BNC shields	
16	HOT PLUG DETECT			Pin populated in DVI-A connector, but not connected for this cable
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED	Red Signal	Red BNC center pin	
C2	C2 ANALOG GREEN	Green Signal	Green BNC center pin	
C3	C3 ANALOG BLUE	Blue Signal	Blue BNC center pin	
C4	C4 ANALOG HSYNC	HSync Signal	Grey BNC center pin	
C5	C5 ANALOG GROUND	Red, Green, Blue Returns (shields)	Red/Green/Blue BNC shields	
BACKSHELL	SHIELD			Pin populated in DVI-A connector, but not connected for this cable

DVI-A Male to Triple RCA Male Cable

NOTE: *This cable type corresponds to the CC-DVI-RCA3M DVI-to-Component/Composite cable (FG10-2170-09), available from AMX.*

Cable to be composed of:

- Three 75ohm 28 AWG mini-coax cables for the Red, Green and Blue signals and returns
- EMI shield metal can on DVI connector

DVI-to-Triple RCA Cable Pinout Information

DVI-to-Triple RCA Cable Pinout Information				
DVI-A Connector Pin	**Signal Name**	**Signal Name**	**RCA connector pin**	**Notes:**
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK			Pin populated in DVI-A connector, but not connected for this cable
7	DDC DATA			Pin populated in DVI-A connector, but not connected for this cable
8	ANALOG VERTICAL SYNC			Pin populated in DVI-A connector, but not connected for this cable
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC			Pin populated in DVI-A connector, but not connected for this cable
15	GROUND			Pin populated in DVI-A connector, but not connected for this cable
16	HOT PLUG DETECT			Pin populated in DVI-A connector, but not connected for this cable
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED	Component Pr / CVBS 1 Signal	Red RCA connector center pin	
C2	C2 ANALOG GREEN	Component Y / CVBS 2 Signal	Green RCA connector center pin	
C3	C3 ANALOG BLUE	Component Pb / CVBS 3 Signal	Blue RCA connector center pin	
C4	C4 ANALOG HSYNC			Pin populated in DVI-A connector, but not connected for this cable
C5	C5 ANALOG GROUND	Pr, Y, Pb / CVBS Returns (shields)	Red/Green/Blue RCA connector shields	
BACKSHELL	SHIELD			Pin populated in DVI-A connector, but not connected for this cable

DVI-A Male to S-Video Male Cable

NOTE: *This cable corresponds to the CC-DVI-SVID DVI-to-S-Video adapter cable (FG10-2170-10), available from AMX.*

Cable to be composed of:

- Two 75ohm 28 AWG mini-coax cables for the Luminance (Y) and Chrominance (C) signals and returns
- EMI shield metal can on DVI connector

DVI-to-S-Video Cable Pinout Information

DVI-to-S-Video Cable Pinout Information				
DVI-A Connector Pin	**Signal Name**	**Signal Name**	**S-Video Connector Pin**	**Notes:**
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK			Pin populated in DVI-A connector, but not connected for this cable
7	DDC DATA			Pin populated in DVI-A connector, but not connected for this cable
8	ANALOG VERTICAL SYNC			Pin populated in DVI-A connector, but not connected for this cable
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC			Pin populated in DVI-A connector, but not connected for this cable
15	GROUND			Pin populated in DVI-A connector, but not connected for this cable
16	HOT PLUG DETECT			Pin populated in DVI-A connector, but not connected for this cable
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED			Pin populated in DVI-A connector, but not connected for this cable
C2	C2 ANALOG GREEN	Luminance (Y) Signal (center conductor)	3	
C3	C3 ANALOG BLUE	Chrominance (C) Signal (center conductor)	4	
C4	C4 ANALOG HSYNC			Pin populated in DVI-A connector, but not connected for this cable
C5	C5 ANALOG GROUND	Y, C Returns (shields)	1, 2	
BACKSHELL	SHIELD			Pin populated in DVI-A connector, but not connected for this cable

DVI-A Male to HD15 (VGA) Male Cable

NOTE: *This cable type corresponds to the CC-DVIM-VGAF DVI-to-VGA cable (FG10-2170-13), available from AMX.*

Cable to be composed of:

- Three 75ohm 28 AWG mini-coax cables for the Red, Green and Blue signals and returns
- Seven UL1589 (28AWG) for VSYNC, HSYNC, DDC_CLK, DDC_DATA, Hot_Plug_Detect, +5VDC and GROUND
- The above bundles jacketed together in aluminum foil shield and 85% (minimum) braid
- EMI shield metal can on both DVI and HD15 connectors and connected to braid

DVI-to-VGA Cable Pinout Information

DVI-to-VGA Cable Pinout Information				
DVI-A Connector Pin	**Signal Name**	**Signal Name**	**HD15 (VGA) Pin**	**Notes:**
1	TMDS DATA 2 N			Pin populated in DVI-A connector, but not connected for this cable
2	TMDS DATA 2 P			Pin populated in DVI-A connector, but not connected for this cable
3	TMDS SHIELD 2/4			Pin not populated in DVI-A connector
4	TMDS DATA 4 N			Pin not populated in DVI-A connector
5	TMDS DATA 4 P			Pin not populated in DVI-A connector
6	DDC CLOCK	DDC CLOCK	15	28AWG
7	DDC DATA	DDC DATA	12	28AWG
8	ANALOG VERTICAL SYNC	VSYNC Signal	14	28AWG
9	TMDS DATA 1 N			Pin not populated in DVI-A connector
10	TMDS DATA 1 P			Pin not populated in DVI-A connector
11	TMDS SHIELD 1/3			Pin not populated in DVI-A connector
12	TMDS DATA 3 N			Pin not populated in DVI-A connector
13	TMDS DATA 3 P			Pin not populated in DVI-A connector
14	+5VDC	+5VDC	9	28AWG
15	GROUND	GND, HS Return	5	28AWG
16	HOT PLUG DETECT	+5VDC	9	28AWG
17	TMDS DATA 0 N			Pin populated in DVI-A connector, but not connected for this cable
18	TMDS DATA 0 P			Pin populated in DVI-A connector, but not connected for this cable
19	TMDS SHIELD 0/5			Pin not populated in DVI-A connector
20	TMDS DATA 5 N			Pin not populated in DVI-A connector
21	TMDS DATA 5 P			Pin not populated in DVI-A connector
22	TMDS CLOCK SHIELD			Pin not populated in DVI-A connector
23	TMDS CLOCK P			Pin populated in DVI-A connector, but not connected for this cable
24	TMDS CLOCK N			Pin populated in DVI-A connector, but not connected for this cable
C1	C1 ANALOG RED	RED Coax Signal	1	Red mini-coax signal
C2	C2 ANALOG GREEN	GREEN Coax Signal	2	Green mini-coax signal
C3	C3 ANALOG BLUE	BLUE Coax Signal	3	Blue mini-coax signal
C4	C4 ANALOG HSYNC	HSYNC Signal	13	28AWG
C5	C5 ANALOG GROUND	RGB Coax, VSync/DDC Returns	6, 7, 8, 10, 11	Red, Green, Blue mini-coax returns; VSync/DDC return; NC used as GND
BACKSHELL	Braided Shield	Braided Shield	BACKSHELL	Outer braid, tied to 6, 7, 8, 10, 11

Wiring and Device Connections

Overview

The only physical differences between the TPI-PRO-DVI-4 and TPI-PRO-DVI-2 are the number of VIDEO/VGA/DVI Inputs on the rear panel (and their associated Input LEDs on the front panel), and the number of USB Source Interface ports on the rear panel.

- The TPI-PRO-DVI-4 features four DVI Inputs/Input LEDs and four USB Source Interface ports.
- The TPI-PRO-DVI-2 features two DVI Inputs/Input LEDs and four USB Source Interface ports.

Front Panel Components

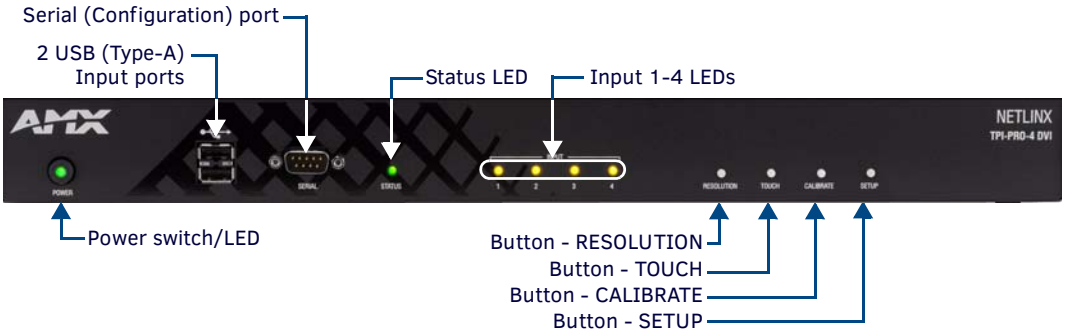


FIG. 5 Front Panel Components (TPI-PRO-DVI-4 shown)

NOTE: *FIG. 4 shows the TPI-PRO-DVI-4, with four Input LEDs (which correspond to VIDEO/VGA/DVI Inputs 1-4 on the rear panel). The TPI-PRO-DVI-2 has two Input LEDs, corresponding to VIDEO/VGA/DVI Inputs 1-2.*

Rear Panel Components

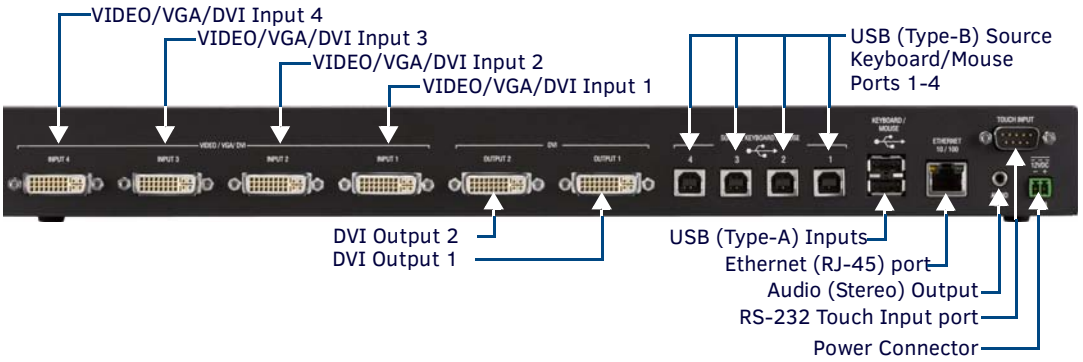


FIG. 6 Rear Panel Components (TPI-PRO-DVI-4 shown)

NOTE: *FIG. 5 shows the TPI-PRO-DVI-4, with four VIDEO/VGA/DVI Inputs and four USB (Type-B) Source Keyboard/Mouse Ports. The TPI-PRO-DVI-2 has two VIDEO/VGA/DVI Inputs and two USB (Type-B) Source Keyboard/Mouse Ports.*

Connections Overview

FIG. 7 illustrates how all of the basic connections on the TPI-PRO-DVI are used in a basic installation:

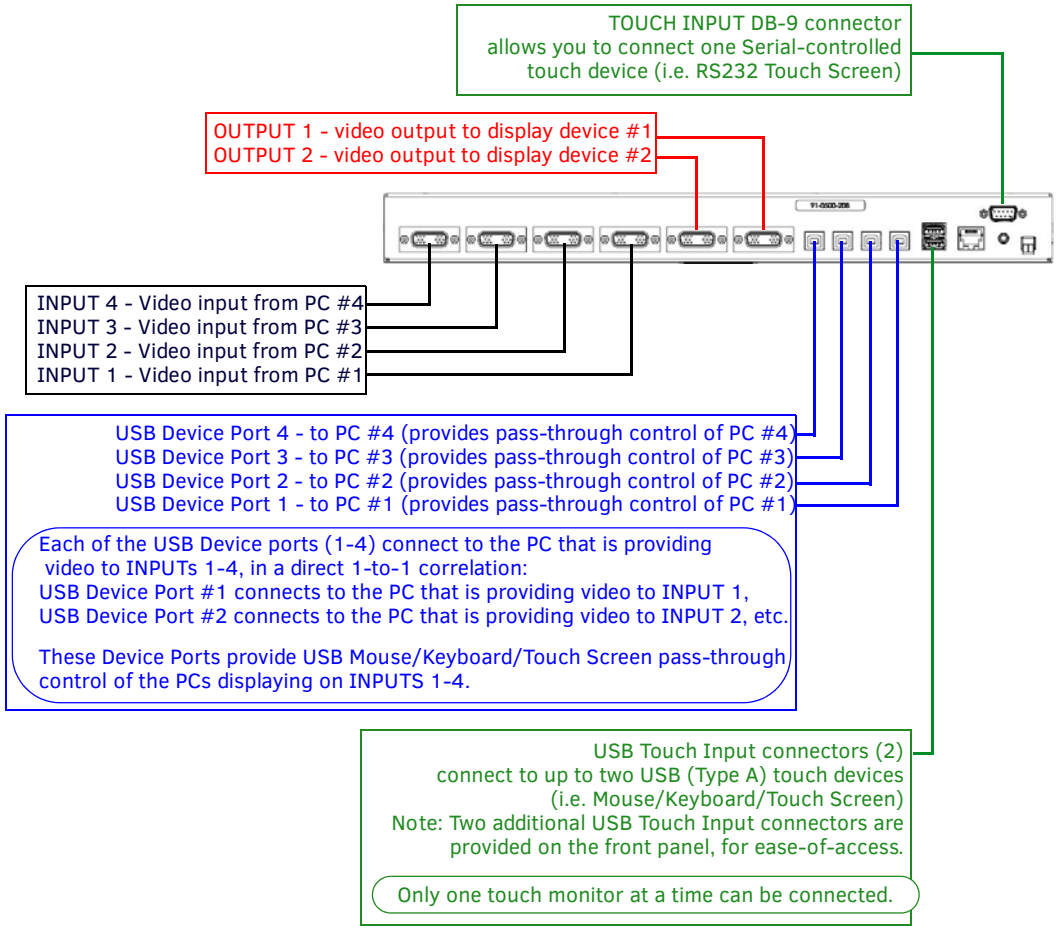


FIG. 7 TPI-PRO-DVI - Basic Wiring Connections

Front Panel Connectors

The front panel connectors on both versions of the TPI-PRO-DVI are identical.

USB (Type A) Input ports

The two USB (Type A) Input ports on the front panel are used to connect USB touch/input devices to the TPI (FIG. 8).

FIG. 8 Front Panel USB (Type A) Input Ports

NOTE: *Touch/input devices can consist of any combination of a keyboard, mouse, or USB-capable touch screen.*

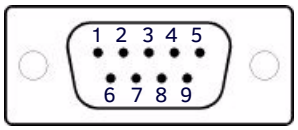
Note that there are two additional USB (Type A) Input ports on the rear panel. All of the USB Input ports have the same functionality; they are provided on both sides of the TPI for ease-of-access (see FIG. 13 on page 28).

SERIAL Port

The SERIAL (DB-9) port can be used for direct Serial (RS-232) configuration (FIG. 9).

FIG. 9 SERIAL (DB-9) Port

SERIAL Port - Pinouts and Signals	
Pin	**Signal**
1	DCD - Data Carrier Detect
2	RXD - Receive Data
3	TXD - Transmit Data
4	DTR - Data Terminal Ready
5	Ground
6	DSR - Data Set Ready
7	RTS - Request to Send
8	CTS - Clear to Send
9	RI - Ring Indicator



See the *Terminal/Telnet Commands* section on page 132 for a listing of supported Terminal/Telnet commands.

Rear Panel Connectors

DVI Input Adapter Cables

In order to connect non-DVI input source devices (S-Video, Composite, VGA and Component) to the DVI Input connectors, the following (optional) adapter cables are required:

DVI Input Adapter Cables			
Name	**Description**	**Length**	**FG#**
• CC-DVI-DVI	DVI-to-DVI	9' (2.743m)	FG10-2170-06
• CC-DVI-5BNCM	DVI-to-5 BNC Male	6' (1.828m)	FG10-2170-08
• CC-DVI-RCA3M	DVI-to-3 RCA Male *Note: Used for Component and Composite inputs*	6' (1.828m)	FG10-2170-09
• CC-DVI-SVID	DVI-to-S-Video	9' (2.743m)	FG10-2170-10
• CC-DVIM-VGAF	DVI-to-VGA (up to 1920x1200) *Note: Standard DVI-to-VGA adapters can be used for DVI-to-VGA. These adapters are common and widely available.*	6' (1.828m)	FG10-2170-13

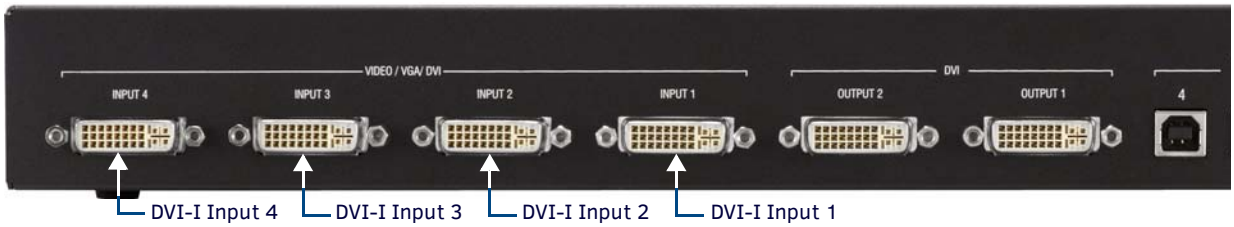
NOTE: *The TPI and the adapter cables listed above utilize industry-standard pinouts. The only adapter cable that is unique to AMX is the CC-DVI-SVID (DVI-to-S-Video) cable. The others are generally available to purchase from other vendors, assuming that they also utilize industry standard (or equivalent) pinouts.*

Refer to the *Cable Details and Pinout Information* section on page 18 for cable details and pinout information for each cable type:

- *DVI-D Male to DVI-D Male Single-Link Cable* section on page 19
- *DVI-A Male to 5-BNC Male Cable* section on page 20
- *DVI-A Male to Triple RCA Male Cable* section on page 21
- *DVI-A Male to S-Video Male Cable* section on page 22
- *DVI-A Male to HD15 (VGA) Male Cable* section on page 23

VIDEO/VGA/DVI Inputs

The DVI-I Input connectors on the rear panel (labeled "VIDEO/VGA/DVI Inputs") are used to connect source input devices to the TPI (FIG. 10). The TPI routes video from connected source input devices to the connected output devices. Each connector supports DVI -I, DVI-A and DVI-D, as well as VGA, S-video, Composite and Component inputs.



Note: The TPI-PRO-DVI-4 (shown here) has four DVI-I Inputs, the TPI-PRO-DVI-2 has two DVI-I Inputs

FIG. 10 VIDEO/VGA/DVI Inputs

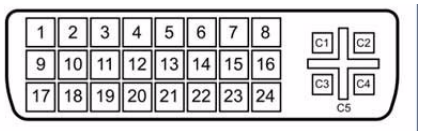
These numbered inputs (**1-2** on the TPI-PRO-DVI-2, **1-4** on the TPI-PRO-DVI-4) correspond to the numbered USB (Type B) Device ports (labeled "SOURCE KEYBOARD/MOUSE").

DVI-I Input Ports - Pinouts and Signals

NOTE: *The DVI Input connectors on the TPI are DVI-I (integrated digital/analog) connectors. These connectors support both DVI-A (analog) and DVI-D (digital) inputs. While less commonly used, they support DVI-I inputs as well.*

The following table describes the pinout configuration of the DVI-I Input connectors on the TPI:

DVI-I Input Ports - Pinouts and Signals					
Pin	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**
1	TMDS Data2-	9	TMDS Data1-	17	TMDS Data0-
2	TMDS Data2+	10	TMDS Data1+	18	TMDSData0+
3	TMDS Data2/4 Shield	11	TMDS Data1/3 Shield	19	TMDS Data0/5 Shield
4	n/c	12	n/c	20	n/c
5	n/c	13	n/c	21	n/c
6	DDC Clock [SCL]	14	+5 V Power	22	TMDS Clock Shield
7	DDC Data [SDA]	15	Ground (for +5 V)	23	TMDS Clock +
8	Analog vertical sync	16	Hot Plug Detect	24	TMDS Clock -
C1	Analog Red				
C2	Analog Green				
C3	Analog Blue				
C4	Analog Horizontal Sync				
C5	Analog Ground				



When using a DVI source, set the Input Type to *DVI* (see the *Setup - Video Settings Page* section on page 59 for details) *before* attaching the DVI cable to the TPI. If a DVI source is attached before setting the input to DVI, you may need to reboot the source for it to recognize the DVI input description information required by the DVI standard.

DVI-I OUTPUT Connectors

The two DVI-I Output connectors on the rear panel are used for connecting the TPI to up to two display devices (FIG. 11). Each connector supports DVI and analog VGA output. The display devices connected to these outputs will display the video from the source input devices routing through the TPI, as determined by the panel design.

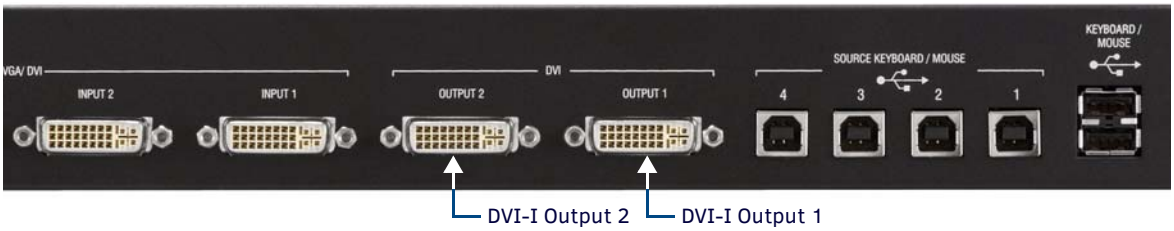


FIG. 11 DVI-I Outputs

NOTE: *The pinouts and signals on the DVI Output connectors are identical to the DVI Input connectors.*

SOURCE KEYBOARD/MOUSE (USB-Type B) Device Ports 1-4

The USB (Type B) Device ports on the rear panel (labeled "SOURCE KEYBOARD/MOUSE") are used to connect up to four source PCs to the TPI to provide pass-through control for the connected PCs (FIG. 12).

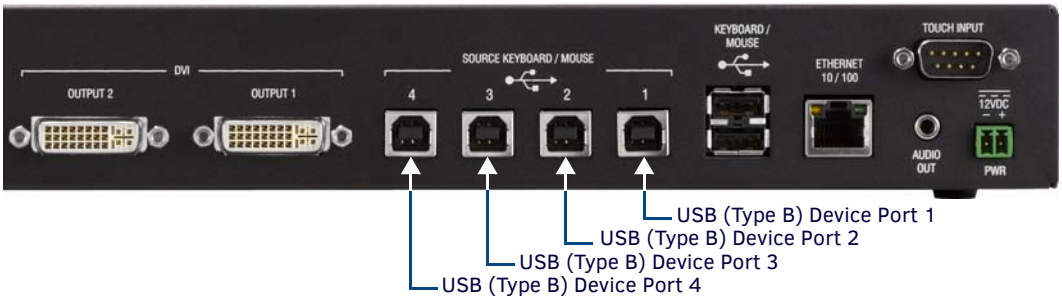


FIG. 12 SOURCE KEYBOARD/MOUSE (USB-Type B) Device Ports

NOTE: *The TPI requires that the host PC uses USB v2.0.*

- The TPI-PRO-DVI-2 has two USB-Type B Device Ports (corresponding with DVI Inputs 1-2)
- The TPI-PRO-DVI-4 has four USB-Type B Device Ports (corresponding with DVI Inputs 1-4)

These numbered USB Device ports correspond to the numbered DVI Inputs:

1. The PC connected to USB Device port #1 has pass-through control of the input device connected to DVI Input #1.
2. The PC connected to USB Device port #2 has pass-through control of the input device connected to DVI Input #2.
3. The PC connected to USB Device port #3 has pass-through control of the input device connected to DVI Input #3 (*TPI-PRO-DVI-4 only*).
4. The PC connected to USB Device port #4 has pass-through control of the input device connected to DVI Input #4 (*TPI-PRO-DVI-4 only*).

USB (Type A) Input ports

The two USB (Type A) Input ports on the rear panel are used to connect USB touch/input devices to the TPI (FIG. 13).

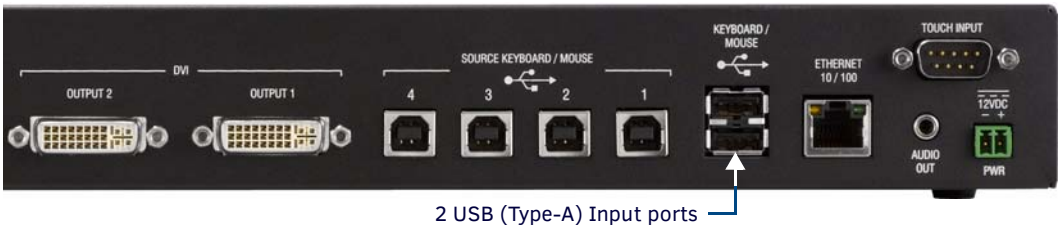


FIG. 13 Rear Panel USB (Type A) Input Ports

NOTE: *Touch/input devices can consist of any combination of a keyboard, mouse, or USB-capable touch screen.*

Note that there are two additional USB (Type A) Input ports on the front panel (see FIG. 8 on page 25). All of the USB Input ports have the same functionality; they are provided on both sides of the TPI for ease-of-access.

ETHERNET 10/100 (RJ-45) Port

The ETHERNET 10/100 (RJ-45) port provides 10/100 Mbps communication with the NetLinx Master via ICSP protocol (FIG. 14).

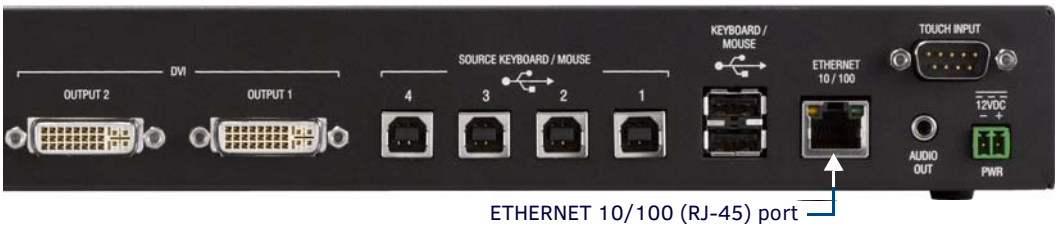


FIG. 14 ETHERNET 10/100 (RJ-45) Port

- The Ethernet port automatically negotiates the connection speed (10 Mbps or 100 Mbps), and whether to use half duplex or full duplex mode.
- FIG. 15 describes the blink activity for the ETHERNET 10/100 Base-T RJ-45 connector LEDs.

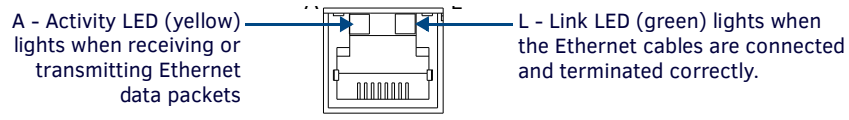


FIG. 15 ETHERNET connector / LEDs

The following table lists the pinouts, signals, and pairing associated with the ETHERNET 10/100 connector.

ETHERNET 10/100 (RJ-45) Port - 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. 16 diagrams the RJ-45 pinouts and signals for the ETHERNET 10/100 connector and cable.

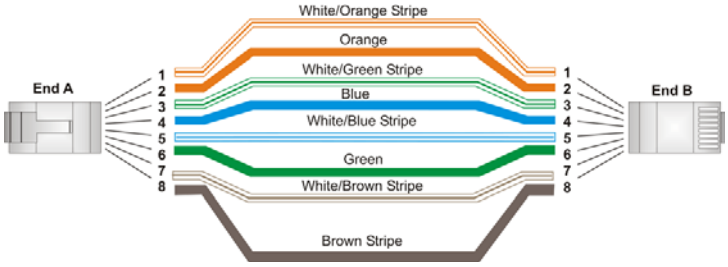


FIG. 16 RJ-45 wiring diagram

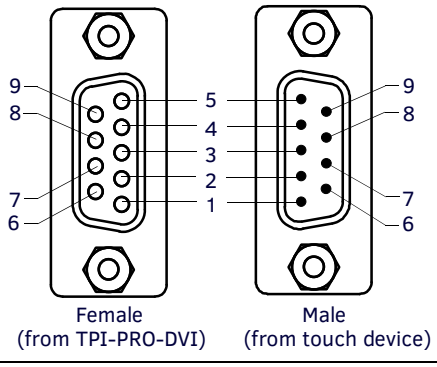
TOUCH INPUT (DB-9) Port

The TOUCH INPUT (DB-9) port provides RS-232 serial connectivity for a touch/input device that requires a serial connection (FIG. 17).

FIG. 17 TOUCH INPUT (DB-9) Port

The following table lists the TOUCH INPUT connector pinouts.

TOUCH INPUT (DB-9) Connector - Pinouts and Signals			
Pin	**Signal**	**Function**	
1	N/A	Not used	
2	RXD	Receive data	
3	TXD	Transmit data	
4	DTR	Data terminal ready	
5	GND	Signal ground	
6	DSR	Data set ready	
7	RTS	Request to send	
8	CTS	Clear to send	
9	N/A	Not used	



AUDIO OUT Connector

The AUDIO OUT connector provides analog line-level stereo audio output, via a 3.5mm mini-stereo jack (FIG. 14).

FIG. 18 ETHERNET 10/100 (RJ-45) Port

The TPI supports WAV and MP3 audio types, at the following sample rates:

Supported WAV / MP3 Audio Sample Rates		
• 48000Hz • 44100Hz • 32000Hz	• 24000Hz • 22050Hz • 16000Hz	• 12000Hz • 11025Hz • 8000Hz

FIG. 19 describes the AUDIO OUT connection pinouts:

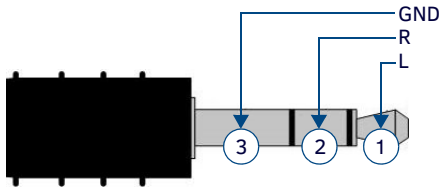


FIG. 19 AUDIO OUT - pinout configuration

12VDC PWR (Power) Connector

The TPI requires a 12 VDC-compliant power supply to provide power via the 2-pin 3.5 mm mini-Phoenix PWR connector (FIG. 20).

FIG. 20 12VDC PWR (Power) Connector

NOTE: *The TPI will power ON when the power supply is connected. Once power is applied, use the Power button to toggle the unit off and on.*

NOTE: *Do not connect power to the TPI-PRO-DVI until wiring is complete. These units 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.*

To use the 2-pin 3.5 mm mini-Phoenix connector for use with a 12 VDC-compliant power supply, the incoming PWR and GND wires from the external power supply must be connected to their corresponding locations on the connector (FIG. 21).

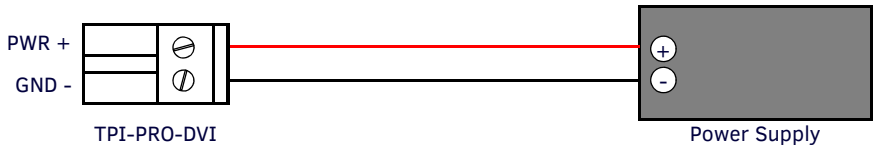


FIG. 21 NetLinx power connector wiring diagram

NOTE: *Never pre-tin wires for compression-type connections.*

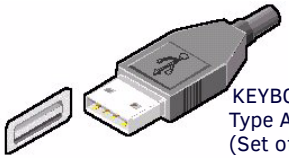
- Constant current draw: 2.6 A @ 12 VDC
- The PSN6.5 Power Supply (FG423-40 - *not included*) is recommended, to accommodate all possible configurations and respective power draws.

Connecting USB Input Touch Devices

1. Insert the input device USB connectors into the appropriate USB connector on the TPI.
2. After the splash-screen disappears:
   - If a USB mouse has been connected, a mouse cursor appears on the 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.
   - If you experience problems introducing new devices, you can install the drivers on a remote PC according to manufacturer suggestions with the device connected directly to the remote PC.

Type A & Type B USB Ports

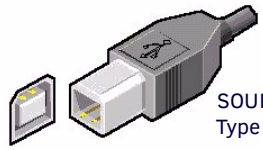
The **Type-A** USB connectors on the front and rear of the TPI (labeled KEYBOARD/MOUSE) are used to provide touch input signals from a USB keyboard and/or USB mouse (FIG. 22).



KEYBOARD / MOUSE
Type A USB (Host) ports are provided on the front and rear panels of the TPI.
(Set of 2 on front, set of 2 on rear; interchangeable)

FIG. 22 Type A USB (Host ports)

The **Type-B** USB connectors on the TPI (rear panel only) are used to provide communication between the TPI and the PC (FIG. 23).



SOURCE KEYBOARD / MOUSE
Type B USB (Device) ports are provided on the rear panel of the TPI.

FIG. 23 Type B USB (Device ports)

Notes on USB Connections

- Do not use a USB hub to connect multiple USB devices to the TPI.
- Removing and reconnecting USB devices from the TPI may result in a loss of connectivity. If this occurs, reset the TPI to allow the devices to re-establish connectivity.
- When disconnecting a USB device, wait 5-10 seconds before reconnecting or connecting a new device to allow the TPI to recognize that the device was disconnected. If connectivity is lost, reset the TPI to re-establish the connection.

NOTE: *Pass-thru must be enabled when using control devices that are connected to the USB connectors on the rear of the TPI. See the Configuring the TPI for Pass-Through Control* section on page 34 *for details.*

System Installation

Overview

FIG. 24 illustrates a typical TPI-PRO-DVI installation:

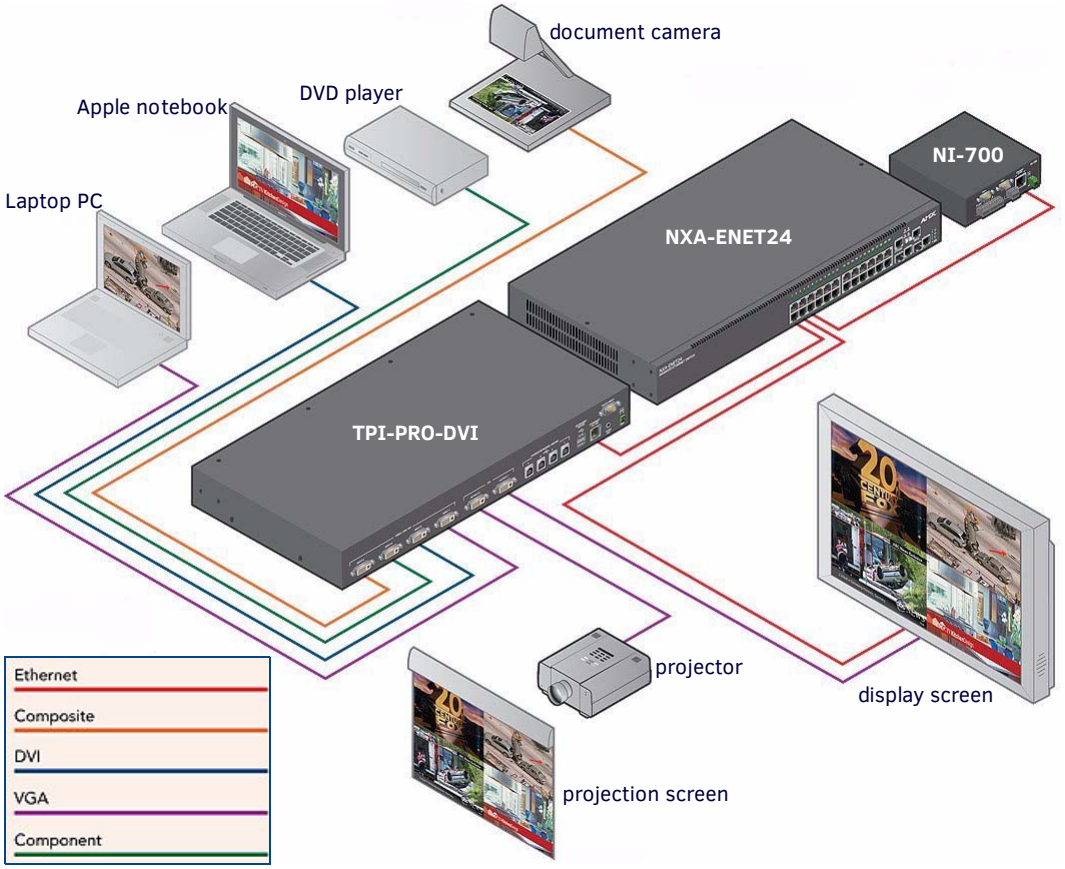


FIG. 24 System Diagram

The following System Diagrams illustrate common applications for the TPI-PRO-DVI. For detailed pinout descriptions for each connector on the TPI, refer to the *Rear Panel Connectors* section on page 26.

Touch Input via Touch Monitor

FIG. 25 illustrates a typical installation using a **Serial** touch monitor to display output from a video source (in this case, a PC).

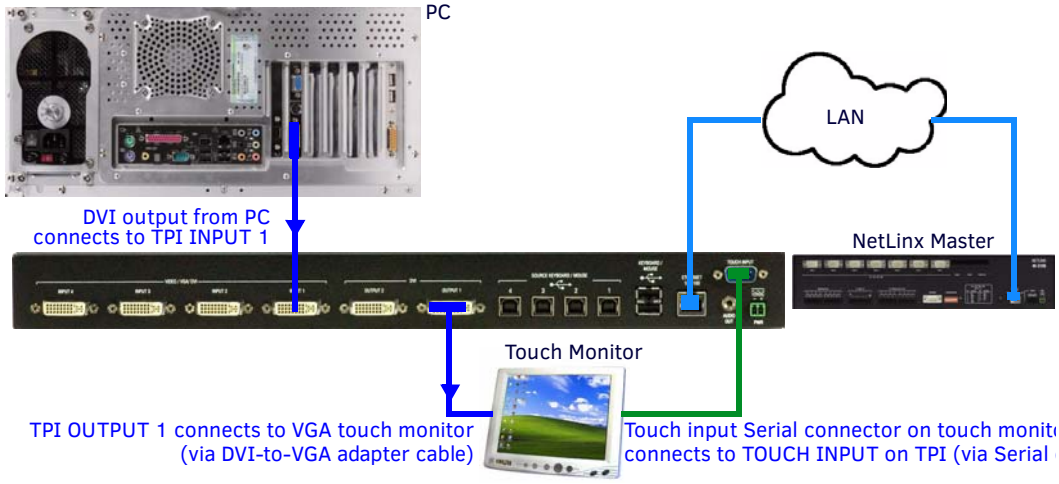


FIG. 25 Example 1: TOUCH INPUT (Serial Touch Monitor)

FIG. 26 illustrates a typical installation using a **USB** touch monitor to display output from a video source.

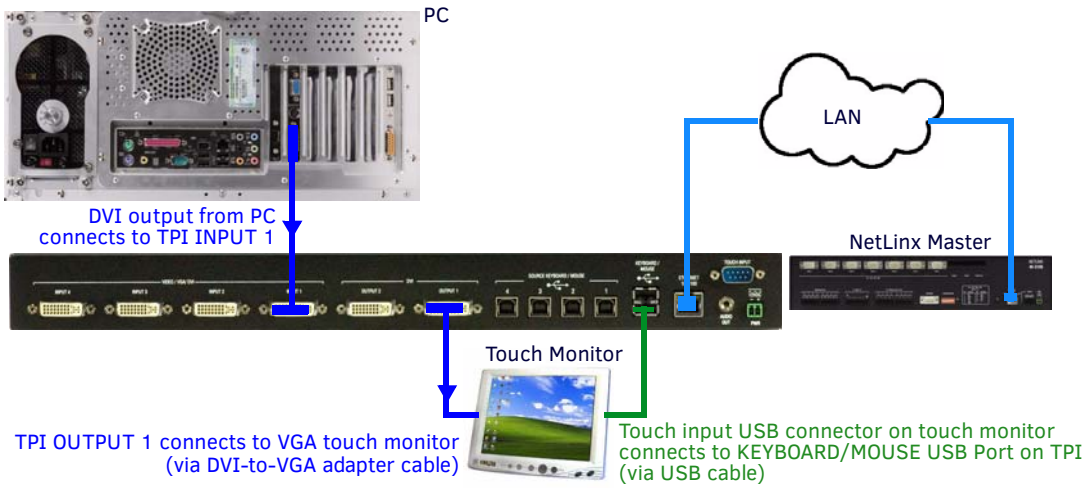


FIG. 26 Example 1: TOUCH INPUT (USB Touch Monitor)

Configuring the TPI for Touch Monitor Input

1. Discharge any acquired static electricity by touching a grounded metal object; disconnect the incoming power connector from the rear of the TPI.
2. Connect the touch monitor's touch (keyboard/mouse) connector to the TPI:

   Depending on the compatibilities of the touch monitor, they can connect to either the TOUCH INPUT (DB9) connector or one of the Type-A USB ports (labeled KEYBOARD/MOUSE) on the TPI.

   - For touch monitors with Serial-touch connectors, use a DB9 Serial cable to connect the touch monitor's touch input connector to the TOUCH INPUT (DB9) connector on the TPI. Refer to the *TOUCH INPUT (DB-9) Port* section on page 29 for a description of the TOUCH INPUT connector pinouts.
   - For touch monitors with USB-touch connectors, use a USB cable to connect the touch monitor's touch input connector to the KEYBOARD/MOUSE (USB Type A) connector on the TPI.
3. Connect the touch monitor's video output connector to the DVI OUTPUT 1 port on the TPI.

   NOTE: *This requires a CC-DVIM-VGAF DVI-to-VGA cable (FG10-2170-13), not included.*
4. Connect a DVI video output connector on the PC to the VIDEO/VGA/DVI INPUT 1 connector on the TPI.
5. Apply power to the TPI.

Mouse Pass-Thru Control

FIG. 27 illustrates a typical installation for using mouse pass-thru control.

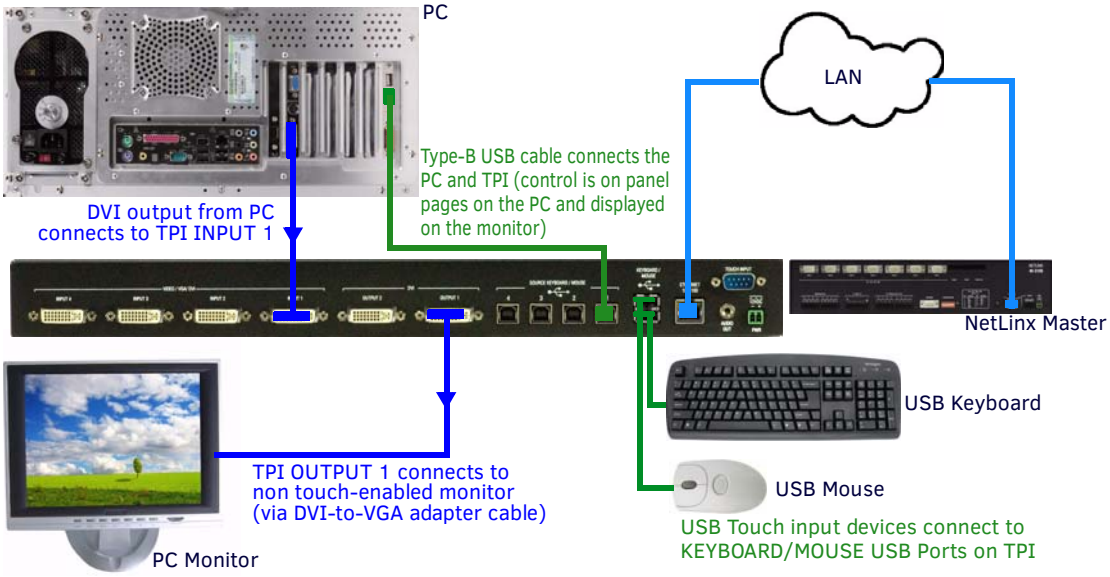


FIG. 27 Example 2: Mouse Pass-Thru Control

To enable a touch response on a panel page routed through a computer, you must enable pass-thru control. Pass-thru control enables the TPI to act as a control bridge between a computer and a monitor (typically with no touch features).

NOTE: *If you experience problems introducing new devices, install the drivers on the remote PC according to manufacturer suggestions with the device connected directly to the remote PC.*

Configuring the TPI for Pass-Through Control

You can control a PC by routing the mouse control through the TPI and displaying the results on a non-touch enabled monitor. In this scenario, the TPI is virtually non-existent as it is akin to connecting the monitor and mouse directly to the rear of the computer, thus the term "pass-through control". In essence, the PC views the TPI as an adapter connected to a USB touch input device (as shown in FIG. 27 on page 33).

1. Discharge any acquired static electricity by touching a grounded metal object; disconnect the incoming power connector from the rear of the TPI.
2. Connect a USB mouse to one of the Type-A USB ports on the front or rear of the TPI.
3. Connect a USB cable from a USB port on the PC to one of the Type-B USB ports on the rear of the TPI (labeled SOURCE KEYBOARD/MOUSE).
4. Connect a DVI video output on the PC to the VGA/RGB/DVI Input connector on the rear of the TPI that corresponds to the Type-B USB port to which the PC is connected. For example:
   - If the PC is connected to Type-B USB port #1, then the video output on the PC must be connected to INPUT 1.
   - If the PC is connected to Type-B USB port #2, then the video output on the PC must be connected to INPUT 2.
   - If the PC is connected to Type-B USB port #3, then the video output on the PC must be connected to INPUT 3 (inputs 3 & 4 available only on the TPI-PRO-DVI-4).
   - If the PC is connected to Type-B USB port #4, then the video output on the PC must be connected to INPUT 4 (inputs 3 & 4 available only on the TPI-PRO-DVI-4).
5. Connect an HD-15 video cable from the output on the monitor to one of the DVI OUTPUT ports on the TPI.

   NOTE: *This requires a CC-DVIM-VGAF DVI-to-VGA Adapter Cable (FG10-2170-13), not included.*
6. Apply power to the TPI.
7. Code a button on the touch monitor page to enable the pass-thru feature on a selected source input.

   Toggling this coded panel button will enable/disable the pass-thru feature.

   NOTE: *You first must set the TPI to match the resolution of the computer's video output resolution, and then you must adjust the TPI to fit the available screen on the monitor. If the image generated from the TPI is slightly "off", adjust the image using the monitor's on-board video adjustment buttons.*
8. Setup the TPI output resolution using the procedures in the *Setting the Output Resolution* section on page 38.

   NOTE: *If the TPI is power cycled, the video alignment settings established through the Video and/or RGB pages will be reset, unless the adjusted values have been saved. Refer to the Setup - Video Settings Page* section on page 59 *for more information.*
9. Use the monitor's video adjust buttons to align the incoming video signal to fit into the available screen area. Initially positioning the incoming video can reduce the necessity of later adjustments (H-position, V-position, H-size, etc.) through the RGB Setup page.

Using a Touch Monitor for Mouse/Touch Pass-Thru Control

FIG. 28 illustrates a typical installation for using a touch monitor for mouse and touch pass-thru control.

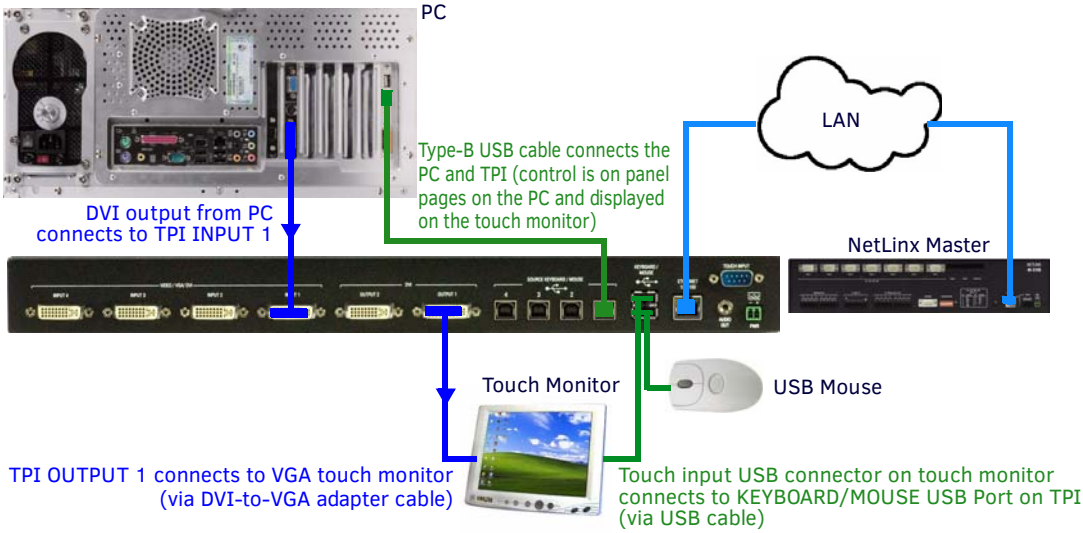


FIG. 28 Example 3: Using a Touch Monitor for Mouse / Touch Pass-Thru Control

Enabling Video Pass-Through Control on a Touch Monitor

To enable a touch response on a panel page being routed through a computer, you must establish pass-thru control. Pass-thru control allows the TPI to act as a control bridge between a PC and a touch monitor. The touch monitor control option is available only if a *Video Fill* has been applied to the panel page (in the TPDesign4 (Touch Panel Design software application).

With the panel page open in TPDesign4:

1. Select the *States* tab of the Properties Control Window.
2. Open the drop-down menu for the *Video Fill* property, and select the **video slot (1-4)** that will be used on the TPI.

   The example shown in FIG. 28 indicates that only Input 1 is being used - in this case you would select **Video Slot 1** (FIG. 29).

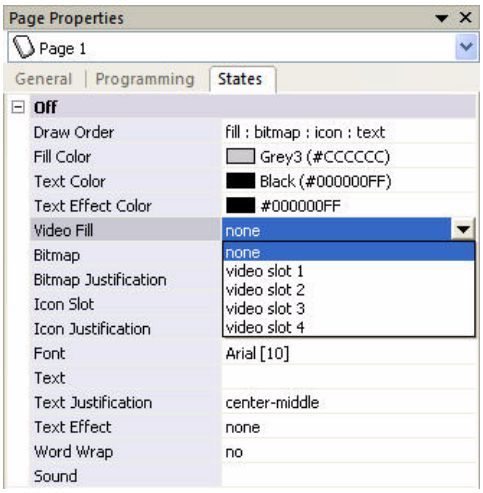


FIG. 29 TPDesign4 - Video Fill drop-down menu

With Video Pass-Thru enabled, the panel's touch coordinates are passed as USB commands from the HD-15 connector on a TPI to the connected PC. This feature works only if the HD-15 connector is connected directly to the PC via the HD-15 port on the rear of the TPI. The touch coordinates are scaled to fit the resulting window. This allows you to "synch" the touch actions from the panel to those on the connected computer.

PC control can be established by routing the Mouse and touch monitor input control through the TPI. In this scenario, the TPI is virtually non-existent and is akin to connecting the touch monitor and mouse directly to the rear of the PC. The PC views the TPI and the HD-15 and USB connectors as an adapter connected to a USB mouse device. This method allows for both mouse and touch monitor input control of the PC (as seen in FIG. 28).

Follow these steps to configure the TPI to use a touch monitor for touch and mouse pass-thru control of a PC:

1. Discharge any acquired static electricity by touching a grounded metal object; disconnect the incoming power connector from the rear of the TPI.
2. Connect a USB mouse to one of the Type-A USB ports on the front or rear of the TPI.
3. Connect a USB cable from a USB port on the PC to one of the Type-B USB ports on the rear of the TPI (labeled SOURCE KEYBOARD/MOUSE).
4. Connect a DVI video output on the PC to the VGA/RGB/DVI Input connector on the rear of the TPI that corresponds to the Type-B USB port to which the PC is connected. For example:
   - If the PC is connected to Type-B USB port #1, then the video output on the PC must be connected to INPUT 1.
   - If the PC is connected to Type-B USB port #2, then the video output on the PC must be connected to INPUT 2.
   - If the PC is connected to Type-B USB port #3, then the video output on the PC must be connected to INPUT 3 (inputs 3 & 4 available only on the TPI-PRO-DVI-4).
   - If the PC is connected to Type-B USB port #4, then the video output on the PC must be connected to INPUT 4 (inputs 3 & 4 available only on the TPI-PRO-DVI-4).
5. Connect the touch monitor's touch (keyboard/mouse) connector to the TPI:

   Depending on the compatibilities of the touch monitor, they can connect to either the TOUCH INPUT (DB9) connector or one of the Type-A USB ports (labeled KEYBOARD/MOUSE) on the TPI.
   - For touch monitors with Serial-touch connectors, use a DB9 Serial cable to connect the touch monitor's touch input connector to the TOUCH INPUT (DB9) connector on the TPI. Refer to the *TOUCH INPUT (DB-9) Port* section on page 29 for a description of the TOUCH INPUT connector pinouts.
   - For touch monitors with USB-touch connectors, use a USB cable to connect the touch monitor's touch input connector to the KEYBOARD/MOUSE (USB Type A) connector on the TPI.
6. Connect the touch monitor's video output connector to the DVI OUTPUT 1 port on the TPI.

   NOTE: *This requires a CC-DVIM-VGAF DVI-to-VGA Adapter Cable (FG10-2170-13), not included.*
7. Apply power to the TPI.
8. Code a button on the touch monitor page to enable the pass-thru feature on a selected input card slot.

Toggling this coded panel button can enable/disable the pass-thru feature.

NOTE: *You must set the TPI to match the resolution of the touch monitor's video output resolution, then select a touch driver. The video should automatically fill-in the available screen area on the touch monitor. If the image generated from the TPI is slightly "off", adjust the image using the monitor's on-board video adjustment buttons.*

9. Setup the TPI output resolution using the procedures in the *Setting the Output Resolution* section on page 38.

   NOTE: *If the TPI is turned off and then has power re-applied (power cycling), video alignment settings established through the Video and/or RGB pages could be reset unless the adjusted values have been previously saved. Refer to the Setup - Video Settings Page* section on page 59 *for more information.*

10. Setup the touch drivers for the connected touch monitor by using the procedures in the *Setting the Touch Drivers (Serial Touch Monitors Only)* section on page 38.
11. If necessary, use the panel's video adjust buttons to align the incoming video signal to fit into the available screen area. Initially positioning the incoming video can reduce the necessity of later adjustments (H-position, V-position, H-size, etc.) through the RGB Setup page.

Configuring the TPI

Overview

The TPI features four configuration pushbuttons (*RESOLUTION*, *TOUCH*, *CALIBRATE* and *SETUP*) on the front panel (FIG. 30). These pushbuttons provide quick access to the main configuration pages for the TPI, as described in the following sections:

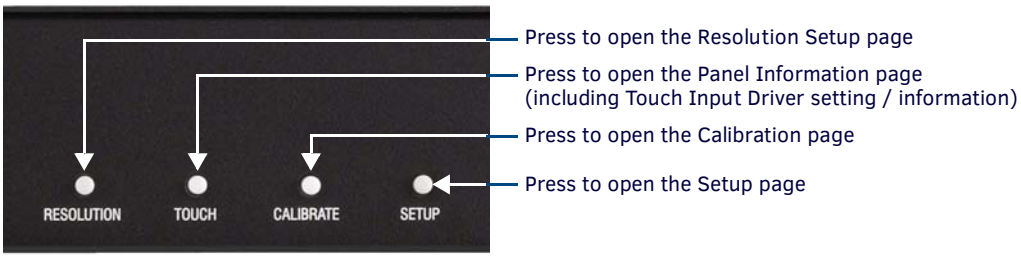


FIG. 30 Configuration Pushbuttons (front panel)

The information contained within this section refers to the procedures necessary to set up the TPI resolution, assign a touch driver, and calibrate the driver for use with a connected touch monitor.

NOTE: *In order to configure the TPI, you'll need to have a touch device as well as an output display device connected, so that you can view and navigate the pages and make selections and text entries. See the Wiring and Device Connections* section on page 24 *for details.*

The configuration options described in this section are limited to the functions and settings that are typically necessary for the initial setup of the TPI.

There are many more configuration options available:

- Refer to the *TPI Configuration Pages* section on page 52 for full descriptions of every Configuration page and the options contained in each.
- Refer to the *Protected Setup Page* section on page 64 for descriptions of the options available via the Protected Setup Pages.

Before You Start

The TPI has been factory setup with specific touch panel pages. The first splash screen that appears indicates the TPI is receiving power, loading firmware, and preparing to display the default touch panel page. When the panel is ready, the AMX Splash Screen is replaced by the Initial Panel Setup page.

- Verify you are using the latest NetLinx Master firmware.
- Verify you are using the latest TPI firmware.
- Verify the NetLinx Studio program you are using is version **2.8** or higher.
- Verify the TPDesign4 program you are using is version **2.11** or higher.

Startup Routine and Initial Panel Response

- Discharge any acquired static electricity by touching a grounded metal object.
- Verify the rear connections are secure and active. Refer to the *Rear Panel Connectors* section on page 26 for detailed cable connector information.

1. Connect the 12VDC Power Supply to the PWR connector on the rear panel. The TPI will power ON and initialize the startup routine when the power supply is connected.

   NOTE: *Once power is applied, use the Power button to toggle the unit off and on.*

2. After the startup routine, the connected touch monitor displays one of two possible screens:
   - If the TPI's output resolution matches that of the touch monitor, continue by setting the touch drivers associated with the touch monitor.

     Refer to the *Setting the Touch Drivers (Serial Touch Monitors Only)* section on page 38.
   - If the TPI's output resolution does not match the resolution of the connected touch monitor, you must set the output resolution of the TPI to match the touch monitor.

     Refer to the following section - *Setting the Output Resolution*.

NOTE: *An "OUT OF RANGE" message is often generated by the touch monitor. Some monitors will not display a message, but will appear blank instead.*

Setting the Output Resolution

The TPI's output resolution must match the output resolution and refresh rate set on the connected monitor.

- The default output resolution is **1280 x 1024 @ 60Hz**.
- The maximum output resolution is **1920 x 1200 @ 60 Hz**.
- Use the RESOLUTION pushbutton to alter the outgoing resolution to match the output pixel resolution and refresh rate set on the connected touch monitor.

NOTE: *The TPI-PRO-DVI does not provide Component (YPbPr) or Interlaced outputs.*

1. Press the RESOLUTION pushbutton to open the *Resolution Setup* page (FIG. 31).

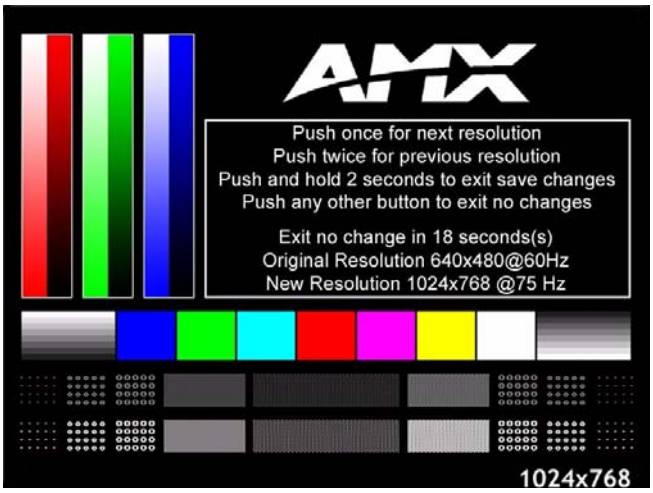


FIG. 31 Resolution Setup page

2. Press the RESOLUTION button again to cycle through the available output resolution settings. Every consecutive button push cycles the output resolution to the next highest setting.
   - Double-push the RESOLUTION button to return to the previous setting.
   - Go to http://www.amx.com//assets/manuals/TPI-PRO.Supported.Touch.Monitors.zip to view/download the most recent List of Touch Monitors and USB / Serial Touch Drivers Tested with the TPI (including the most current listing of tested USB touch panel drivers).

     NOTE: *The listing of compatible touch monitors is subject to change due to hidden changes that touch monitor manufacturers make to their products over time. Compatibility at a past date does not guarantee compatibility in the future, and should be verified before deployment.*
3. The message "*Please wait, loading new resolution...*" indicates that the new resolution setting is being saved. Do not cycle or remove power while the new settings are being saved.
4. Once your resolution is selected, you can use the outer screen area lines on the *Resolution Setup* page to adjust your monitor's visible screen area.
   - This could involve using the monitor's video control to stretch and move the incoming video so that the borders follow the edges of the screen without disappearing.
   - There are normally 60 seconds before the resolution times-out, but you can press the front panel Resolution button again to return to the previous resolution pattern and continue setting up the monitor.
5. Press and hold the RESOLUTION button to save the resolution setting and exit the *Resolution Setup* page.

   NOTE: *When the new output resolution is applied, there may be some shifting of the default Main page, as it was developed for 1280 x 1024.*

Setting the Touch Drivers (Serial Touch Monitors Only)

After matching the resolution between the TPI and panel/monitor, the next step is to select the necessary touch drivers from the driver set provided by the TPI.

- This step only applies to serial touch monitors, as USB monitors are automatically detected.
- The touch drivers are set when you connect the TPI to a touch monitor.
- The default Touch Input Driver is **EloTouch®**.
- If you are using a non-touch monitor, set the Touch Input Driver to **NullTouch**.

1. Press the TOUCH pushbutton on the front panel to open the *Panel Information* page (FIG. 32).

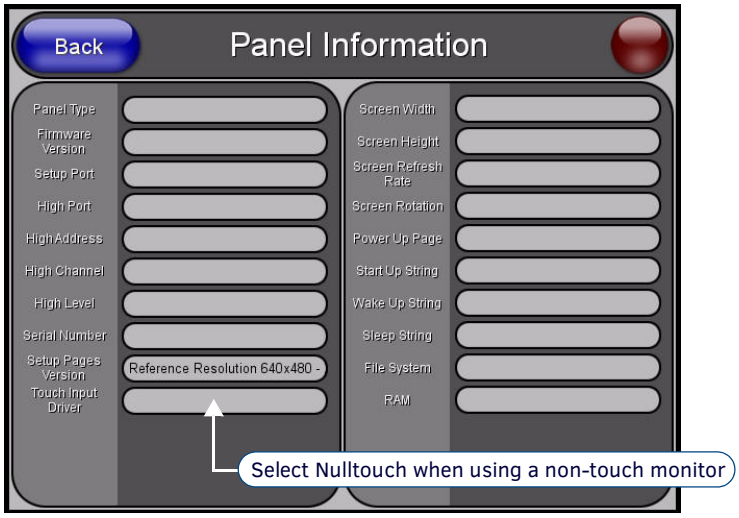


FIG. 32 Panel Information page

2. Press the front panel TOUCH button to cycle through the list of available Touch Input Drivers.

   NOTE: *Go to* http://www.amx.com//assets/manuals/TPI-PRO.Supported.Touch.Monitors.zip *to view/download the most recent List of Touch Monitors and USB Touch Drivers Tested with the TPI-Pro (including the most current listing of tested serial touch panel drivers).*

   NOTE: *The listing of compatible touch monitors is subject to change due to undocumented changes that 3rd-party touch monitor manufacturers make to their products over time. Compatibility at a past date does not guarantee compatibility in the future, and should be verified before deployment.*

Verify that the selected Touch Input Driver matches the connected touch monitor.

Calibrating the TPI

Use the *Calibration* page to calibrate the touch input on a connected touch panel with the TPI. The Calibration page can be accessed via the CALIBRATE pushbutton on the front panel, or via the Calibrate option in the Protected Setup page.

- If no touch device is detected, the *Calibration* page is not available. In this case, the TPI will ignore any attempt to open the *Calibration* page.
- If the wrong touch driver is selected prior to the calibration process, press any of the front-panel pushbuttons to exit the *Calibration* page (and select a different touch driver).

NOTE: *If you are using a non-touch enabled monitor, DO NOT PRESS THE CALIBRATE BUTTON. Refer to the Setting the Output Resolution* section on page 38 *for screen adjustment procedures.*

Calibrating the TPI Using a USB Input

1. Connect a USB cable from a touch monitor to one of the Type-A USB ports on the front or back of the TPI.
2. Press the POWER button on the front panel to reboot the TPI and allow the unit to detect the new hardware.
3. Press the CALIBRATE button on the front panel (see FIG. 30 on page 37) to open the *Calibration* page.
4. Press the crosshairs to set the calibration points on the LCD.
5. After the "*Calibration Successful.*" message appears, press anywhere to return to the Setup page. If the calibration fails, attempt to calibrate again. If unsuccessful, call AMX Tech Support.

   NOTE: *It is recommended that you calibrate the TPI before its initial use, after completing a firmware download, and after switching Touch Input Drivers (and touch devices.)*

6. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the *Protected Setup* page (FIG. 33).

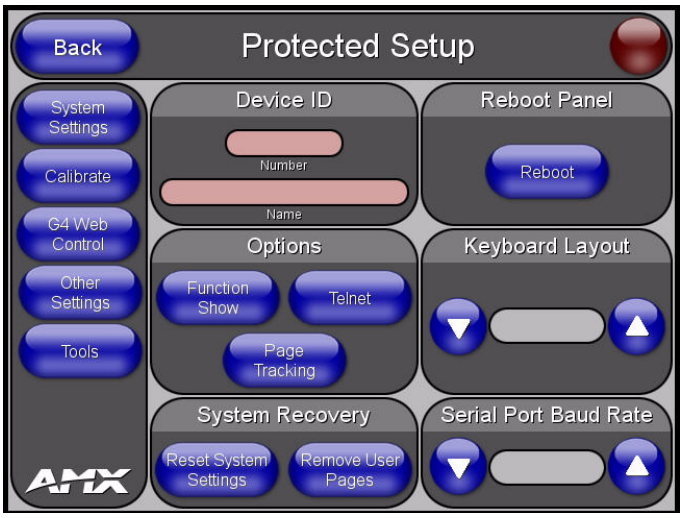


FIG. 33 Protected Setup page

7. Enter *1988* in the *Password* field and press **Done** when finished.
8. Press the on-screen **Reboot** button to cycle power to the TPI and incorporate the new settings. The touch monitor goes blank for a few seconds during the reboot process.

Calibrating the TPI Using a Serial Touch Monitor

1. Connect a DB9 cable from a touch monitor to the DB-9 touch input connector on the back of the TPI.
2. Press the POWER button on the front panel to reboot the TPI and allow the unit to detect the new hardware.
3. Press the CALIBRATE button on the front panel. This process opens a calibration page that uses a series of crosshair coordinate intersections to calibrate the touch monitor (using the newly selected touch driver).

   NOTE: *If the wrong touch driver is selected prior to the calibration process, press any front-panel button to exit the calibration process and re-select another touch driver. If you are using a non-touch enabled monitor, DO NOT PRESS THE CALIBRATE BUTTON. Refer to the Setting the Output Resolution* section on page 38 *for adjustment procedures.*
4. Press the crosshairs (on the *Calibration* page) to set the calibration points on the monitor.
5. After the "*Calibration Successful.*" message appears, press anywhere to return to the Setup page. If the calibration fails, return to the Protected Setup page and select another touch input driver.

   NOTE: *It is recommended that you calibrate the TPI before its initial use, after completing a firmware download, and after switching touch input drivers (and touch devices.)*
6. Press the **Protected Setup** button (located on the lower-left of the panel page) to open the *Protected Setup* page (see FIG. 33 on page 40).
7. Enter *1988* into the Keypad's password field and press **Done** when finished.
8. Press the on-screen **Reboot** button to cycle power to the TPI and incorporate the new settings. The touch monitor goes blank for a few seconds during the reboot process. You can also use a mouse to press the on-screen **Reboot** button.
9. Upon start-up, press anywhere on the screen to return to the Protected Setup page and begin defining the communication properties.

Other Configuration Pages

- For instructions on using the TPI Configuration pages to configure communication options for the TPI, and establish communication between the TPI and the NetLinx Master, refer to the *Configuring Communication Settings* section on page 41.
- For descriptions of all of the TPI Configuration pages and their options, refer to the *TPI Configuration Pages* section on page 52.

Configuring Communication Settings

Overview

Communication between the TPI and the NetLinx Master consists of using an Ethernet connection (DHCP or Static IP).

Configuring TPI Communication Settings

Press the SETUP pushbutton on the front panel (FIG. 34) to open the *Setup* page.

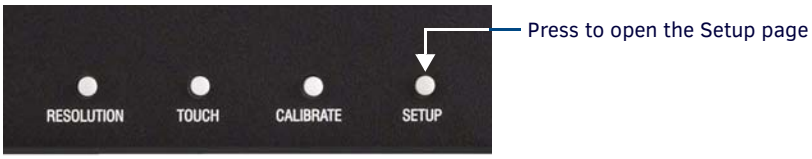


FIG. 34 Setup Pushbutton (front panel)

The options in the *Setup* page allow you to configure communications between the TPI and NetLinx Master (FIG. 35).

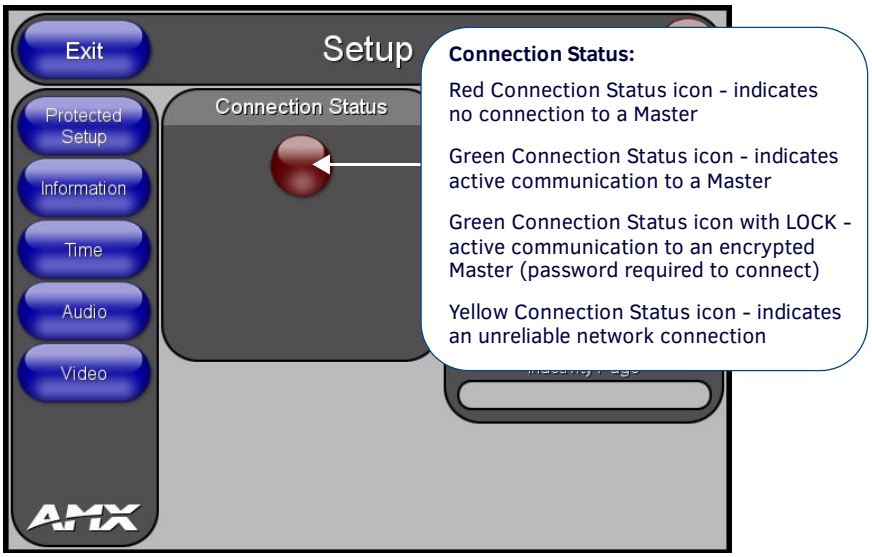


FIG. 35 Setup page

NOTE: *Before commencing, verify you are using the latest NetLinx Master firmware. Verify the NetLinx Studio program being used is version 2.8 or higher.*

The basic steps involved with configuring the TPI's communications settings include:

1. Assign a Device Number to the TPI (see page 42).
2. Set the Serial Port Baud Rate (see page 43).
3. Configure the Master Connection Settings (see page 43).

Assigning a Device Number to the TPI

1. Press the front panel SETUP pushbutton to open the *Setup* page (FIG. 36).

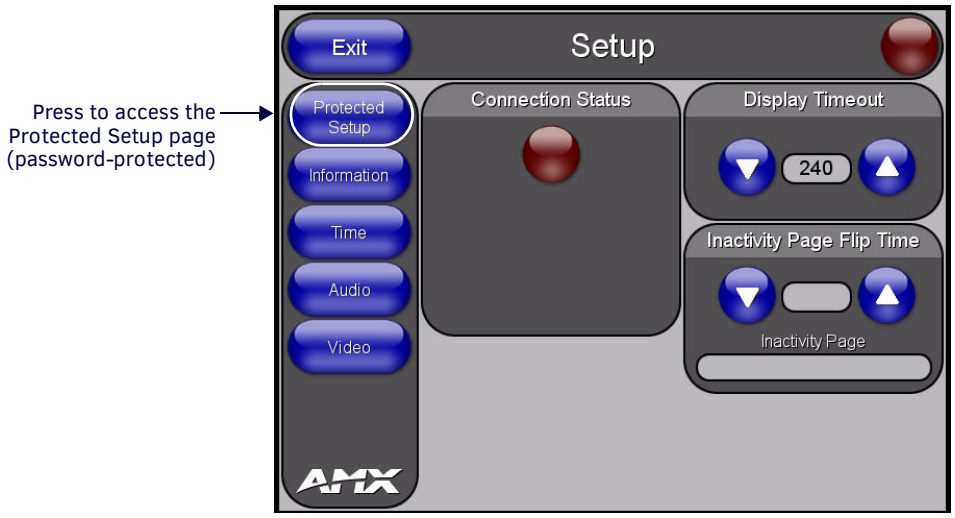


FIG. 36 Setup page - Protected Setup button

2. Press the **Protected Setup** button to open the *Protected Setup* page. This page is password-protected:
   a. Use the on-screen keypad to enter the default password - *1988.*
   b. Press **Done** to close the keypad (FIG. 37).

   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.*

3. Enter a **Device Number** value for the TPI (FIG. 37):

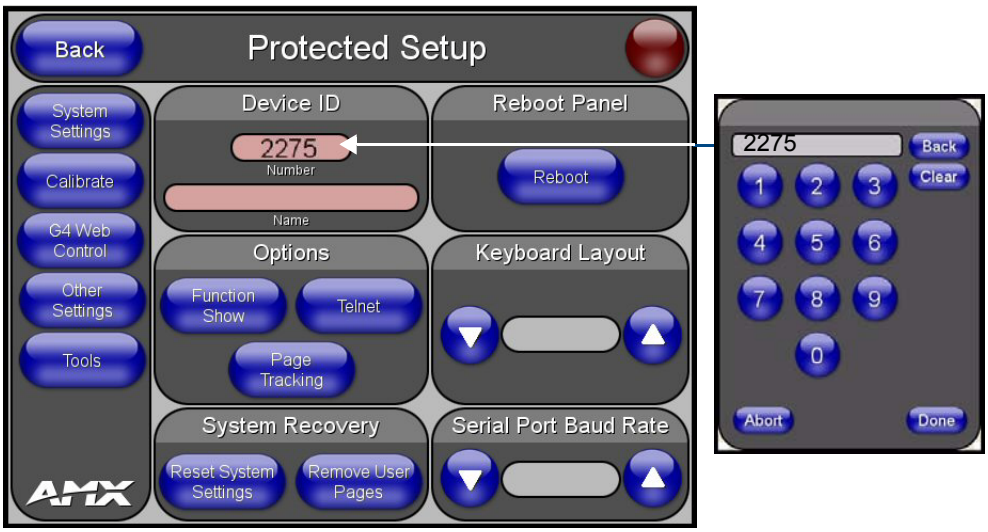


FIG. 37 Protected Setup page with Keypad

   a. Press the red *Device ID* field to open the keypad.
   b. Enter a Device Number value for the TPI.
   c. Press **Done** to assign the device number close the keypad.

- The default value is **10001**
- Range = **1 - 32000**
- When using multiple TPIs within a NetLinx System, assign unique Device Number values to each TPI.

NOTE: *Changes made in the Setup pages are not incorporated until the TPI is rebooted. See the Rebooting the TPI* section on page 51 *for details.*

Setting the Serial Port Baud Rate

In the *Protected Setup* page:

Press the *Serial Port Baud Rate* Up/Down arrow buttons to cycle through the available baud rates (FIG. 38).

FIG. 38 Protected Setup page - Serial Port Baud Rate

- The default Serial Baud Rate is **115200**.

NOTE: *Changes made in the Setup pages are not incorporated until the TPI is rebooted. See the Rebooting the TPI* section on page 51 *for details.*

Configuring the Master Connection Settings

It is necessary to point the TPI to the specific NetLinx Master with which it should be communicating. "Pointing to a Master" is achieved via options in the *System Settings* page. The options on the *System Settings* Page allow you to enter the IP Address, System Number, and Username/Password information assigned to the target NetLinx Master.

Use NetLinx Studio to establish and/or determine the IP address information for the target NetLinx Master.

Refer to *Appendix B: Using NetLinx Studio to Connect to a NetLinx Master* on page 158 for information on using NetLinx Studio to establish communication with a NetLinx Master.

NOTE: *Until you configure the System Settings parameters, the Connection Status icon remains red, indicating there is no current connection to a Master.*

1. Launch NetLinx Studio and establish communication with the target NetLinx Master.
   - NetLinx Studio is available to download from www.amx.com.
   - This program assists in developing a System Number, Master IP/URL, and Master Port number.
   - Refer to the NetLinx Studio online help for details.
2. Obtain the *System Number*, *Master IP/URL*, and *Master Port Number* for the Target NetLinx Master from NetLinx Studio. This information must be specific for the system used with this TPI.
3. Press the **System Settings** button (on the *Protected Setup* page - see FIG. 37) to open the *System Settings* page (FIG. 39).

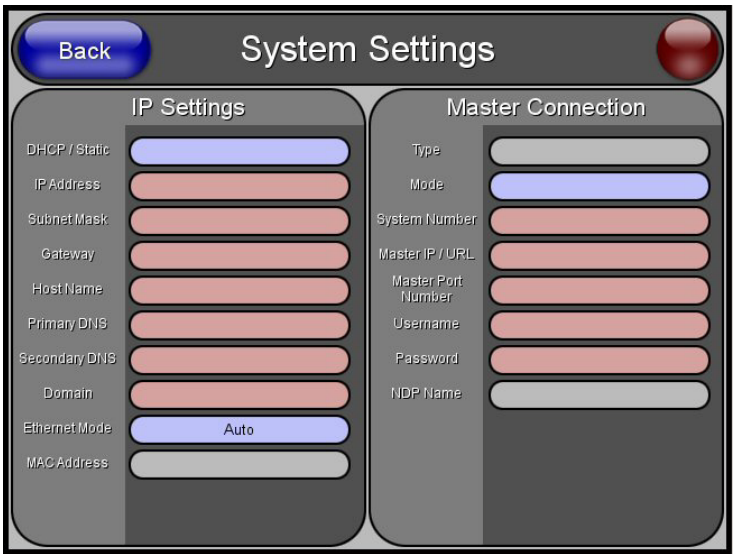


FIG. 39 System Settings page

4. Set the *Master Connection* settings to match those of the target NetLinx Master.
5. Press the **Back** button to return to the *Protected Setup* page.
6. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

Configuring IP Settings

Configure the IP Settings for the TPI via options in the *System Settings* page. IP Settings for the TPI can be configured via either DHCP or a reserved Static IP Address, as described in the following sub-sections:

Configuring a DHCP Address

1. Press the **System Settings** button on the *Protected Setup* page (FIG. 37 on page 42) to open the *System Settings* page (FIG. 39 on page 43).
2. In the *IP Settings* section (FIG. 40), press the **DHCP/Static** button until the choice cycles to **DHCP**.

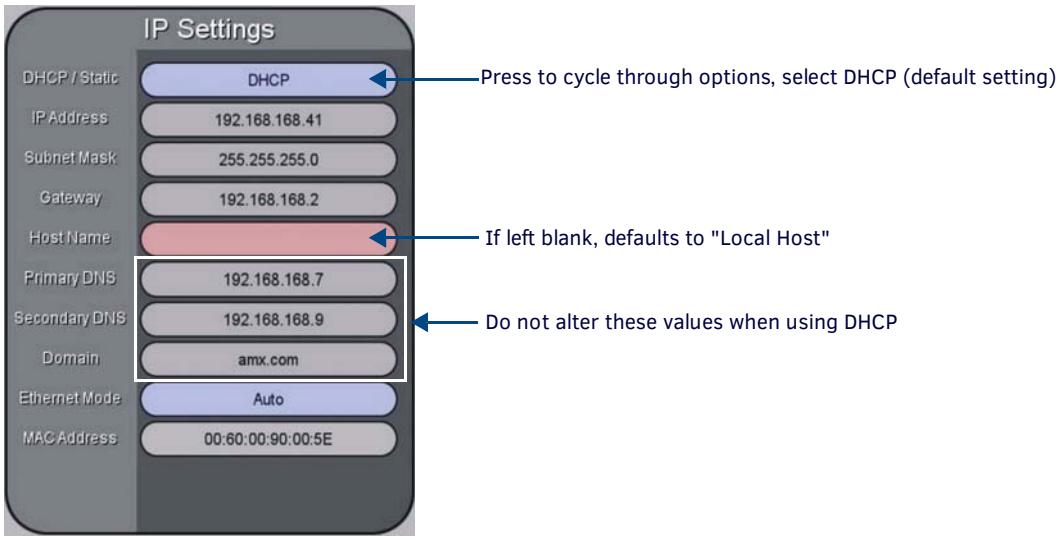


FIG. 40 System Settings page - IP Settings

3. Press **Host Name** button to open an on-screen Keyboard, and enter an alpha-numeric string for the Host Name.
   - If the *Host Name* is left blank, it will automatically resort to the default - "**localhost**".
   - Press **Done** to close the on-screen Keyboard.

   NOTE: *Do not alter any of the remaining fields in the IP Settings section.Once the TPI is rebooted, these values are obtained by the unit and displayed in the DNS fields.*
4. Press the **Back** button to return to the *Protected Setup* page.
5. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

Configuring a Static IP Address

NOTE: *Before you start, obtain a pre-reserved Static IP Address to assign to the TPI from your System Administrator.*

1. Press the **System Settings** button on the *Protected Setup* page (FIG. 37 on page 42) to open the *System Settings* page (FIG. 39 on page 43).
2. In the *IP Settings* section (FIG. 40), press the **DHCP/Static** button until the choice cycles to **Static**.

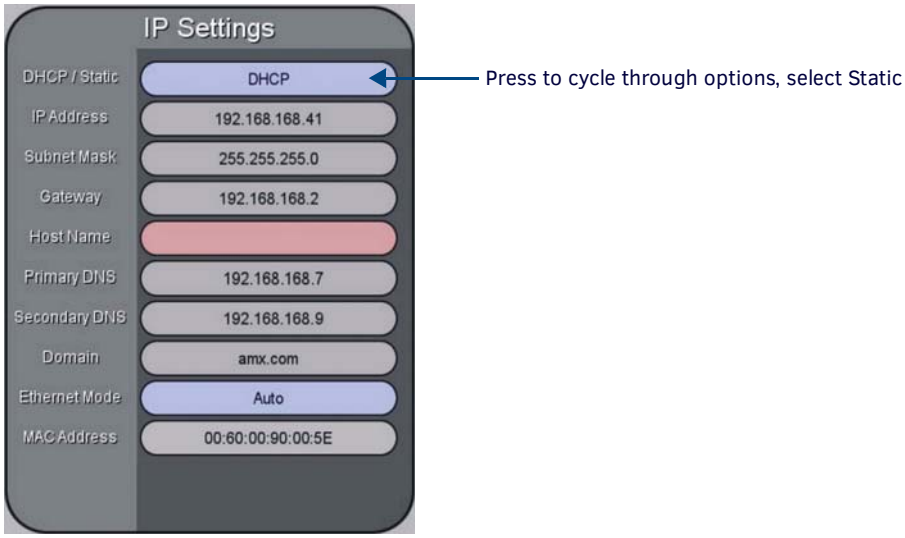


FIG. 41 System Settings page - IP Settings

3. Press the **IP Address** button to open an on-screen keypad, and enter the static IP address provided by your System Administrator. Press **Done** to close the keypad.
4. Repeat this process for **Subnet Mask** and **Gateway**.
5. Press the **Host Name** button to open an on-screen keyboard, and enter an alpha-numeric string for the Host Name (optional).
   - If the *Host Name* is left blank, it will automatically resort to the default - "**localhost**".
   - Press **Done** to close the keyboard.
6. Press the **Primary DNS** button to open an on-screen keypad, and enter the Primary DNS address provided by your System Administrator. Press **Done** to close the keypad.
7. Repeat this process for the **Secondary DNS** field.
8. Press the **Domain** button to open an on-screen keyboard, and enter the unique, resolvable domain address provided by your System Administrator. Press **Done** to close the keyboard.
9. Press the **Back** button to return to the *Protected Setup* page.
10. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

Choosing the Master Connection Mode

Use the options in the **Master Connection** section of the *System Settings* page (FIG. 42) to specify the communication parameters for the target Master.

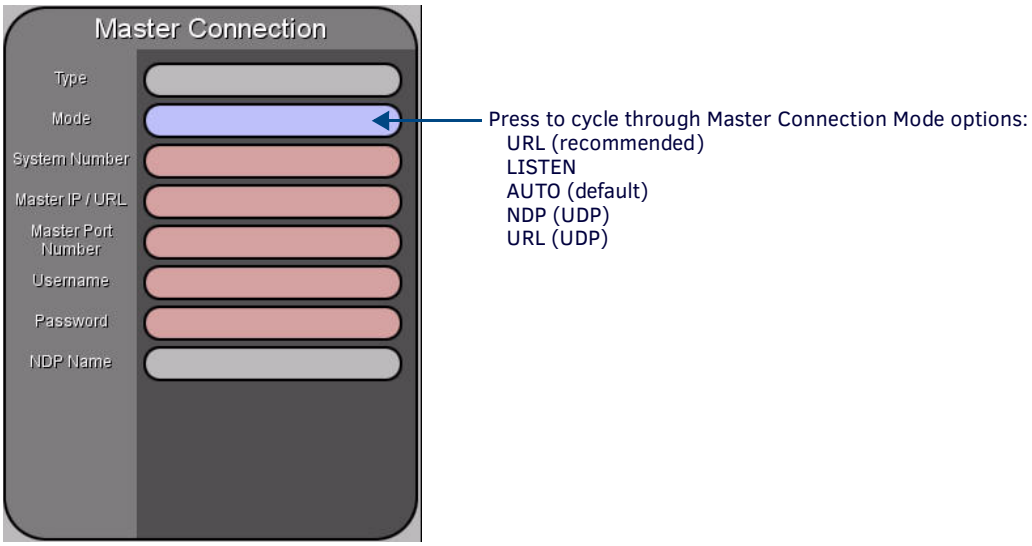


FIG. 42 System Settings page - Master Connection options

Master Connection Mode Options

There are five Ethernet MODE settings available:

- **URL** (*Uniform Resource Locater*) is the address that defines the route to a file on the Web or any other Internet facility. In this system, the TPI acts essentially as a "Client" and the Master acts as a "Server".
  This is the recommended setting for most situations.
- **LISTEN** sets the TPI to "listen" for connections from the Master (using the panel IP from its URL list). In this system, the TPI acts as a "Server" (in that Clients attach to it) and the Master acts as a "Client".
- **AUTO (***default setting***)** is used to instruct the TPI 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. *AUTO should only be used in systems with a single NetLinx Master on the network.*
- **NDP (UDP)** uses multicasting to allow devices to discover each other. The devices must be on a network that allows multicasting and is setup so that if the device and the Master are on separate subnets, the multicasting allows them to discover each other.
- **URL (UDP)** 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). In this case, the Master has its UDP feature enabled.

Configuring the Ethernet Connection on the NetLinx Master

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

NOTE: *Verify that you are using the latest NetLinx Master firmware (available at www.amx.com).*

Before you start, verify that the NetLinx Master is receiving power and is communicating via Ethernet with the PC running NetLinx Studio.

1. Apply power to the TPI (see the *12VDC PWR (Power) Connector* section on page 30).
2. Connect the TPI to a valid Ethernet Hub on the same LAN as the NetLinx Master and the PC running NetLinx Studio (see the *ETHERNET 10/100 (RJ-45) Port* section on page 28).
   - Verify the green LED on the Ethernet ports on both the NetLinx Master and the TPI are illuminated, indicating a proper connection.
   - Verify the yellow LED on the Master's Ethernet port is blinking, indicating active communication.
3. Open the *System Settings* page on the TPI:
   a. Press the SETUP pushbutton on the front panel to access the *Setup* page.
   b. Press the **Protected Setup** button to access the *Protected Setup* page, using the on-screen keypad to enter the password (default = **1988**).
   c. Press the **System Settings** button to open the *System Settings* page (FIG. 43).

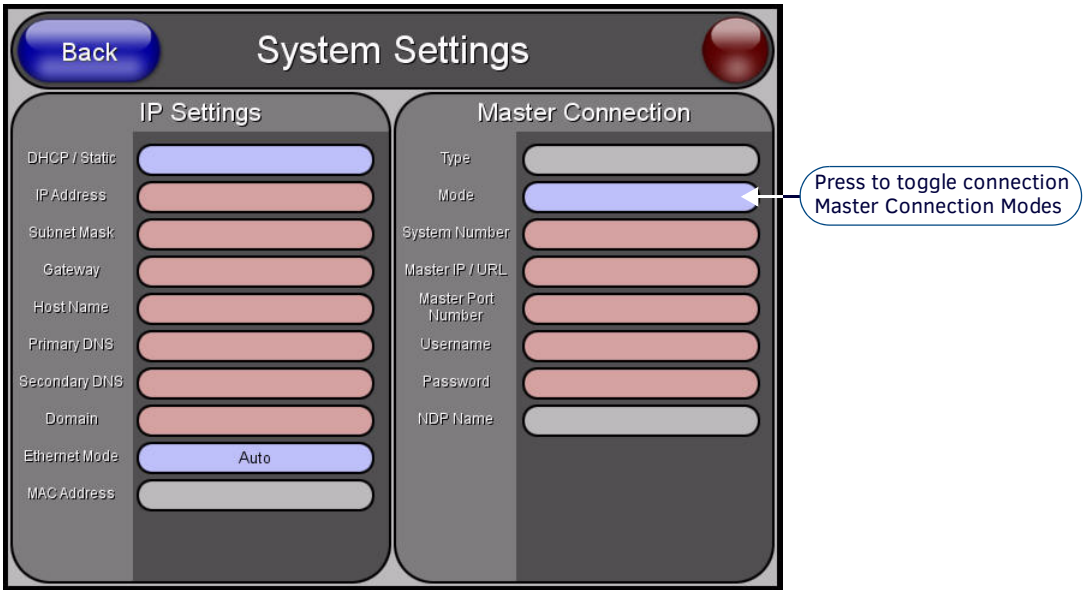


FIG. 43 System Settings page

NetLinx Master IP Address - URL Mode

In *URL* mode, enter the System Number and the IP/URL of the NetLinx Master in the *System Settings* page.

- Use **0** (zero) for if the System Number is unknown (*default setting*).
- The default Master Port Number is **1319.** *Do not alter the Master Port Number value*.

1. Press the **Mode** button until the option cycles to **URL**.
   - By selecting URL, the System Number field becomes read-only, because the TPI retrieves this value from the Master.
   - If the TPI does not appear in the Online Tree in NetLinx Studio, make sure that the NetLinx Master System Number, which can be derived from NetLinx Studio's *Device Addressing* dialog (FIG. 44), is assigned correctly.

FIG. 44 NetLinx Studio - Device Addressing dialog

2. Press the **Master IP/URL** button to open the on-screen keyboard, and enter the Master's IP address or URL. This information can be obtained from the *Networking Addresses* dialog in NetLinx Studio:
   a. In NetLinx Studio, select **Diagnostics > Network Addresses** to open the *Network Addresses* dialog (FIG. 45).

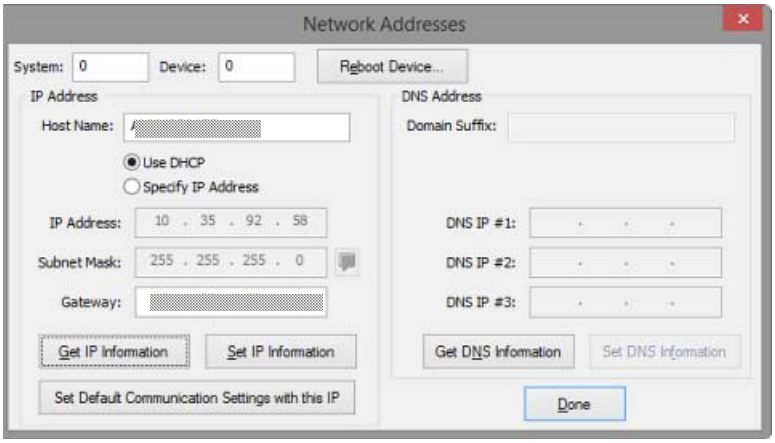


FIG. 45 NetLinx Studio - Network Addresses dialog

   b. Click **Get IP Information** to retrieve IP information from the NetLinx Master.
3. Click **Done** to accept the new value and return to the *System Configuration* page.
4. Press the **Back** button to open the *Protected Setup* page.

   NOTE: *If the Master has been secured, a Username and Password are required.*
5. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

NetLinx Master IP Address - Listen Mode

When in *Listen* mode, the TPI will listen for connections from the Master (using the TPI's IP from its URL list). To place the TPI in Listen mode, you must add the TPI's IP address into the Master's URL List (using NetLinx Studio):

1. Obtain either a Static IP for the TPI from your System Administrator, or obtain a DHCP Address from the *System Settings* page (*IP Settings* section).

   See the *Configuring IP Settings* section on page 44 for details.
2. Press the **Reboot** button on the *Protected Setup* page to save changes and restart the TPI.
3. After power-up, press the SETUP pushbutton (front panel) to access the *Setup* page (see FIG. 35 on page 41).
4. Navigate to the *System Settings* page (**Setup > Protected Setup > System Settings)**, and note the newly obtained *IP Address* information in the *IP Settings* section.

   NOTE: *The TPI's IP Address information will be entered into the URL List for the NetLinx Master in a later step.*
5. Press **Mode** until the option cycles to **Listen**.
6. Press the **Back** button to open the *Protected Setup* page.

   NOTE: *If the Master has been secured, a Username and Password are required.*
7. In NetLinx Studio, select **Diagnostics** > **URL Listing** to open the *URL Listing* dialog (FIG. 46).

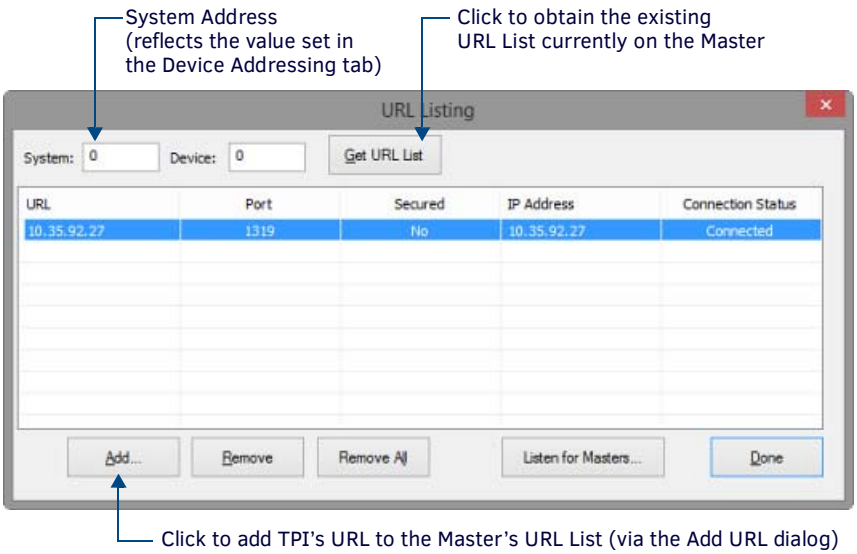


FIG. 46 NetLinx Studio - URL Listing dialog

8. Enter the **System** and **Device** number for the NetLinx Master associated with your TPI, as indicated in NetLinx Studio's *Device Addressing* dialog (FIG. 44 on page 47).
9. In the *URL Listing* dialog, click **Add** to access the *Add URL* dialog, and enter the TPI's IP address in the **URL** field (FIG. 47).

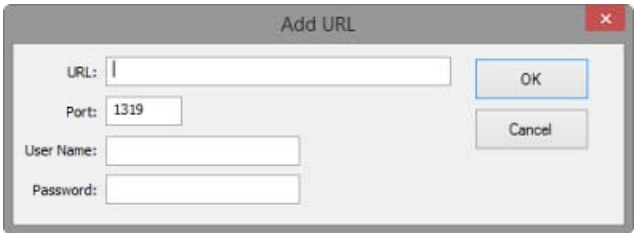


FIG. 47 NetLinx Studio - Add URL dialog

10. Click **OK** to add this IP Address to the Master's URL List and close the *Add URL* dialog.
11. In the *URL Listing* dialog, click **Done** to save changes and close the dialog.
12. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

NetLinx Master Ethernet IP Address - Auto Mode

Auto mode instructs the TPI to search for a Master with the same System Number and residing on the same Subnet as the TPI. To place the TPI in Auto mode, you must enter the System Number of the NetLinx Master.

NOTE: *The NetLinx Master and the TPI must share the same Subnet.*

1. In the *System Settings* page, press **Mode** until the option cycles to **Auto**.
2. Press the **System Number** to open the on-screen keypad, and enter the System Number of the NetLinx Master.
   - The Master's System Number can be derived from NetLinx Studio's *Device Addressing* dialog (see FIG. 44 on page 47).
   - Do not alter the IP settings on the *System Settings* page for AUTO connection mode.
3. Press the **Back** button to open the *Protected Setup* page.

   NOTE: *If the Master has been secured, a Username and Password are required.*
4. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).
5. Press the SETUP pushbutton (on the front panel) to open the *Setup* page and confirm there is an active connection.

NetLinx Master Ethernet IP Address - NDP (UDP) Mode

In *NDP (UDP)* mode, a connection is established via the NetLinx Master's on-board WebConsole to bind the TPI to the Master.

NOTE: *Refer to the NI Series NetLinx Integrated Controllers - WebConsole & Programming Guide (available at www.amx.com) for a full description of the on-board WebConsole.*

1. In the *System Settings* page, press **Mode** until the option cycles to **NDP (UDP)**.
2. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).
3. Open the Master's online WebConsole:
   a. Open a web browser on a PC that has access to the Master to which you want to connect
   b. Enter the IP address of the Master in the browser's Address bar.

c. Press **Enter** to connect to the Master and open the WebConsole. The initial view is the *WebControl* page, as shown in FIG. 48.

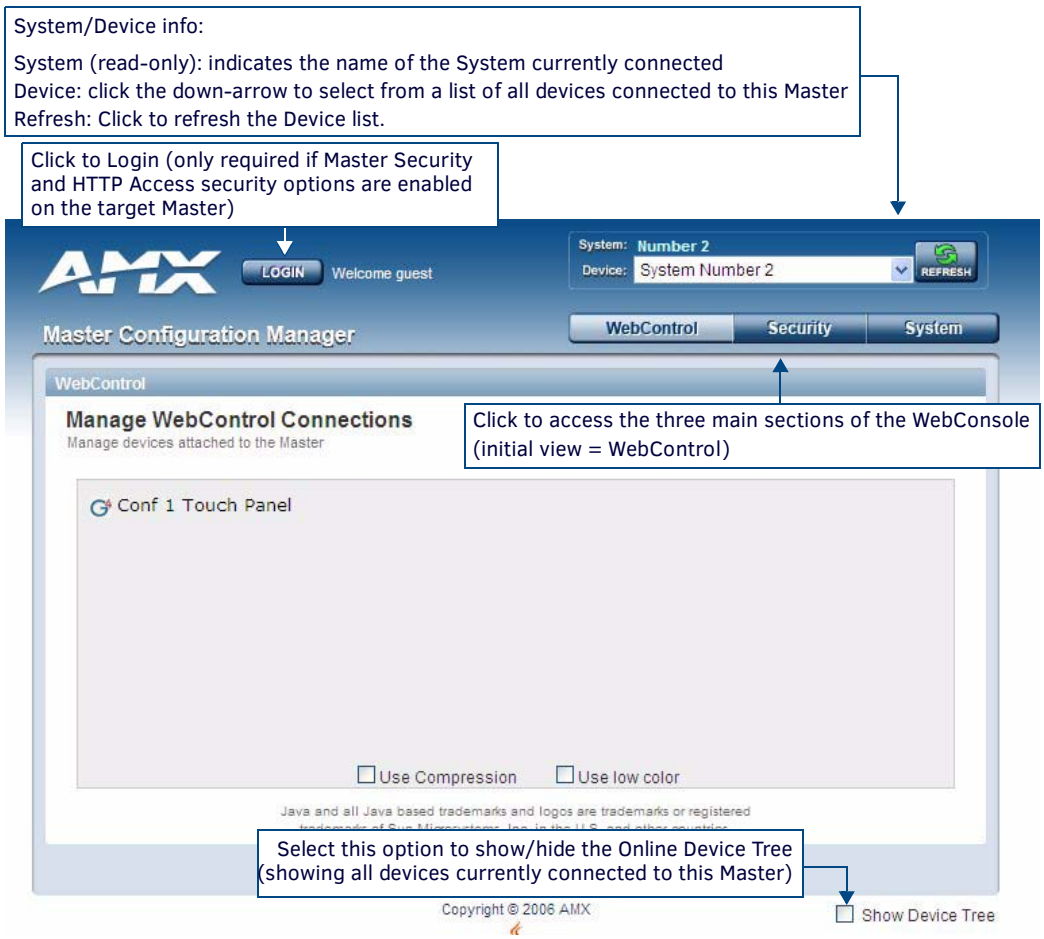


FIG. 48 Master Configuration Manager - WebControl Page (initial view)

4. Click **System** at the top of the page. The default view for the System option is the *Manage System* tab (FIG. 49).

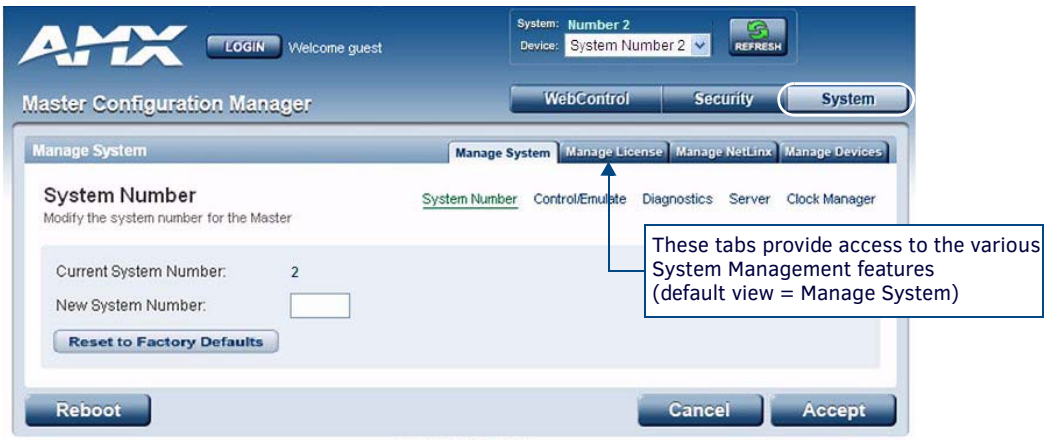
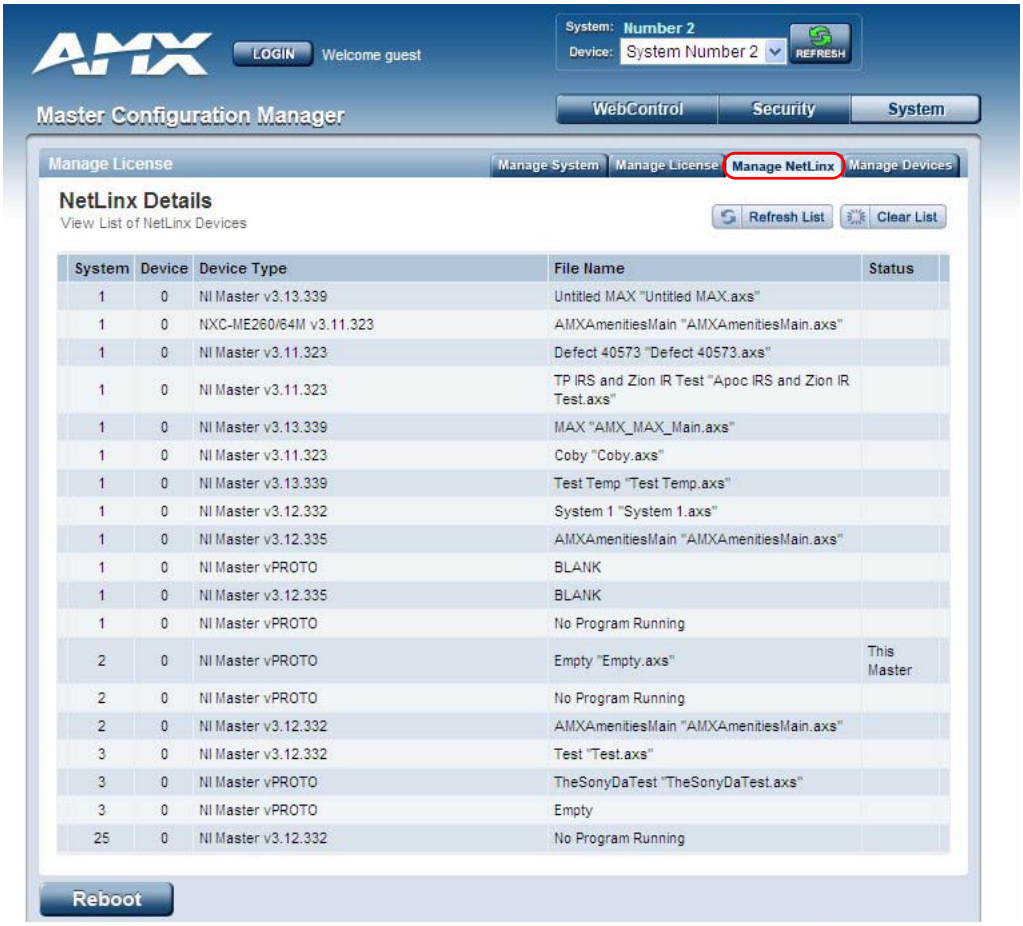


FIG. 49 Manage System (System Number)

5. Open the **Manage NetLinx** tab. This tab displays a list of NetLinx devices connected to the Master, and indicates device status for each (FIG. 50).



System	Device	Device Type	File Name	Status
1	0	NI Master v3.13.339	Untitled MAX "Untitled MAX.axs"	
1	0	NXC-ME260/64M v3.11.323	AMXAmenitiesMain "AMXAmenitiesMain.axs"	
1	0	NI Master v3.11.323	Defect 40573 "Defect 40573.axs"	
1	0	NI Master v3.11.323	TP IRS and Zion IR Test "Apoc IRS and Zion IR Test.axs"	
1	0	NI Master v3.13.339	MAX "AMX_MAX_Main.axs"	
1	0	NI Master v3.11.323	Coby "Coby.axs"	
1	0	NI Master v3.13.339	Test Temp "Test Temp.axs"	
1	0	NI Master v3.12.332	System 1 "System 1.axs"	
1	0	NI Master v3.12.335	AMXAmenitiesMain "AMXAmenitiesMain.axs"	
1	0	NI Master vPROTO	BLANK	
1	0	NI Master v3.12.335	BLANK	
1	0	NI Master vPROTO	No Program Running	
2	0	NI Master vPROTO	Empty "Empty.axs"	This Master
2	0	NI Master vPROTO	No Program Running	
2	0	NI Master v3.12.332	AMXAmenitiesMain "AMXAmenitiesMain.axs"	
3	0	NI Master v3.12.332	Test "Test.axs"	
3	0	NI Master vPROTO	TheSonyDaTest "TheSonyDaTest.axs"	
3	0	NI Master vPROTO	Empty	
25	0	NI Master v3.12.332	No Program Running	

FIG. 50 System - Manage NetLinx tab

The table on this page consists of five columns:

NetLinx Device Details	
Column	**Description**
System:	Displays the System value being used by the listed NetLinx Master.
Device:	Displays the assigned device value of the listed unit. This Device entry applies to both the Master and those NDP-capable devices currently connected to that Master.
Device Type:	Displays a description of the target Master or connected device, and its current firmware version. Example: *NI Master v3.01.323*.
File Name:	Displays the program name and/or file resident on the device.
Status:	Indicates the Master or device state: • **This Master**: Indicates its the target Master currently being used and being browsed to. Its this Master's web pages which are currently being viewed. • **Orphan**: Indicates that the device is currently not yet "bound" or assigned to communicate with a particular Master. This state shows an adjacent **Bind** button which is used to bind the device to the Master whose web pages are currently being viewed. • **Searching**: Indicates that the device is trying to establish communication with it's associated Master. • **Bound**: Indicates that the device has established communication with it's associated Master. This state shows an adjacent **Unbind** button which is used to release/disassociate the device from communicating with its current Master. • **Lost**: Indicates that the device has tried to establish communication with it's associated or "bound" Master, but was after a period of time, unable to establish communication.

6. Locate the TPI you want to connect to the Master, and click **Bind (**the *Bind* button is located on the same line as the TPI).
   - The Master refreshes and shows that the TPI is bound to it.
   - The TPI remains bound to the Master and will connect to it whenever you reboot the TPI.

NOTE: *If the TPI 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 the Device Addressing dialog box) is correctly assigned.*

NetLinx Master Ethernet IP Address - URL (UDP) 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 **Mode** field until the option cycles to URL (UDP). By selecting **URL (UDP)**, the System Number field becomes read-only because the panel pulls this value directly from the communicating target Master.
2. Press the *Master IP/URL* field to open an on-screen keyboard, and enter the Master IP Address **(**obtained from the Diagnostics - Networking Address dialog in the NetLinx Studio application**)**.
3. Click **Done** to accept the new value and return to the System Configuration page.
4. Do not alter the *Master Port Number* value (this is the default value used by NetLinx).
5. Enter a username and password into their respective fields if the target Master has been previously secured.
6. Press the **Back** button to open the *Protected Setup* page.
7. Press the on-screen **Reboot** button to both save any changes and restart the TPI.

Rebooting the TPI

Changes made in the Setup pages are not incorporated until the TPI is rebooted.

Press the **Reboot** button on the *Protected Setup* page to reboot the TPI and incorporate all changes (FIG. 51).

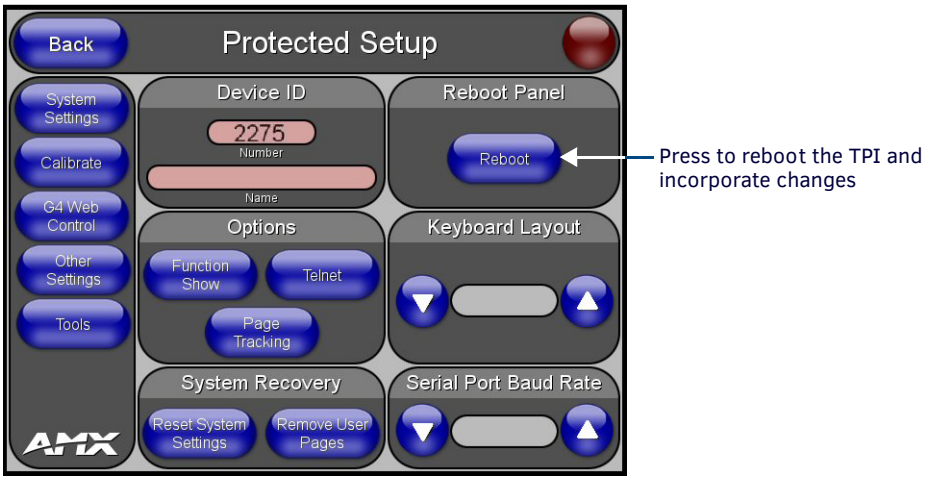


FIG. 51 Protected Setup page - Reboot Panel button

TPI Configuration Pages

Overview

This section describes each of the configuration pages available on the TPI, and the options contained in each. The main pages are accessed via the four pushbuttons on the front panel (FIG. 52), while several secondary setup pages are accessed via buttons contained in the Main Pages.

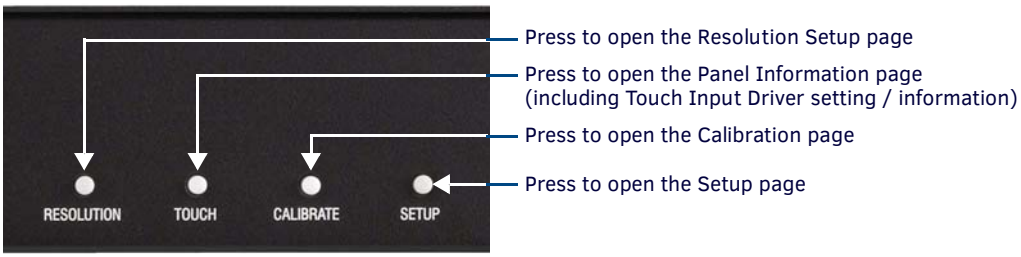


FIG. 52 Configuration Pushbuttons (front panel)

NOTE: *In order to configure the TPI, you'll need to have a touch device as well as an output display device connected, so that you can view and navigate the pages and make selections and text entries. See the Wiring and Device Connections* section on page 24 *for details.*

Resolution Setup Page

Press the **RESOLUTION** pushbutton on the front panel (see FIG. 52) to access the *Resolution Setup Page* (FIG. 53).

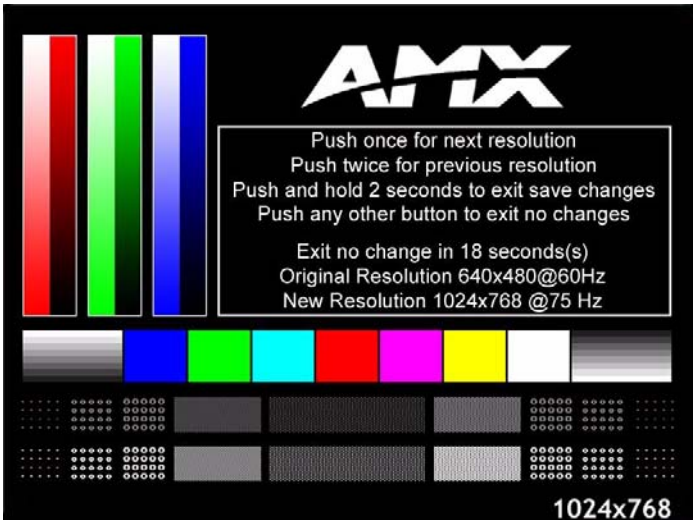


FIG. 53 Resolution Setup page

The options on this page allow you to adjust the TPI's output resolution/refresh rate setting.

The TPI's output resolution must match the output resolution and refresh rate set on the connected touch monitor.

- The default TPI output resolution is **1280 x 1024 @ 60Hz**.
- The maximum output resolution setting is **1920x1200 @ 60Hz**.
- For a listing of available output resolutions and refresh rates, see the *Supported Output Modes* section on page 156.

Refer to the *Setting the Output Resolution* section on page 38 for instructions on adjusting the TPI's output resolution. Also see the ORES Send Command on page 109.

Panel Information Page

Press the **TOUCH** pushbutton on the front panel (see FIG. 52 on page 52) to access the *Panel Information Page* (FIG. 54).

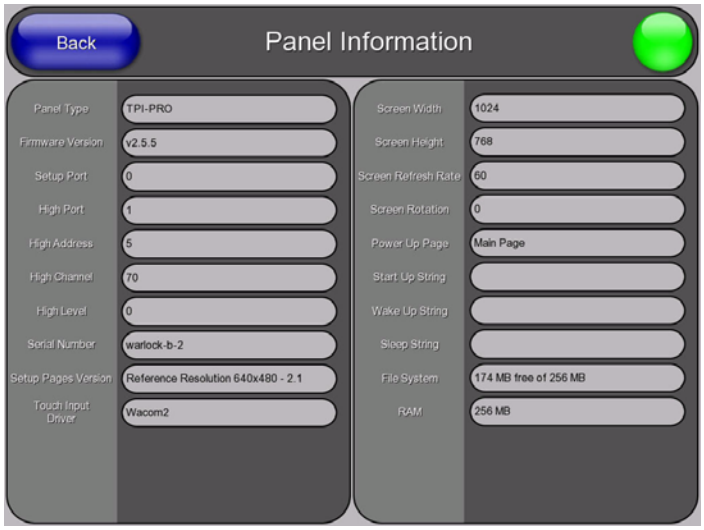


FIG. 54 Panel Information Page

The Panel Information Page displays various properties of the TPI (*read-only*):

Panel Information Page	
Back:	Saves the changes and returns to the previously active touch panel page.
Connection Status icon:	This visual display of the connection status allows the user to have a current update of the TPI's connection status regardless of what page is currently active. • A Lock only appears on the icon if the TPI has established a connection with a currently secured target Master (*requiring a username and password*).
• Panel Type:	Displays the type of G4 device (TPI-PRO-DVI) being used.
• Firmware Version:	Displays the version of G4 firmware currently loaded.
• Setup Port:	Displays the TPI's Setup Port value.
• High Port:	Displays the TPI's high port (port count) value.
• High Address:	Displays the TPI's high address (address count) value.
• High Channel:	Displays the TPI's high channel (channel count) value.
• High Level:	Displays the TPI's high level (level count) value.
• Serial Number:	Displays the TPI's serial number.
• Setup Pages Version:	Displays the type and version of the Setup pages.
• Touch Input Driver:	Displays the driver used for the touch monitor.
• Screen Width:	Displays the pixel width sent by the TPI to the display. • The maximum available screen width on a TPI is 1920 pixels.
• Screen Height:	Displays the pixel height sent by the TPI to the display. • The maximum available screen height on a TPI is 1200 pixels.
• Screen Refresh Rate:	Displays the refresh rate sent to the display.
• Screen Rotation:	Displays the degree of rotation applied to the on-screen image.
• Power Up Page:	Displays the touch panel page set to display when the TPI is powered-up. • This information comes from the TPD4 project file. • Most projects begin with a Main page.
• Start Up String:	Displays the string used for start-up.
• Wake Up String:	Displays the string used for an activation after a timeout.
• Sleep String:	Displays the string used during the sleep mode.
• File System:	Displays the amount of internal disk space available on the TPI.
• RAM:	Displays the amount of RAM available on the TPI.

Calibrate Page

Press the **CALIBRATE** pushbutton on the front panel (see FIG. 52 on page 52) to access the *Calibrate Page* (FIG. 55).

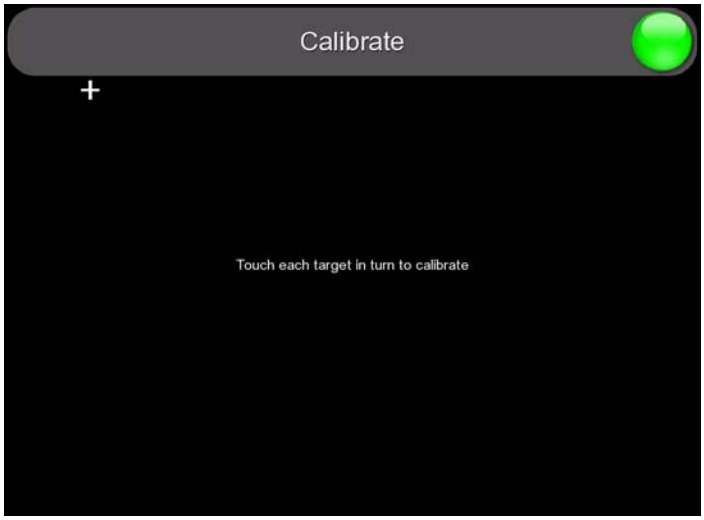


FIG. 55 Calibrate Page

The options on this page allow you to calibrate the input touch device (touch monitor) using the selected touch driver.

NOTE: *Alternatively, the Calibrate Page can be accessed via options on the Protected Setup Page (see Protected Setup Page* section on page 64*).*

- Press the crosshairs to calibrate the panel.
- When the calibration is complete, the Calibrate Page closes (returning to the last open Configuration page).

Refer to the *Calibrating the TPI* section on page 39 for details.

Setup Page

Press the **SETUP** pushbutton on the front panel (see FIG. 52 on page 52) to access the Setup Page (FIG. 56). The options on the *Setup* page center around the basic properties used by the touch device connected to the TPI.

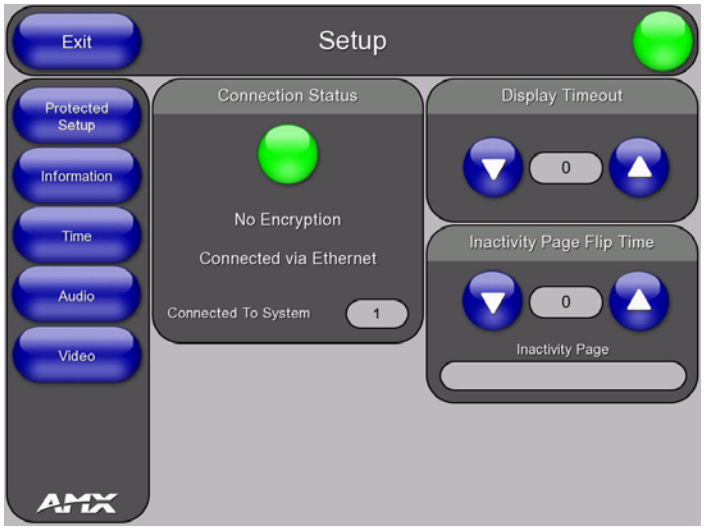


FIG. 56 Setup Page

Setup Page	
• Exit:	Saves any setting changes made on the page to disk, and returns you to the Main touch panel page.
• Connection Status icon:	The icon in the upper-right hand corner provides a visual indication of the connection status, displayed on every page for convenience. • The Connection Status icon reflects the connection icon in the Connection Status area of this page (see below). • A Lock appears on the icon if the TPI has established a connection with a secured NetLinx Master (*requiring a username and password*).

Setup Page (Cont.)	
• Setup Page Navigation Buttons:	The navigation buttons displayed along the left of the Setup Page provide access to several additional configuration pages: • **Protected Setup** - Press to access the main *Protected Setup Page.* Refer to the *Protected Setup Page* section on page 64. • **Information** - Press to access the *Project Information Page.* This page displays various properties of the TPDesign4 project file currently loaded on the TPI (read-only). Refer to the *Setup - Project Information Page* section on page 56. • **Time** - Press to access the *Time & Date Settings Page.* The options on this page allow you to alter the time and date settings on the TPI. Refer to the *Setup - Time & Date Settings Page* section on page 57. **Audio** - Press to access the *Audio Settings Page.* The options on this page allow you to adjust various audio parameters. Refer to the *Setup - Audio Settings Page* section on page 58. • **Video** - Press to access the *Video Settings Page.* The options on this page allow you to set the properties for incoming video signals. Refer to the *Setup - Video Settings Page* section on page 59.
• Connection Status:	This read-only area indicates the TPI's connection status, the encryption status of the NetLinx Master, the connection type, and the System to which this TPI is connected.
• Display Timeout:	Sets the length of time (in minutes) the TPI can remain idle before activating sleep mode. When the device goes into sleep mode, the LCD (on connected touch panels) is powered-down. Press the UP/DN buttons to increase/decrease the timeout value. • Range = 0 - 240 minutes (0 = Display Timeout disabled) • Default = 5 minutes *Note: You must exit the setup page in order for the "Display Timeout" & "Inactivity Page Flip Time" settings to be saved to memory.*
• Inactivity Page Flip Timeout:	Sets the length of time (in minutes) of inactivity allowed before the TPI will automatically flip to a pre-selected panel page (on connected touch panels). In this case, the LCD does not power-down. Press the UP/DN buttons to increase/decrease the timeout value. • Range = 0 - 240 minutes (0 = Inactivity Page Flip Timeout disabled) • Default = 5 minutes • The touch panel page used for the Inactivity page flip is shown within a small Inactivity Page field. *Note: You must exit the setup page in order for the "Display Timeout" & "Inactivity Page Flip Time" settings to be saved to memory.*

Setup - Protected Setup Page

Press the **Protected Setup** button on the *Setup Page* (see FIG. 56 on page 54) to access the main *Protected Setup Page* (FIG. 57).

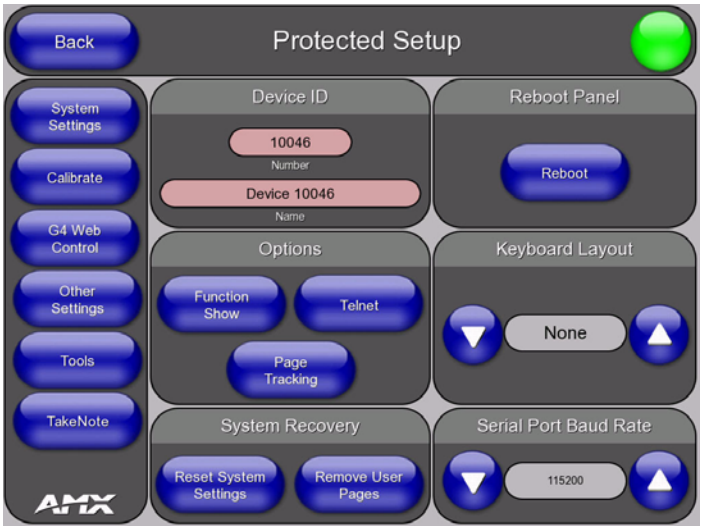


FIG. 57 Setup - Protected Setup Page

Refer to the *Protected Setup Page* section on page 64.

Setup - Project Information Page

Press the **Information** button on the *Setup Page* (see FIG. 56 on page 54) to access the *Project Information Page* (FIG. 58).

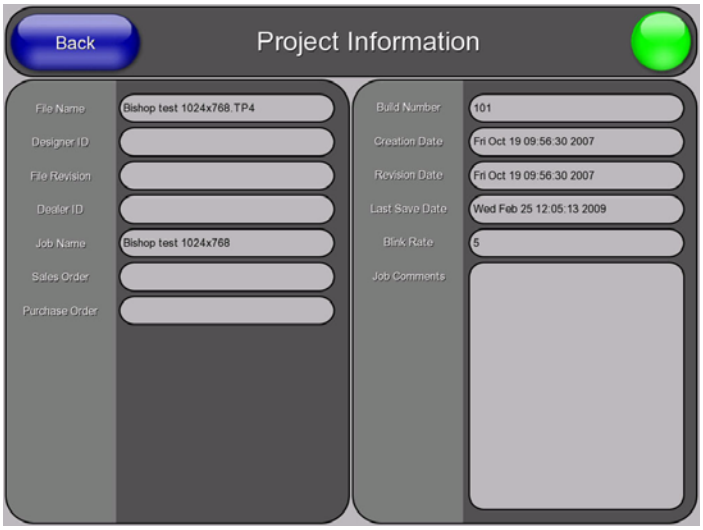


FIG. 58 Setup - Project Information Page

The *Project Information* page displays various properties of the TPDesign4 project file currently loaded on the TPI (read-only). The items on this page reflect the items on the *Project Information* tab of the *Project Properties* dialog in TPDesign4:

Setup - Project Information Page	
• Back:	Saves the changes and returns to the previously active touch panel page. *Note: This option is included on all Setup pages for convenience.*
• Connection Status icon:	This visual display of the connection status allows the user to have a current update of the TPI's connection status regardless of what page is currently active. • A Lock only appears on the icon if the TPI has established a connection with a currently secured target Master (*requiring a username and password*). *Note: This option is included on all Setup pages for convenience.*
• File Name:	Displays the name of the TPDesign4 project file downloaded to the TPI.
• 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.
• 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.

Setup - Time & Date Settings Page

Press the **Time** button on the *Setup Page* (see FIG. 56 on page 54) to access the *Time & Date Settings Page* (FIG. 59).

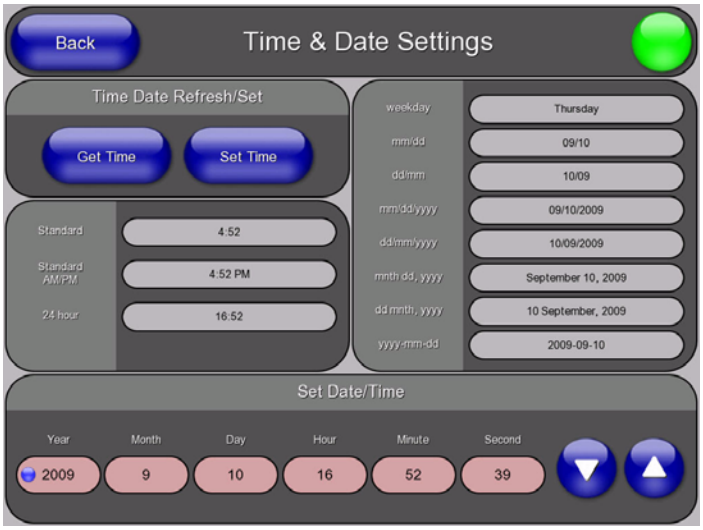


FIG. 59 Setup - Time & Date Settings Page

The options on this page allow you to view, set or edit the time and date information on the NetLinx Master to which the TPI is connected.

- The TPI does not have an on-board clock. This page both receives and sets the time/date of the NetLinx Master.
- If either the time or date is modified on this page and then updated to the Master (via the **Set Time** button), all devices communicating to that target Master are updated to reflect the new information.
- The only way to modify a TPI's time without altering the Master is to use NetLinx Code.

Setup - Time & Date Settings Page	
• Time Date Refresh/Set:	• 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 or date modifications made on the Time and Date Setup page.
• Time Display:	These fields display the time in 3 formats: • STANDARD • STANDARD AM/PM • 24 HOUR (military)
• Date Display:	These fields display the calendar date information in several different formats.
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. • *Year*: range = 2000 - 2037 • *Month*: range = 1 - 12 • *Day*: range = 1 - 31 • *Hour:* range = 1-24 (24-hour military) • *Minute*: range = 0 - 59 • *Second*: range = 0 - 59

Setup - Audio Settings Page

Press the **Audio** button on the *Setup Page* (see FIG. 56 on page 54) to access the *Audio Settings Page* (FIG. 60).

FIG. 60 Setup - Audio Settings Page

The options on the *Audio Settings* page allow you to adjust the master volume and default panel sounds on the TPI:

Setup - Audio Settings Page	
Master Volume:	This section allows you to adjust the current sound level on the unit's internal speaker: • Use the UP/DN buttons to adjust the volume output on the internal speakers • Range = 0 - 100 • Default = 50 • The Internal Sound Level bargraph indicates the current sound level. • The **Mute** button mutes the volume. • The **Play Test** button plays a test WAV/MP3 file over the internal speakers.
Default Panel Sounds:	Sets the unit to play either the default **Button Hit** sound (when you touch an active button) and/or the default **Button Miss** sound (when you touch a non-active button or any area outside of the active button). By default, **Button Hit** sound is *enabled*, and **Button Miss** sound is *disabled*.

Supported Sampling Rates for WAV and MP3 Audio

The TPI supports WAV and MP3 audio types, at the following sample rates:

Supported WAV / MP3 Audio Sample Rates		
• 48000Hz • 44100Hz • 32000Hz	• 24000Hz • 22050Hz • 16000Hz	• 12000Hz • 11025Hz • 8000Hz

Setup - Video Settings Page

Press the **Video** button on the *Setup Page* (see FIG. 56 on page 54) to access the *Video Settings Page.* The options in the *Video Settings* page allow you to configure the properties of the incoming video signal(s).

This page features up to four tabs (SLOT 1 - SLOT 4) - one for each source input on the TPI. If you are using a TPI-PRO/DVI-2 (which features two inputs), then the tabs for Slots 3 and 4 are disabled.

- These source inputs are labeled at the rear of the TPI (Input *N*).
- The Input type (*Composite*, *S-Video*, *Computer (VGA)*, *Component (YPrPb), or DVI*) must be set for each input.

The options presented on this page differ according to the Input type selected:

- If you have selected **VGA** or **Component** as the Input Type, the Video Settings Page contains the options shown in FIG. 61.

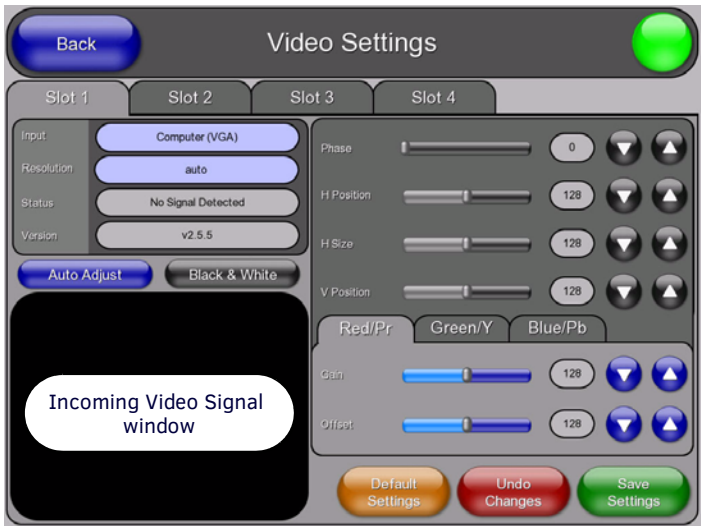


FIG. 61 Setup - Video Settings Page (Input Type = VGA or Component)

- If you have selected **Composite** or **S-Video**, the Video Settings Page contains the options shown in FIG. 62.

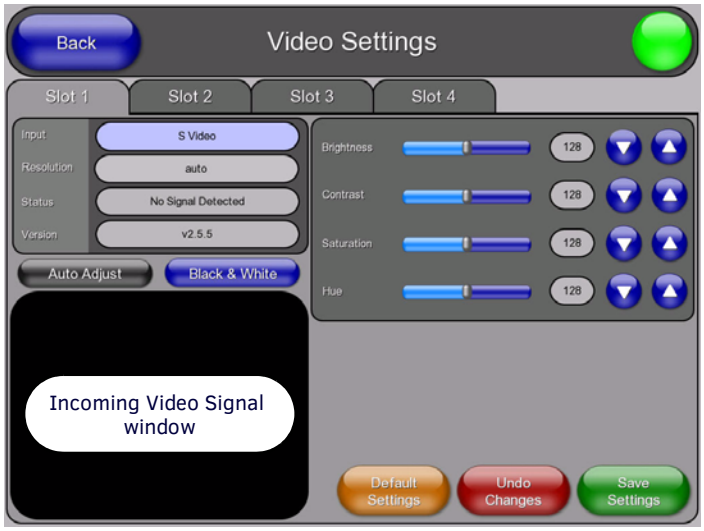


FIG. 62 Setup - Video Settings Page (Input Type = Composite or S-Video)

Setup - Video Settings Page	
Input:	Press to cycle through the options for video input types: *Composite 1/2/3*, *S-Video*, *Computer (VGA)*, *Component (YPrPb), and DVI*. *Composite 1/2/3*: • Composite 1 = Corresponds to a signal connected to the Red connector on the DVI-to-3RCA Male adapter cable. • Composite 2 = Corresponds to a signal connected to the Green connector on the DVI-to-3RCA Male adapter cable. • Composite 3 = Corresponds to a signal connected to the Blue connector on the DVI-to-3RCA Male adapter cable. Default = *Composite 1* *Note When using a DVI source, set the input to DVI before attaching the DVI cable to the TPI. If a DVI source is attached before setting the input to DVI, you may need to reboot the source for it to recognize the DVI input description information required by the DVI standard.*
Resolution:	Press to open the Input Resolution Popup Page, to adjust the TPI's Input Resolution setting (see the *Configuring the Input Resolution (VGA & Component only)* section on page 62).
Status:	This read-only field indicates whether a video-sync signal is detected.
Version:	This read-only field indicates the firmware version currently loaded on the TPI.
Auto Adjust:	Press to toggle between *Auto* detection and *Manual* setup. • This option is only valid for VGA and Component Input signal types. • Default = *Auto*
Black & White:	Press to toggle Black & White display mode. • This option is only valid for Composite and S-Video Input signal types. • Default = *Off*
Incoming Video Signal Window:	The video signal on the TPI Input that corresponds to the open tab is displayed in this video button (Input 1 is displayed on the Slot 1 tab, Input 2 is displayed on the Slot 2 tab, etc). Press inside the Incoming Video Signal Window to open the *Full Screen Settings* page.
Video Parameters:	The Video Parameters (i.e. *Brightness*, *Contrast*, *Saturation*, etc.) presented on this page depend on the Input Type assigned to the selected Input. See the *Video Parameters* section on page 61 for descriptions of all possible Video Parameters.
Default Settings:	Press to reset all video settings to their default values.
Undo Changes:	Press to disregard any changes made on the page since the last settings were saved.
Save Settings:	Press to save all changes made on this page.

Configuring Incoming Video Signals

In the *Video Settings* page, you can select any of the available source inputs by selecting the corresponding tab (Slot 1 - Slot 4) at the top of the page. If the selected source input is receiving a video signal, this video is displayed in the Incoming Video Signal Window. Use the video settings on the right side of the page to adjust the incoming video signal (FIG. 63).

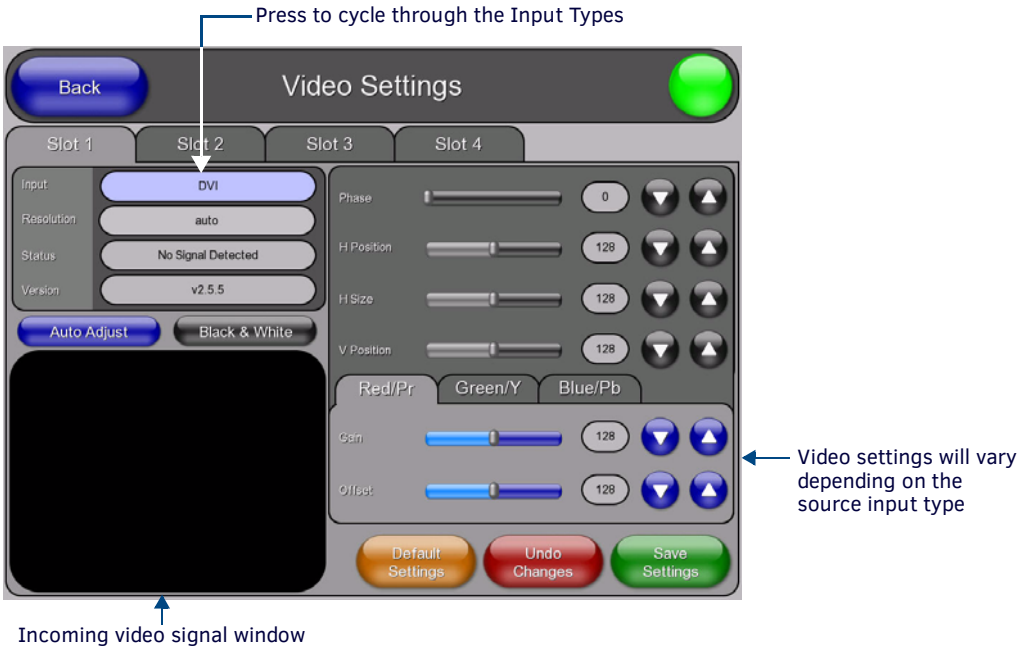


FIG. 63 Video Settings page (Slot 1 tab)

When using a a non-touch enabled monitor, the incoming video image often must be adjusted to fit into the visible screen area. Refer to the *Setting the Output Resolution* section on page 38 for instructions on adjusting the position and size on a non-touch enabled monitor.

When using a touch monitor, the TOUCH DRIVER selected should compensate for the visible area. If not, continue with these steps.

1. Open the tab (Slot 1 - Slot 4) that corresponds to the Input that you want to adjust.
2. Press **Input** to cycle through the available Input Type options:
   - Composite 1, Composite 2, Composite 3

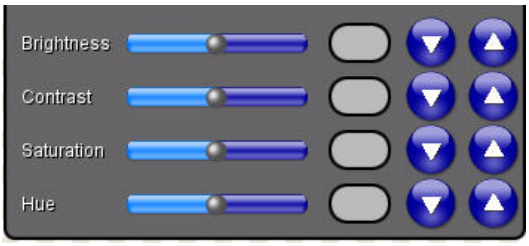
     Composite 1 Corresponds to a signal connected to the Red connector on the DVI-to-3RCA Male adapter cable.

     Composite 2 Corresponds to a signal connected to the Green connector on the DVI-to-3RCA Male adapter cable.

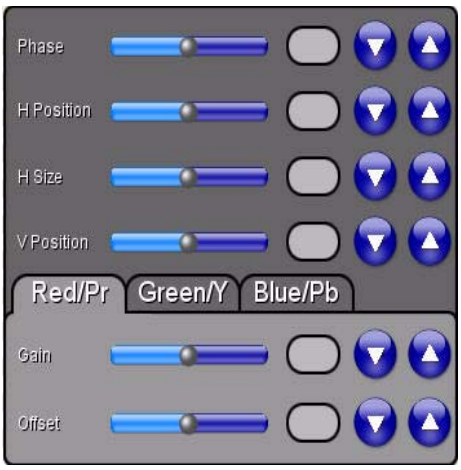
     Composite 3 Corresponds to a signal connected to the Blue connector on the DVI-to-3RCA Male adapter cable.

   - S-Video
   - Computer (VGA)
   - Component (YPrPb)
   - DVI

   NOTE: *When using a DVI source, set the input to DVI before attaching the DVI cable to the TPI. If a DVI source is attached before setting the input to DVI, you may need to reboot the source for it to recognize the DVI input description information required by the DVI standard.*
3. Depending on the Input Type assigned to the selected Input, some or all of the video settings below are provided (FIG. 64):



Composite / S-Video settings



VGA / Component Settings

FIG. 64 Video Settings page - Video Settings

4. Use the **H Size** and **V Position** options to compensate for the visible area.
5. Press the **Save Settings** button to save your changes.
6. Press the **Back** button to return to the Setup page.

Video Parameters

Depending on the Input Type assigned to the selected Input, some or all of the following Video Parameters are available via the Video Settings Page:.

Video Parameters	
• Brightness:	Use the UP/DN buttons to adjust the brightness level of the incoming signal. • This option does not appear if you select Computer (VGA), Component (YPrPb), or DVI as the input type. • Range = 0 - 255 • Default = *128*
• Contrast:	Use the UP/DN buttons to adjust the contrast level of the incoming signal. • This option does not appear if you select Computer (VGA), Component (YPrPb), or DVI as the input type. • Range = 0 - 255 • Default = *128*
• Saturation:	Use the UP/DN buttons to adjust the color saturation level of the incoming signal. • This option does not appear if you select Computer (VGA), Component (YPrPb), or DVI as the input type. • Range = 0 - 255 • Default = *128*
• Hue:	Use the UP/DN buttons to adjust the hue level of the incoming signal. • This option does not appear if you select Computer (VGA), Component (YPrPb), or DVI as the input type. • Range = 0 - 255 • Default = *128*

Video Parameters (Cont.)	
• Phase:	Use the UP/DN buttons to adjust the phase (RGB tracking/signal) level of the incoming signal. • This option only appears if you select Computer (VGA) or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *0* *Note: Adjustments to the Phase value can resolve most image issues.*
• H Position	Use the UP/DN buttons to alter the horizontal position of the incoming signal. • This option only appears if you select Computer (VGA) or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *128*
• H Size:	Use the UP/DN buttons to alter the horizontal size of the incoming signal. • This option only appears if you select Computer (VGA) or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *128*
• V Position:	Use the UP/DN buttons to alter the vertical position of the incoming signal. • This option only appears if you select Computer (VGA) or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *128*
• Red/Pr:	Use the UP/DN buttons in this tab to adjust the Red/Pr *Gain* and *Offset* settings. • This option only appears if you have selected RGB or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *128*
• Green/Y:	Use the UP/DN buttons in this tab to adjust the Green/Y *Gain* and *Offset* settings. • This option only appears if you have selected RGB or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *128*
• Blue/Pb:	Use the UP/DN buttons in this tab to adjust the Blue/Pb *Gain* and *Offset* settings. • This option only appears if you have selected RGB or Component (YPrPb) as the input type. • Range = 0 - 255 • Default = *128*

Configuring the Input Resolution (VGA & Component only)

If either VGA or Component has been selected as the Input Type, use the **Resolution** option in the *Video Settings* page to specify the resolution setting for each source input (FIG. 65).

NOTE: *The input resolution for all input types other than VGA and Component are automatically detected by the TPI.*

Select any of the available source inputs by selecting the corresponding tab (Slot 1 - Slot 4) at the top of the page.

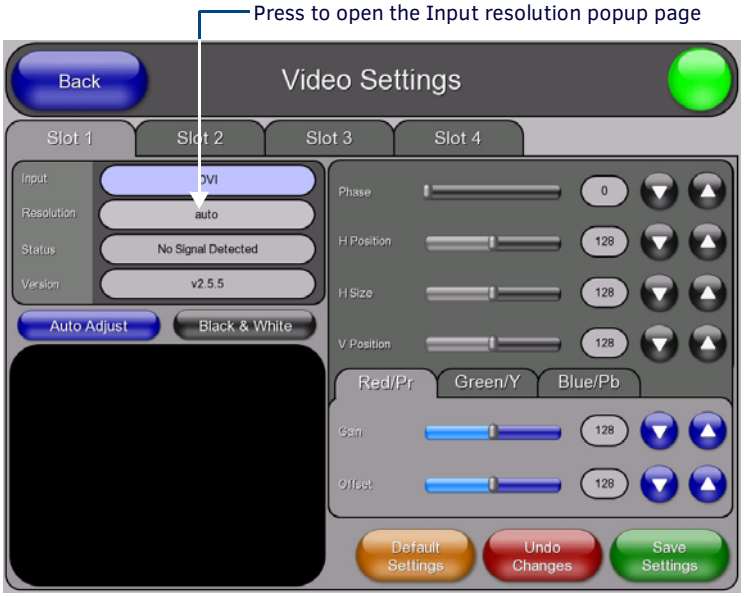
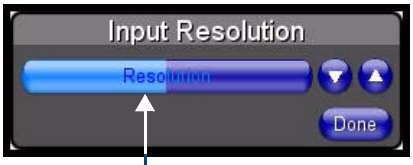


FIG. 65 Video Settings page (Slot 1 tab)

Press **Resolution** to access the *Input Resolution* popup page (FIG. 66).



Position the slider to it's left-most position to set Input Resolution to "auto"

FIG. 66 Input Resolution popup page

- Use the slider on this page to select a known input resolution (use the Up/Down arrows to adjust).
- When the slider is set all the way to the left, it selects "**auto**", and the TPI automatically sets the input resolution.

Press **Done** to save the Input resolution setting and close the *Input Resolution* popup page.

The same functionality can be achieved via the "*resolution*=" option of the **^SLT** command (see page 113).

Protected Setup Page

Overview

Select **Protected Setup** on the *Setup* page to access the *Protected Setup* page (FIG. 67).

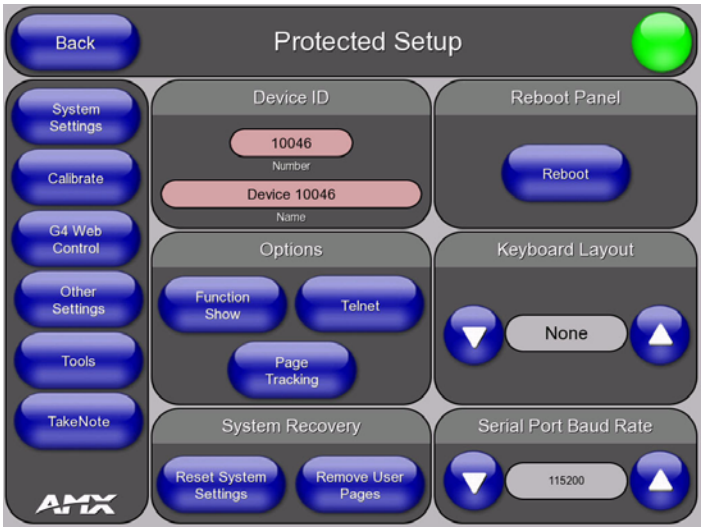
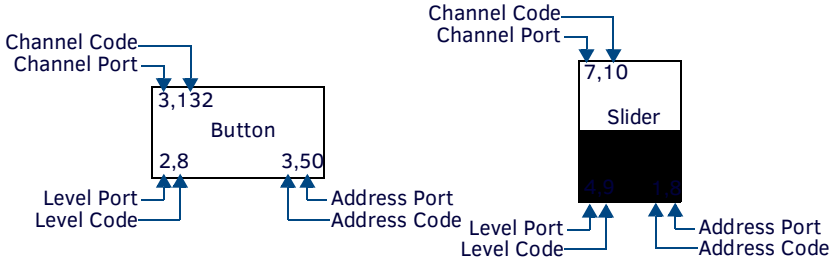


FIG. 67 Protected Setup page

NOTE: *This page is password-protected.*

Enter the factory default password (*1988)* into the on-screen keypad to access this page.

Protected Setup Page	
Back:	Saves the changes and returns to the previously active touch panel page. *Note: This option is included on all Protected Setup pages for convenience.*
Connection Status icon:	This visual display of the connection status allows the user to have a current update of the TPI's connection status regardless of what page is currently active. • A Lock only appears on the icon if the TPI has established a connection with a currently secured target Master (*requiring a username and password*). *Note: This option is included on all Protected Setup pages for convenience.*
Protected Setup Page Navigation Buttons:	The navigation buttons displayed along the left of the Protected Setup Page provide access to several additional protected configuration pages: • **System Settings** - Press to access the *System Settings* page, where you can configure communication settings for both the NetLinx Master and the TPI. Refer to the *Protected Setup - System Settings Page* section on page 66. • **Calibrate** - Press to access the *Calibrate* page, where you can calibrate a touch monitor. Refer to the *Calibrating the TPI* section on page 39. • **G4 Web Control** - Press to access the *G4 Web Control* page, where you can enable or disable display and control of your panel (via the web) using a PC running a VNC client. Refer to the *Protected Setup - G4 Web Control Page* section on page 68. • **Other Settings** - Press to open a slide bar with the following options: **Cache** - press to access the *Cache* page, where you can adjust your Flash Cache settings. Refer to the *Protected Setup (Other Settings) - Cache Page* section on page 69. **Passwords** - press to access the *Password Setup* page, where you can specify up to five security passwords. Refer to the *Protected Setup (Other Settings) - Password Settings Page* section on page 71. **Note**: The default password is **1988**. • **Tools** - Press to open a slide bar with the following options: **Panel Logs** - press to access the *Panel Logs* page, where you can view your panel's connection history. Refer to the *Protected Setup (Tools) - Panel Connection Logs Page* section on page 72. **Panel Statistics** - press to access the *Panel Statistics* page, where you can view the connection statistics for your panel. Refer to the *Protected Setup (Tools) - Panel Statistics Page* section on page 73. **Connection Utility** - press to open the *Connection Utility* page, where you can view connection statistics and information for your panel. Refer to the *Protected Setup (Tools) - Connection Utility Page* section on page 74 for details. • **TakeNote** - Press to access the *TakeNote Control* page, where you can enable or disable the TakeNote Annotation Application. Refer to the *Using Takenote™* section on page 139 for details.

Protected Setup Page (Cont.)	
Device ID:	• **Number** - Opens a keypad that is used to set and display the current device number. • **Name** - Opens an on-screen keyboard used to set and display the current device name. Note that this device name is displayed in the G4 Web Control page as the *Web Control Name* (see the *Using G4 Web Control®* section on page 136).
Options:	Allows you to view/edit the following TPI features: • **Function Show** - press to display button function information on each button on the panel pages: The *Channel* port and code assignments are displayed in the top left corner. The *Level* port and code assignments are displayed in the bottom left corner. The *Address* port and code assignments are displayed in the bottom right corner.  • **Page Tracking** - press to toggle page tracking on the TPI. When enabled, the TPI sends page data to the NetLinx Master, or vice versa depending on the touch panel settings. • **Telnet** - press to enable or disable direct telnet communication to the TPI. By default, Telnet is *Enabled*.
System Recovery:	These options provide the ability to reset the TPI to factory default settings and/or wipe out all existing touch panel pages: • **Reset System Settings** - push to wipe out all current configuration parameters on the TPI (including IP Addresses, Device Number assignments, Passwords, and all Presets). Pressing this button launches the *Confirmation* dialog which prompts you to confirm your selection:  The **Yes** option is enabled after a 5-second delay (press **Yes** to proceed). • **Remove User Pages** - press to remove *all* TPD4 touch panel pages currently loaded on the TPI (including the pre-installed AMX Demo pages). Pressing this button launches the *Confirmation* dialog which prompts you to confirm your selection. The **Yes** option is enabled after a 5-second delay (press **Yes** to proceed).
Reboot Panel:	Press to reboot the TPI. *Note: A reboot is required to apply changes made in the Setup pages.*
Keyboard Layout:	Use the UP/DN buttons to select the type of keyboard you want to use.
Serial Port Baud Rate:	Use the UP/DN buttons to set the baud rate on the front Serial port. • Range = 1200 - 115200 • Default = **115200**

Protected Setup - System Settings Page

Select **System Settings** on the *Protected Setup Page* (see FIG. 67 on page 64) to access the System Settings page (FIG. 68).

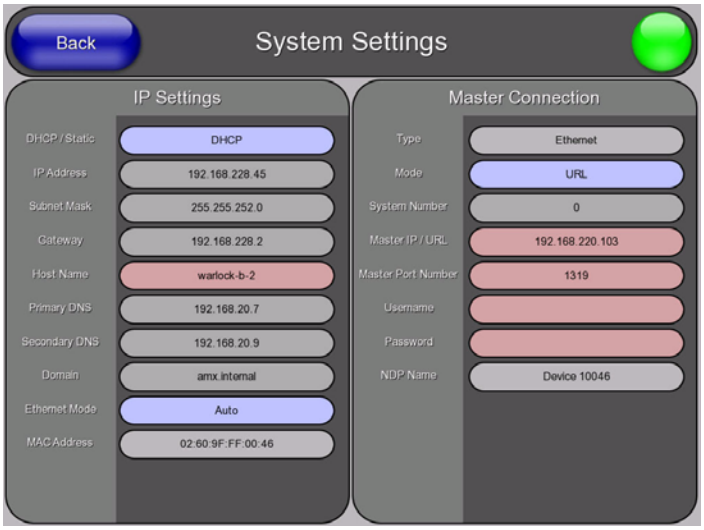


FIG. 68 Protected Setup - System Settings Page

The options on the *System Settings* page set the DNS Address information with its corresponding IP communication parameters, NetLinx Master communication settings, and reads the device number assigned to the G4 device.

- **Red** fields are user-editable
- **Blue** fields cycle through available choices
- **Grey** fields are read-only

Protected Setup - System Settings Page	
IP Settings:	
• DHCP/ Static:	Sets the G4 device 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. • Default = **DHCP**
• IP Address:	Sets the IP Address assigned to the TPI.
• Subnet Mask:	Sets a subnetwork address to the TPI. • *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 TPI. • *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 TPI. *Note: If the Host Name is left blank, it will automatically resort to the default - "localhost".*
• Primary DNS:	Sets the address of the primary DNS server being used by the TPI 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 the secondary DNS value to the TPI.
• Domain:	Sets the unique name on the Internet to the TPI for DNS look-up. • The TPI belongs to the DNS domain.
• Ethernet Mode:	Sets the speed of the Ethernet connection to the TPI. • The choices are: Auto (default), 10 Half Duplex, 10 Full Duplex, 100 Half Duplex, or 100 Full Duplex. • Default = *Auto*. This setting is recommended for most situations.
• MAC Address:	Displays a read-only field that is factory set by AMX for the built-in Ethernet interface.

Protected Setup - System Settings Page (Cont.)	
Master Connection:	
• Ethernet Type:	Sets the NetLinx Master to communicate to the TPI via Ethernet. Ethernet uses a CAT-5 cable (10/100Base T terminated in an RJ-45 connector) 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.
• Type:	Cycles between the different connection modes (URL, Listen, Auto, NDP (UDP), and URL (UDP)) • **URL** - In this mode, enter the IP Address or DNS Name of the NetLinx Master, as well as the Master Port Number, and Username/Password (if required). The *System Number* field is read-only because the TPI obtains this information from the communicating Master. • **Listen** - In this mode, add the TPI address into the URL List in NetLinx Studio and set the connection mode to Listen. This mode allows the TPI to "listen" for the Master's communication signals. The System Number and Master IP/URL fields are read-only. • **Auto** - In this mode, enter the System Number and a username/password (if applicable). This mode is used when both the TPI and the NetLinx Master are on the same Subnet and the Master has its UDP feature enabled. The Master IP/URL field is read-only. • **NDP (UDP)** - In this mode, enter the IP/URL, Master Port Number, and username/password (if used) on the Master. • **URL (UDP)** - In this mode, enter the IP/URL, Master Port Number, and username/password (if used) on the Master.
• System Number:	Allows you to enter a system number. • Default value is **0** (zero).
• Master IP/URL:	Sets the Master IP or URL of the NetLinx Master.
• Master Port Number:	Allows you to enter the port number used with the NetLinx Master. • Default value is **1319**.
• 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.
• NDP Name:	Displays the Name that is shown on the Master's Manage NetLinx Web Page associated with the device File Name (read-only).

Refer to the *Configuring the Master Connection Settings* section on page 43 and *Configuring the Ethernet Connection on the NetLinx Master* section on page 46 for instructions on using the System Settings page.

Protected Setup - Calibrate Page

Select **Calibrate** on the *Protected Setup Page* (see FIG. 67 on page 64) to access the *Calibrate Page* (FIG. 69).

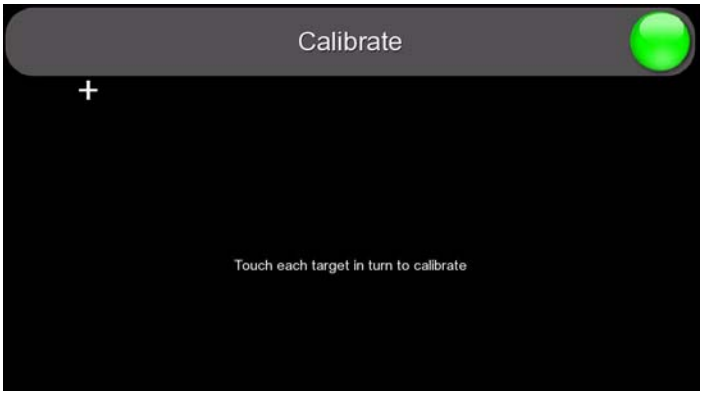


FIG. 69 Calibrate Page

The options on this page allow you to calibrate the input touch device (touch monitor) using the selected touch driver.

NOTE: *Alternatively, this page can be accessed via the CALIBRATE pushbutton on the front panel. Refer to the Calibrating the TPI* section on page 39 *for details.*

- If no touch device is detected, the *Calibration* page is not available. In this case, the TPI will ignore any attempt to open the *Calibration* page.
- If the wrong touch driver is selected prior to the calibration process, press any of the front-panel pushbuttons to exit the *Calibration* page (and select a different touch driver).
- Press the crosshairs to calibrate the panel.
- When the calibration is complete, the Calibrate page closes (returning to the last open Configuration page).

NOTE: *If you are using a non-touch enabled monitor, DO NOT PRESS THE CALIBRATE BUTTON. Refer to the Setting the Output Resolution* section on page 38 *for screen adjustment procedures.*

Protected Setup - G4 Web Control Page

Select **G4 Web Control** on the *Protected Setup Page* (see FIG. 67 on page 64) to access the *G4 Web Control Page* (FIG. 70).

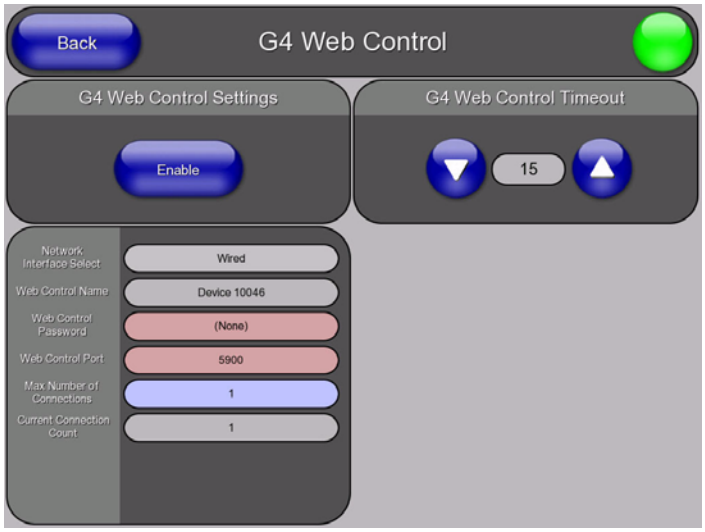


FIG. 70 Protected Setup - G4 Web Control Page

The options on the *G4 Web Control* page center around enabling and disabling both the display and control of your TPI, via the web (FIG. 70). An external PC running a VNC client (installed during the initial communication to the G4 device) makes this possible.

Each G4 device supports the open standard Virtual Network Computing (VNC) interface containing a VNC server, which allows it 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 TPI remotely.

The TPI supports up to four G4 Web Control users simultaneously connected to the TPI.

Protected Setup - G4 Web Control Page	
G4 Web Control Settings	
• Enable/Enabled:	The *Enable/Enabled* button toggles between the two G4 Web Control activation settings: • **Enable** - deactivates the G4 Web Control feature on the TPI. • **Enabled** - activates the G4 Web Control feature on the TPI and allows an external PC running a VNC client to access the unit, after the remaining fields are configured. Default = *Enabled*.
• Network Interface Select	A read-only field that displays the method of communication to web. • **Wired** is selected because it is the only method of communication to the web (via a direct Ethernet connection). This is a default setting since no wireless interface is available.
• Web Control Name:	The unique alpha-numeric string that is used as the display name of the TPI within the Web Control tab of the NetLinx Security browser window. Set the name through the *Device Name* field on the Protected Setup Page. This Web Control tab displays a G4 icon alongside the link to the Web Control Name given to this TPI.
• Web Control Password:	Allows you to enter the G4 Authentication session password associated for VNC web access of this TPI.
• Web Control Port:	Allows you to enter the port value that the VNC Web Server runs on. • Default = *5900*.
• Max Number of Connections:	Allows you view and set the maximum number of users (up to four) that can be simultaneously connected to the target TPI via G4 Web Control. Press to cycle through the selection options. • Range = 1-4. • Default = *1*.
• Current Connection Count:	This read-only field displays the current number of users connected to the target TPI via the web. *Note: This value cannot exceed the Maximum number field.*
G4 Web Control Timeout:	Sets the length of time (in minutes) the TPI can remain idle (no cursor movements) before the session is closed and the user is disconnected. • Range = 0-240 minutes (0 = G4 Web Control never times-out) • Default = *15*

Refer to the *Using G4 Web Control®* section on page 136 for more detailed instructions on how to use the G4 Web Control page with the web-based NetLinx Security application.

Protected Setup - Other Settings

Select **Other Settings** on the *Protected Setup Page* (see FIG. 67 on page 64) to open a slider with the following options (FIG. 71):

- **Cache** - Press to access the *Cache Page* (FIG. 72)
- **Passwords** - Press to access the *Password Settings Page* (FIG. 73 on page 71)

FIG. 71 Protected Setup - Other Settings Slider

Protected Setup (Other Settings) - Cache Page

Select **Cache** from the *Other Settings* slider to access the *Cache Page* (FIG. 72):

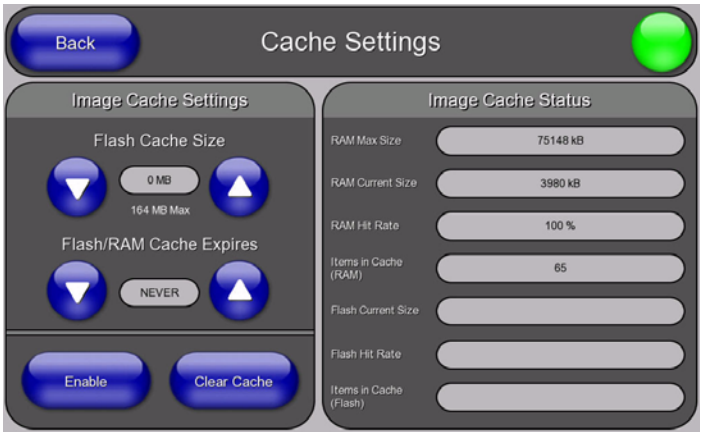


FIG. 72 Protected Setup (Other Settings) - Cache Page

The options on the *Cache* page allow you to configure the allocation of memory for image caching.

G4 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 be moved to Flash, since it is typically faster to retrieve images on Flash than across a network.

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.

While RAM cache is always enabled, Flash memory can be also be allocated for image caching. However, Flash memory is a secondary cache and is much slower than RAM cache (as it uses the local disk to store images). Flash memory should not be used frequently, but it may be appropriate to use Flash memory in some environments that are dynamic image intensive, at times when RAM cache is easily exhausted and the time taken to access Flash memory would be faster than network latency.

For example, when large dynamic images are being used over slow wireless links, putting the images into Flash memory can improve performance, since the panel can spend more resources processing information rather than waiting on images to arrive from a slow network.

Protected Setup (Other Settings) - Cache Page	
Image Cache Settings	
• Flash Cache Size:	Press the Up and Down arrows to add and remove Flash memory. • Flash memory allocation cannot exceed the amount of Flash memory on the panel. • Default = *0*
• 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 Default = *Never*
• Enable:	Press this button to toggle the image Flash cache option On and Off. Default = *Disabled*
• Clear Cache:	Press this button to clear both the Flash and RAM cache of all stored images.
Image Cache Status	
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. If your hit rate is low, you may want to consider enabling Flash 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.

Enabling Image Cache

By default, Image Cache is disabled. To enable Image Cache:

1. In the *Flash/RAM Cache Expires* field, use the UP/DOWN arrow buttons to set the cache expiration.
2. Press **Enable** to turn on image caching (the button appears illuminated when enabled).
3. In the *Flash Cache Size* field, use the UP/DOWN arrow buttons to set the amount of Flash memory used.

NOTE: *The maximum amount of flash that can be allocated for caching is 75% of available flash.*

Clearing the Image Cache

Press **Clear Cache**.

This clears all image cache currently stored on the panel (both Flash and RAM).

Checking Image Cache Status

All status information is located in the **Image Cache Status** section of the *Cache* page.

Protected Setup (Other Settings) - Password Settings Page

Select **Passwords** from the *Other Settings* slider (see FIG. 71 on page 69) to access the *Password Settings Page* (FIG. 73):

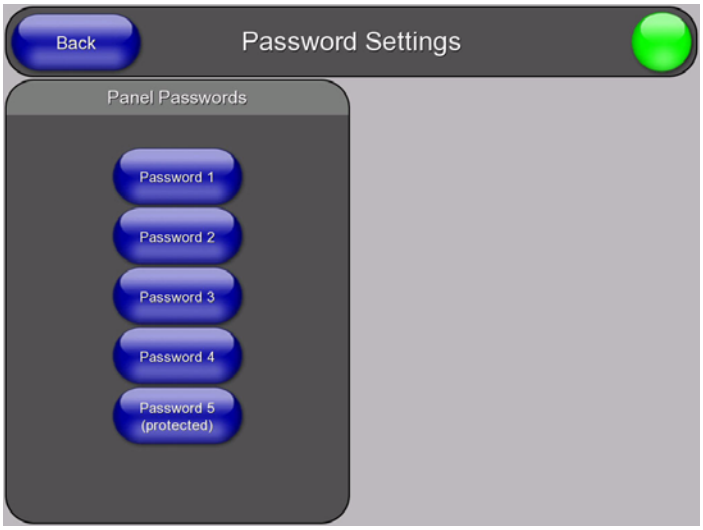


FIG. 73 Protected Setup (Other Settings) - Password Settings Page

The options in the *Password Settings* page allow you to assign passwords for the panel pages:

Protected Setup (Other Settings) - Password Settings Page	
Panel Passwords:	Accesses the alphanumeric values associated to particular password sets. • PASSWORD 1, 2, 3, 4, 5 (protected) buttons open a keyboard where you can enter alphanumeric values associated to a selected password group. • Clearing Password #5 removes the need to enter a password before accessing the Protected Setup page.

NOTE: *The default for all five Passwords is "1988".*

Protected Setup - Tools

Select **Tools** on the *Protected Setup Page* (see FIG. 67 on page 64) to open a slider with the following options (FIG. 71):

- **Panel Logs** - Press to access the *Panel Connection Logs* page (FIG. 75)
- **Panel Statistics** - Press to access the *Panel Statistics* page (FIG. 76 on page 73)
- **Connection Utility** - Press to access the *Connection Utility* page (FIG. 77 on page 74)

FIG. 74 Protected Setup - Tools Slider

Protected Setup (Tools) - Panel Connection Logs Page

Select **Panel Logs** from the *Tools* slider (see FIG. 74) to access the *Panel Connection Logs Page* (FIG. 75):

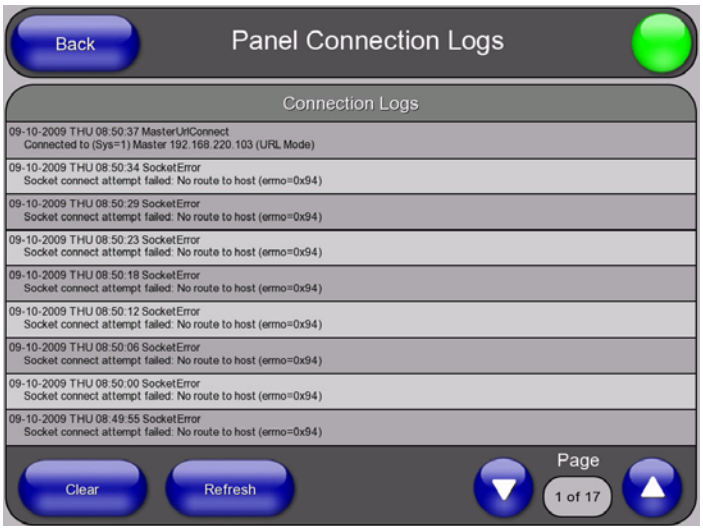


FIG. 75 Protected Setup (Tools) - Panel Connection Logs Page

The *Panel Connection Logs* page allows you to view and track the connection history of the panel.

Protected Setup (Tools) - Panel Connection Logs Page	
• Connection Logs:	A history of all connections, attempts, and failures for the panel.
• Clear:	Clears the Panel Connection Logs history.
• Refresh:	Refreshes the Panel Connection Logs history.
• Page:	Indicates the current page of the Panel Connection Logs. Use the Up and Down arrows to move from one page to the next.

Protected Setup (Tools) - Panel Statistics Page

Select **Panel Statistics** from the *Tools* slider (see FIG. 74) to access the *Panel Statistics Page* (FIG. 76):

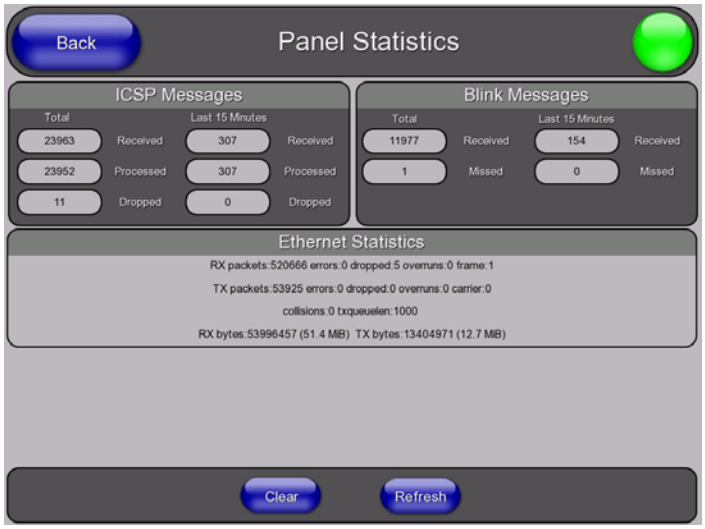


FIG. 76 Protected Setup (Tools) - Panel Statistics Page

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

Protected Setup (Tools) - Panel Statistics Page	
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.
• 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.

Protected Setup (Tools) - Connection Utility Page

Select **Connection Utility** from the *Tools* slider (see FIG. 74) to access the *Connection Utility Page* (FIG. 77):

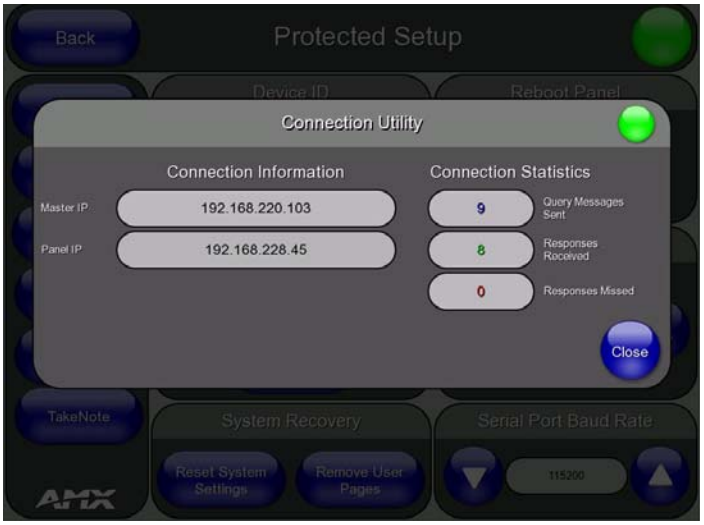


FIG. 77 Protected Setup (Tools) - Connection Utility Page

The options on the *Connection Utility* page allows you to view query and response statistics for your connection.

Connection Utility Page	
Connection Information	
• Master IP:	Displays the IP address of the network's Master.
• Panel IP:	Displays the IP address of the touch panel.
Connection Statistics	
• Query Messages Sent:	Displays the number of query messages sent from the panel to the Master.
• Responses Received:	Displays the number of responses the panel has received from the Master.
• Responses Missed:	Displays the number of expected responses from the Master that 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 page.
3. Move the panel throughout your wireless network, and changes within the utility.
   - **Connection Information** indicates the IP of the connected master and the IP of your panel.
   - **Connection Statistics** show the current quality of the panel connection.
4. Push **Close** when you are done using the Connection Utility.

Protected Setup - TakeNote Control Page

Select **TakeNote** on the *Protected Setup Page* (see FIG. 67 on page 64) to access the *TakeNote Control Page* (FIG. 70).

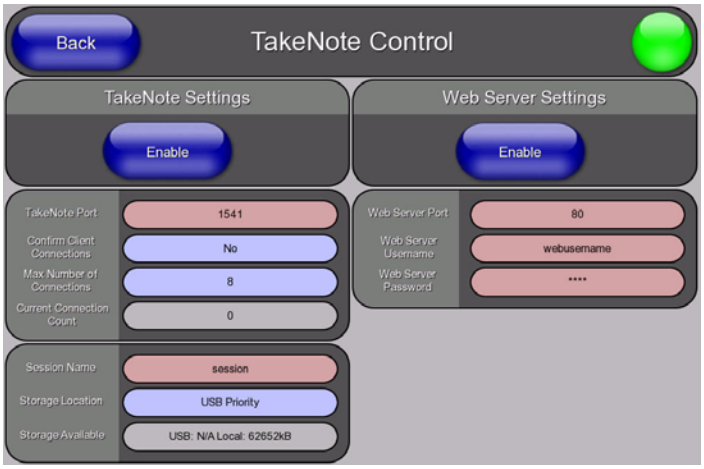


FIG. 78 Protected Setup - TakeNote Control Page

The options on the *TakeNote Control* page center around enabling and disabling the TakeNote™ Annotation Application. The TakeNote application allows you to create on-screen annotations over the displayed video sources, using a Pointing device (i.e. USB mouse or touch screen) connected to a TPI. The TPI supports up to eight external TakeNote clients simultaneously, in addition to the internal connection. A remote client can be any other AMX G4 touch panel using either a Computer Control button with TakeNote enabled, or a TakeNote button.

Protected Setup - TakeNote Control Page	
Takenote Settings	
• Enable/Enabled:	The *Enable/Enabled* button toggles between the two TakeNote activation settings: • **Enable** - deactivates the TakeNote feature on the TPI. • **Enabled** - activates the TakeNote feature on the TPI. Default = *Disabled*.
• TakeNote Port:	Press within this field to invoke the on-screen TakeNote Port keypad, and enter the Port number on the TPI that will be reserved for use by TakeNote (default = **1541**). This is the port number that remote TakeNote clients must specify in their G4 Computer Control button's TakeNote properties, or their TakeNote button's properties.
• Confirm Client Connections:	When a remote client attempts to connect to the device, a dialog is displayed on the screen asking whether the remote client should be allowed to connect. • Select *Yes* on the dialog to allow the connection • Select *No* to deny it Remote clients can connect at any time.
• Max Number of Connections:	Allows you view and set the maximum number of users (up to 8) that can be simultaneously connected to the TPI to use TakeNote. Press to cycle through the selection options: • Range = 1-8. • Default = *8*.
• Current Connection Count:	This read-only field displays the current number of TakeNote users connected to the TPI. *Note: This value cannot exceed the Maximum Number of Connections field.*
• Session Name:	Selecting this field will show a keyboard on the screen that allows the name of the current "session" to be entered. The Session Name is prefix to the file names of any saved images made during that session.
• Storage Location:	This option allows you to specify where to save captured TakeNote screen images. Captured TakeNote screen images are saved as JPG files. Press to cycle through the selection options: • **USB Priority** (*default*) - This setting saves the image to a USB stick inserted into any of the USB Type A Input ports on the TPI, if a USB stick is present (see the *Wiring and Device Connections* section on page 24). If a USB stick is not present, images will be saved to the internal local disk. • **Local Disk** - This setting saves the image to the TPI's internal hard drive. • **disabled** - This option disables the Save feature. *Note: Refer to the Capturing and Saving the Screen Image* section on page 143 *for details on saving captured TakeNote screen images.*
• Storage Available:	This read-only field indicates the amount of storage space available on the Local Disk, as well as the USB stick (if present).

Protected Setup - TakeNote Control Page (Cont.)	
Web Server Settings	
• Enable/Enabled:	The *Enable/Enabled* button toggles between the two Web Server activation settings: • **Enable** - deactivates the Web Server feature on the TPI. • **Enabled** - activates the Web Server feature on the TPI. Default = *Disabled*.
• Web Server Port:	Press within this field to invoke the on-screen WebServer Port keypad, and enter the Port number on the TPI that will be reserved for use by the Web Server. • Default = **80**.
• Web Server Username:	Press within this field to invoke the on-screen WebServer User Name keyboard, and enter the Username that will be required to connect to the TPI from a remote PC. *Note: This is can be left blank is no user authentication is desired.*
• Web Server Password:	Press within this field to invoke the on-screen WebServer Password keyboard, and enter the Password that will be required to connect to the TPI from a remote PC. *Note: This is can be left blank is no user authentication is desired.*

Refer to the *Using Takenote™* section on page 139 for more detailed instructions on how to use the G4 Web Control page with the web-based NetLinx Security application.

NetLinx Programming

Overview

You can program the TPI using the commands described in this section to perform a wide variety of operations.

NOTE: *Verify you are using the latest NetLinx Master firmware as well as the latest versions of NetLinx Studio and TPDesign.*

Button Assignments

• Channel Range:	1 - 4000 Button push and Feedback (per address port)
• 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

NOTE: *Button assignments can only be adjusted in TPD4, not on the panels themselves.*

Color, Border, and Font Names/ID #'s

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 Triplets And Names For Basic 88 Colors

Index #	Name	Red	Green	Blue	Index #	Name	Red	Green	Blue
00	Very Light Red	255	0	0	46	Dark Aqua	0	64	127
01	Light Red	223	0	0	47	Very Dark Aqua	0	48	95
02	Red	191	0	0	48	Very Light Blue	0	0	255
03	Medium Red	159	0	0	49	Light Blue	0	0	223
04	Dark Red	127	0	0	50	Blue	0	0	191
05	Very Dark Red	95	0	0	51	Medium Blue	0	0	159
06	Very Light Orange	255	128	0	52	Dark Blue	0	0	127
07	Light Orange	223	112	0	53	Very Dark Blue	0	0	95
08	Orange	191	96	0	54	Very Light Purple	128	0	255
09	Medium Orange	159	80	0	55	Light Purple	112	0	223
10	Dark Orange	127	64	0	56	Purple	96	0	191
11	Very Dark Orange	95	48	0	57	Medium Purple	80	0	159
12	Very Light Yellow	255	255	0	58	Dark Purple	64	0	127
13	Light Yellow	223	223	0	59	Very Dark Purple	48	0	95
14	Yellow	191	191	0	60	Very Light Magenta	255	0	255
15	Medium Yellow	159	159	0	61	Light Magenta	223	0	223
16	Dark Yellow	127	127	0	62	Magenta	191	0	191
17	Very Dark Yellow	95	95	0	63	Medium Magenta	159	0	159
18	Very Light Lime	128	255	0	64	Dark Magenta	127	0	127
19	Light Lime	112	223	0	65	Very Dark Magenta	95	0	95
20	Lime	96	191	0	66	Very Light Pink	255	0	128
21	Medium Lime	80	159	0	67	Light Pink	223	0	112
22	Dark Lime	64	127	0	68	Pink	191	0	96
23	Very Dark Lime	48	95	0	69	Medium Pink	159	0	80
24	Very Light Green	0	255	0	70	Dark Pink	127	0	64
25	Light Green	0	223	0	71	Very Dark Pink	95	0	48
26	Green	0	191	0	72	White	255	255	255
27	Medium Green	0	159	0	73	Grey1	238	238	238
28	Dark Green	0	127	0	74	Grey3	204	204	204
29	Very Dark Green	0	95	0	75	Grey5	170	170	170
30	Very Light Mint	0	255	128	76	Grey7	136	136	136
31	Light Mint	0	223	112	77	Grey9	102	102	102
32	Mint	0	191	96	78	Grey4	187	187	187
33	Medium Mint	0	159	80	79	Grey6	153	153	153
34	Dark Mint	0	127	64	80	Grey8	119	119	119
35	Very Dark Mint	0	95	48	81	Grey10	85	85	85

RGB Triplets And Names For Basic 88 Colors (Cont.)									
Index #	Name	Red	Green	Blue	Index #	Name	Red	Green	Blue
36	Very Light Cyan	0	255	255	82	Grey12	51	51	51
37	Light Cyan	0	223	223	83	Grey13	34	34	34
38	Cyan	0	191	191	84	Grey2	221	221	221
39	Medium Cyan	0	159	159	85	Grey11	68	68	68
40	Dark Cyan	0	127	127	86	Grey14	17	17	17
41	Very Dark Cyan	0	95	95	87	Black	0	0	0
42	Very Light Aqua	0	128	255	255	TRANSPARENT	99	53	99
43	Light Aqua	0	112	223					
44	Aqua	0	96	191					
45	Medium Aqua	0	80	159					

Fixed Fonts and ID Numbers

Font styles can be used to program the text fonts on buttons, sliders, and pages. The following table 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
			Variable Fonts start at 32.		

NOTE: *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.*

Slider/Cursor Names

Default Font Styles and ID Numbers	
Bargraph slider names	Joystick Cursor names
None	None
Ball	Arrow
Circle -L	Ball
Circle -M	Circle
Circle -S	Crosshairs
Precision	Gunsight
Rectangle -L	Hand
Rectangle -M	Metal
Rectangle -S	Spiral
Windows	Target
Windows Active	View Finder

Border Styles By Name

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.

Border Styles By Name			
1	None	80	Menu Bottom Rounded 15
2	AMX Elite -L	81	Menu Bottom Rounded 25
3	AMX Elite -M	82	Menu Bottom Rounded 35
4	AMX Elite -S	83	Menu Bottom Rounded 45
5	Bevel -L	84	Menu Bottom Rounded 55
6	Bevel -M	85	Menu Bottom Rounded 65
7	Bevel -S	86	Menu Bottom Rounded 75
8	Circle 15	87	Menu Bottom Rounded 85

Border Styles By Name (Cont.)			
9	Circle 25	88	Menu Bottom Rounded 95
10	Circle 35	89	Menu Bottom Rounded 105
11	Circle 45	90	Menu Bottom Rounded 115
12	Circle 55	91	Menu Bottom Rounded 125
13	Circle 65	92	Menu Bottom Rounded 135
14	Circle 75	93	Menu Bottom Rounded 145
15	Circle 85	94	Menu Bottom Rounded 155
16	Circle 95	95	Menu Bottom Rounded 165
17	Circle 105	96	Menu Bottom Rounded 175
18	Circle 115	97	Menu Bottom Rounded 185
19	Circle 125	98	Menu Bottom Rounded 195
20	Circle 135	99	Menu Top Rounded 15
21	Circle 145	100	Menu Top Rounded 25
22	Circle 155	101	Menu Top Rounded 35
23	Circle 165	102	Menu Top Rounded 45
24	Circle 175	103	Menu Top Rounded 55
25	Circle 185	104	Menu Top Rounded 65
26	Circle 195	105	Menu Top Rounded 75
27	Cursor Bottom	106	Menu Top Rounded 85
28	Cursor Bottom with Hole	107	Menu Top Rounded 95
29	Cursor Top	108	Menu Top Rounded 105
30	Cursor Top with Hole	109	Menu Top Rounded 115
31	Cursor Left	110	Menu Top Rounded 125
32	Cursor Left with Hole	111	Menu Top Rounded 135
33	Cursor Right	112	Menu Top Rounded 145
34	Cursor Right with Hole	113	Menu Top Rounded 155
35	Custom Frame	114	Menu Top Rounded 165
36	Diamond 15	115	Menu Top Rounded 175
37	Diamond 25	116	Menu Top Rounded 185
38	Diamond 35	117	Menu Top Rounded 195
39	Diamond 45	118	Menu Right Rounded 15
40	Diamond 55	119	Menu Right Rounded 25
41	Diamond 65	120	Menu Right Rounded 35
42	Diamond 75	121	Menu Right Rounded 45
43	Diamond 85	122	Menu Right Rounded 55
44	Diamond 95	123	Menu Right Rounded 65
45	Diamond 105	124	Menu Right Rounded 75
46	Diamond 115	125	Menu Right Rounded 85
47	Diamond 125	126	Menu Right Rounded 95
48	Diamond 135	127	Menu Right Rounded 105
49	Diamond 145	128	Menu Right Rounded 115
50	Diamond 155	129	Menu Right Rounded 125
51	Diamond 165	130	Menu Right Rounded 135
52	Diamond 175	131	Menu Right Rounded 145
53	Diamond 185	132	Menu Right Rounded 155
54	Diamond 195	133	Menu Right Rounded 165
55	Double Bevel -L	134	Menu Right Rounded 175
56	Double Bevel -M	135	Menu Right Rounded 185
57	Double Bevel -S	136	Menu Right Rounded 195
58	Double Line	137	Menu Left Rounded 15
59	Fuzzy	138	Menu Left Rounded 25
60	Glow - L	139	Menu Left Rounded 35
61	Glow -S	140	Menu Left Rounded 45
62	Help Down	141	Menu Left Rounded 55
63	Neon Active -L	142	Menu Left Rounded 65
64	Neon Active -S	143	Menu Left Rounded 75
65	Neon Inactive -L	144	Menu Left Rounded 85
66	Neon Inactive -S	145	Menu Left Rounded 95
67	Oval H 60x30	146	Menu Left Rounded 105

Border Styles By Name (Cont.)			
68	Oval H 100x50	147	Menu Left Rounded 115
69	Oval H 150x75	148	Menu Left Rounded 125
70	Oval H 200x100	149	Menu Left Rounded 135
71	Oval V 30x60	150	Menu Left Rounded 145
72	Oval V 50x100	151	Menu Left Rounded 155
73	Oval V 75x150	152	Menu Left Rounded 165
74	Oval V 100x200	153	Menu Left Rounded 175
75	Picture Frame	154	Menu Left Rounded 185
76	Quad Line	155	Menu Left Rounded 195
77	Single Line		
78	Windows Style Popup		
79	Windows Style Popup (Status Bar)		

Border Styles By Numbers

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

Text Effects Names

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

SEND_COMMANDs

- New command format starts with a '^'
- '^' commands have the capability of assigning a variable text address range and button state range.
- Variable text address ranges allow the user to target 1 or more variable text channels in a single command.
- Button States range allow the user to target 1 or more states of a variable text button with a single command.
- "." Character is used for the 'through' notation and "&" character is used for the 'And' notation to specify the variable text address range and Button States range.

Example:

```
SEND_COMMAND D:P:S,"'^JSB-500.504&510.515,1&2,1'"
```

- '^JSB-' - Set picture alignment
- '500.504&510.515' - For variable text range 500-504 & 510-515
- '1&2' - For the OFF & ON states of the button
- '1' - Picture alignment to upper left corner

Page Commands

NOTE: *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 compatible G4 devices).*

The following NetLinx Page Commands are supported by the TPI, and are not case sensitive.

Page Commands	

@APG	Add the pop-up page to a group if it does not already exist. If the new pop-up is added to a group which has a pop-up displayed on the current page along with the new pop-up, the displayed pop-up will be hidden and the new pop-up will be displayed.
	Syntax:
	`"'@APG-<popup page name>;<popup group name>'"`
	Variables:
	• 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 pop-up page 'Popup1' to the pop-up group 'Group1'.

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

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

@PDR	Set the pop-up location reset flag. If the flag is set, the pop-up 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 = Name of the page on which the pop-up is displayed (1 - 50 ASCII characters).
	• 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.

Page Commands (Cont.)	

@PHE	Set the hide effect for the specified pop-up page to the named hide effect.
	Syntax:
	`"'@PHE-<popup page name>;<hide effect name>'"`
	Variables:
	• popup page name = Name of the page on which the pop-up is displayed (1 - 50 ASCII characters).
	• hide effect name = Refers to the pop-up effect names being used.
	Example:
	`SEND_COMMAND Panel,"'@PHE-Popup1;Slide Left'"`
	Sets the Popup1 hide effect name to 'Slide 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 on which the pop-up is displayed.
	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 pop-up page.
	Syntax:
	`"'@PHT-<popup page name>;<hide effect time>'"`
	Variables:
	• popup page name = 1 - 50 ASCII characters. Name of the page on which the pop-up is displayed.
	• 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.

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

@PPF	Deactivate a specific pop-up 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 pop-up 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>'"`
	Variables:
	• popup page name = 1 - 50 ASCII characters. Name of the pop-up page.
	• page name = 1 - 50 ASCII characters. Name of the page on which the pop-up is displayed.
	Example:
	`SEND_COMMAND Panel,"'@PPF-Popup1;Main'"`
	Deactivates the pop-up page 'Popup1' on the Main page.
	Example 2:
	`SEND_COMMAND Panel,"'@PPF-Popup1'"`
	Deactivates the pop-up page 'Popup1' on the current page.

@PPG	Toggle a specific pop-up 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 pop-up 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 pop-up page.
	• page name = 1 - 50 ASCII characters. Name of the page on which the pop-up is displayed.
	Example:
	`SEND_COMMAND Panel,"'@PPG-Popup1;Main'"`
	Toggles the pop-up page 'Popup1' on the 'Main' page from one state to another (On/Off).
	Example 2:
	`SEND_COMMAND Panel,"'@PPG-Popup1'"`
	Toggles the pop-up page 'Popup1' on the current page from one state to another (On/Off).

Page Commands (Cont.)	

@PPK	Kill a specific pop-up page from all pages. *Kill* refers to the deactivating (Off) of a pop-up 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 TPDesign4.
	Syntax:
	`"'@PPK-<popup page name>'"`
	Variable:
	• popup page name = 1 - 50 ASCII characters. Name of the pop-up page.
	Example:
	`SEND_COMMAND Panel,"'@PPK-Popup1'"`
	Kills the pop-up page 'Popup1' on all pages.

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

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

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

@PPX	Close all pop-ups on all pages. Same as a 'Clear All' command in TPDesign 4.
	Syntax:
	`"'@PPX'"`
	Example:
	`SEND_COMMAND Panel,"'@PPX'"`
	Close all pop-ups on all pages.

Page Commands (Cont.)	

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

@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 on which the pop-up is displayed.
	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 pop-up page.
	Syntax:
	`"'@PST-<popup page name>;<show effect time>'"`
	Variables:
	• popup page name = Name of the page on which the pop-up is displayed (1 - 50 ASCII characters).
	• 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	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 on which the pop-up is displayed.
	Example:
	`SEND_COMMAND Panel,"'PAGE-Page1'"`
	Flips to page1.

PPOF	Deactivate a specific pop-up page on either a specified page or the current page. If the pop-up 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.
	Note: If the page name is empty, the current page is used (see example 2).
	Syntax:
	`"'PPOF-<popup page name>;<page name>'"`
	Variables:
	• popup page name = 1 - 50 ASCII characters. Name of the pop-up page.
	• page name = 1 - 50 ASCII characters. Name of the page on which the pop-up is displayed.
	Example:
	`SEND_COMMAND Panel,"'PPOF-Popup1;Main'"`
	Deactivates the pop-up page 'Popup1' on the Main page.
	Example 2:
	`SEND_COMMAND Panel,"'PPOF-Popup1'"`
	Deactivates the pop-up page 'Popup1' on the current page.

PPOG	Toggle a specific pop-up 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 pop-up page. This command works in the same way as the 'Toggle Popup' command in TPDesign4.
	Syntax:
	`"'PPOG-<popup page name>;<page name>'"`
	Variables:
	• popup page name = 1 - 50 ASCII characters. Name of the pop-up page.
	• page name = 1 - 50 ASCII characters. Name of the page on which the pop-up is displayed.
	Example:
	`SEND_COMMAND Panel,"'PPOG-Popup1;Main'"`
	Toggles the pop-up page 'Popup1' on the Main page from one state to another (On/Off).
	Example 2:
	`SEND_COMMAND Panel,"'PPOG-Popup1'"`
	Toggles the pop-up page 'Popup1' on the current page from one state to another (On/Off).

Page Commands (Cont.)	

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

Button Commands With Embedded Codes

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 compatible G4 devices).

Button Commands With Embedded Codes		
^BMF	Set any/all button parameters by sending embedded codes and data. See below for embedded codes. Syntax: `SEND_COMMAND <DEV>,"'^BMF-<vt addr range>,<button states range>,<data>'"` Variables: • 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) • level range = 1 - 600 (level value is 1 - 65535) • data = embedded codes below.	
	Embedded Codes:	
	'%R<left>,<top>,<right>,<bottom>'	Set rectangle.
	'%B',<border style>	Set the Border Style name.
	'%B',<border 0-27,40,41>	Set the Border Style number.
	'%DO<1-5><1-5><1-5><1-5><1-5>'	Set the draw order. Listed bottom to top.
	'%F',<font 1-8,10,11,20-29,32-xx>	Set Font (Font ID#'s generated in TPD4).
	'%F<font 01-08,10,11,20-29,32-xx>'	Set Font (Font ID#'s generated in TPD4).
	'%MI<mask image>'	Set the mask image (See ^BIM).
	'%T<text>'	Set Text using ASCII characters (empty is clear).
	'%P<bitmap>'	Set Picture/Bitmap filename (empty is clear).
	'%I',<icon 1-9900, 0-clear>	Set 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 Icon using values of 01 - 9900 (icon numbers are assigned in the TPDesign4 Resource Manager tab - Slots section).
	'%J',<alignment of text 1-9>'	Set text alignment using telephone Keypad layout • 1 = left, top • 5 = center, middle • 9 = right, bottom
	'%JT<alignment of text 0-9>'	Set text alignment using telephone Keypad layout • 1 = left, top • 5 = center, middle • 9 = right, bottom • 0 is absolute followed by '<left>,<top>' outside the border.
	'%JB<alignment of bitmap/picture 0-9>'	Set bitmap/picture alignment using telephone Keypad layout • 1 = left, top • 5 = center, middle 9 = right, bottom) • 0 is absolute followed by '<left>,<top>' outside the border.
	'%JI<alignment of icon 0-9>'	Set icon alignment using telephone Keypad layout • 1 = left, top • 5 = center, middle 9 = right, bottom) • 0 is absolute followed by '<left>,<top>' outside the border.

Button Commands With Embedded Codes (Cont.)	
Embedded Codes (Cont.):	
'%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 button.
'%ST<style>'	Button Style.
'%SO<sound>'	Set Button Sound
'%EN<1 or 0>'	Enable/Disable button.
'%WW<1 or 0>'	Word wrap on/off.
'%GH<bargraph hi>'	Bargraph upper limit.
'%GL<bargraph low>'	Bargraph lower limit.
'%GN<bargraph slider name>'	Bargraph slider name/Joystick cursor name.
'%GC<bargraph slider color>'	Bargraph slider color/Joystick cursor color.
'%GI<bargraph invert>'	Bargraph invert (0,1,2,3-See ^GIV).
'%GU<bargraph ramp up>'	Bargraph ramp up time 1/10 sec.
'%GD<bargraph ramp down>'	Bargraph ramp down time 1/10 sec.
'%GG<bargraph drag increment>'	Bargraph drag increment relative bargraph (See ^GDI).
'%VI<1 or 0>'	Set Video, Video ON = 1, OFF = 0.
'%OT<feedback type>'	Feedback Type: • None • Channel • Invert • On(Always On) • Momentary • Blink
'%SM'	Submit text for text area button.
'%SF<1 or 0>'	Set focus for text area button. *Note: 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.*
'%OP<0-255>'	Button Opacity: • 0=Invisible • 255=Opaque
'%OP#<00-FF>'	Button Opacity: • 00=Invisible • FF=Opaque
'%UN<Unicode text'	Set Unicode text (See ^UNI).
'%LN<0-240>'	Set lines of video removed.
'%EF<text effect name>'	Set text effect.
'%EC<text effect color>'	Set text effect color.
'%ML<max length>'	Set max length of a text area. *Note: This is only for text area input buttons & not for text area Input Mask buttons.*
'%MK<input mask>'	Set input mask of a text area.
'%VL<0-1>'	Logon/logoff computer control.
'%VN<network name>'	Set the network connection name.
'%VP<password>'	Set the Network connection password.
Example: `SEND_COMMAND D:P:S,"'^BMF-500,1,%B10,%CF Red,%CB Blue,%CT Black,%Ptest.png'"` Set button OFF state Border, Fill Color, Border Color, Text Color and Bitmap.	

Button Commands

NOTE: *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 compatible G4 devices).*

These Button Commands are not case sensitive.

All commands that begin with "**^**" have the capability of assigning a variable text address range and button state range.

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

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 Commands	

^ANI	Run a button animation (in 1/10 second).
	Syntax:
	`"'^ANI-<vt addr range>,<start state>,<end state>,<time>'"`
	Variables:
	• 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 address 500 from state 1 to state 25 for 10 second.

Button Commands (Cont.)	

^APF	Add page flip action to a button if it does not already exist.
	Syntax:
	`"'^APF-<vt addr range>,<page flip action>,<page name>'"`
	Variables:
	• 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 button address 400 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>'"`
	Variables:
	• 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.

^BAU	Append unicode text. Same format as ^UNI.
	Syntax:
	`"'^BAU-<vt addr range>,<button states range>,<unicode text>'"`
	Variables:
	• 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>'"`
	Variables:
	• 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 the *RGB Triplets and Names for Basic 88 Colors* section on page 77 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, RGB alpha colors (RRGGBBAA) and R, G, & B color values (RRGGBB).

Button Commands (Cont.)	

?BCB	Get the current border color.
	Syntax:
	`"'?BCB-<vt addr range>,<button states range>'"`
	Variables:
	• 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	Set the fill 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:
	`"'^BCF-<vt addr range>,<button states range>,<color value>'"`
	Variables:
	• 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 the *RGB Triplets and Names for Basic 88 Colors* section on page 77 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, RGB alpha colors (RRGGBBAA) and R, G, & B color values (RRGGBB).

?BCF	Get the current fill color.
	Syntax:
	`"'?BCF-<vt addr range>,<button states range>'"`
	Variables:
	• 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 Commands (Cont.)	

^BCT	Set the text 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:
	`"'^BCT-<vt addr range>,<button states range>,<color value>'"`
	Variables:
	• 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 the *RGB Triplets and Names for Basic 88 Colors* section on page 77 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, RGB alpha colors (RRGGBBAA) and R G & B colors values (RRGGBB).

?BCT	Get the current text color.
	Syntax:
	`"'?BCT-<vt addr range>,<button states range>'"`
	Variables:
	• 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:
	`ButtonGet Id = 529 Type = 1013`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #FFFFFEFF`
	`TEXT LENGTH = 9`

^BDO	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>'"`
	Variables:
	• 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 =
	1 - Fill Layer
	2 - Image Layer
	3 - Icon Layer
	4 - Text Layer
	5 - Border Layer
	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. This command only works on General-type buttons.
	Syntax:
	`"'^BFB-<vt addr range>,<feedback type>'"`
	Variables:
	• 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>'"`
	Variables:
	• variable text address range = 1 - 4000.
	• input mask = Refer to the *Text Area Input Masking* section on page 9 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>'"`
	Variables:
	• 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'"`
	Removes 55 lines from the top and 55 lines from the bottom of the video button.

^BMC	Button copy command. Copy attributes of the source button to all the destination buttons. 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 character pairs that can be separated by comma, space, percent or just ran together.
	Syntax:
	`"'^BMC-<vt addr range>,<button states range>,<source port>,<source address>,`
	`<source state>,<codes>'"`
	Variables:
	• 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 1:
	`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.

Button Commands (Cont.)	
^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: See the *Button Commands With Embedded Codes* section on page 85.

^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>'"`
	Variables:
	• 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.
	Note: 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>'"`
	Variables:
	• 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>'"`
	Variables:
	• 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.

?BMP	Get the current bitmap name.
	Syntax:
	`"'?BMP-<vt addr range>,<button states range>'"`
	Variables:
	• 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:
	`ButtonGet Id = 529 Type = 1002`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = Buggs.png`
	`TEXT LENGTH = 9`

Button Commands (Cont.)	

^BNC	Clear current TakeNote annotations.
	Syntax:
	`"'^BNC-<vt addr range>,<command value>'"`
	Variables:
	• 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.

^BNN	Set the TakeNote network name for the specified Addresses.
	Syntax:
	`"'^BNN-<vt addr range>,<network name>'"`
	Variables:
	• 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>'"`
	Variables:
	• 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>'"`
	Variables:
	• 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.

?BOP	Get the overall button opacity.
	Syntax:
	`"'?BOP-<vt addr range>,<button states range>'"`
	Variables:
	• 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`

Button Commands (Cont.)	

^BOR	Set a border to a specific border style associated with a border value for those buttons with a defined address range. Refer to the Border Styles By Name table on page 78.
	Syntax:
	`"'^BOR-<vt addr range>,<border style name or border value>'"`
	Variables:
	• variable text address range = 1 - 4000.
	• border style name = Refer to the Border Styles By Name table on page 78.
	• 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 the *Border Styles By Name* section on page 78 for more information.

^BOS	Set the video window slot ID # to the new Slot ID#. The new Slot ID # is set only if the specified slot is not the same as the current slot selected.
	Note: This is an optional parameter and ONLY passes data to the PC.
	Syntax:
	`"'^BOS-<vt addr range>,<button states range>,<slot number>,<touch pass through (optional)>'"`
	Variables:
	• 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).
	• slot number =
	0 = No Video Fill (**Video Off**)
	1 - 4 = Video Fill (**Video On**)
	• touch pass through (optional) - If not present, assumed Touch Pass Through is off.
	0 = Turn off Touch Pass Through
	1 = Turn on Touch Pass Through
	Example:
	`SEND_COMMAND Panel,"'^BOS-500,1,0'"`
	Sets the button to display no video fill, and disables Touch Pass Through.
	Example:
	`SEND_COMMAND Panel,"'^BOS-500,1,2,1'"`
	Sets the button to display video in Slot 2, and enables Touch Pass Through.
	Refer to the *Setup - Video Settings Page* section on page 59 for more information on the slot assignments within a panel.

^BPP	Set or clear the protected page flip flag of a button. A value of zero (0) clears the flag.
	Syntax:
	`"'^BPP-<vt addr range>,<protected page flip flag value>'"`
	Variables:
	• 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. This command works **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>'"`
	Variables:
	• 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 to the Border Styles By Name table on page 78.
	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.

Button Commands (Cont.)	

?BRD	Get the current border name.
	Syntax:
	`"'?BRD-<vt addr range>,<button states range>'"`
	Variables:
	• 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`

^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>,<selection value>'"`
	Variables:
	• variable text address = 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	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.

^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>'"`
	Variables:
	• 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>'"`
	Variables:
	• 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.

Button Commands (Cont.)	

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

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

^BWW	Set the button word wrap feature to those buttons with a defined address range.
	Note: By default, word-wrap is Off.
	Syntax:
	`"'^BWW-<vt addr range>,<button states range>,<word wrap>'"`
	Variables:
	• 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.

?BWW	Get the current word wrap flag status.
	Syntax:
	`"'?BWW-<vt addr range>,<button states range>'"`
	Variables:
	• 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`

Button Commands (Cont.)	

^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>'"`
	Variables:
	• 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.

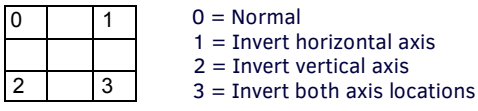
^ENA	Enable or disable buttons with a set variable text range.
	Syntax:
	`"'^ENA-<vt addr range>,<command value>'"`
	Variables:
	• variable text address range = 1 - 4000.
	• command value = (0= disable, 1= enable)
	Example:
	`SEND_COMMAND Panel,"'^ENA-500.504&510.515,0'"`
	Disables button pushes on buttons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

^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>'"`
	Variables:
	• 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 the Default Font Styles and ID Numbers table on page 78.
	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).

Button Commands (Cont.)	

?FON	Get the current font index.
	Syntax:
	`"'?FON-<vt addr range>,<button states range>'"`
	Variables:
	• 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`

^GDI	Change the bargraph drag increment.
	Syntax:
	`"'^GDI-<vt addr range>,<bargraph drag increment>'"`
	Variables:
	• 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>'"`
	Variables:
	• variable text address range = 1 - 4000.
	• joystick axis to invert = 0 - 3.
	 
	
	0 = Normal
	1 = Invert horizontal axis
	2 = Invert vertical axis
	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>'"`
	Variables:
	• variable text address range = 1 - 4000.
	• bargraph limit range = 0 - 65535 (*bargraph upper limit range*).
	Example:
	`SEND_COMMAND Panel,"'^GLH-500,1000'"`
	Changes the bargraph upper limit to 1000.

<table>
<tr><th colspan="2">Button Commands (Cont.)</th></tr>
<tr><td>^GLL</td><td>Change the bargraph lower limit.
Syntax:
"'^GLL-<vt addr range>,<bargraph low>'"
Variables:
• variable text address range = 1 - 4000.
• bargraph limit range = 0 - 65535 (bargraph lower limit range).
Example:
SEND_COMMAND Panel,"'^GLL-500,150'"
Changes the bargraph lower limit to 150.</td></tr>
<tr><td>^GRD</td><td>Change the bargraph ramp-down time in 1/10th of a second.
Syntax:
"'^GRD-<vt addr range>,<bargraph ramp down time>'"
Variables:
• 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.</td></tr>
<tr><td>^GRU</td><td>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.</td></tr>
<tr><td>^GSC</td><td>Change the bargraph slider color or joystick cursor color.
Note: You can also assign the color by color index, name, and R,G,B value (RRGGBB or RRGGBBAA).
Syntax:
"'^GSC-<vt addr range>,<color value>'"
Variables:
• variable text address range = 1 - 4000.
• color value = Refer to theRGB Triplets and Names for Basic 88 Colors section on page 77 for more information.
Example:
SEND_COMMAND Panel,"'^GSC-500,12'"
Changes the bargraph or joystick slider color to Yellow.</td></tr>
<tr><td>^GSN</td><td>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>'"
Variables:
• 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'.</td></tr>
</table>

Button Commands (Cont.)	

^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.

?ICO	Get the current icon index.
	Syntax:
	`"'?ICO-<vt addr range>,<button states range>'"`
	Variables:
	• 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:
	`ButtonGet Id = 529 Type = 1003`
	`Flag = 0`
	`VALUE1 = 2`
	`VALUE2 = 12`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

^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>'"`
	Variables:
	• 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,"'^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.)	

?JSB	Get the current bitmap justification.
	Syntax:
	`"'?JSB-<vt addr range>,<button states range>'"`
	Variables:
	• 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:
	`ButtonGet Id = 529 Type = 1005`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 5`
	`VALUE3 = 0`
	`TEXT =`
	`TEXT LENGTH = 0`

^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>'"`
	Variables:
	• 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.

?JSI	Get the current icon justification.
	Syntax:
	`"'?JSI-<vt addr range>,<button states range>'"`
	Variables:
	• 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`

Button Commands (Cont.)	

^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>'"`
	Variables:
	• 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.

?JST	Get the current text justification.
	Syntax:
	`"'?JST-<vt addr range>,<button states range>'"`
	Variables:
	• 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`

^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'.

^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.

Button Commands (Cont.)	

^SHO	Show or hide a button with a set variable text range.
	Syntax:
	`"'^SHO-<vt addr range>,<command value>'"`
	Variables:
	• 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.

^SKT	Open a local socket on a port for 3rd party devices to receive press, move, or release commands. Output is text/telnet based and follows the same format as ^TOP. Set port to 0 to disable. An existing client will be forcefully disconnected. Only 1 client at a time will be serviced.
	Syntax:
	`"'^SKT-<port>'"`
	Variables:
	• port = 1024 - 65535.
	Example:
	`SEND_COMMAND Panel,"'^SKT-1234'"`

^SLT	Send a command to a given slot.
	• These commands are directed at the video card subsystems. Slot commands contain a series of name/value pairs separated by commas.
	• These commands are case insensitive.
	Syntax:
	`SEND_COMMAND <DEV>,"'^SLT-<slot number>,<slot command>'"`
	Variables:
	• slot number = 1 - 4 (each of these options corresponds to an input position.)
	• slot command = see list below.
	• Input: Set input type for a slot.
	Input type = Composite (comp1, comp2, comp3), Svideo, Component, RGB, or DVI.
	Syntax:
	`input=<input type>`
	input = **<svideo,component,comp1,comp2,comp3,rgb,dvi>**
	Examples:
	`SEND_COMMAND TP,"'^SLT-1,input=component'"`
	Switches input 1 to detect component input signals.
	`SEND_COMMAND TP,"'^SLT-3,input=rgb'"`
	Switches input 3 to detect RGB input signals.
	• Resolution: Set input resolution detection to manual or auto. Valid choices are auto, or specify manual resolution. Valid for only Component or RGB input types.
	Syntax:
	`resolution=<>`
	resolution = **<auto or <horizontal>x<vertical>@<refresh> <description>>**
	Default = auto.
	Note: See latest product manual for supported input resolutions for different input types.
	Examples:
	`SEND_COMMAND TP,"'^SLT-1,resolution=auto'"`
	Switches input 1 to detect resolution automatically.
	`SEND_COMMAND TP,"'^SLT-3,resolution=1600x1200@60'"`
	Switches input 3 to force input timings to an expected 1600x1200@60 input.
	• **?Input:** Query the input type for an input.
	Syntax:
	`?input`
	The TPI will respond with a DATA COMMAND event from port 1 of the panel. The DATA.TEXT of the event will be in the following format.
	`'^SLT-<slot number 1-4>,input=<input type>'`
	Input type will be the current selected input type and will be one of the following:
	comp1,comp2,comp3,svideo,rgb,component,dvi

Button Commands (Cont.)	

^SLT (Cont.)	Example:
	`SEND_COMMAND TP,"'^SLT-1,?input'"`
	If input 1 is set to composite 1, the Command response will be: ^SLT-1,input=comp1
	If input 1 is set to composite 2, the Command response will be: ^SLT-1,input=comp2
	If input 1 is set to composite 3, the Command response will be: ^SLT-1,input=comp3
	If input 1 is set to svideo, the Command response will be: ^SLT-1,input=svideo
	If input 1 is set to RGB, the Command response will be: ^SLT-1,input=rgb
	If input 1 is set to component, the Command response will be: ^SLT-1,input=component
	If input 1 is set to DVI, the Command response will be: ^SLT-1,input=dvi
	• **?Resolution**: Query the detected resolution for an input.
	Syntax:
	`?resolution`
	Queries input 1 for the current input type. Panel will respond with a DATA Command event.
	Example:
	`SEND_COMMAND TP,"'^SLT-1,?resolution'"`
	Queries input 1 for the current input resolution. Panel will respond with a DATA Command event.
	Command data will vary depending on input type and detected resolution.
	•For composite and svideo: NTSC, PAL, …, No Signal Detected
	•For component, RGB, and DVI: <Horz>x<Vert>@<Ref> <desc>,
	•No Signal Detected, or Manual:<Horz>x<Vert>@<Ref> <desc>
	Individual video inputs may be frozen. A frozen display retains the last frame of the picture. The incoming video is NOT buffered or saved in any way. It is simply not displayed. When the display is unfrozen, the video input resumes normal operation. Physically changing video inputs while frozen causes the display to resume normal operations.
	Set the freeze state. Sends an unsolicited data/string event indicating the current state.
	Example command: "'^SLT-3,freeze'"
	Example Response: "'SLT-3,paused'"
	Unset the freeze state. Sends an unsolicited data/string event indicating the current state.
	Example command: "'^SLT-3,unfreeze'"
	Example Response: "'SLT-3,playing'"
	Toggle the freeze state.Sends an unsolicited data/string event indicating the current state.
	Example command: "'^SLT-3,tfreeze'"
	Example Response: "'SLT-3,<playing|paused>'"
	Query the freeze state. Sends an data/string event indicating the current state.
	Example command: "'^SLT-3,?freeze'"
	Example Response: "'SLT-3,<playing|paused>'"
	Individual video inputs may muted. A muted display is simply a solid black display.
	Set the muted state. Sends an unsolicited data/string event indicating the current state.
	Example command: "'^SLT-3,mute'"
	Example Response: "'SLT-3,muted'"
	Unset the muted state. Sends an unsolicited data/string event indicating the current state.
	Example command: "'^SLT-3,unmute'"
	Example Response: "'SLT-3,unmuted'"
	Toggle the mute state. Sends an unsolicited data/string event indicating the current state.
	Example command: "'^SLT-3,tmute'"
	Example Response: "'SLT-3,<muted|unmuted>'"
	Query the mute state. Sends an data/string event indicating the current state.
	Example command: "'^SLT-3,?mute'"
	Example Response: "'SLT-3,<muted|unmuted>'"

^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>'"`
	Variables:
	• 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 the *RGB Triplets and Names for Basic 88 Colors* section on page 77 for more information.
	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.

Button Commands (Cont.)	

?TEC	Get the current text effect color.
	Syntax:
	`"'?TEC-<vt addr range>,<button states range>'"`
	Variables:
	• 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:
	`ButtonGet Id = 529 Type = 1009`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 9`
	`VALUE3 = 0`
	`TEXT = #5088F2AE`
	`TEXT LENGTH = 9`

^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>'"`
	Variables:
	• 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 the *Text Effects Names* section on page 80 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.

?TEF	Get the current text effect name.
	Syntax:
	`"'?TEF-<vt addr range>,<button states range>'"`
	Variables:
	• 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:
	`ButtonGet Id = 529 Type = 1008`
	`Flag = 0`
	`VALUE1 = 1`
	`VALUE2 = 18`
	`VALUE3 = 0`
	`TEXT = Hard Drop Shadow 3`
	`TEXT LENGTH = 18`

^TOP	Enable to send press/release events to the Master as string events.
	Syntax:
	`"'^TOP-<state>'"`
	Variables:
	• state = 0: disable; 1: presses/releases; 2: move; 3: press/move/release
	Example:
	`SEND_COMMAND Panel,"'^TOP-1'"`
	Example Response:
	`"String Event: Text: Press,320,480"`

Button Commands (Cont.)	

^TXT	Assign a Non-Unicode text string to those buttons with a defined address range.
	Syntax:
	`"'^TXT-<vt addr range>,<button states range>,<new text>'"`
	Variables:
	• 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 and 510-515.

?TXT	Get the current text information.
	Syntax:
	`"'?TXT-<vt addr range>,<button states range>,<optional index>'"`
	Variables:
	• 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`

^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>'"`
	Variables:
	• 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 box) unicode HEX values. Refer to the TPDesign4 Instruction Manual for more information.

Run Time Operation Commands

NOTE: *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 compatible G4 devices).*

Serial Commands are used in the AXCESSX Terminal Emulator mode. These commands are not case sensitive.

Run Time 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'.

AKEYB	Pop up the keyboard icon and initializes 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 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'.

Run Time Operation Commands (Cont.)	

@AKR	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.

BRIT	Set the panel brightness.
	Syntax:
	`SEND_COMMAND <DEV>,"'BRIT-<brightness level>'"`
	Variables:
	• brightness level = 0 - 100.
	Example:
	`SEND_COMMAND Panel,"'BRIT-50'"`
	Sets the brightness level to 50.

@BRT	Set the panel brightness.
	Syntax:
	`SEND_COMMAND <DEV>,"'BRIT-<brightness level>'"`
	Variables:
	• brightness level = 0 - 100.
	Example:
	`SEND_COMMAND Panel,"'BRIT-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'.

Run Time Operation Commands (Cont.)

ORES

Changes the output resolution at run time. The description is optional and is used for certain resolutions. Standard output modes are:

Horizontal	Vertical	Refresh	Description	Command
640	480	60		'ORES-640x480@60'
640	480	72		'ORES-640x480@72'
640	480	75		'ORES-640x480@75'
800	600	60		'ORES-800x600@60'
800	600	72		'ORES-800x600@72'
800	600	75		'ORES-800x600@75'
848	480	60		'ORES-848x480@60'
1024	768	60		'ORES-1024x768@60'
1024	768	70		'ORES-1024x768@70'
1024	768	75		'ORES-1024x768@75'
1280	720	60	VESA	'ORES-1280x720@60 VESA'
1280	768	60		'ORES-1280x768@60'
1280	800	60		'ORES-1280x800@60'
1280	1024	60	*(default)*	'ORES-1280x1024@60'
1280	1024	75		'ORES-1280x1024@75'
1360	768	60		'ORES-1360x768@60'
1440	900	60		'ORES-1440x900@60'
1680	1050	60		'ORES-1680x1050@60'
1600	1200	60		'ORES-1600x1200@60'
1920	1080	60	VESA rb	'ORES-1920x1080@60 VESA rb'
1920	1200	60	VESA rb	'ORES-1920x1200@60 VESA rb'

Additional output modes for TPI-PRO-DVI are:

Horizontal	Vertical	Refresh	Description	Command
720	480	60	CEA	'ORES-720x480@60 CEA'
1280	720	60	CEA	'ORES-1280x720@60 CEA'
1920	1080	60	CEA	'ORES-1920x1080@60 CEA'
720	576	50	CEA	'ORES-720x576@50 CEA'
1280	720	50	CEA	'ORES-1280x720@50 CEA'
1920	1080	50	CEA	'ORES-1920x1080@50 CEA'

Additional output modes can be sent, and if a standard does not match, then VESA CVT timings will be calculated for the output timings.

The CVT timings are standard blanking if the pixel clock is within allowable limits, otherwise CVT reduced blanking (rb) timings are employed.

Example:

```
SEND_COMMAND Panel,"'ORES-1920x1200@60 VESA rb'"
```

The output resolution will be changed to 1920x1200@60 using VESA reduced blanking timings.

```
SEND_COMMAND Panel,"'ORES-1280x1024@60'"
```

The output resolution will be changed to 1280x1024@60.

```
SEND_COMMAND Panel,"'ORES-1920x1080@50 CEA'"
```

The output resolution will be changed to 1920x1080@50 using CEA timings.

```
SEND_COMMAND Panel,"'ORES-1400x1050@60'"
```

The output resolution will be changed to 1400x1050@60 using calculated VESA CVT timings.

PKEYP

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

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 '*'.

Run Time 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'.

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

TPAGEON	This command turns on page tracking, whereby when the page or pop-ups 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.

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

^TPO	Selects which of the 2 outputs display G4 graphics.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TPO-<0-3>'"`
	• 0 = None (should not be used in a typical installation)
	• 1 = G4 Graphics on output 1 only
	• 2 = G4 Graphics on output 2 only
	• 3 = G4 Graphics on both outputs 1 and 2 (default)
	Example:
	`SEND_COMMAND Panel,"'^TPO-3'"`
	Sends G4 graphics to outputs 1 and 2.
	Note: Any G4 graphics that appear over a Video Window when the ^TPO command is used to turn off G4 graphics on an output may leave a "hole" in the video display if the button opacity is too high. The upper limit of opacity for any graphic over a video window is panel design dependant. The more layers of graphics over a video window, the lower the opacity needs to be set for the layers. A single layer of graphics has show that an opacity value of 250 or lower is sufficient to correct the problem.

Run Time Operation Commands (Cont.)	

^TPS	Selects Serial Touch data pass through.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TPS-<pass data>'"`
	Variables (pass data):
	• 0 = Disables the touch pass-thru feature from the rear touch serial port through the front panel config serial port.
	• 1 = Enables the touch pass-thru feature from the rear touch serial port through the front panel config serial port.
	This is useful for connecting a PC to the front config serial port on the TPI-PRO and controlling touch input on that PC from the touch panel connected to the touch input port.
	Example:
	`SEND COMMAND Panel,"'^TPS-1'"`
	Enables the touch input data to be passed through to the front config serial port.

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

NOTE: *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 compatible G4 devices).*

These commands are not case-sensitive.

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 pass-thru.
	Note: This command can be overridden by a ^PPS command (see page 112).
	Syntax:
	`SEND_COMMAND <DEV>,"'^KPS-<pass data>'"`
	Variables (pass data):
	• <blank/empty> = Disables the keyboard.
	• 0 = Clears the pass through. Keyboard data goes to G4 application (default).
	• 1 = Pass data to device on port 1.
	• 2 = Pass data to device on port 2.
	• 3 = Pass data to device on port 3.
	• 4 = Pass data to device on port 4.
	• 5 = Pass data to master. Keyboard passed as a string to master.
	Example:
	`SEND_COMMAND Panel,"'^KPS-2'"`
	Sets the keyboard pass-thru via the Input 2 USB port.
	Note: The functionality of the ^MPS and ^KPS commands can be emulated using a USB Keyboard plugged into the TPI by using the following keystroke combinations:
	Keystroke Combo — **Equivalent Command**
	CTLR+ALT+KEYBOARD0 — ^MPS-0 and ^KPS-0
	CTLR+ALT+KEYBOARD1 — ^MPS-1 and ^KPS-1
	CTLR+ALT+KEYBOARD2 — ^MPS-2 and ^KPS-2
	CTLR+ALT+KEYBOARD3 — ^MPS-3 and ^KPS-3
	CTLR+ALT+KEYBOARD4 — ^MPS-4 and ^KPS-4

Input Commands (Cont.)	

^MPS	Set the mouse pass-thru.
	Note: This command can be overridden by a ^PPS command (see page 112).
	Syntax:
	`SEND_COMMAND <DEV>,"'^MPS-<pass data>'"`
	Variables:
	• pass data =
	<blank/empty> = Disables the mouse and clears the cursor from the display.
	0 = Clears the pass through. Mouse data goes to G4 application (default). Mouse Cursor will be present on TPI-PRO display.
	1 = Pass data to device on port 1.
	2 = Pass data to device on port 2.
	3 = Pass data to device on port 3.
	4 = Pass data to device on port 4.
	5 = Pass data to master. Mouse buttons passed as a custom event.
	6 = Pass data to master. Mouse buttons and movements passed as a custom event.
	Example:
	`SEND_COMMAND Panel,"'^MPS-2'"`
	Sets the mouse pass-thru via the Input 2 USB port.
	Note: When this command is given, it causes all mice connected to the G4 product and any mice on a computer connected via USB output to reset to position 0,0.
	Note: The functionality of the ^MPS and ^KPS commands can be emulated using a USB Keyboard plugged into the TPI by using the following keystroke combinations:
	Keystroke Combo — **Equivalent Command**
	CTLR+ALT+KEYBOARD0 — ^MPS-0 and ^KPS-0
	CTLR+ALT+KEYBOARD1 — ^MPS-1 and ^KPS-1
	CTLR+ALT+KEYBOARD2 — ^MPS-2 and ^KPS-2
	CTLR+ALT+KEYBOARD3 — ^MPS-3 and ^KPS-3
	CTLR+ALT+KEYBOARD4 — ^MPS-4 and ^KPS-4

^PPS	Sets USB Port pass through, including mouse, keyboard and touch.
	Note: The ^PPS command replaces the separate ^MPS, ^KPS commands that were used on the TPI-4 (pass through cannot be selected based on device). The command may only be used AFTER the HUB has been recognized and enumerated by the remote PC.
	Syntax:
	`SEND_COMMAND <DEV>,"'^PPS-<pass data>'"`
	Variables:
	• pass data =
	0 = Pass data to G4 application (default).
	1 = Pass data to device on port 1.
	2 = Pass data to device on port 2.
	3 = Pass data to device on port 3.
	4 = Pass data to device on port 4.
	5 = Pass data to master. Mouse buttons passed as a custom event. Keyboard passed as a string.
	6 = Pass data to master. Mouse buttons and movements passed as a custom event. Keyboard passed as a string.
	Example:
	`SEND COMMAND Panel,"'^PPS-3'"`
	Sets USB pass-thru to the device on port 3.
	Note: When using the ^PPS command to enable USB Port pass through, a mouse connected to the TPI will no longer be available to G4. The mouse will solely interact with the remote PC. Any keyboard inputs will be sent to the remote PC, while G4 will trap for certain keystroke combinations described below. Any touch inputs will be processed by G4 and sent to the remote PC until something turns off the ^PPS command (either by ^PPS-0 or keystroke combinations described below.
	The functionality of the ^PPS can be emulated using a USB Keyboard plugged into the TPI by using keystroke combinations.
	Keystroke Combo — Equivalent Command
	CTLR+ALT+NUMPAD1 — ^PPS-1
	CTLR+ALT+NUMPAD2 — ^PPS-2
	CTLR+ALT+NUMPAD3 — ^PPS-3
	CTLR+ALT+NUMPAD4 — ^PPS-4
	CTLR+ALT+NUMPAD0 — ^PPS-0
	CTLR+ALT+ESC — ^PPS-0

Input Commands (Cont.)	

^SLT	Send a command to a given slot. Only available with VG-Series and TPI-PRO panels. These commands are directed at the video card subsystems. Slot commands contain a series of name/value pairs separated by commas. These commands are case insensitive.
	Syntax:
	`SEND_COMMAND <DEV>,"'^SLT-<slot number>,<slot command>'"`
	Variables:
	• slot number = 1 - 4 (each of these options corresponds to an input position.)
	Slot 1 = source input position 1.
	Slot 2 = source input position 2.
	Slot 3 = source input position 3.
	Slot 4 = source input position 4.
	• slot command = see list below.
	Input: Set input type for a slot. Input type can be Composite (comp1, comp2, or comp3), Svideo, Component, RGB, or DVI.
	Syntax:
	`input=<input type>`
	input = <svideo,component,comp1,comp2,comp3,rgb,dvi>
	Example:
	`SEND_COMMAND TP,"'^SLT-1,input=component'"`
	Switches input 1 to detect component input signals.
	`SEND_COMMAND TP,"'^SLT-3,input=rgb'"`
	Switches input 3 to detect RGB input signals.
	Resolution: Set input resolution detection to manual or auto. Valid choices are auto, or specify manual resolution. Valid for only Component or RGB input types.
	Syntax:
	`resolution=<>`
	resolution = <auto> or <horizontal>x<vertical>@<refresh><description>>
	Default is auto.
	See the *Supported Input Modes* section on page 155 for details.
	Example:
	`SEND_COMMAND TP,"'^SLT-1,resolution=auto'"`
	Switches input 1 to detect resolution automatically.
	`SEND_COMMAND TP,"'^SLT-3,resolution=1600x1200@60'"`
	Switches input 3 to force input timings to an expected 1600x1200@60 input.
	?Input: Query the input type for an input.
	Syntax:
	`?input`
	The TPI will respond with a DATA COMMAND event from port 1 of the panel. The DATA.TEXT of the event will be in the following format.
	`'^SLT-<slot number 1-4>,input=<input type>'`
	Input type will be the current selected input type and will be one of the following:
	comp1,comp2,comp3,svideo,rgb,component,dvi
	Example:
	`SEND_COMMAND TP,"'^SLT-1,?input'"`
	Queries input 1 for the current input type. Panel will respond with a DATA Command event.
	If input 1 is set to composite 1, the Command response will be: ^SLT-1,input=comp1
	If input 1 is set to composite 2, the Command response will be: ^SLT-1,input=comp2
	If input 1 is set to composite 3, the Command response will be: ^SLT-1,input=comp3
	If input 1 is set to svideo, the Command response will be: ^SLT-1,input=svideo
	If input 1 is set to RGB, the Command response will be: ^SLT-1,input=rgb
	If input 1 is set to component, the Command response will be: ^SLT-1,input=component
	If input 1 is set to DVI, the Command response will be: ^SLT-1,input=dvi

Input Commands (Cont.)	

^SLT (Cont.)	**?Resolution**: Query the detected resolution for an input.
	Syntax:
	`?resolution`
	The TPI will respond with a DATA COMMAND event from port 1 of the panel. The DATA.TEXT of the event will be in the following format.
	`'^SLT-<slot number 1-4>,resolution=<detected resolution string>'`
	Example:
	`SEND_COMMAND TP,"'^SLT-1,?resolution'"`
	Queries input 1 for the current input resolution. Panel will respond with a DATA Command event.
	Command data will vary depending on input type and detected resolution.
	• For composite and svideo: NTSC, PAL, ..., No Signal Detected
	• For component, RGB, and DVI: <Horz>x<Vert>@<Ref> <desc>, No Signal Detected, or Manual: <Horz>x<Vert>@<Ref> <desc>

^VKS	Send one or more virtual keystrokes to the G4 application. Key presses and key releases are not distinguished except in the case of CTRL, ALT, and SHIFT. The *Embedded Codes* section on page 114 defines 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
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

Embedded Codes		
Decimal numbers	**Hexidecimal values**	**Virtual keystroke**
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

NOTE: *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 compatible G4 devices).*

These commands are not case sensitive.

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.

@PWD	@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'.

^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.

Listbox Commands

Listboxes provide flexibility to remote pages once constrained by physical display areas. Both static and dynamic tables can display multiple devices and items when used with proper navigation tools. List Box commands can be used in conjunction with the application *TPDesign4* to create both static and dynamic commands.

Any data field (including primary data) may be enclosed in double quotes so that commas within that data field will not be interpreted as delimiters. Within the double quotes in such a field, the backslash (\) is treated as an escape character so that double quote literals can still be used within the field. When a backslash is encountered, it is discarded and the following character is treated as a literal. This means that if a backslash is part of the data field, it needs to be escaped with a preceding backlash as well.

When a column or row number is required as a field in any command, note that the numbering begins at 1, not 0 (i.e. the first column is column 1 and the first row is row 1).

There are no hard limits enforced for the number of list boxes and such list box parameters as list address and column count. The range is determined by available memory, which is affected by things like how many lists are defined and how many items will be added for each list.

Data List Commands

The TPI supports the following Data List Commands.

Data List Commands	

^LDN	Creates a new data list. It is up to the program to make sure the list address and name are unique.
	Syntax:
	`"'^LDN-<list port>,<list address>,<column count>,<list name>'"`
	Variables:
	• list port = 1-100. Port where data resides
	• list address = address where data resides
	• column count = the number of data columns (includes hidden columns)
	• list name = User specified name for the data list
	Example:
	`SEND_COMMAND Device, "'^LDN-5,1,4,my songs'"`
	Creates a data list of 4 columns named "*my songs*" and places it at port 5, address 1.

^LDA	Adds a new row to an existing data list. Primary data is required.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LDA-<list address>,<uniflag>,<primary data>,<data2>…'"`
	Variables:
	• list address = address where data resides
	• uniflag = indicates unicode; 0 - No unicode, 1 - Uses unicode
	• primary data = the "key" data column. The information in this column provides each row with its uniqueness.
	• data2 = variable, column data information. The number of data fields is limited only to the number of columns in the data list.
	Example:
	`SEND_COMMAND Device,"'^LDA-1,0,Entry5,Meatloaf,Best of,Anything for Lunch'"`
	Adds a text row to the data list located at address 1. The primary data is set as Entry5. Meatloaf, Best of, and Anything for Love are all cells within the new row.
	Example (unicode):
	`SEND_COMMAND Device,"'^LDA-1,1,0045006E0074007200790035,004D006500610074006C006F00610061,`
	`00420065007300740020006F0066,0041006E007900740068006900 6E006700200066006F00720020004C006F00760065'"`
	Adds a unicode text row to the data list located at address 1.
	The primary data is set as Entry5.
	Meatloaf, Best of, and Anything for Lunch are all cells within the new row.

^LDR	Removes a row from an existing data list
	Syntax:
	`SEND_COMMAND <DEV>,"'^LDR-<list address>,<uniflag>,<primary data>'"`
	Variables:
	• list address = address where data resides
	• uniflag = indicates unicode; 0 - No unicode, 1 - Uses unicode
	• primary data = the "key" data column. The information in this column provides each row with its uniqueness.
	Example:
	`SEND_COMMAND Device,"'^LDR-1,0,Entry5'"`
	Removes the text row with primary data Entry5 from an existing data list at address 1.

^LDC	Clears all rows in a given list
	Syntax:
	`"'^LDC-<list address>'"`
	Variables:
	• list address = address where data resides
	Example:
	`SEND_COMMAND Device, "'^LDC-1'"`
	Clears all rows in data list located at address **1**.

Data List Commands (Cont.)	

^LDD	Deletes the data list
	Syntax:
	`"'^LDD-<list address>'"`
	Variables:
	• list address = address where data resides
	Example:
	`SEND_COMMAND Device, "'^LDD-1'"`
	Deletes the data list located at address **1**.

^LDT	Set the column type for a data list by modifying its column type. Column is the index of the first type to set. Additional types sent will be set in this order:
	0 - Text
	1 - Reserved
	2 - Reserved
	3 - Channel
	4 - Page
	Syntax:
	`SEND_COMMAND <DEV>,"'^LDT-<list address>,<column>,<type>,<type>…'"`
	Variables:
	• list address = address where data resides
	• column = the starting column number (first column is 1)
	• type = subsequent columns. 0 - Text; 3 - Channel; 4 - Page
	Example:
	`SEND_COMMAND Device,"'^LDT-1,1,0,0,0'"`
	Sets the column type for the data list located at address 1.
	The column type starts at column 1, the first column is Text, the second and third columns are also Text.

^LDL	Modifies the data in a single column field. This can be used to load a data list that has long text fields.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LDL-<list address>, <column>, <uniflag>, <primary data>,<data column>'"`
	Variables:
	• list address = address where data resides
	• column = the starting column number (first column is 1)
	• uniflag = indicates unicode; 0 - No unicode, 1 - Uses unicode
	• primary data = the "key" data column. The information in this column provides each row with its uniqueness.
	• new cell data = data information for a single field or "cell"
	Example:
	`SEND_COMMAND Device,"'^LDL-1,1,0,Entry5,Music'"`
	The field located in column 1, in the row with the primary data "Entry5" and in the data list located at the address of 1 is a text value of Music.
	Example (unicode):
	`SEND_COMMAND Device, "'^LDL-1,1,1,0045006E0074007200790035,004D0075007300690063'"`
	The field located in column 1, in the row with the primary data "Entry5" and in the data list located at the address of 1 is a text value of Music.

List View Commands

The TPI supports the following List View Commands.

List View Commands	

^LVC	Set the table column display order according to the order of the entered column values.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVC-<view address>,<column>,<column>…'"`
	Variables:
	• view address = the address of the view definition
	• column = the column number to display (first column is 1)
	Example:
	`SEND_COMMAND Device,"'^LVC-3,5,2,1'"`
	Sets the column display order to column 5 first, then column 2, and then column 1.
	The data list is displayed according to the view definitions located at address 3.

List View Commands (Cont.)	

^LVF	Filter a list by setting what column to use and what string to compare. Note that setting column to zero or data to none makes the filtered ordering the same as sorted ordering. Update must be called for changes to take effect.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVF-<view address>,<uniflag>,<column>,<search data>'"`
	Variables:
	• view address = the address of the view definition
	• uniflag = indicates unicode; 0 - No unicode, 1 - Uses unicode
	• column = the starting column number (first column is 1)
	• search data = the data on which to filter
	Example:
	`SEND_COMMAND Device,"'LVF-1,0,2,Smith'"`
	Filters list based on column 2 such that only those rows whose column 2 contains Smith are displayed.
	The data is displayed according to the view definitions located at address 1.
	Filter is case sensitive.

^LVL	Set the data list to be displayed.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVL-<view address>,<list port>,<list address>'"`
	Variables:
	• view address = the address of the view definition
	• list port = 1-100. port where data resides
	• list address = address where data resides
	Example:
	`SEND_COMMAND Device,"'^LVL-5,my songs'"`
	Sets the data list viewed to my songs and displays it according to the view definitions located at address 5.

^LVM	Display a new position. If select is set, then select that new position.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVM-<view address>,<offset>'"`
	Variables:
	• view address = the address of the view definition
	• offset = + / - numeric display shift
	Example:
	`SEND_COMMAND Device,"'^LVM-2,-4'"`
	Shifts the display -4 and displays the list according to the view definitions located at address 2.

^LVO	Display a data list according to a preset sort/ordering view definition. This command tells the view which of the possible orderings to use.
	Note that the <sort> field is a bitmask, so that the 3 bit positions may be combined.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVO-<view address>,<sort>'"`
	Variables:
	• view address = the address of the view definition
	• sort = bitmask with the following bit assignments:
	0x0001 = Sort
	0x0002 = Reverse
	0x0004 = Filter
	Note: Of special note is the reverse bit (0x0002), which reverses the list whatever order it is currently in. When used on a sorted list, it results in a reverse sort. When used on a reverse sorted list, it results in a forward sorted list. In most cases, the reverse bit should not be used alone, but should be used in combination with the sort bit (0x0003) such that it always results in a reverse sorted list.
	Possible values for the sort field:
	0 = None
	1 = Forward Sort
	2 = Reverse the current list ordering (may or may not be sorted)
	3 = Reverse Sort
	4 = Filter
	5 = Forward Sort + Filter
	6 = Reverse current + filter
	7 = Reverse sort + filter
	Example:
	`SEND_COMMAND Device,"'^LVO-1,7'"`
	Displays the data list according to the view definitions located at address 1 and filters and reverse sorts the list.

List View Commands (Cont.)	

^LVP	Display a new position. If the select option is set, then select that position.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVP-<view address>,<index>'"`
	Variables:
	• view address = the address of the view definition
	• index = the row number in sequential order (first row is 1)
	Example:
	`SEND_COMMAND Device,"'^LVP-5,3'"`
	Sets the display position starting at the third row and displays it according to the view definitions located at address 5.

^LVS	Set the column order for sorting. Update must be called for changes to take effect.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVS-<view address>,<column>,<column>…'"`
	Variables:
	• view address = the address of the view definition
	• column = the starting column number (first column is 1)
	Example:
	`SEND_COMMAND Device,"'^LVS-3,5,2,1'"`
	Sets the column sort order to column 5 first, then column 2 and then column 1.
	The data list is displayed according to the view definitions located at address 3.

^LVU	Update any view currently looking at this list.
	Note: This must be called after changes to list data.
	Syntax:
	`SEND_COMMAND <DEV>,"'^LVU-<view address>'"`
	Variables:
	• view address = the address of the view definition
	Example:
	`SEND_COMMAND Device,"'LVU-3'"`
	Updates the data list and displays it according to the view definitions located at address 3.

Dynamic Image Commands

NOTE: *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 compatible G4 devices).*

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	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 120.
	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**.

Dynamic Image Commands (Cont.)	

^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'.

^RMF	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 120.
	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 120.
	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.
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.

TakeNote Commands

NOTE: *^TNA commands control the local TakeNote client (client/server same physical box), while ^TNB commands control the remote TakeNote clients. ^TNB commands should be sent to the client DPS and NOT the TakeNote server.*

The following is a listing of Send Commands specific to controlling TakeNote on the TPI:

TakeNote Commands	
TAKENOTE-ENABLE	Activates TakeNote. This is the same as pressing the TakeNote icon when TakeNote is disabled. Syntax: `SEND_COMMAND <DEV>,"'TAKENOTE-ENABLE'"`
TAKENOTE-DISABLE	Disables TakeNote. This is the same as pressing the TakeNote icon when TakeNote is enabled. Syntax: `SEND_COMMAND <DEV>,"'TAKENOTE-DISABLE'"`
TAKENOTESERVER-ENABLE	Enables the TakeNote server. This is the same as pressing the TakeNote Server enable button on the TakeNote Protected Setup page when the Server is disabled. Syntax: `SEND_COMMAND <DEV>,"'TAKENOTESERVER-ENABLE'"`
TAKENOTESERVER-DISABLE	Disables the TakeNote server. This is the same as pressing the TakeNote Server disable button on the TakeNote Protected Setup page when the server is enabled. Syntax: `SEND_COMMAND <DEV>,"'TAKENOTESERVER-DISABLE'"`

^TNA-AUTOEXPOSE	Enables the TakeNote control autoexpose feature. When enabled, the TakeNote control window is automatically restored when drawing stops. Autoexpose is only available when autohide is enabled. Autoexpose restores the main TakeNote Control pop-up.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-AUTOEXPOSE,<state>'"`
	Variable:
	state = Set to 0 for disable or 1 for enable
	Example:
	`SEND_COMMAND Panel,"'^TNA-AUTOEXPOSE,0'"`

TakeNote Commands (Cont.)	

?TNA-AUTOEXPOSE	Queries the status of the TakeNote control autoexpose feature.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-CANVASCOLOR'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 10, Value1: <0|1> Text: autoexpose <enabled|disabled>"`

^TNA-AUTOHIDE	Enables the TakeNote control autohide feature. When enabled, the TakeNote control window is automatically minimized when the drawing is started.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-AUTOHIDE,<state>'"`
	Variable:
	state = Set to 0 for disable or 1 for enable
	Example:
	`SEND_COMMAND Panel,"'^TNA-AUTOHIDE,0'"`

?TNA-AUTOHIDE	Queries the status of the TakeNote control autohide feature
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-AUTOHIDE'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 9, Value1: <0|1> Text: autohide <enabled|disabled>"`

^TNA-CANVASCOLOR	Sets the canvas color. Valid values are the textual representation (case insensitive), or 0-2.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-CANVASCOLOR,<canvas>'"`
	Variable:
	canvas = Screen(0), White(1), Black(2)
	Example:
	`SEND_COMMAND Panel,"'^TNA-CANVASCOLOR,White'"`

?TNA-CANVASCOLOR	Queries the current canvas color
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-CANVASCOLOR'"`
	Example Response:
	`"Custom Event: ID: 1, Type: 1500, Flag 2, Value1: <0-2> Text: <screen, white, black>"`

?TNB-CANVASCOLOR	Queries the current canvas color.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNB-<addr>,CANVASCOLOR'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,CANVASCOLOR'"`
	Example Response:
	`"Custom Event: ID: 1, Type: 1500, Flag 2, Value1: <0-2> Text: <screen, white, black>"`

^TNA-CLEAR	Clears the current session.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-CLEAR,<all>'"`
	Variable:
	all = 0-1. 0 clears the current session. 1 clears the entire canvas.
	Example:
	`SEND_COMMAND Panel,"'^TNA-CLEAR,0'"`

^TNA-FLUSH	Flushes the current call stack and clears the screen. Syntax: `SEND_COMMAND <DEV>,"'^TNA-FLUSH'"`

^TNA-HIDE	Hides the TakeNote control panel.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-HIDE,<state>'"`
	Variable:
	state = Set to 0 to show the controls or 1 to hide the controls
	Example:
	`SEND_COMMAND Panel,"'^TNA-HIDE,1'"`

TakeNote Commands (Cont.)	

^TNA-PENCOLOR	Sets the pen color for a remote TakeNote client.
	Valid values are predefined NetLinx color names or hex coded Alpha + RGB (ARGB) values. The LSB of ARGB are always reserved. Note that if you request a color that has a reserved bit set, the bit will be ignored. For example, setting a border color to Blue/#ff and setting the pen color to Blue/#ff may result in slightly different shades of blue on screen. This is true for any color used due to the reserved bits in the pen color. This command should be sent to the remote TakeNote client DPS and not the TakeNote server (PC App and/or TPI/PRO)
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-PENCOLOR,<color>'"`
	Variable:
	color = The color you want to use for the pen. See the *RGB Triplets and Names for Basic 88 Colors* section on page 77 for more information, or use a hexadecimal RGB code (#FF0000).
	Example 1:
	`SEND_COMMAND Panel,"'^TNA-PENCOLOR,Blue'"`
	Example 2:
	`SEND_COMMAND Panel,"'^TNA-PENCOLOR,#00ff00'"`
	Note: The color you submit may be adjusted internally for opacity. If you submit a PENCOLOR request of white or #FFFFFF, you may not get the same value back, however, it will be close.

?TNA-PENCOLOR	Queries the current pen color on a remote TakeNote client. Returns a value in the format of #AARRGGBB. This command should be sent to the remote TakeNote client DPS and NOT the TakeNote server (PC App and/or TPI/PRO).
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-PENCOLOR'"`
	Example Response 1:
	`"Custom Event: ID: 1, Type: 1500, Flag 4, Value1: 0xbe Text: PenColor"`
	Example Response 2:
	`"Custom Event: ID: 1, Type: 1500, Flag 4, Value1: 0xFF00 Text: PenColor"`

^TNA-PENOPACITY	Sets the opacity of the pen. This also sets the color picker opacity level for visual indication of opacity/new color.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-PENOPACITY,<opacity>'"`
	Variable:
	opacity = A value between 0-100
	Example:
	`SEND_COMMAND Panel,"'^TNA-PENOPACITY,75'"`

?TNA-PENOPACITY	Queries the current opacity of the pen.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-PENOPACITY'"`
	Example Response:
	`"Custom Event: ID: 1, Type: 1500, Flag 5, Value1: 75 Text: PenOpacity"`

^TNA-PENSTYLE	Sets the pen style. Valid values are the textual representation (case insensitive), or 0-2.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-PENSTYLE,<style>'"`
	Variable:
	style = Solid(0), Dotted(1), Dashed(2)
	Example:
	`SEND_COMMAND Panel,"'^TNA-PENSTYLE,Dashed'"`

^TNA-PENWIDTH	Sets the pen width. Valid values are 1-50.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-PENWIDTH,<width>'"`
	Variable:
	width = The width of the pen. Enter a value between 1-50.
	Example:
	`SEND_COMMAND Panel,"'^TNA-PENWIDTH,50'"`

^TNA-REDO	Redoes the previous TakeNote action. Syntax: `SEND_COMMAND <DEV>,"'^TNA-REDO'"`
^TNA-SAVE	Saves the current session to file. Syntax: `SEND_COMMAND <DEV>,"'^TNA-SAVE'"`

TakeNote Commands (Cont.)	

^TNA-SESSION	Renames the current session. Spaces and punctuation are allowed, but discouraged.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-SESSION,<SessionName>'"`
	Variable:
	SessionName = the name you want to give to the session
	Example:
	`SEND_COMMAND Panel,"'^TNA-SESSION,Docket123456'"`

^TNA-TEXT	Displays a text string onscreen. Maximum length of text is 1000 characters. Use \n for carriage return/line feed.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-TEXT,<text>'"`
	Variable:
	text = The string to create and display onscreen. It is ready for placement using the current pen color and text size.
	Example:
	`SEND_COMMAND Panel,"'^TNA-TEXT,AMX makes presentations fun!'"`

^TNA-TEXTSIZE	Sets the size of the text onscreen.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-TEXTSIZE,<size>'"`
	Variable:
	size = The font size. Valid range is 12-96.
	Example:
	`SEND_COMMAND Panel,"'^TNA-TEXTSIZE,50'"`

^TNA-TOOLTYPE	Sets the tool type for drawing. Some of the commands are simple aliases for convenience. For instance, diamond is the same as polygon, 4.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNA-TOOLTYPE,<tool>,[num sides]'"`
	Variable:
	tool = One of the following values: free, line, text, rectangle, ellipse, selector, pointer, triangle, diamond, hexagon, polygon, pushpin, uparrow, downarrow, leftarrow, rightarrow.
	num sides = The number of sides when <tool> is set to polygon.
	Example 1:
	`SEND_COMMAND Panel,"'^TNA-TOOLTYPE,uparrow'"`
	Example 2:
	`SEND_COMMAND Panel,"'^TNA-TOOLTYPE,polygon,7'"`

^TNA-UNDO	Undoes the previous TakeNote action. Syntax: `SEND_COMMAND <DEV>,"'^TNA-UNDO'"`

^TNB-CANVASCOLOR	Sets the canvas color. Valid values are the textual representation (case insensitive), or 0-2.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,CANVASCOLOR,<canvas>'"`
	Variable:
	addr = The address of the device
	canvas = Screen(0), White(1), Black(2)
	Example:
	`SEND_COMMAND Panel,"'^TNB-5,CANVASCOLOR,White'"`

^TNB-CLEAR	Clears the current session.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,CLEAR,<all>'"`
	Variable:
	addr = The address of the device
	all = 0-1. 0 clears the current session. 1 clears the entire canvas.
	Example:
	`SEND_COMMAND Panel,"'^TNB-5,CLEAR,0'"`

^TNB-FLUSH	Flushes the current call stack and clears the screen.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,FLUSH'"`
	Variable:
	addr = The address of the device
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,FLUSH'"`

TakeNote Commands (Cont.)	

^TNB-PENCOLOR	Sets the pen color for a remote TakeNote client. Valid values are predefined NetLinx color names or hex coded Alpha + RGB (ARGB) values. The LSB of ARGB are always reserved. Note that if you request a color that has a reserved bit set, the bit will be ignored. For example, setting a border color to Blue/#ff and setting the pen color to Blue/#ff may result in slightly different shades of blue on screen. This is true for any color used due to the reserved bits in the pen color. This command should be sent to the remote TakeNote client DPS and not the TakeNote server (PC App and/or TPI).
	Syntax:
	`SEND_COMMAND <DEV>,"'^TN5-<addr>,PENCOLOR,<color>'"`
	Variable:
	addr = The address of the device
	color = The color you want to use for the pen. See the *RGB Triplets and Names for Basic 88 Colors* section on page 77 for more information, or use a hexadecimal RGB code (#FF0000).
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,PENCOLOR,Blue'"`
	Example 2:
	`SEND_COMMAND Panel,"'^TNB-5,PENCOLOR,#00ff00'"`
	Note: The color you submit may be adjusted internally for opacity. If you submit a PENCOLOR request of white or #FFFFFF, you may not get the same value back, however, it will be close.

?TNB-PENCOLOR	Queries the current pen color on a remote TakeNote client. Returns a value in the format of #AARRGGBB. This command should be sent to the remote TakeNote client DPS and NOT the TakeNote server (PC App and/or TPI/PRO).
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNB-<addr>,PENCOLOR'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,PENCOLOR'"`
	Example Response 1:
	`"Custom Event: ID: 1, Type: 1500, Flag 4, Value1: 0xbe Text: PenColor"`
	Example Response 2:
	`"Custom Event: ID: 1, Type: 1500, Flag 4, Value1: 0xFF00 Text: PenColor"`

^TNB-PENOPACITY	Sets the opacity of the pen. This also sets the color picker opacity level for visual indication of opacity/new color.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,PENOPACITY,<opacity>'"`
	Variable:
	addr = The address of the device
	opacity = A value between 0-100
	Example:
	`SEND_COMMAND Panel,"'^TNB-5,PENOPACITY,75'"`

?TNB-PENOPACITY	Queries the current opacity of the pen.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNB-<addr>,PENOPACITY'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,PENOPACITY'"`
	Example Response:
	`"Custom Event: ID: 1, Type: 1500, Flag 5, Value1: 75 Text: PenOpacity"`

^TNB-PENSTYLE	Sets the pen style. Valid values are the textual representation (case insensitive), or 0-2.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,PENSTYLE,<style>'"`
	Variable:
	addr = The address of the device
	style = Solid(0), Dotted(1), Dashed(2)
	Example:
	`SEND_COMMAND Panel,"'^TNB-5,PENSTYLE,Dashed'"`

?TNA-PENSTYLE	Queries the current pen style.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-PENSTYLE'"`
	Example Response:
	`"Custom Event: ID: 1, Type: 1500, Flag 1, Value1: <0-2> Text: <solid(0), dotted(1), dashed(2)>"`

TakeNote Commands (Cont.)	

?TNB-PENSTYLE	Queries the current pen style.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-<addr>,PENSTYLE'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,PENSTYLE'"`
	Example Response:
	`"Custom Event: ID: 1, Type: 1500, Flag 1, Value1: <0-2> Text: <solid(0), dotted(1), dashed(2)>"`

^TNB-PENWIDTH	Sets the pen width. Valid values are 1-50.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,PENWIDTH,<width>'"`
	Variable:
	addr = The address of the device
	width = The width of the pen. Enter a value between 1-50.
	Example:
	`SEND_COMMAND Panel,"'^TNB-5,PENWIDTH,50'"`

?TNB-PENWIDTH	Queries the current pen width.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNB-<addr>,PENWIDTH'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,PENWIDTH'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 3, Value1: <1-50> Text: PenWidth"`

?TNA-PENWIDTH	Queries the current pen width.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-PENWIDTH'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 3, Value1: <1-50> Text: PenWidth"`

^TNB-PRINT	Prints the current session to the default printer. This command applies to the PC TakeNote server only.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,PRINT'"`
	Variable:
	addr = The address of the device
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,PRINT'"`

^TNB-REDO	Redoes the previous TakeNote action.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,REDO'"`
	Variable:
	addr = The address of the device
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,REDO'"`

^TNB-SAVE	Saves the current session to file.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,SAVE'"`
	Variable:
	addr = The address of the device
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,SAVE'"`

^TNB-TEXTSIZE	Sets the size of the text onscreen.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,TEXTSIZE,<size>'"`
	Variable:
	addr = The address of the device
	size = The font size. Valid range is 12-96.
	Example:
	`SEND_COMMAND Panel,"'^TNB-5,TEXTSIZE,50'"`

?TNA-TEXTSIZE	Queries the current text size.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-TEXTSIZE'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 8, Value1: 50 Text: TextSize"`

TakeNote Commands (Cont.)	

?TNB-TEXTSIZE	Queries the current text size.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNB-<addr>,TEXTSIZE'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,TEXTSIZE'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 8, Value1: 50 Text: TextSize"`

^TNB-TOOLTYPE	Sets the tool type for drawing. Some of the commands are simple aliases for convenience. For instance, diamond is the same as polygon, 4.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,TOOLTYPE,<tool>,[num sides]'"`
	Variable:
	addr = The address of the device
	tool = One of the following values: free, line, text, rectangle, ellipse, selector, pointer, triangle, diamond, hexagon, polygon, pushpin, uparrow, downarrow, leftarrow, rightarrow.
	num sides = The number of sides when <tool> is set to polygon.
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,TOOLTYPE,uparrow'"`
	Example 2:
	`SEND_COMMAND Panel,"'^TNB-5,TOOLTYPE,polygon,7'"`

?TNA-TOOLTYPE	Queries the current tool type.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNA-TOOLTYPE'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 6, Value1: 8 Text: Polygon"`

?TNB-TOOLTYPE	Queries the current tool type.
	Syntax:
	`SEND_COMMAND <DEV>,"'?TNB-<addr>,TOOLTYPE'"`
	Example:
	`SEND_COMMAND Panel,"'?TNB-5,TOOLTYPE'"`
	Example response:
	`"Custom Event: ID: 1, Type: 1500, Flag 6, Value1: 8 Text: Polygon"`

^TNB-UNDO	Undoes the previous TakeNote action.
	Syntax:
	`SEND_COMMAND <DEV>,"'^TNB-<addr>,UNDO'"`
	Variable:
	addr = The address of the device
	Example 1:
	`SEND_COMMAND Panel,"'^TNB-5,UNDO'"`

?TNA-SESSION	Queries the name of the current session. Syntax: `SEND_COMMAND <DEV>,"'?TNA-SESSION'"`
^TNC	Clears all TakeNote annotations Syntax: `SEND_COMMAND <DEV>,"'^TNC'"`
^TNF	Clears and flushes all TakeNote annotations Syntax: `SEND_COMMAND <DEV>,"'^TNF'"`
^TNH-PageName	Hides the TakeNote icon on the specified page. If the page is not specified, then current page is selected. Syntax: `SEND_COMMAND <DEV>,"'^TNH-<pagename>'"` Variable: pagename = The page on which you want to hide the TakeNote icon
^TNS-PageName	Shows the TakeNote icon on the specified page. If the page is not specified, then current page is selected. Syntax: `SEND_COMMAND <DEV>,"'^TNS-<pagename>'"` Variable: pagename = The page on which you want to show the TakeNote icon

Programming - Button Properties

The following sections describe various button properties, which are set within the TPDesign4 Touch Panel Design program. TPDesign4 is available to download from www.amx.com. Refer to the TPDesign4 online help for detailed instructions on setting button.

Text Formatting Codes for Bargraphs/Joysticks

Text formatting codes for bargraphs provide a mechanism to allow a portion of a bargraph's text to be dynamically provided information about the current status of the level (multi-state 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

By 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 week, 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)

NOTE: *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 91).
- ^BMF subcommand **%MK** - sets the input mask of a text area (see the *^BMF* section on page 92).

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 filed 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".
- *Example 2*: 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** (Hyper Text 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**.

NOTE: *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**" becomes "**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

Terminal/Telnet Commands

Overview

The following telnet/terminal commands are supported by the TPI, via the SERIAL (DB-9) port on the front panel (see the *SERIAL Port* section on page 26).

Terminal/Telnet Commands	
`disk free`	Show the amount of free space on the disk.
`get dns`	Show the DNS configuration of a device.
`get ip`	Show the IP configuration.
`get config`	Show the current configuration.
`mem`	Shows size of the largest block of available memory.
`msg on|off`	Enables/Disables extended diagnostic messages.
`ping [address]`	Pings an address. Address may be an IP or URL.
`reboot`	Reboots the device.
`set dns`	Setup the DNS configuration of a device.
`set ip`	Setup the IP configuration of a device.
`show log <start>`	Display the message log. • <start> specifies message to begin the display. • 'all' will display all messages
`show mem`	Display the memory usage for all memory types (requires msg on).
`setup`	Display setup page on panel.
`get cache enable`	Get the state of the image cache flash backup
`get cache expire`	Get current expiration time for image cache entries
`get cache size`	Get flash cache maximum size
`get cache`	Display all image cache parameters.
`toggle cache enable`	Toggle the state of the image cache flash backup
`cache purge [mask]`	Purge image cache (bit 0=NV, bit 1=RAM)
`set cache expire`	Set expiration duration for image cache entries
`set cache size`	Set flash cache maximum size
`show connection log`	Show the connection logs for the panel.
`show connection stats`	Show the connection stats for the panel.
`get connection`	Show the master settings.
`get device`	Show the device number.
`set device`	Setup the device number.
`set connection`	Setup the master settings.
`version`	Display the version(s) of the units components.
`temp info`	Display the temperature sensor data.
`input stats [1-4]`	Display the video input statistics.
Terminal Only	
`echo on|off`	Enables/Disables echo of typed characters.

Upgrading Firmware

Overview

The process of updating firmware requires a communicating NetLinx Master. The steps for updating firmware to a TPI are virtually identical to those necessary for updating .KIT files to a NetLinx Master, except that the target device is a "panel" instead of a Master. Refer to either your Master's literature or NetLinx Studio online help for those instructions. Use the *Firmware Transfers* utility in NetLinx Studio to transfer firmware upgrades to the TPI. In NetLinx Studio, select **Tools > Firmware Upgrades > Send To NetLinx Device** to access the *Send To NetLinx Device* dialog shown in FIG. 79:

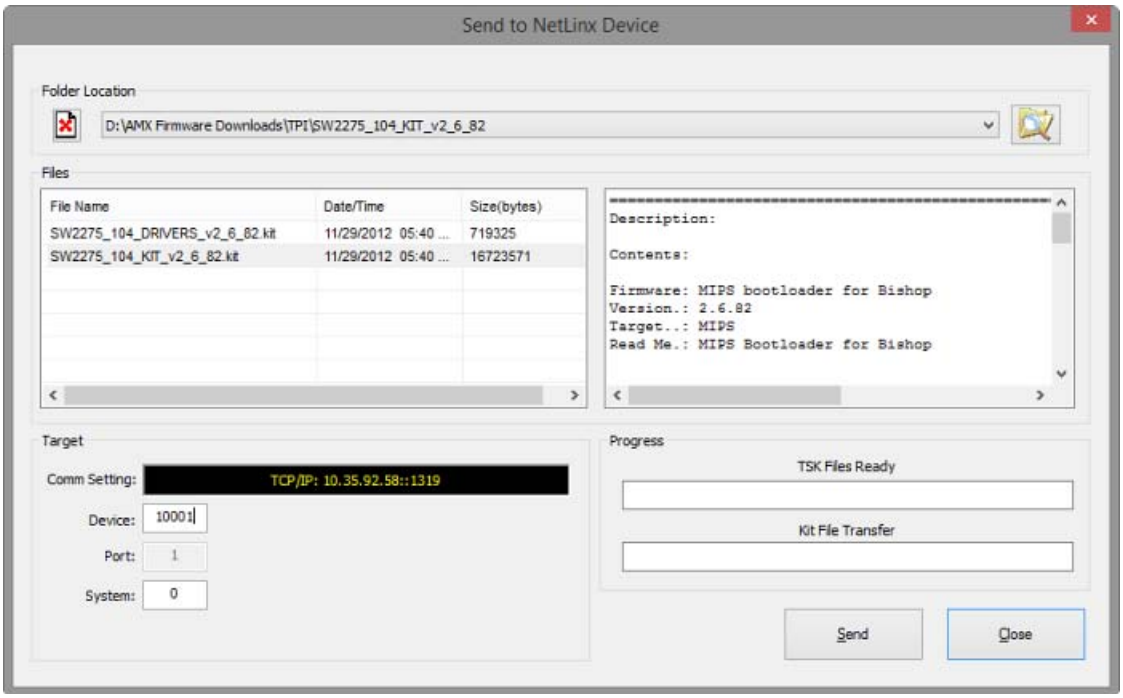


FIG. 79 NetLinx Studio - Firmware Transfer Tool - Send to NetLinx Device dialog

Before beginning the firmware upgrade process:

- Setup and configure your NetLinx Master. Refer to your particular NetLinx Master instruction manual for detailed setup procedures.
- Select the correct resolution, touch drivers, and calibrate the TPI (see the *Calibrating the TPI* section on page 39).
- Configure your TPI for direct communication (see the *Configuring IP Settings* section on page 44 for details regarding Ethernet communication).
- Verify that the TPI is powered and connected to the NetLinx Master via Ethernet.

NOTE: *A TPI 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 a TPI which is not using a username or password field, you must first remove the Master Security feature to establish an unsecured connection. If you are downgrading the firmware to version 2.5.10 or earlier and you are using the 1280x800@60Hz resolution, change the panel page resolution to a different setting since this resolution does not exist in earlier firmware versions.*

Prepare the TPI for Ethernet Communication

1. Open the *System Settings* page on the TPI:
   a. Press the SETUP pushbutton on the front panel to access the *Setup* page.
   b. Press the **Protected Setup** button to access the *Protected Setup* page, using the on-screen keypad to enter the password (default = **1988**).
   c. Press the **System Settings** button to open the *System Settings* page (FIG. 80).

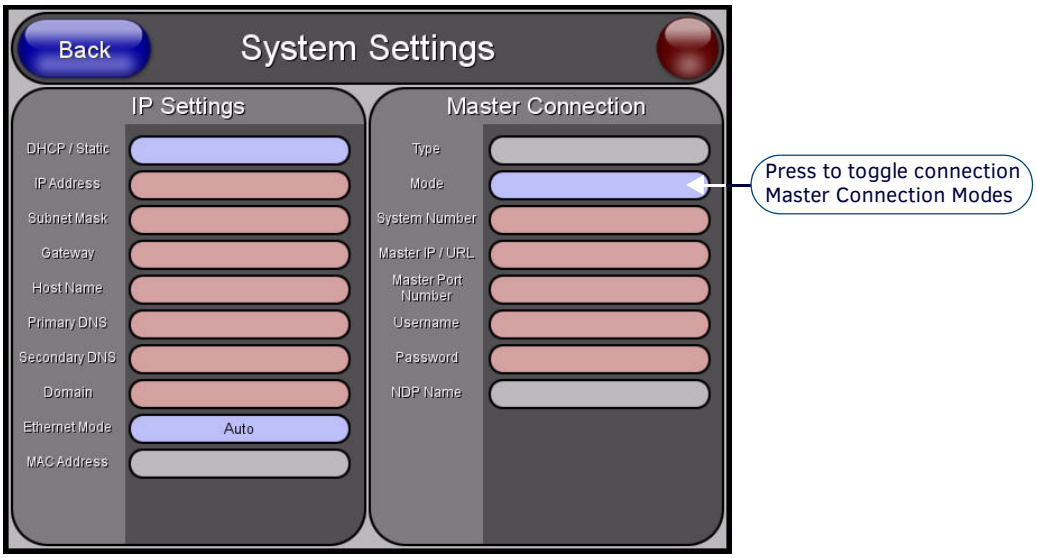


FIG. 80 System Settings page

2. Press the **Master IP/URL** button to open the on-screen keyboard, and enter the Master's IP address or URL.

   NOTE: *This information can be obtained from the Networking Addresses dialog in NetLinx Studio. See Appendix B: Using NetLinx Studio to Connect to a NetLinx Master* on page 158 *for details.*

3. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

Upgrade the TPI Firmware

1. Use the **OnLine Tree** in NetLinx Studio to view the devices on the System. Verify the TPI appears in the OnLine Tree tab of the Workspace window (FIG. 81).

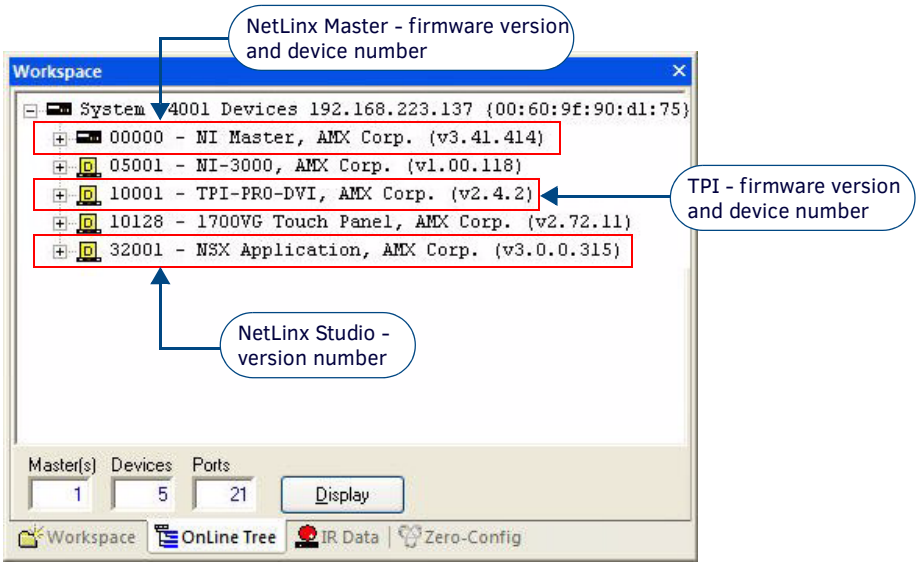


FIG. 81 NetLinx Workspace window (showing connected TPI)

- Click on the **Display** button to open the Online Tree context menu, and select **Refresh System** to refresh the device tree.
-
- The default TPI device number is **10001**.

2.

Sending Firmware to the TPI (via NetLinx Studio)

NOTE: *Check www.amx.com for the latest firmware (*.KIT file) for the TPI. Firmware updates are available for registered AMX Dealers to download from the Tech Center section of the website.*

- Download the appropriate firmware (*.KIT) file from the AMX web site to your PC.

Use the **Firmware Transfers** options in the *Tools* menu to update the firmware in NetLinx Master Controllers or System devices. NXI Master Controllers use Kit files for firmware upgrades. A Kit file (*.kit) is a package of several files, all of which are required to upgrade the firmware, and are available online via www.amx.com.

- The Online Tree (Online Tree tab of the Workspace Bar) displays information about each online device, including the current firmware version.
- Before attempting to upgrade the firmware, you must have the appropriate Kit file for the target device.

1. Choose **Tools > Firmware Transfers > Send to NetLinx Device** to open the *Send To NetLinx Device* dialog (FIG. 82):

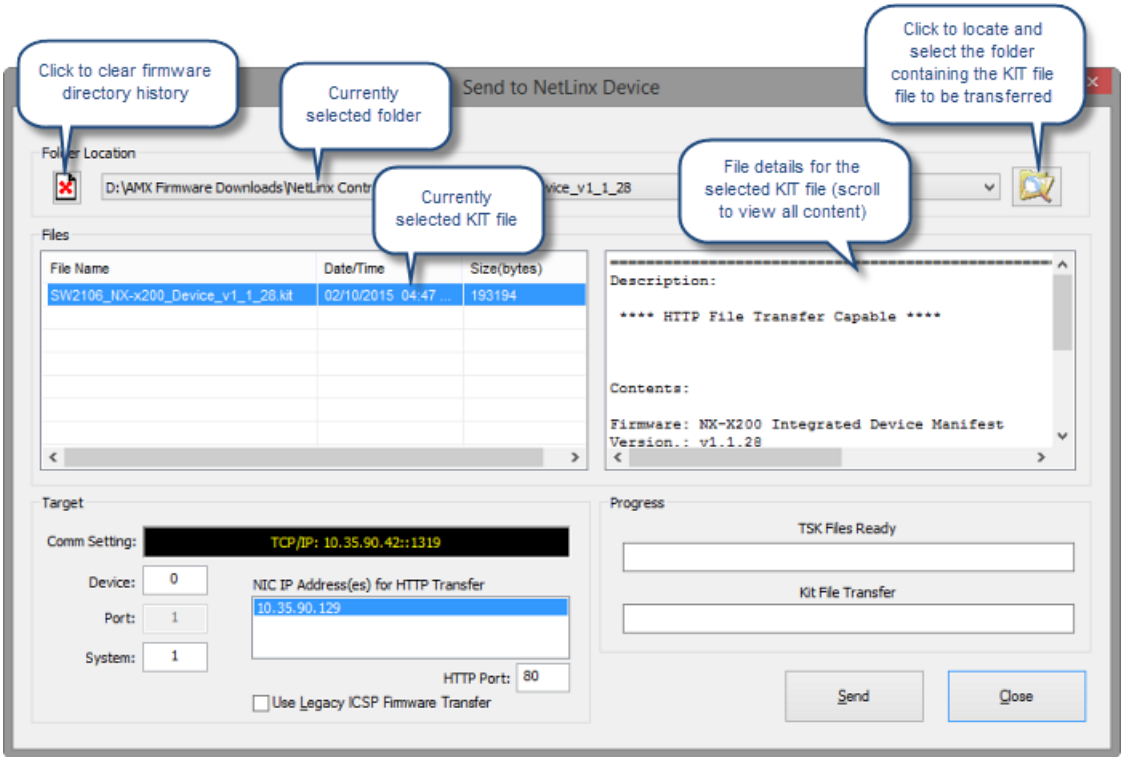


FIG. 82 Send To NetLinx Device dialog

NOTE: *This dialog can also be accessed by right-clicking on the target device in the Online Device Tree and selecting Firmware Transfer from the Online Device Tree context menu.*

2. Click the **Browse for KIT Directories** button to navigate to the target directory (in the *Select Folder* dialog). The selected directory path is displayed in the *Folder Location* field. Assuming that the specified target directory contains one or more Kit files, the Kit files in the selected directory are displayed in the *Files* list box (with the file's last modified date and time).
3. Select the appropriate KIT file from the *Files* list.
4. Under **Target**, set the *Device* and *System* number of the device that is the target for this firmware transfer:
   - If the Kit file is for a TPI, you must enter the correct Device ID number. The default TPI device number is **10001**.
   - The default System value is **1**.
   - Use the Online Tree to determine the device's assigned ID.
   - *Port* is preset to **1** and cannot be edited.

   If your PC has more than one NIC Card, use the **NIC IP Address(es) for HTTP Transfer** option to select which NIC card to use for this transfer.

   HTTP Port: Specify which port to use for HTTP transfers. In most cases, the default setting of 80 should work.

   Use Legacy ICSP Firmware Transfer: Check this option to use ICSP (rather than HTTP) for this transfer.
5. Click **Send** to initiate the firmware transfer.

   The progress of the transfer is indicated under *Progress* (FIG. 83):

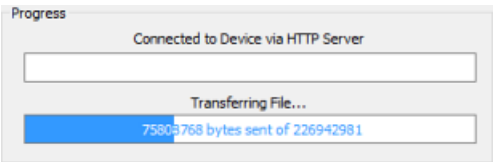


FIG. 83 Send To NetLinx Device dialog - Transfer Progress

6. When the transfer is complete, the Master is rebooted.
7. When the reboot is complete, click the **Close** button.

Using G4 Web Control®

Overview

G4 Web Control allows you to use a PC to interact with an AMX G4 Touch Panel (including the TPI) via the web. The TPI can support up to four simultaneous G4 Web Control connections.

- Refer to the *Protected Setup - G4 Web Control Page* section on page 68 for descriptions of all of the options on the *G4 Web. Control* page.
- Refer to the *NI Series NetLinx Integrated Controllers WebConsole & Programming Guide* for more detailed information on NetLinx Security.
- Verify your NetLinx Master has the latest firmware (*.KIT) file loaded.
- Verify your NetLinx Master's IP Address and System Number have been properly entered into the Master Connection section of the *System Settings* page (see the *Configuring the Master Connection Settings* section on page 43).

1. Open the *G4 Web Control* page (FIG. 84):

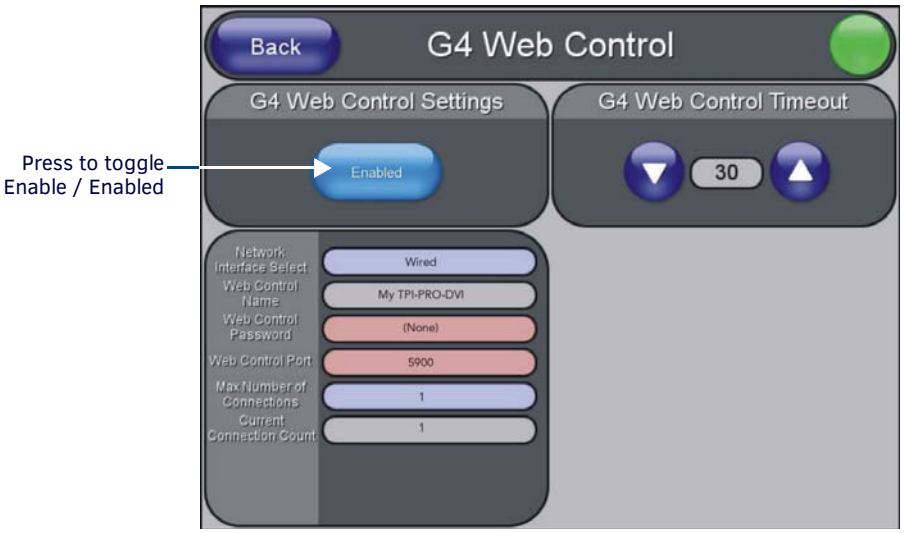


FIG. 84 G4 Web Control page

   a. Press the front panel SETUP pushbutton to open the *Setup* page.
   b. Press **Protected Setup** to open the *Protected Setup* page. This page is password-protected:
   - Use the on-screen keypad to enter the default password - *1988.*
   - Press **Done** to close the keypad.

   c. Press **G4 Web Control** to open the *G4 Web Control* page.

2. Press **Enable/Enabled** until it toggles to **Enabled** (as shown in FIG. 84).

   NOTE: *The Network Interface Select field is read-only - the TPI uses "Wired" as the default method of communication to the web.The "Wireless option" is unavailable for the TPI.*

3. Enter a G4 Authentication session password:
   a. Press the **Web Control Password** field to open the on-screen keyboard.
   b. Enter a unique alpha-numeric string, and press **Done** after you are finished.

   This password is saved as the G4 Authentication session password, associated with VNC web access of this TPI.

4. Enter the port number of the Port on the TPI that the VNC Web Server is running on:
   a. Press the **Web Control Port** field to open the on-screen keypad.
   b. Enter a unique numeric value to be assigned to the port that the VNC Web Server is running on, and press **Done** after you are finished.

   The default Web Control Port is **5900**.

   NOTE: *The remaining fields in the G4 Web Control Settings section are read-only. The name that appears in the Web Control Name field is the device name entered in the main Protected Setup Page (as the "Device Name") - see the Protected Setup Page* section on page 64.

5. Press the **Up/Down** arrows to adjust the *G4 Web Control Timeout* value. This value determines the amount of time the TPI can remain idle (no cursor movements) before the VNC session is closed and the user is disconnected.
6. Press the **Back** button to open the *Protected Setup* page.
7. **Reboot** the TPI (see the *Rebooting the TPI* section on page 51).

Using the NetLinx Master to Control the TPI

Before you begin:

- Verify your NetLinx Master has the latest firmware (*.KIT) file loaded.
- Set the Master's IP Address via NetLinx Studio (version 2.8 or higher).

1. Launch your web browser and enter the IP address of the target NetLinx Master into the Address field.
2. Press the **Enter** key on your keyboard to begin the communication process between the Master and your PC.
   - Initially, the *Master Security* option is disabled, therefore a Username and Password are not required for access or configuration.
   - Both HTTP and HTTPS Ports are enabled by default.
3. If the Master has been 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 in the *Login* dialog.
4. Click **OK** to enter the information and access the Master's WebConsole (*Manage WebControl Connections* page).
5. Click on **Manage connections** to access the *Manage WebControl Connections* page (FIG. 85). This page displays links to G4 Touch Panels running the G4 Web Control feature (which was previously setup and activated on each Touch Panel).

FIG. 85 Manage WebControl Connections page (indicating one compatible panel)

6. Click **Yes** in the *Security Alert* popup to agree to the installation of the G4 WebControl application on your computer (FIG. 86).

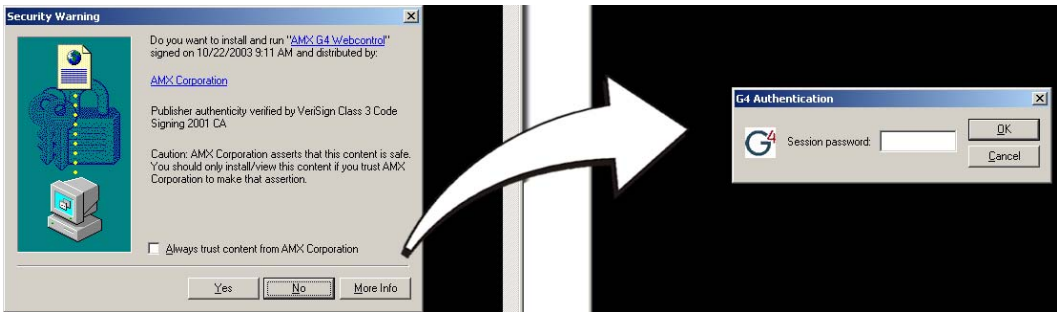


FIG. 86 Web Control VNC installation and G4 Authentication Session Password entry

- The G4 Web Control application is sent by the TPI to the PC that is used for communication. Once the application is installed on the PC, this popup will no longer appear.
- The G4 Web Control application contains the necessary Active X and VNC client applications necessary to properly view and control the unit's pages from your computer.

7. Click on the G4 Touch Panel link associated with the target panel (see FIG. 85). This invokes a secondary browser window.
8. In the *Connection Details* dialog box (FIG. 87), enter the VNC Server IP Address.

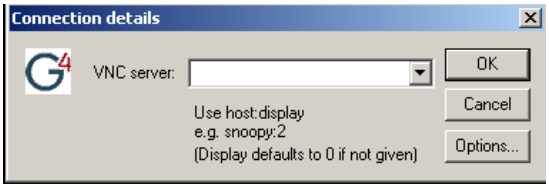


FIG. 87 Connection Details dialog

NOTE: *This is not the IP address of the Master, but the IP address of the target touch panel. You can find the IP address in the Wired Ethernet - System Connection > IP Settings section.*

9. If you setup a WebControl password on the G4 WebControl page, a *G4 Authentication* dialog appears in the secondary browser window (FIG. 88).

FIG. 88 G4 Authentication dialog

10. Enter the Web Control session password into the Session password field (FIG. 86).

    This password was previously entered into the Web Control Password field in the G4 Web Control page on the TPI (see FIG. 84 on page 136).

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

Using Takenote™

Overview

The TakeNote application allows you to create on-screen annotations over the displayed video sources, using a Pointing device (i.e. USB mouse or touch screen) connected to a TPI.

- Refer to the *Protected Setup - TakeNote Control Page* section on page 75 for descriptions of all of the options on the *TakeNote Control* page.
- Verify your NetLinx Master has the latest firmware (*.KIT) file loaded.
- Verify your NetLinx Master's IP Address and System Number have been properly entered into the Master Connection section of the *System Settings* page (see the *Configuring the Master Connection Settings* section on page 43).

Enabling TakeNote on the TPI

The TakeNote feature of the TPI must be enabled before TakeNote can be used:

1. Open the *TakeNote Control* page (FIG. 89):

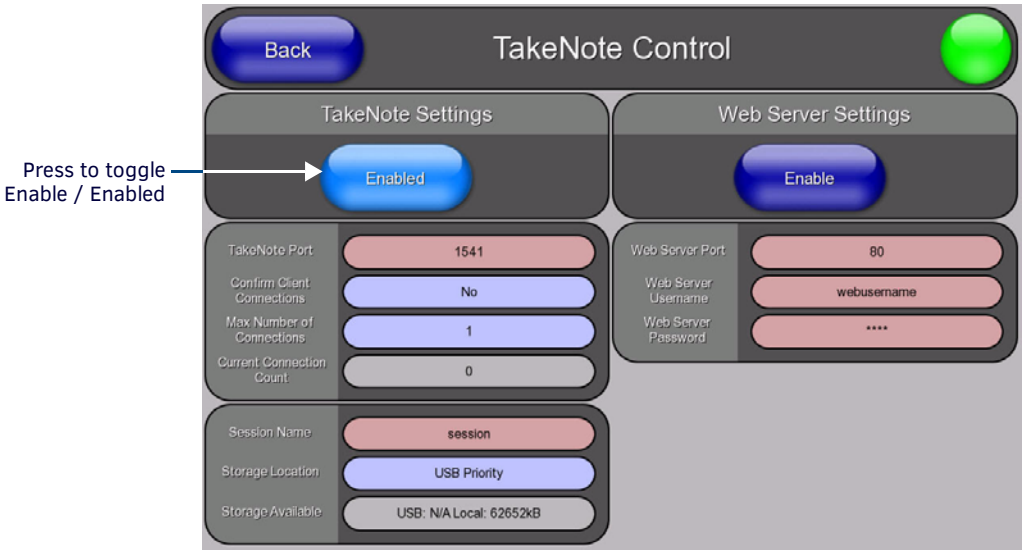


FIG. 89 TakeNote Control page

   a. Press the front panel SETUP pushbutton to open the *Setup* page.
   b. Press **Protected Setup** to open the *Protected Setup* page. This page is password-protected:
   - Use the on-screen keypad to enter the default password - *1988.*
   - Press **Done** to close the keypad.

   c. Press **TakeNote** to open the *TakeNote Control* page.

2. Press **Enable/Enabled** until it toggles to **Enabled** (as shown in FIG. 89).

Starting a TakeNote Session

Once TakeNote has been Enabled, it is ready to use:

1. Click **Back** in the Protected Setup page to return to the Setup Page.
2. Click **Exit** in the Setup Page to close the Setup page.
3. When TakeNote is enabled, the TakeNote icon is displayed in the upper-right corner of the display area (FIG. 90):

FIG. 90 TakeNote icon

4. Click this icon to access the TakeNote menu bar, which provides access to all TakeNote annotation tools, in the TakeNote Menu Bar.
5. Use the options in the TakeNote Menu Bar to perform various types of on-screen annotations, using the pointing device (i.e. mouse) and keyboard connected to the TPI.

TakeNote Menu Bar

The options in the TakeNote Menu Bar (FIG. 91) are described below:

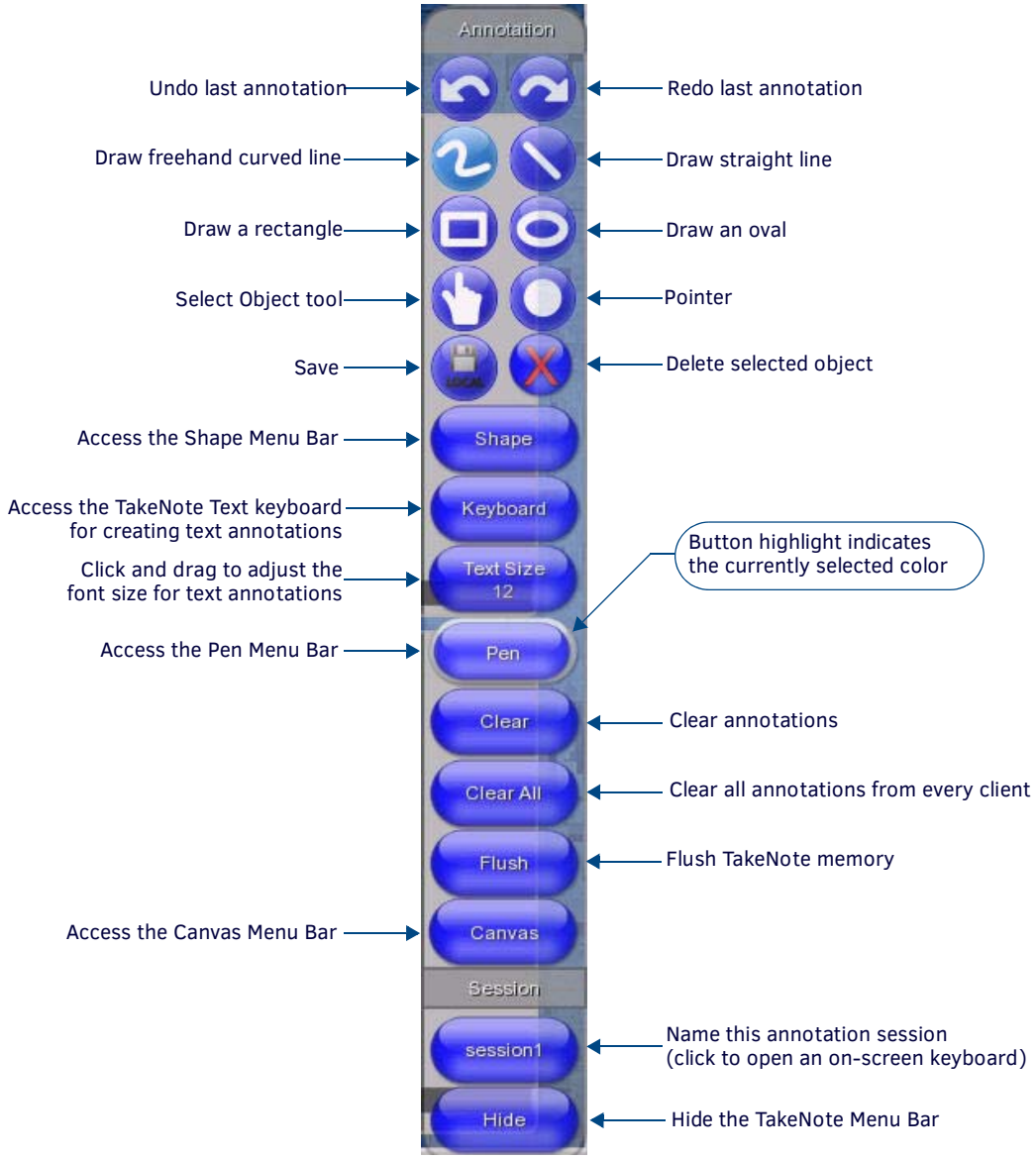


FIG. 91 TakeNote Menu Bar - detailed view

Drawing Annotation Tools

The top portion of the TakeNote Menu Bar contains the main annotation tool set (FIG. 92):

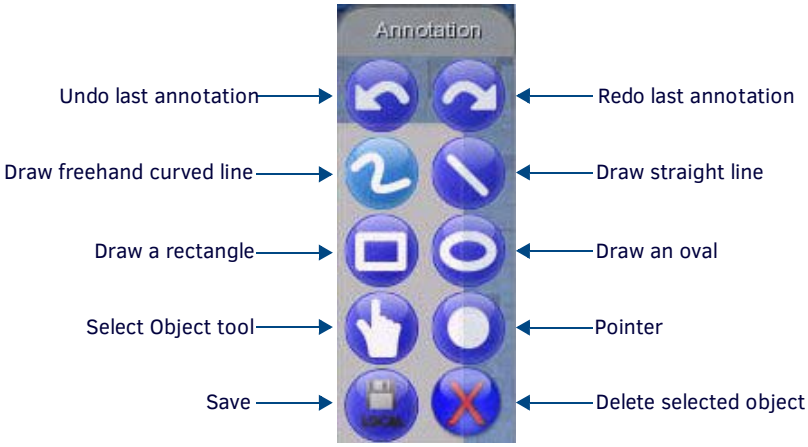


FIG. 92 TakeNote Menu Bar - Annotation Tools

Undo / Redo Last Action

Press the Undo and Redo buttons to undo or redo the last annotation action. Press these buttons repeatedly to undo or redo the last several actions.

Drawing a Freehand Curved Line

NOTE: *All Pen settings (line Type, Width, Color and Opacity) must be set in the Pen Options Menu Bar before drawing the line - once the line is drawn, these settings cannot be changed. Refer to the Pen Options Menu Bar* section on page 148 *for details.*

1. Select the Freehand Curved Line tool from the TakeNote Menu Bar (see FIG. 92).
2. Using touch, the mouse (or other pointing device), draw as desired. The line is drawn on-screen, using the current Pen settings, as set in the Pen Menu Bar.

Drawing a Straight Line

1. Select the Straight Line tool from the TakeNote Menu Bar (see FIG. 91 on page 140).
2. Using touch, the mouse (or other pointing device), draw as desired. The line is drawn on-screen, using the current Pen settings, as set in the Pen Menu Bar. Refer to the *Pen Options Menu Bar* section on page 148 for details.

Drawing a Rectangle

1. Select the Rectangle tool from the TakeNote Menu Bar (see FIG. 91 on page 140).
2. Using touch, the mouse (or other pointing device), draw as desired. The rectangle is drawn on-screen, using the current Pen settings, as set in the Pen Menu Bar. Refer to the *Pen Options Menu Bar* section on page 148 for details.

Drawing an Oval

1. Select the Oval tool from the TakeNote Menu Bar (see FIG. 91 on page 140).
2. Using touch, the mouse (or other pointing device), draw as desired. The oval is drawn on-screen, using the current Pen settings, as set in the Pen Menu Bar. Refer to the *Pen Options Menu Bar* section on page 148 for details.

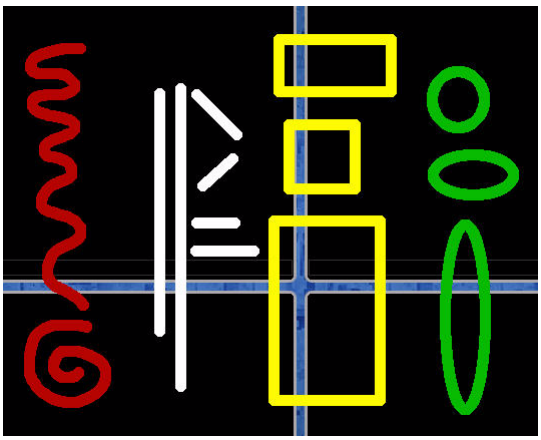


FIG. 93 Drawing annotations examples (Curved Line, Straight Lines, Rectangles, Ovals)

NOTE: *All lines, shapes and text annotations are treated as Objects in TakeNote. Once they are on-screen, each line can be selected to move or delete, using the Select Object tool.*

Use the options in the Shape Menu Bar (see FIG. 99 on page 144) to draw triangles, diamonds and hexagons (see the *Shape Options Menu Bar* section on page 144 for details).

Using the Select Object Tool

All lines, shapes and text annotations are treated as Objects in TakeNote. Once they are on-screen, each line can be selected to move or delete, using the Select Object tool.

Use the **Select Object** tool to select any annotation object (Line, Shape or Text) on the screen (FIG. 94).

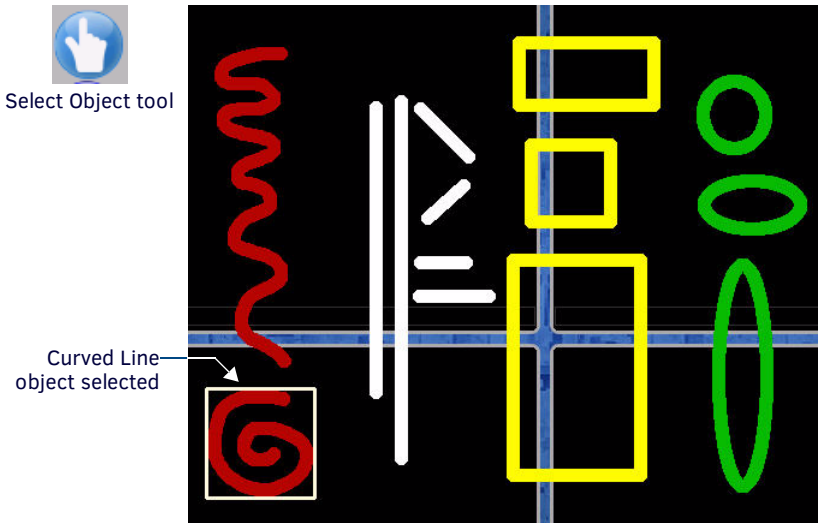


FIG. 94 Drawing annotations examples (Curved Line object selected)

Once selected, the object can be moved or deleted (see below).

Moving a TakeNote Annotation Object

1. Use the **Select Object** tool to select any TakeNote annotation object (line, shape or text) on the screen.
2. Click and drag the selected object to move as desired.

Deleting a TakeNote Annotation Object

1. Use the **Select Object** tool to select any TakeNote annotation object (line, shape or text) on the screen.
2. Press the **Delete** button (FIG. 95).

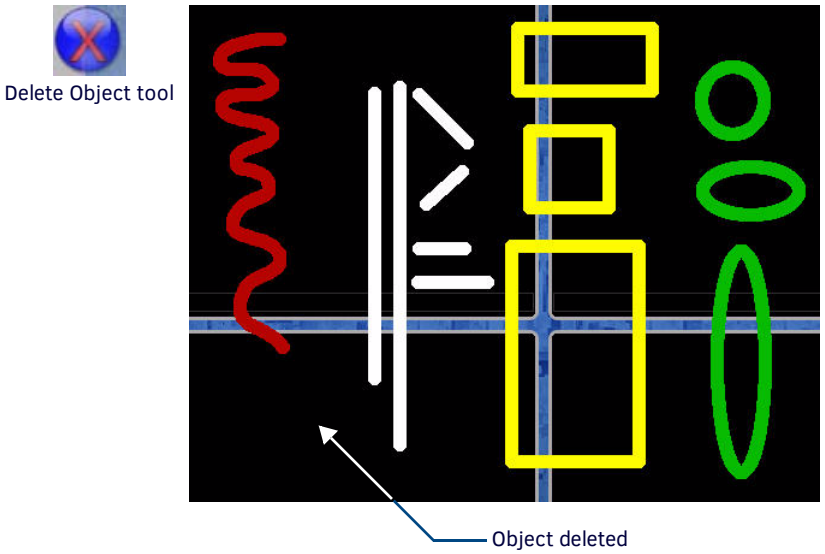


FIG. 95 Drawing annotations examples (Curved Line object deleted)

Using the Pointer

Select the Pointer tool to place a "pointer" on the screen, in the form of a colored dot that can be moved on-screen via the pointing device (i.e. the mouse). The pointer is displayed only when the primary select button on the pointing device is enabled (i.e. the left mouse button is clicked, or the touchscreen is touched). This allows you to point to specific areas on-screen, without drawing lines or leaving any annotations on-screen (FIG. 96).

Pointer tool

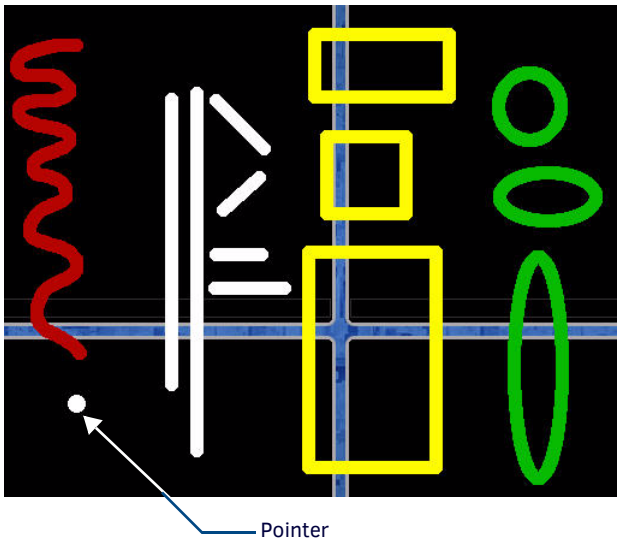


FIG. 96 Drawing annotations examples (Pointer)

To change the color of the pointer, select a color from the Pen Option Menu Bar (see the *Pen Options Menu Bar* section on page 148).

Using the Save Tool

The Save tool (FIG. 97) allows you to capture and save screen images from the TakeNote session.

FIG. 97 Save Tool

Capturing and Saving the Screen Image

Press the **Save** button to capture the current screen image, including all visible annotations, and save the captured image to either a USB stick or to the TPI's internal disk drive.

By default, the TPI is configured to save captured TakeNote screen images to a USB stick inserted into any of the USB (Type A) Input ports.

To save captured TakeNote screen images to a USB stick:

1. Insert a USB stick into any of the USB (Type A) Input ports on the TPI. (see the *Wiring and Device Connections* section on page 24).

   The TPI automatically detects the first USB stick to be inserted into any of the USB (Type A) Input ports (two available on the front panel, two more available on the rear panel - refer to FIG. 5 and FIG. 6 on page 24).
2. Press the **Save** button on the Main TakeNote Menu Bar. This action will cause the screen to refresh.
3. Once the screen has refreshed, the captured screen image has been saved to the USB Stick.
   - Images are saved as JPG files.
   - Images are named according to the TakeNote session name, followed by a timestamp of the time and date the image was saved.

Changing the Storage Location For Captured TakeNote Screen Images

The screen image will be saved according to the settings specified in the TakeNote Control (Protected Setup) page:

1. Open the *TakeNote Control* page (FIG. 89):

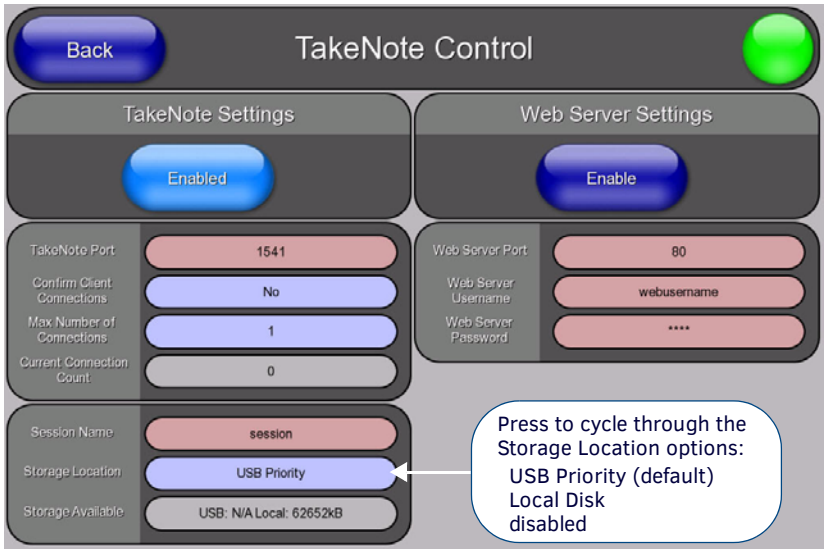


FIG. 98 TakeNote Control page

2. Press the **Storage Location** button to cycle through the options:
   - **USB Priority** (default) - This setting saves the image to a USB stick inserted into any of the USB Type A Input ports on the TPI . The TPI supports a single USB Stick at a time.
   - **Local Disk** - This setting saves the image to the TPI's internal disk. Images saved to the TPI's internal drive can be managed via the TakeNote Web Application - see the *Using The TakeNote Web Application* section on page 150 for information.
   - **disabled** - This option disables the Save feature.

Shape Options Menu Bar

Click the **Shape** button in the TakeNote Menu Bar (see FIG. 91 on page 140) to access the Shape Menu Bar shown in FIG. 99:

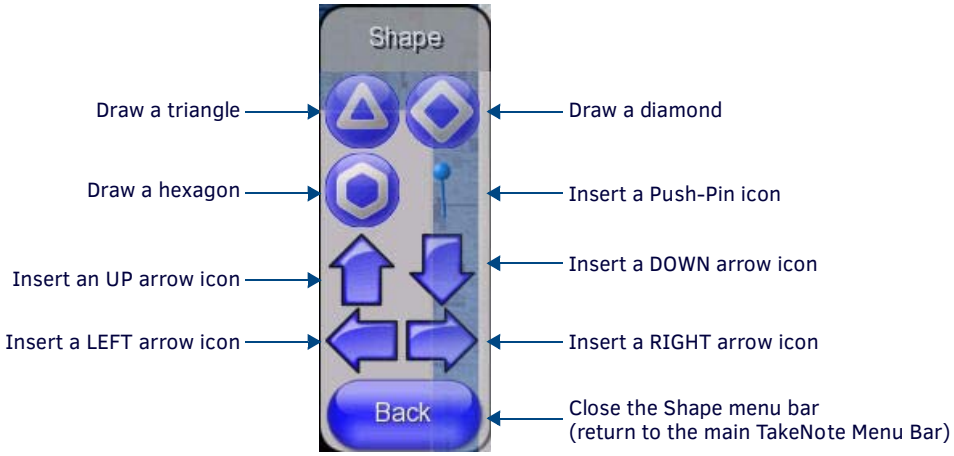


FIG. 99 TakeNote - Shape Menu Bar

Drawing a Shape

Select one of the shape icons (triangle, diamond or hexagon), then click-and-drag to draw the selected shape:

- **Triangles** - The triangle tool draws isosceles triangles, with a straight line at the bottom relative to the cursor position (FIG. 100):

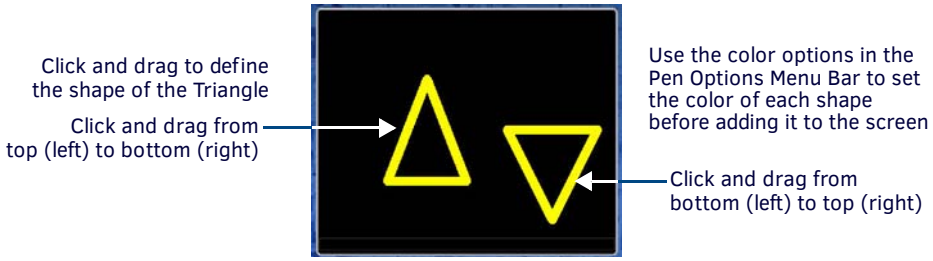


FIG. 100 Drawing Triangles

- **Diamonds** - The diamond tool draws equilateral diamonds (FIG. 101):

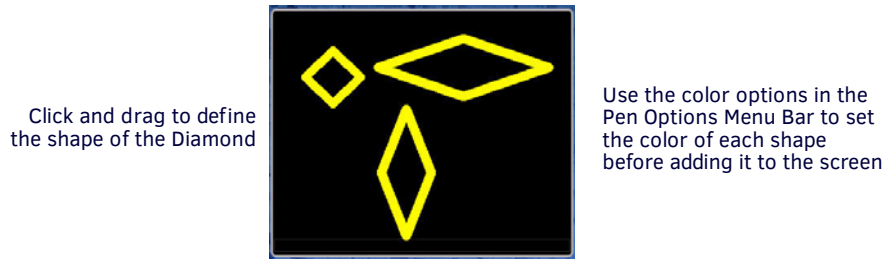


FIG. 101 Drawing Diamonds

NOTE: *Use the Rectangle tool (see FIG. 92 on page 141) to draw squares and rectangles.*

- **Hexagons** - The diamond tool draws equilateral hexagons (FIG. 102):

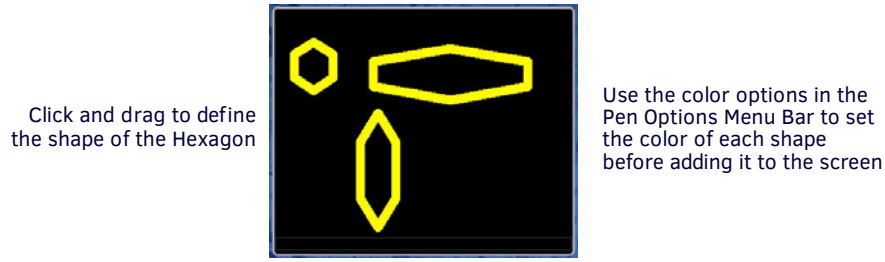


FIG. 102 Drawing Hexagons

Inserting a Push-Pin Icon

Select the Push-Pin button and click on the screen to draw a push-pin icon at the cursor location (FIG. 103):

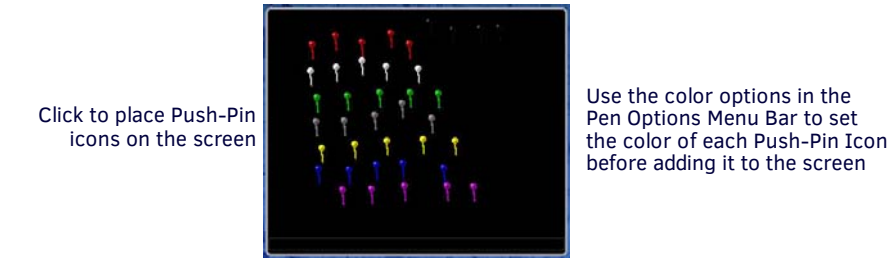


FIG. 103 Adding Push-Pin Icons

Inserting an Arrow Icon

Select an Arrow button and click on the screen to draw an arrow icon at the cursor location (FIG. 104):

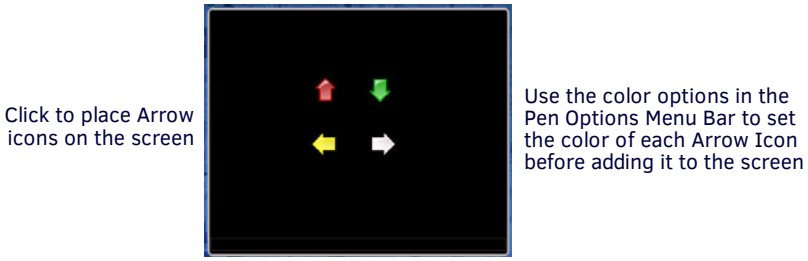


FIG. 104 Adding Arrow Icons

> **NOTE:** *Arrow and Push-Pin icons are drawn using the color that is currently selected in the Pen Options Menu Bar. To place different colors of icons, select the Push-Pin or Arrow icon tool, then open the Pen Options Menu Bar. This allows you to change the color of the icons before placing each one on the screen.*

Text Annotation Tools

NOTE: *All Text settings (text Size, Color and Opacity) must be set before entering the text - once the text is drawn, these settings cannot be changed.*

Text Size Button

Click-and-drag on the **Text Size** button in the TakeNote Menu Bar (FIG. 105) to set the font size for text annotations:

FIG. 105 Text Size button

The range for Text Size is 12- 96 (points).

TakeNote Text Keyboard

Click the **Keyboard** button in the TakeNote Menu Bar (see FIG. 91 on page 140) to access the TakeNote Text Keyboard shown in FIG. 106:

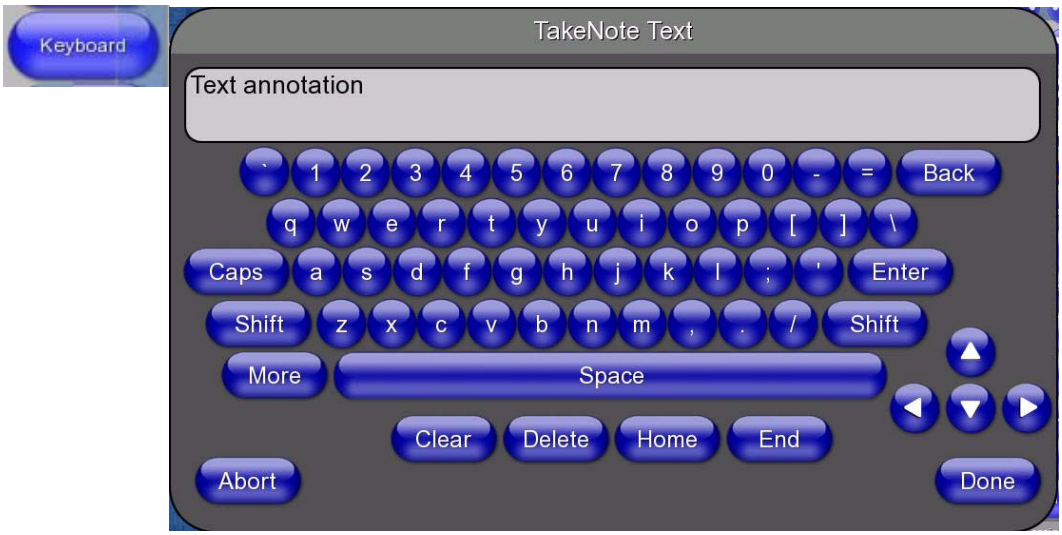


FIG. 106 TakeNote Text Keyboard

Use this keyboard to create and edit text annotations. To type, press on each letter or symbol button and click **Done** when finished.

- Press **Caps** to toggle all characters to upper-case, press again to return to lower-case.
- Press **Shift** to shift all characters to upper-case for the next typed character only.
- Press **More** to toggle an alternative keyboard featuring various special symbols, press again to return to the normal character set.

- Press **Clear** to clear all characters.
- Press **Delete** to delete the character at the cursor position.
- Press **Home** to place the cursor at the beginning of the text line; press **End** to jump to the end of the line.
- Use the UP/DOWN/LEFT/RIGHT arrow buttons to move the cursor within the text box.
- Press **Done** to close the Keyboard, placing the entered text on-screen.

Creating Text Annotations

1. Set the text Size by clicking and dragging on the **Text Size** button (range = 12-96).
2. Set the text Color and Opacity using the options in the Pen Options Menu Bar (refer to the *Pen Options Menu Bar* section on page 148).
3. Press the **Keyboard** button to open the TakeNote Text Keyboard (see FIG. 106 on page 146).
4. Press the character buttons on the on-screen keyboard. The entered text is displayed in the Text Window of the Keyboard.
5. When finished entering the text that you want to appear on-screen, press **Done** to close the keyboard.
6. The text is displayed on-screen (FIG. 107).

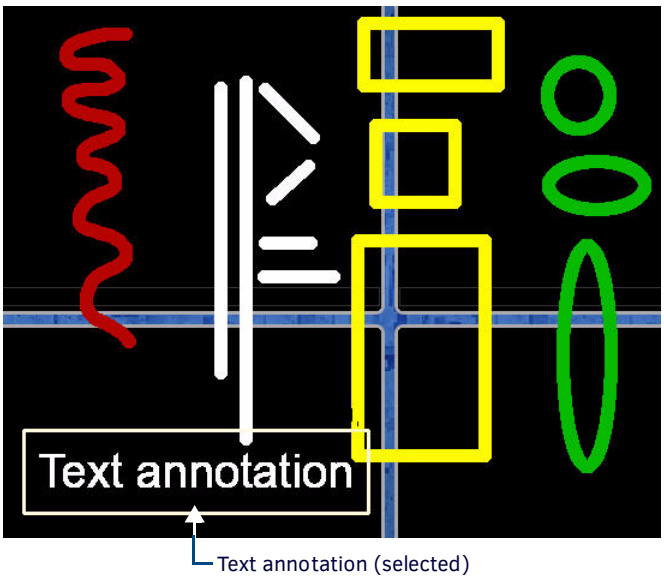


FIG. 107 Text annotations example

7. Note that the newly created text annotation is selected, when it is added to the screen. This is to allow you to position the text annotation object without having to use the Select Object tool. Click-and-drag to move the text annotation object to the desired position, and click anywhere to place the text.

   NOTE: *All lines, shapes and text annotations are treated as Objects in TakeNote. Once they are on-screen, each line can be selected to move or delete, using the Select Object tool.*

Moving Text

To move the text annotation object once it is displayed on the screen:

1. Select the **Select Object** tool from the main TakeNote Menu Bar (see the *Using the Select Object Tool* section on page 142).
2. Select the text, and drag it to the desired location on the screen.

Pen Options Menu Bar

Click the **Pen** button in the TakeNote Menu Bar (see FIG. 91 on page 140) to access the Pen Options Menu Bar FIG. 108:

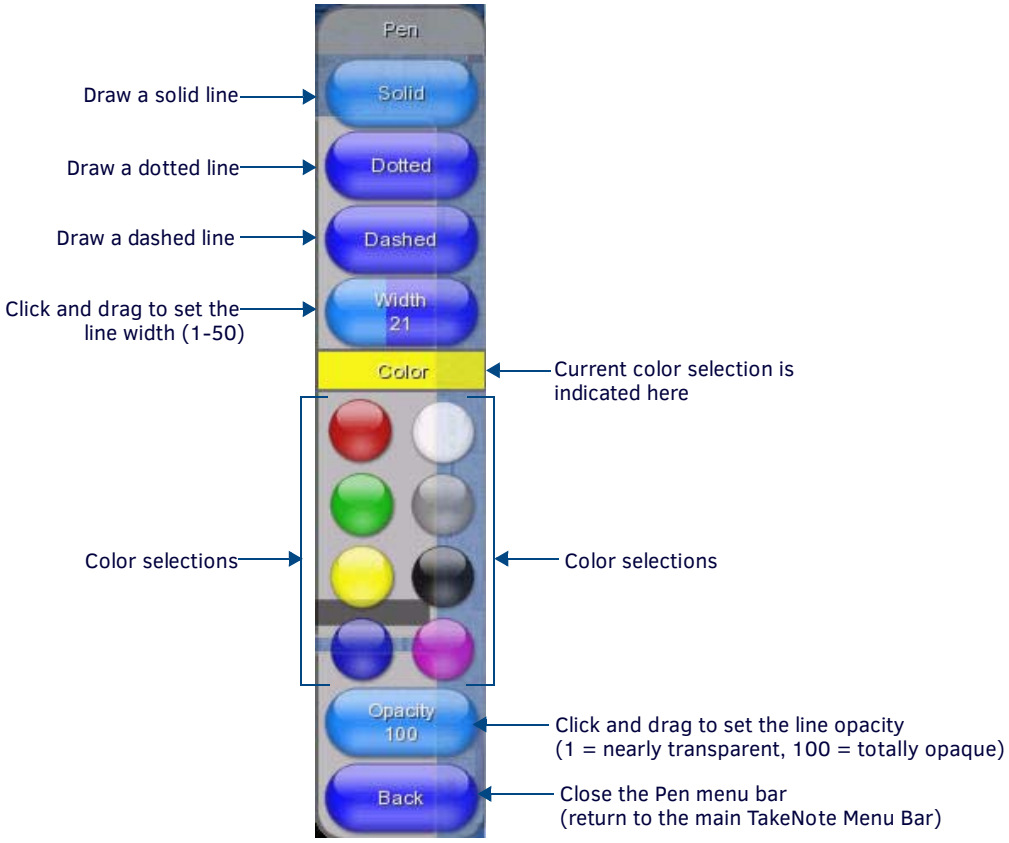


FIG. 108 Pen Options Menu Bar

Note that the settings made in the Pen Options Menu Bar can affect all types of annotations:

- The Line attributes (*Type*, *Width*, *Color* and *Opacity*) affect all types of lines, curves and shapes. For example, if you have selected *Dotted* as the line Type, *Yellow* as the line Color, "*10*" as the line Width, and Opacity set to "50", then all lines (including the lines used to draw shapes) will be yellow dotted lines with a width of 10 and opacity of 50, until these attributes are changed.
- The *Color* and *Opacity* settings also apply to Text annotations.

NOTE: *All Pen settings must be set before drawing the line, shape or entering the text - once the annotation object is drawn, these settings cannot be changed.*

Clearing Annotations

- Press **Clear** to clear all annotations from the screen, for this client only. In this case, you can bring the annotations back by using the Undo function (see the *Undo / Redo Last Action* section on page 141).
- Press **Clear All** to clear all annotations from the screen, for all clients. In this case, each client can bring it's annotations back by using the Undo function (see the *Undo / Redo Last Action* section on page 141).
- Press **Clear/Flush** to clear all annotations from the screen for all clients, as well as flush the undo stack. In this case, all annotations are permanently cleared from the TPI (no Undo).

Canvas Options Menu Bar

Press the **Canvas** button on the TakeNote Menu Bar to access the Canvas Options Menu Bar (FIG. 109):

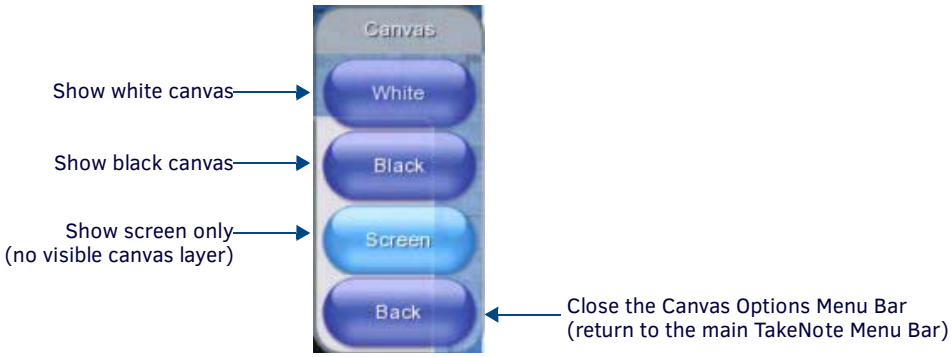


FIG. 109 Canvas Options Menu Bar

The options in this menu apply to the super-imposed drawing layer used by TakeNote for annotations.

- **White**: Press to use a white canvas (overlay).
- **Black**: Press to use a black canvas (overlay).
- **Screen**: Press to use a totally transparent overlay (default setting). In this case, the canvas is invisible.

Working With Opacity Settings

The Opacity setting can affect the performance of the TPI, as semi-transparent lines can place substantial demands on the processor. Generally, semi-transparent lines should be used as sparingly as possible. The opacity settings are intended for minor highlighting, but not for large areas or complex drawings.

Session Tools

Naming the TakeNote Session

Click the **Session** button in the TakeNote Menu Bar (see FIG. 91 on page 140) to access the Session Name Keyboard shown in FIG. 110:

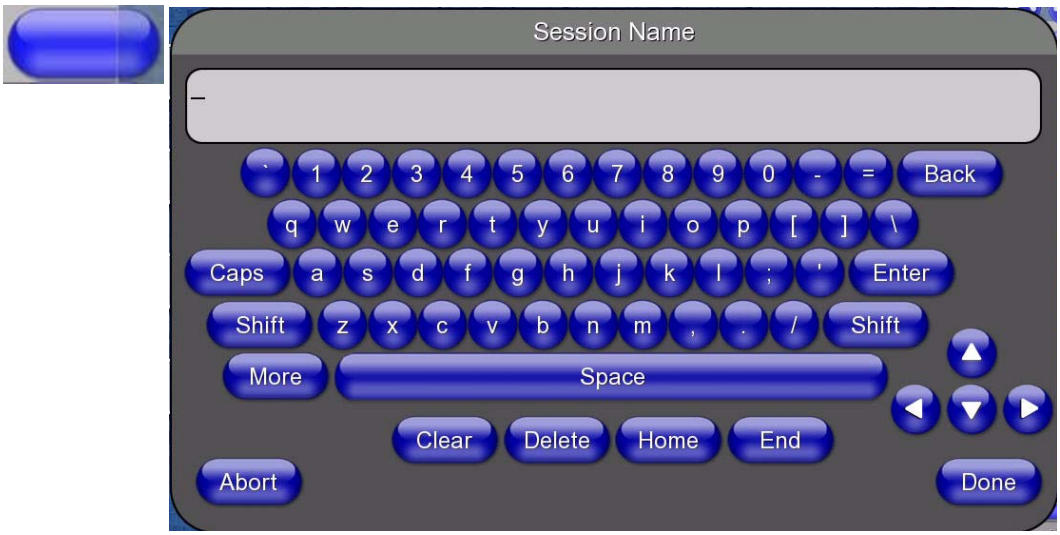


FIG. 110 Session Name Keyboard

Use this keyboard to enter a name for the current TakeNote session. To type, press on each letter or symbol button and click **Done** when finished. The session name entered here will be used in two ways:

- It will appear in the *TakeNote Control* (Protected Setup) page (see FIG. 89 on page 139) in the *Session Name* field.
- It will be used as a prefix in the system-generated file names applied to all saved screen images. See the *Using the Save Tool* section on page 143 for details.

Hiding TakeNote

You can temporarily hide the TakeNote Menu Bar, TakeNote annotations, or both. Hiding TakeNote removes the TakeNote display from the screen, but does not delete any annotations.

Hiding the TakeNote Menu Bar

To hide the TakeNote Menu Bar while continuing to display annotations, press the **Hide** button. In this case, the annotations are displayed, but the Menu Bar is not.

In this state, you can bring back the TakeNote Menu Bar by pressing the **Annotation** button at the bottom of the screen. (FIG. 111):

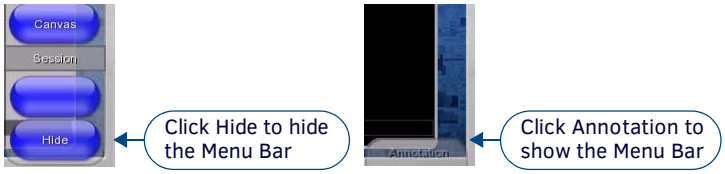


FIG. 111 TakeNote Menu Bar hidden

Hiding TakeNote Annotations

To hide the TakeNote Menu Bar and all annotations, press the **TakeNote** icon at the top of the Menu Bar.

In this state, you can bring back the TakeNote Menu Bar and all annotations by pressing the **TakeNote** icon a second time (FIG. 112):

FIG. 112 TakeNote Menu Bar and annotations hidden

Using The TakeNote Web Application

The TPI includes an internal web application for managing TakeNote screen images that have been captured and saved to the TPI's internal (local) disk drive.

NOTE: *By default, the TPI is configured to save captured TakeNote screen images to a USB stick inserted into any of the USB (Type A) Input ports. In order to save TakeNote images to the TPI's internal drive, you must change the Storage Location setting (in the TakeNote Control page) to Local Disk - see the Changing the Storage Location For Captured TakeNote Screen Images* section on page 144 *for details.*

Launching the AMX TakeNote Web Application

1. Verify that the Web Server is enabled in the TakeNote Control page, as shown in FIG. 113.

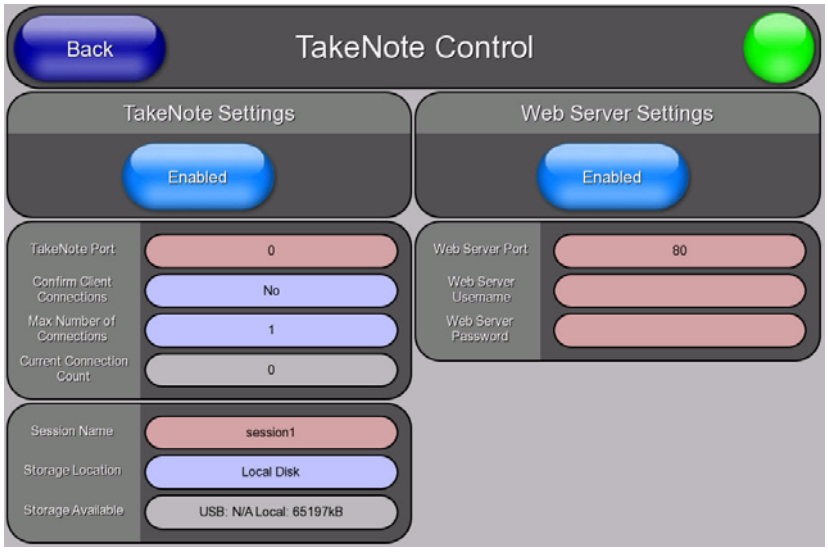


FIG. 113 TakeNote Control page - Web Server Enabled

2. From a PC connected to the LAN on which the TPI resides:

a. Open a web browser.
b. Enter the TPI's IP Address in the browse window and press Enter.
c. If the target TPI has authentication requirements (*Web Server Username* and *Web Server Password*), the browser will prompt you for them before allowing a connection.

3. The AMX TakeNote application is opened in the browser window.

The AMX TakeNote Web Application User Interface

FIG. 114 shows the AMX TakeNote Web Application, and identifies the main features of the user interface:

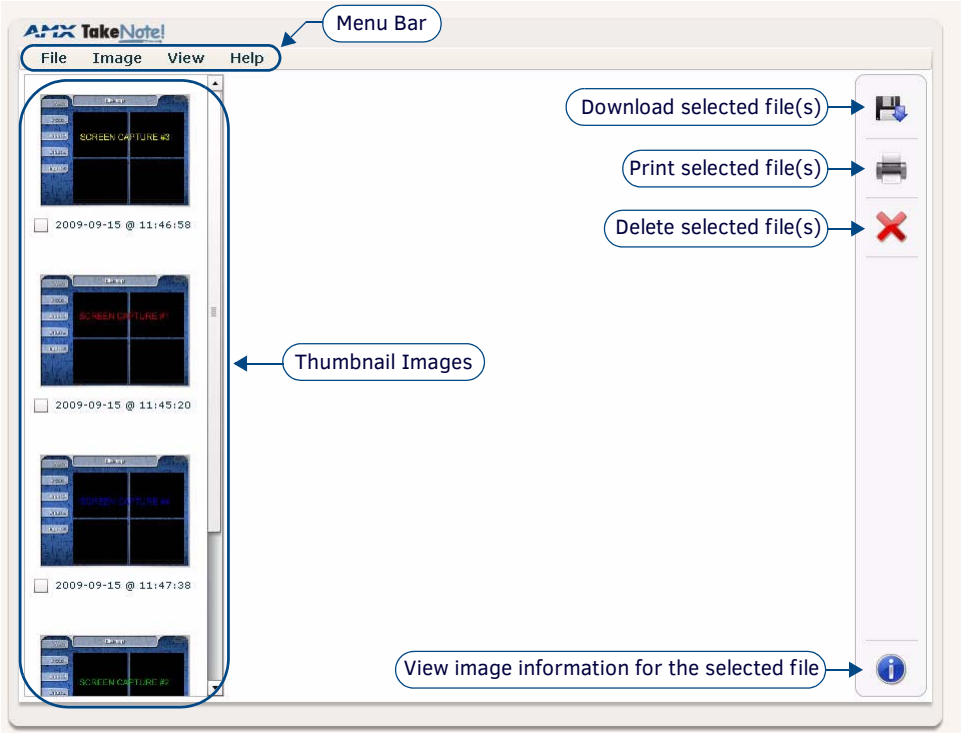


FIG. 114 AMX TakeNote web application

Menu Bar

The options in the Menu Bar include:

AMX TakeNote Menu Bar	
File Menu	
• Refresh:	Select to refresh the image list.
Image Menu	
• Download Image:	This option allows you to download selected the image to a local directory. The application will prompt you for a target directory for the file.
• Print Image:	This option allows you to print the selected image.
• Open Image In New Window:	This option opens the selected image in a new window (or tab) in your browser.
• Display Image Information:	This option displays the *Image Information* dialog, which provides detailed image/file information for the selected image.
• Delete Image:	This option deletes all selected (checked) images. The application will prompt you to verify this action before the image files are deleted from the TPI.
View Menu	
• Horizontal Thumbnails:	This option displays the Image Thumbnails in a horizontal window along the bottom of the application window.
• Vertical Thumbnails:	This option displays the Image Thumbnails in a vertical window along the left edge of the application window (default setting).
Help Menu	
• About	This option opens the About AMX TakeNote dialog, containing version and copyright information on the application
• AMX Website	This option opens the AMX Website (www.amx.com) in a new window (or tab) in your browser.

Thumbnail Images

Each image currently saved on the TPI's Local Disk is represented in the AMX TakeNote application with a thumbnail image (FIG. 115).

Thumbnail Image (not selected) | Thumbnail Image (selected for preview) | Thumbnail Image (checked for deletion)

FIG. 115 Thumbnail Images

Each thumbnail provides a date and time stamp for the image file. For detailed image/file information, select an image and press the Information icon (in the lower-right corner of the application window), or select **Display Image Information** from the *Image* menu. Note that each thumbnail also features a checkbox, which allows you to select multiple images for deletion.

Toolbar

The options in the Toolbar include:

AMX TakeNote Toolbar	
• Download:	With an image selected, press the *Download* button to download the image to a local directory. The application will prompt you for a target directory for the file. Pressing this button is the same as selecting *Download Image* from the Image menu.
• Print:	With an image selected, press the *Print* button to print the image to a selected printer. Pressing this button is the same as selecting *Print Image* from the Image menu.
• Delete:	With one or more images checked (see FIG. 115), press the *Delete* button to delete all checked images. The application will prompt you to verify this action before the image files are deleted from the TPI.
• Information:	With an image selected, press the *Information* button to display the *Image Information* dialog, which provides detailed image/file information.

Previewing Captured TakeNote Image Files

Select a thumbnail image to preview the image in the main window (FIG. 116):

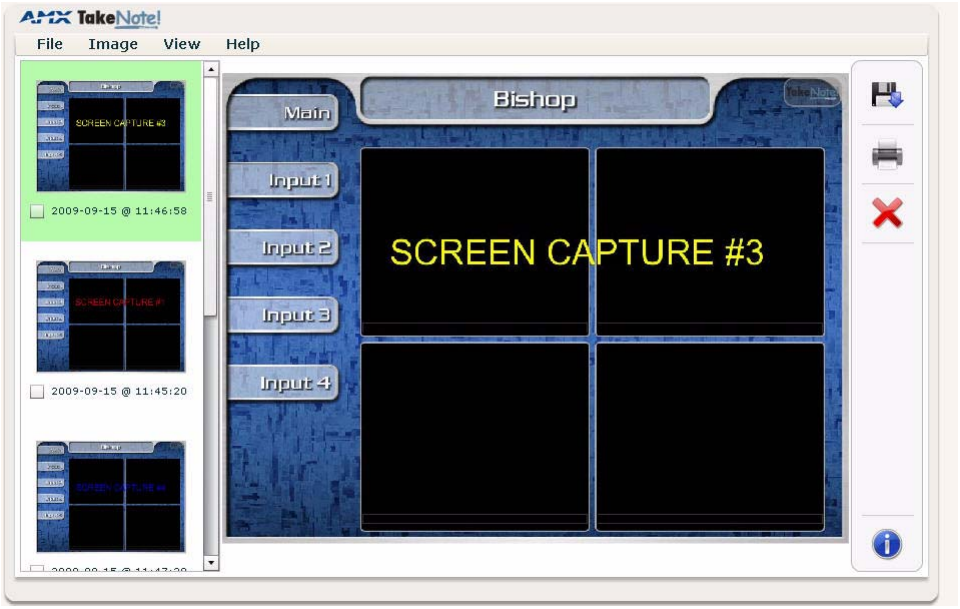


FIG. 116 Preview Image

NOTE: *Hold the mouse cursor over the preview image to invoke a Image Information pop-up window.*

Downloading Captured TakeNote Image Files To a Local Directory

1. Launch the AMX TakeNote Web application. If the application is already open, select **File > Refresh** to refresh the image list.
2. In the Thumbnail Images window, select a file that you want to save to a local directory on your PC or LAN.

NOTE: *Image files must be downloaded one at a time (multi-selection is not supported for downloading files).*

3. Press the **Download** button (FIG. 117).

FIG. 117 Download button

Alternatively, select **Image > Download Image** from the Menu Bar.

4. The application prompts you to specify a target directory for the image (.JPG) file (FIG. 118):

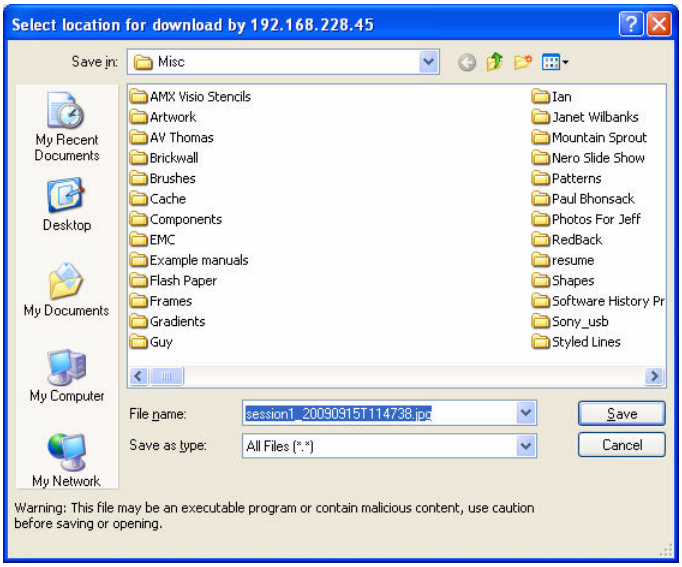


FIG. 118 Select Location for Download dialog

5. Select a target directory, and click **Save**.
6. The application notifies you that the file has been saved (FIG. 119):

FIG. 119 Download Image File dialog

7. Click **Close** to return to the main application window.

Printing Captured TakeNote Image Files

1. Launch the AMX TakeNote Web application. If the application is already open, select **File > Refresh** to refresh the image list.
2. In the Thumbnail Images window, select a file that you want to print.

   NOTE: *Image files must be printed one at a time (multi-selection is not supported for printing files).*

3. Press the **Print** button (FIG. 117).

FIG. 120 Print button

Alternatively, select **Image > Print Image** from the Menu Bar.

4. Select a target printer in the *Print* dialog and click **Print**.

Deleting Captured TakeNote Image Files

1. Launch the AMX TakeNote Web application. If the application is already open, select **File > Refresh** to refresh the image list.
2. In the Thumbnail Images window, place a check in the checkbox of each image file that you want to permanently delete from the TPI's local disk (FIG. 121).

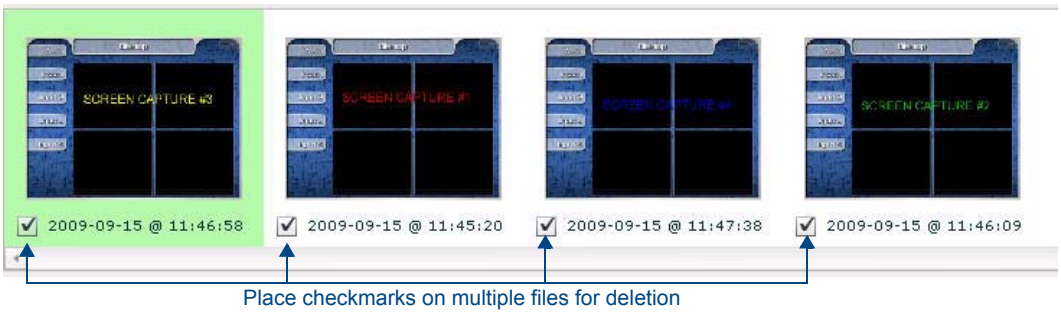


FIG. 121 Multiple files checked for deletion

3. Press the **Delete** button (FIG. 117).

FIG. 122 Delete button

Alternatively, select **Image > Delete Image** from the Menu Bar.

4. The application prompts you to confirm this action before deleting any files, via the *Delete Selected Images* dialog - click **Yes** to proceed. (FIG. 123):

FIG. 123 Delete Selected Images dialog

5. The application notifies you that the selected file(s) have been deleted - click **Close** to return to the main application window. (FIG. 124):

FIG. 124 Delete Images dialog

Appendix A: Supported Input and Output Modes

Overview

This section lists the supported Input and Output modes for the TPI-PRO-DVI.

Supported Input Modes

Use the **^SLT** Input Command to manually specify the input mode (see *^SLT* on page 103).

Supported Input Modes - DVI and RGB

The following table lists the supported input modes for DVI and RGB:

Supported Input Modes for DVI and RGB			
Resolution	**Standard**	**Resolution**	**Standard**
640x350@85	VESA-DMT	1280x768@75	VESA-CVT
640x400@60	VESA-CVT	1280x768@85	VESA-CVT
640x400@85	VESA-DMT	1280x800@60	VESA-CVT
640x480@60	VESA-DMT	1280x960@60	VESA-DMT
640x480@72	VESA-DMT	1280x960@85	VESA-DMT
640x480@75	VESA-DMT	1280x1024@60	VESA-DMT
640x480@85	VESA-DMT	1280x1024@75	VESA-DMT
720x400@85	VESA-DMT	1280x1024@85	VESA-DMT
720x480@60 480p	CEA 861	1360x764@60	VESA-CVT
720x576@50 576p	CEA 861	1360x768@60	VESA-DMT
800x500@60	VESA-CVT	1400x1050@60	VESA-CVT
800x600@56	VESA-DMT	1400x1050@60 rb	VESA-CVTR
800x600@60	VESA-DMT	1400x1050@75	VESA-CVT
800x600@72	VESA-DMT	1440x900@60	VESA-CVT
800x600@75	VESA-DMT	1440x900@60 rb	VESA-CVTR
800x600@85	VESA-DMT	1440x900@75	VESA-CVT
848x477@60	VESA-CVT	1440x900@85	VESA-CVT
848x480@60	VESA-DMT	1600x1200@60	VESA-DMT
848x480@75	VESA-CVT	1680x1050@60	VESA-CVT
848x480@85	VESA-CVT	1680x1050@60 rb	VESA-CVTR
1024x640@60	VESA-CVT	1920x540@50 1080i	CEA 861
1024x768@60	VESA-DMT	1920x540@50 1080i_S295M	CEA 861
1024x768@70	VESA-DMT	1920x540@60 1080i	CEA 861
1024x768@75	VESA-DMT	1920x1080@24 1080p	CEA 861
1024x768@85	VESA-DMT	1920x1080@25 1080p	CEA 861
1152x864@75	VESA-DMT	1920x1080@30 1080p	CEA 861
1280x720@50 720p	CEA 861	1920x1080@50 1080p	CEA 861
1280x720@60	VESA-CVT	1920x1080@60	VESA-CVT
1280x720@60 rb	VESA-CVTR	1920x1080@60 1080p	CEA 861
1280x720@60 720p	CEA 861	1920x1080@60 rb	VESA-CVTR
1280x768@60 rb	VESA-CVTR	1920x1200@60	VESA-CVT
1280x768@60	VESA-CVT	1920x1200@60 rb	VESA-CVTR

Supported Input Modes - Component

The following table lists the supported input modes for Component:

Supported Input Modes for Component	
Resolution	**Standard**
720x240@60	CEA 770.2
720x288@50	
720x480@60	ITU-R BT.1358 / SMPTE 296M
720x576@50	ITU-R BT.1358
1280x720@25	SMPTE 296M
1280x720@30	SMPTE 296M
1280x720@50	SMPTE 296M
1280x720@60	CEA 770.3 / SMPTE 274M
1440x960@60	
1920x540@24	SMPTE 274M
1920x540@50	SMPTE 274M
1920x540@50	SMPTE 295M
1920x540@60	CEA 770.3
1920x1080@24	SMPTE 274M
1920x1080@25	SMPTE 274M
1920x1080@30	SMPTE 274M
1920x1080@50	SMPTE 274M
1920x1080@50	SMPTE 295M
1920x1080@60	SMPTE 274M

Supported Output Modes

Standard output modes for the TPI-PRO-DVI are listed below:

Supported Output Modes		
Resolution	**Standard**	**Command**
640x480@60	VESA-DMT	'ORES-640x480@60'
640x480@72	VESA-DMT	'ORES-640x480@72'
640x480@75	VESA-DMT	'ORES-640x480@75'
800x600@60	VESA-DMT	'ORES-800x600@60'
800x600@72	VESA-DMT	'ORES-800x600@72'
800x600@75	VESA-DMT	'ORES-800x600@75'
848x480@60	VESA-DMT	'ORES-848x480@60'
1024x768@60	VESA-DMT	'ORES-1024x768@60'
1024x768@70	VESA-DMT	'ORES-1024x768@70'
1024x768@75	VESA-DMT	'ORES-1024x768@75'
1280x720@60	VESA-CVT	'ORES-1280x720@60 VESA'
1280x768@60	VESA-DMT	'ORES-1280x768@60'
1280x800@60	VESA-CVT	'ORES-1280x800@60'
1280x1024@60	VESA-DMT	'ORES-1280x1024@60'
1280x1024@75	VESA-DMT	'ORES-1280x1024@75'
1360x768@60	VESA-DMT	'ORES-1360x768@60'
1440x900@60	VESA-DMT	'ORES-1440x900@60'
1600x1200@60	VESA-DMT	'ORES-1600x1200@60'
1680x1050@60	VESA-DMT	'ORES-1680x1050@60'
1920x1080@60	VESA-CVTR	'ORES-1920x1080@60 VESA rb'
1920x1200@60	VESA-CVTR	'ORES-1920x1200@60 VESA rb'

NOTE: *"rb" indicates VESA reduced blinking timings.*

Additional output modes for TPI-PRO-DVI are:

Standard output modes for TPI-PRO-DVI		
Resolution	**Standard**	**Command**
720x480@60	CEA861	'ORES-720x480@60 CEA'
720x576@50	CEA861	'ORES-720x576@50 CEA'
1280x720@50	CEA861	'ORES-1280x720@50 CEA'
1280x720@60	CEA861	'ORES-1280x720@60 CEA'
1920x1080@50	CEA861	'ORES-1920x1080@50 CEA'
1920x1080@60	CEA861	'ORES-1920x1080@60 CEA'

NOTE: *Extended CEA refresh rates are recommended for DVI outputs, and may not work reliably with VGA outputs.*

- Additional output modes can be sent, and if a standard does not match, then VESA CVT timings will be calculated for the output timings. The CVT timings will be standard blanking if the pixel clock is within allowable limits, or will be CVT reduced blanking (rb) timings.
- The TPI-PRO-DVI does not provide Component (YPbPr) or Interlaced outputs.
- See the ORES command on page 109.

NOTE: *If you are downgrading the firmware on the TPI to version 2.5.10 or earlier and you are using the 1280x800@60Hz resolution, change the panel page resolution to a different setting since this resolution does not exist in earlier firmware versions. Failure to do so results in your panel resolution being reset.*

Appendix B: Using NetLinx Studio to Connect to a NetLinx Master

Overview

The options in the NetLinx Studio *Workspace Communication Settings* and *Communications Settings dialog*s allow you to define various communication settings, to allow you to connect NetLinx Studio to NetLinx Masters. With NetLinx Masters, you can connect via TCP/IP, Serial, or Virtual NetLinx Master. When connected to a Master Controller, NetLinx Studio can be used for file transfers (including firmware upgrades) as well as various diagnostics tasks.

Connecting to a Master Controller via Network (TCP/IP)

1. Select **Settings > Workspace Communications Settings** to open the *Workspace Communication Settings* dialog (FIG. 125).

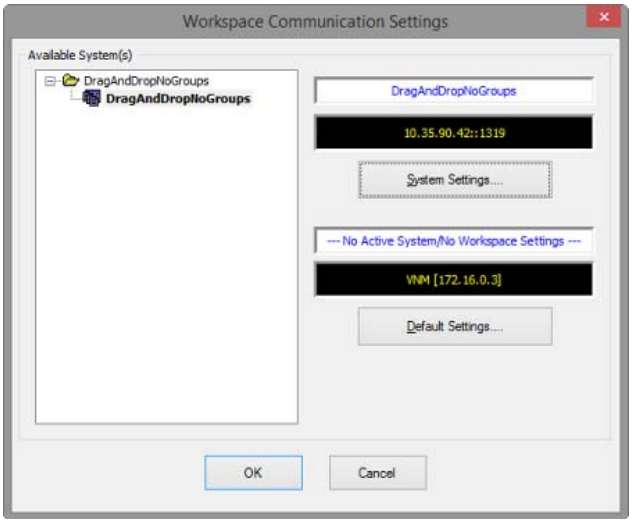


FIG. 125 Workspace Communication Settings dialog

2. Click **System Settings** to open the *Communications Settings* dialog (FIG. 126).

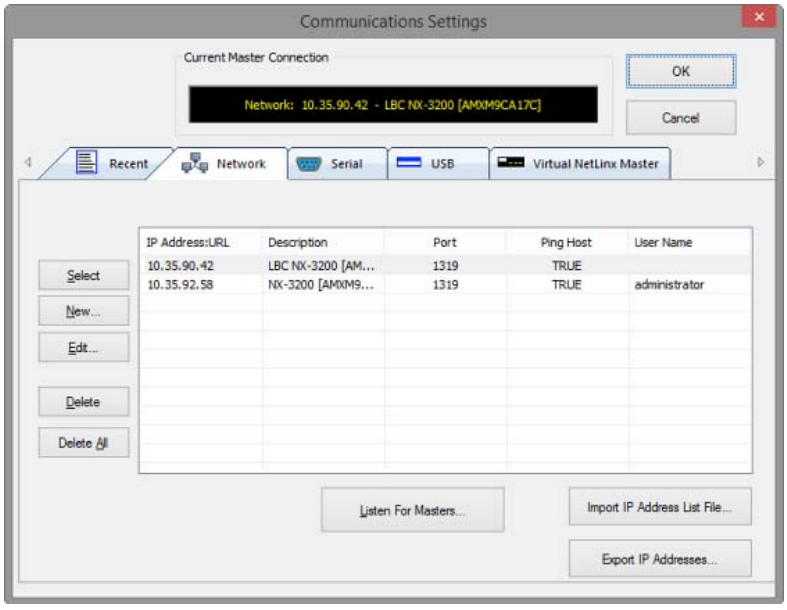


FIG. 126 Communications Settings dialog - Network tab

Communications Settings Dialog - Network Tab	
List of Addresses:	This table lists all TCP/IP Addresses that have been configured and saved in NetLinx Studio. This table presents the following information for each address in the list (as entered in the *New TCP/IP Setting* dialog when each address is defined. • **IP Address:URL** - This is the address information entered in the *TCP/IP Address* field. • **Description** - This is the description entered in the *Description* field. Since this property is optional, there may not be a description for every address in the list. • **Port** - This is the Port assigned to each address (in most cases, **1319**). • **Ping Host** - This value indicates whether the address is configured to automatically ping the Master Controller to ensure availability (*True* or *False*). • **User ID** - This value indicates the *User Name* entered for this address. • **Password** - This value indicates the *Password* entered for this address. Since *User* and *Password* are optional (depending on whether authentication is required on the target NetLinx Master), there may not be entries in these columns for every address in the list.
Command Buttons	
Select:	With an address selected in the *List of Addresses* table, click to select that address for use, or to edit or delete.
New:	Click to define a new TCP/IP address, in the *New TCP/IP Setting* dialog. See the *Editing a TCP/IP Address* section on page 163 for details.
Edit:	Click to edit the selected address, in the *TCP/IP Properties* dialog. See the *Editing a TCP/IP Address* section on page 163 for details.
Delete:	With an address selected in the *List of Addresses* table, click to remove it from the list. See the *Deleting a TCP/IP Address* section on page 163 for details.
Delete All:	Click to clear the List of Addresses.
Listen For Masters:	Click to listen for "blink" (UDP) messages from NetLinx Masters on the same subnet (in the *Listen For Masters* dialog. See the *Listening for Masters on the Network* section on page 161 for details.
Import IP Address List File	Click to import a list of IP addresses in the form of either a .csv or .txt file. Refer to NetLinx Studio online help for details.
Export IP Addresses	Click to export the list of IP addresses indicated in the Network tab in the form of either a .csv or .txt file. Refer to NetLinx Studio online help for details.

NOTE: *The Communications Settings dialog can also be accessed by clicking in the Master Controller Connection Information area of the Status Bar.*

3. Use the options in this dialog to configure TCP/IP communication settings with the target Master Controller. There are two ways to do this:
   - Manually entering the Master's IP address information (see page 160)
   - Listening for Master's on the Network (see page 161)
4. Once the communication settings have been set and the desired Master Controller is indicated in the *Current Platform-Transport Selected* field (FIG. 126), click **OK** to close the *Communications Settings dialog* and return to the *Workspace Communication Settings* dialog.

   Note that the selected Master Controller connection is indicated in the *Workspace Communication Settings* dialog (FIG. 127).

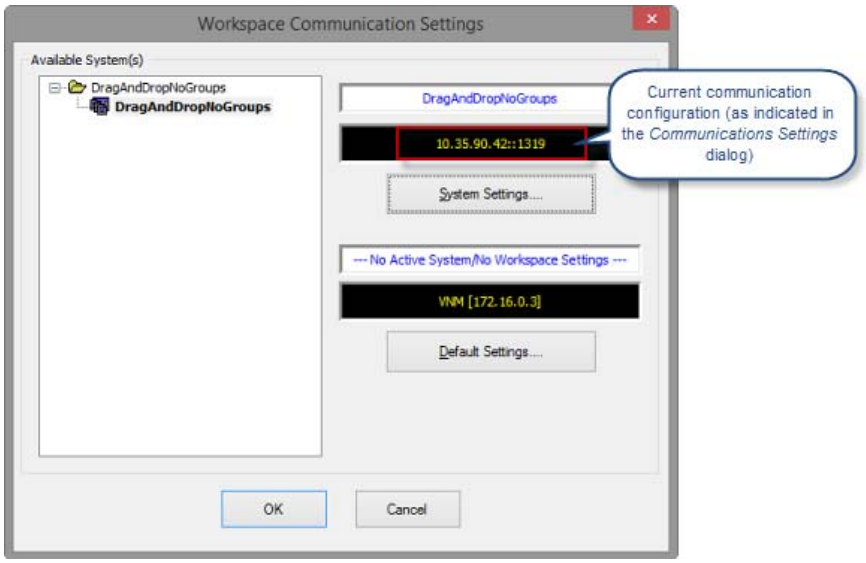


FIG. 127 Workspace Communication Settings dialog with the selected Master Connection

5. Click **OK** to close the *Workspace Communication Settings* dialog.

6. In the *Online Tree*, right-click and select **Refresh System** from the context menu to attempt to establish the specified connection.
   - If the connection is successful, the connection information is indicated in the Status Bar and highlighted in green/yellow (FIG. 128).

FIG. 128 Status Bar indicating a Network connection to a Master Controller

   - If the connection fails, the Status Bar indicates no active connection (FIG. 129).

FIG. 129 Status Bar indicating NO Network connection to a Master Controller

The program will prompt you to revisit the current communication settings (FIG. 130).

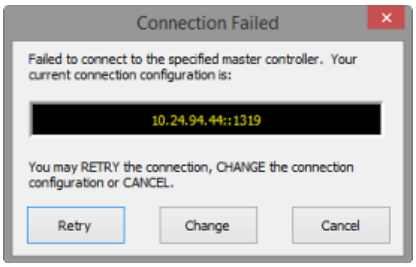


FIG. 130 Connection Failed

If you receive this message, try the following:

- Click **Retry** to attempt the connection again, using the same settings.
- Click **Change** to re-visit the *Workspace Communication Settings* dialog to edit the current settings.
- Click **Cancel** to close the dialog without establishing a connection.

Manually Entering the Master's IP Address Information

NOTE: *Click Settings > Workspace Communications Settings to open the Workspace Communication Settings dialog, and click the System Settings or Default Settings button to open the Communications Settings dialog.*

1. In the *Communications Settings* dialog (*Network* tab), click **New** to open the *New TCP/IP Setting* dialog (FIG. 131).

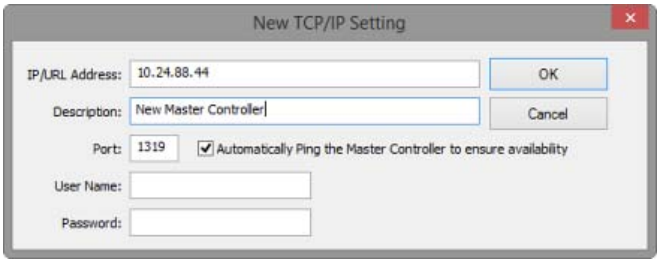


FIG. 131 New TCP/IP Setting dialog (indicating sample IP information)

2. Enter the **TCP/IP Address** for the target Master Controller.
3. Enter a **Description**.

   NOTE: *The Port should always be set to 1319 (default setting). Do not change the Port assignment.*
4. Leave the **Automatically Ping the Master to ensure availability** option selected.
5. Enter the **User Name** and **Password** required by the target Master (only if the Master is secured).
6. Click **OK** to close this dialog and return to the *Communications Settings* dialog. The new Master's IP Address is indicated in the *List of Addresses*.
7. Select the new Master connection in the *List of Addresses*. This populates the *Current Master Connection* field (FIG. 132).

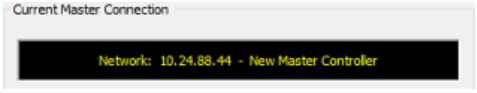


FIG. 132 Communications Settings dialog indicating the selected Master connection

8. Click **OK** to close the *Communications Settings* dialog and return to the *Workspace Communication Settings* dialog, with the selected communication configuration displayed (FIG. 133).

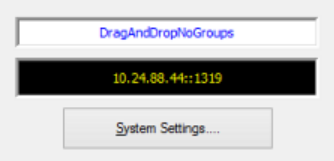


FIG. 133 Workspace Communication Settings dialog indicating the selected Master connection

9. Click **OK** to close this dialog.
10. In the *Online Tree*, right-click and select **Refresh System** from the context menu to attempt to establish the specified connection.

Listening for Masters on the Network

NOTE: *Click Settings > Workspace Communications Settings to open the Workspace Communication Settings dialog, and click the System Settings or Default Settings button to open the Communications Settings dialog.*

1. In the *Communications Settings* dialog (*Network* tab), click **Listen for Masters** to open the *Listen For Masters* dialog (FIG. 134).

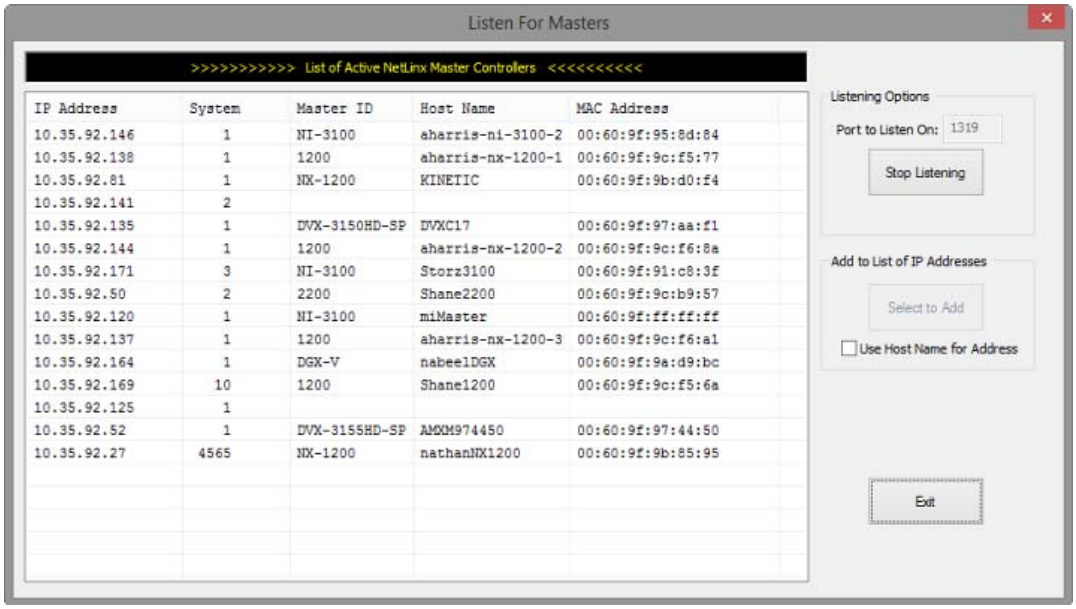


FIG. 134 Listen For Masters dialog

2. When this dialog is opened, the program automatically begins listening for "blink" (UDP) messages from NetLinx Masters on the same subnet. As Masters are discovered, they are added to the *List of Active NetLinx Master Controllers*.
3. When you see the IP Address for the target Master in the *List of Active NetLinx Master Controllers*, click **Stop Listening**. Note that this action enables the *Select To Add* button (FIG. 135).

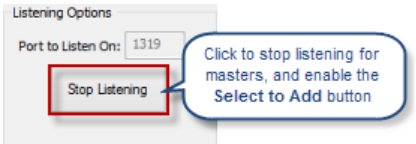


FIG. 135 Listen For Masters dialog - Stop Listening

4. Select the IP Address of the target Master and click **Select to Add** (FIG. 136).

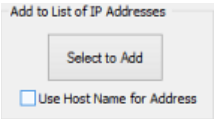


FIG. 136 Listen For Masters dialog - Master Selected

5. If the selected IP address is new, the *New TCP/IP Setting* dialog is presented, indicating the selected IP address. Fill in the **Description**, **User Name** and **Password** fields as necessary (FIG. 137).

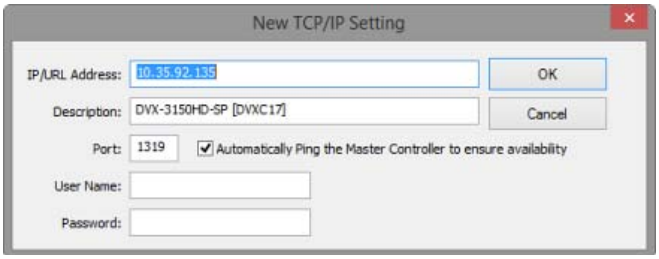


FIG. 137 New TCP/IP Setting dialog

6. Click **OK** to save changes, close this dialog and return to the *Communications Settings* dialog (*Network* tab). The new Master's IP Address is now indicated in the *List of Addresses*.
7. With the newly added Master selected, click **Select**. This updates the *Current Platform-Transport Selected* window to indicate that the newly added and selected Master is now the current communication configuration (FIG. 138).

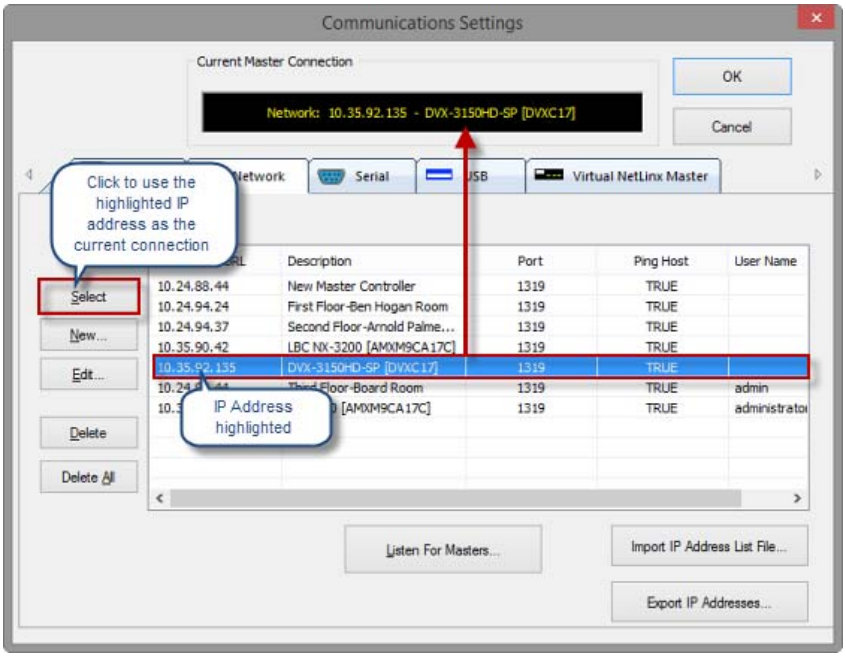


FIG. 138 Listen For Masters dialog (new Master selected)

8. Click **OK** to close the *Communications Settings dialog*, and return to the *Workspace Communication Settings* dialog, which now indicates the newly selected configuration (FIG. 139).

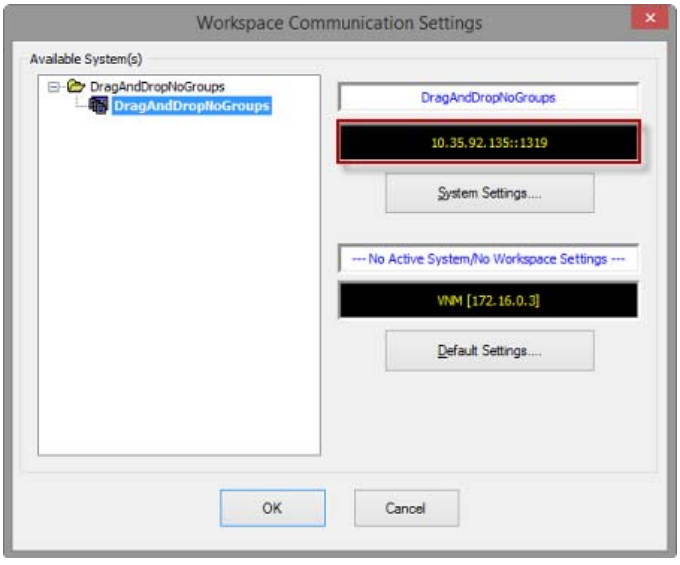


FIG. 139 Workspace Communication Settings dialog (new Master indicated as current Configuration)

9. Click **OK** to close this dialog.

10. Refresh the Online Tree (select **Refresh System Online Tree** from the Online Tree context menu) to connect to the Master.

Editing a TCP/IP Address

1. In the *Communications Settings* dialog, select an address in the *List of Addresses*, and click **Edit** to open the *Edit TCP/IP Setting* dialog (FIG. 140).

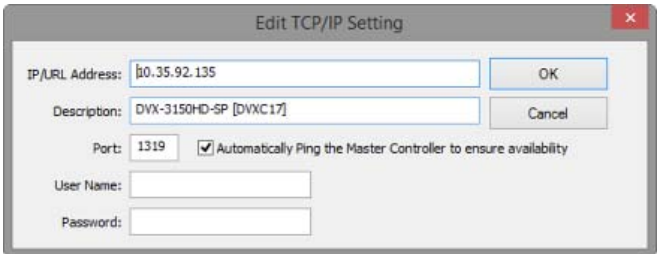


FIG. 140 Edit TCP/IP Setting dialog

2. Edit the fields as desired and click **OK** to save your changes and close the dialog.

Deleting a TCP/IP Address

1. In the *Communications Settings* dialog, select an address in the *List of Addresses*, and click **Delete.**
2. The deleted address is removed from the *List of Addresses*.

Click **Delete All** to clear the List of Addresses.

NOTE: *Refer to NetLinx Studio online help for additional details on communicating with NetLinx Masters, including using IP Address List Files as well as connecting via other connection methods.*

Appendix C: Troubleshooting

Overview

This section provides solutions to possible hardware/firmware issues that could arise during common operation of the TPI.

Troubleshooting Information	
Symptom	**Solution**
A DVI source is connected, but no signal is detected, even though "DVI" is selected as the Input Type in the Video setup pages.	When using a DVI source, set the Input Type to *DVI before* attaching the DVI cable to the TPI. If a DVI source is attached before setting the input to DVI, you may need to reboot the source for it to recognize the DVI input description information required by the DVI standard. See the *Setup - Video Settings Page* section on page 59 for details.
Manifest.xma can not be found. An error occurs when sending a file to a G4 panel.	*Manifest.xma* is the file that contains the listing for all the files. If you see this error again, before attempting to send the file, uncheck the Smart Transfer box. It may be necessary do a Full Clean.
The video pages appear blank upon TPI restart.	Wrong input type may be selected. Go to Video Settings page and select the appropriate input type for that input.
When using G4 WebControl to communicate with a target TPI, a VNC Server dialog appears on my screen.	• During a WebControl connection to a target TPI you are prompted with a G4 Authentication dialog which asks you to enter the assigned password for the TPI (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 TPI 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 TPI-PRO-DVI's WebControl password.
The image on my video page isn't centered and/or aligned properly even though I'm using the RGB/Video Setup page alignment tools.	• Before an image can be displayed onto a touch panel or other monitor it must first be positioned to occupy the available visible space on the panel/monitor. • After completing those tasks, use the monitor's video controls to stretch and move the incoming video so that the borders of the desired resolution pattern follow the edges of the screen without disappearing. There are normally 60 seconds before the resolution times-out, but you can press the front panel RESOLUTION button again several time to return to the previous resolution pattern and continue setting-up the monitor. • Once these baseline alignments are done, use the RGB controls to complete the final positioning of the incoming image/video.
I can't seem to connect to a NetLinx Master using my NetLinx Studio 2.8.	• From the **Settings** > **Master Comm Settings** > **Communication Settings** > **Settings (for TCP/IP)**, uncheck the "**Automatically Ping the Master Controller** to ensure availability" check box. • 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.*
After downloading a panel file or firmware to a G4 device, the device 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 internal disk. • 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 disk space. Cause: • If the G4 device already contains a large enough file, subsequent downloads will take up more space than is available and can corrupt the disk. 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.

Troubleshooting Information	
Symptom	**Solution**
After copying and pasting images from the TPI's setup pages, the images appear over-sized on my pages.	Verify that you are using TPDesign4 version 2.11 or higher. • Previous versions of TPD4 did not fully support copying and pasting TPI-PRO setup pages components into Panel designs. • TPDesign4 is available to download from www.amx.com.

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