# Operation/Reference Guide

# MXT/D-701

7" Modero X Series® G5 Tabletop Touch Panel
7" Modero X Series® G5 Wall/Flush Mount Touch Panel

**Touch Panels**

# AMX Limited Warranty and Disclaimer

This Limited Warranty and Disclaimer extends only to products purchased directly from AMX or an AMX Authorized Partner which include AMX Dealers, Distributors, VIP's or other AMX authorized entity.

AMX warrants its products to be free of defects in material and workmanship under normal use for three (3) years from the date of purchase, with the following exceptions:

- Electroluminescent and LCD Control Panels are warranted for three (3) years, except for the display and touch overlay components are warranted for a period of one (1) year.

- Disk drive mechanisms, pan/tilt heads, power supplies, and MX Series products are warranted for a period of one (1) year.

- AMX lighting products are guaranteed to switch on and off any load that is properly connected to our lighting products, as long as the AMX lighting products are under warranty. AMX also guarantees the control of dimmable loads that are properly connected to our lighting products. The dimming performance or quality there of is not guaranteed, impart due to the random combinations of dimmers, lamps and ballasts or transformers.

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- Batteries and incandescent lamps are not covered under the warranty.

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All products returned to AMX require a Return Material Authorization (RMA) number. The RMA number is obtained from the AMX RMA Department. The RMA number must be clearly marked on the outside of each box. The RMA is valid for a 30-day period. After the 30-day period the RMA will be cancelled. Any shipments received not consistent with the RMA, or after the RMA is cancelled, will be refused. AMX is not responsible for products returned without a valid RMA number.

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# Modero X Series® G5 Touch Panels

## Overview

The most elegant interface designed specifically for dedicated room control has been significantly enhanced to include a new G5 Graphic Engine to provide even faster and smoother animations and transitions, and we quadrupled the processing power with a new Quad Core Processor. This new generation of touch panels is built for usability offering edge-to-edge capacitive touch glass with multi-touch capabilities. It features advanced technology empowering users to operate AV equipment seamlessly, while providing the ultimate in audio and video quality. The distinctive appearance will complement even the most sophisticated meeting facilities and homes. With a lightning fast processor, brilliant graphics and enhanced capabilities, the Modero X Series is the control surface that simply delivers more.

## Features

- **G5 Graphics Engine and Quad Core Processing** – The most powerful processing in the industry delivers smooth gesturing, animations and transitions all at higher speeds for an experience any user will enjoy.
- **Simplified Enterprise Touch Panel Updates** – Deploy and update touch panel files from a network URL for simplified company-wide updates.
- **Latest Communication Technologies** – Supports Near Field Communication™ (NFC) - short-range wireless technologies that deliver peer-to-peer communication by 'sharing, pairing and transaction' between RF devices like exchanging data/identities.
- **Enhanced Usability** – HD video streaming.
- **Perfect From Any Angle** – Includes In-Plane Switching (IPS), the latest technology in popular tablet/mobile devices that delivers the widest viewing angles and the most accurate color reproduction on the market.

## Modero X Series G5 Dealer Benefits

- **Attract More Corporate Customers -** The elegant design and simple beauty of the Modero X Series G5 will create demand from both new and current customers.
- **Address Unique Requirements** – With a panoramic profile, the Modero X Series G5 provides dealers with a solution for uses where multiple applications must be viewed simultaneously.
- **Differentiate Yourself** – The Modero X Series G5 offers design and technology features unmatched in the industry.

## Modero X Series G5 Customer Benefits

- **Multi-Task Capability** – The contemporary design provides a large control surface, which allows multiple views for different activities such as presenting, controlling and previewing.
- **Simple to Use Interfaces** – The capacitive multi-touch screen combined with intuitive user-interfaces makes it easy for anyone to operate sophisticated meeting room equipment
- **Sleek, Low-Profile Design -** The Modero X Series G5 is engineered to sit perfectly on a table without obstructing views.

## MXT-701

The MXT-701 7" Modero X Series® G5 Tabletop Touch Panel (**FG5968-53**) (FIG. 1) is ideal for boardrooms, conference rooms, or auditoriums where a panoramic control surface is needed to provide access to multiple functions simultaneously while remaining elegantly unobtrusive. In residences, it is perfect for kitchens, home theaters, or home offices where the panoramic control surface can be used to manage systems throughout the house.



**FIG. 1** MXT-701 touch panel

The MXT-701 features a 7.3" x 4.8" (186 mm x 122 mm), 8.8" (222 mm) diagonal display, with a viewable area of 6.05" x 3.54" (154 mm x 90 mm), 7.0" (178 mm) diagonal.

The device communicates via Ethernet (10/100 port, RJ-45 connector, supported IP and IP-based protocols: UDP, TCP, ICMP, ICSP, IGMP, DHCP, SSH, DNS, RFB for VNC, and HTTP) and USB (2 USB host 2.0, Type A ports).

The MXT-701 also supports Near Field Communication (NFC) technology (please see the *NFC* on page 9 for more information).



**FIG. 2** MXT-701 side view

| MXT-701 Specifications | |
|---|---|
| Power Requirements: | PoE (Power over Ethernet), 802.3af, class 3 |
| Power Consumption: | • Full-On: 11.5 W maximum<br>• Standby: 5.8 W<br>• Shutdown: 1 W |
| **Front Panel Components:** | |
| NFC Transceiver: | Antenna and transceiver for Near Field Communications device detection and interaction. |
| Light Sensor: | Photosensitive light detector for automatic adjustment of the panel brightness. |
| Motion Sensor: | Proximity detector to wake the panel when it is approached.<br>• Typical Range: 1 foot (30.48 cm)<br>• *Maximum Range:* 3 feet (91.44 cm)<br>• *Range width:* 10 degrees |
| Sleep/Settings Button: | Single button on top of panel for placing panel in sleep mode, for powering off the panel, and for accessing the Settings app. |
| Microphone: | -42dB ± 3dB sensitivity FET microphone |
| Speakers: | 4 ohm, 2 Watt, 300Hz cutoff frequency |
| **Rear Panel Components:** | |
| USB connections: | 2 easily accessible USB ports on rear of base, used for connection to keyboard, mouse, or USB drive. |
| Ethernet 10/100 Port and Cable: | 10/100 Base-T RJ-45 connector for Ethernet connectivity and PoE. |
| **Touch Panel Display:** | |
| Display Type: | TFT Active Matrix Color LCD with Fringe Field Switching (FFS) - Wide viewing angle technology |
| Display Size: | 7.3" x 4.8" (186 mm x 122 mm), 8.8" (222 mm) diagonal |
| Viewable Area: | 6.05" x 3.54" (154 mm x 90 mm), 7.0" (178 mm) diagonal |
| Viewing Angle: | • Vertical: ± 89°<br>• Horizontal: ± 89° |
| Screen Resolution (W x H): | 1024x600 |
| Aspect Ratio (W x H): | 16x9 |
| Brightness: | 400 cd/m2 |
| Contrast Ratio: | 800:1 |
| Color Depth: | 16,7M colors |
| Backlight Type: | LED |
| Touch Overlay: | Projected Capacitive; Multi-touch support, 3 simultaneous max. |
| **Communications:** | |
| Ethernet: | 10/100 port, RJ-45 connector and cable. Supported IP and IP-based protocols: UDP, TCP, ICMP, ICSP, IGMP, DHCP, SSH, DNS, RFB (for VNC), HTTP |
| USB: | 2 - USB host 2.0, Type A ports |
| Near Field Communications (NFC): | Supports standards ISO/IEC 15693, ISO/IEC 14443A, ISO/IEC 14443B; Unique Identifier (UID), Typical Range = .25", Maximum Range = .5" |
| **Video:** | |
| Supported Video Codecs: | • MPEG2-TS: MPEG-2 Main Profile @High Level up to 720p at 25 fps, H.264 (decode only)<br>• MJPEG up to 720p at 25 fps (decode only) |
| Streaming/File Formats: | MPEG-TS for H.264, MPEG2; HTTP for MJPEG |

| MXT-701 Specifications (Cont.) | |
|---|---|
| **Audio:** | |
| Streaming/File Formats: | WAV, MP3 |
| Intercom: | Full Duplex VoIP* **(see note)** |
| Operating Environment: | • Operating Temperature: 32° F to 104° F (0° C to 40° C)<br>• Storage Temperature: 4° F to 140° F (-20° C to 60° C)<br>• Humidity Operating: 20% to 85% RH<br>• Humidity Storage: 5% to 85% RH<br>• Power ("Heat") Dissipation: On: 27.3 BTU/hr, Standby: 10.9 BTU/hr |
| Dimensions (HWD): | 5" x 7 5/16" x 4 1/8" (126 mm x 187 mm x 105 mm) |
| Weight: | 1.8 lbs (0.82 Kg) |
| Certifications: | • FCC Part 15 Class B<br>• C-Tick CISPR 22 Class B<br>• CE EN 55022 Class B and EN 55024<br>• CB Scheme IEC 60950-1<br>• IC<br>• IEC/EN-60950<br>• RoHS/WEEE compliant |
| Included Accessories: | • MXT-701 Installation Guide (**93-5968-53**)<br>• MXA-CLK Modero X Series Cleaning Kit (**FG5968-16**)<br>• HPG-10 .75-inch Hydraport .75-IN. Grommet (**FG570-01**)<br>• MXA-USB-C USB Cover Kit (**FG5968-18**) |
| Other AMX Equipment: | • MXA-MP, Modero X/S Series Multi Preview (**FG5968-20**)<br>• MXA-MPL, Modero X/S Series Multi Preview Live (**FG5968-10**)<br>• PS-POE-AF-TC, POE Injector, 802.3af Compliant (**FG423-83**)<br>• NXA-ENET8-2POE, Gigabit Switch, 8 Port POE, 2 Port SFP (**FG2178-63**)<br>• MXA-STMK-07, Secure Table Mount Kit (**FG5968-67**) |

*- Feature will be supported in a future firmware update*

## Connector Locations

With the unit facing you, the two USB ports for peripherals are located on the rear right corner of the device (FIG. 3). The RJ45 connector for PoE is also located on the back of the device.



USB Ports     Entry for RJ45/ PoE Cable
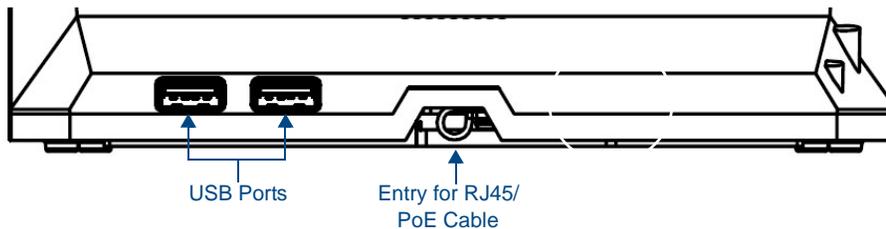
**FIG. 3** MXT-701 USB port location

## A Note On The Touch Panel Aspect Ratio

While the touch panel's screen's physical dimensions fall between 16:9 and 16:10, any incoming video stream can be scaled to 16:9 if needed. This may lead to some letter boxing around the video in some cases.

## Memory

The MXT-701 comes with 2GB of SDRAM and 16GB of Flash memory, neither of which can be upgraded. A maximum of 12GB is available to the user for projects.

## Basic Operation

The MXT-701 is operated using its integral touchscreen, as well as the **Sleep/Settings** button on the top of the device (FIG. 1). If the device has gone into its Sleep Mode, a touch of the touchscreen or of the **Sleep/Settings** button will reactivate it.

### Powering on the MXT-701

The MXT-701 may be powered on by touching and holding the **Sleep/Settings** button on the top of the device.

### Microphone

The MXT-701 contains a built-in microphone above the touch screen for video and audio conferencing capabilities. This microphone is concealed by the casing.

### Audio/Video Capabilities

The MXT-701 has the capability of displaying multiple JPEG and PNG files at one time. The device also supports streaming motion JPEG video (of the sort used by many IP and Web cameras), as well as MP3 and WAV audio files.

## MXD-701

The MXD-701 7" Modero X Series G5 Wall/Flush Mount Touch Panels (*Portrait Wall Mount: **FG5968-54**; Landscape Wall Mount: **FG5968-55***) are ideal for boardrooms, conference rooms, or auditoriums where a panoramic control surface is needed to provide access to multiple functions simultaneously while remaining elegantly unobtrusive. In residences, they are perfect for kitchens, home theaters, or home offices where the panoramic control surface can be used to manage systems throughout the house.

The MXD-701 features a 7.3" x 4.8" (186 mm x 122 mm), 8.8" (222 mm) diagonal (Landscape) or 4.8" x 7.3" (122 mm x 186 mm), 8.8" (222 mm) diagonal (Portrait) display, with a viewable area of 6.05" x 3.54" (154 mm x 90 mm), 7.0" (178 mm) diagonal (Landscape) or 3.54" x 6.05" (90 mm x 154 mm), 7.0" (178 mm) diagonal.

The device communicates via Ethernet (10/100 port, RJ-45 connector, supported IP and IP-based protocols: UDP, TCP, ICMP, ICSP, IGMP, DHCP, SSH, DNS, RFB for VNC, and HTTP) and USB (1 USB host 2.0, Type A port).

The MXD-701 also supports Near Field Communication (NFC) technology (please see the *NFC*  on page 9 for more information).

NFC Sensor          Sleep/Settings Button



**FIG. 4**  MXD-701, Landscape Wall Mount

Sleep/Settings Button ──→

NFC Sensor ──→
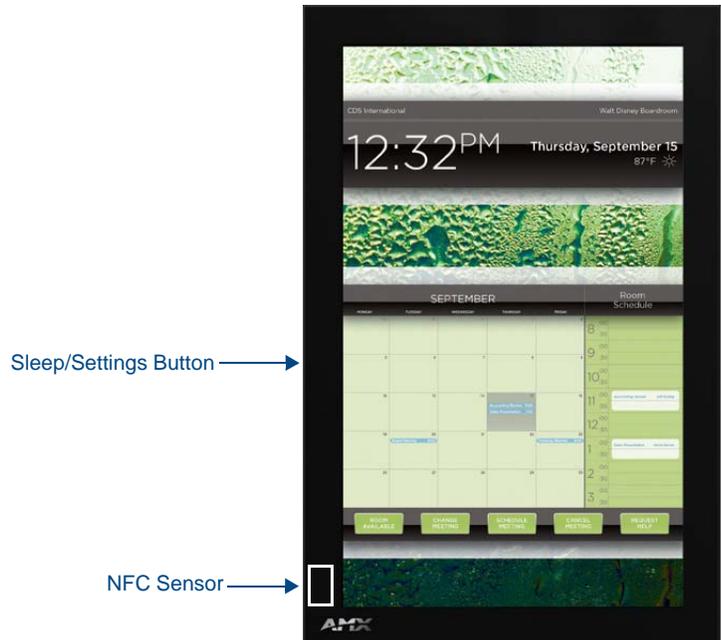
**FIG. 5** MXD-701 (Portrait Wall Mount)

| MXD-701 Specifications | |
|---|---|
| Power Requirements: | PoE (Power over Ethernet), 802.3af, class 3 |
| Power Consumption: | • *Full-On:* 11.5 W maximum<br>• *Standby:* 5.8 W<br>• *Shutdown:* 1 W |
| **Front Panel Components:** | |
| NFC Transceiver: | Antenna and transceiver for Near Field Communications device detection and interaction. |
| Light Sensor: | Photosensitive light detector for automatic adjustment of the panel brightness. |
| Motion Sensor: | Proximity detector to wake the panel when it is approached.<br>• *Typical Range:* 1 foot (30.48 cm)<br>• *Maximum Range:* 3 feet (91.44 cm)<br>• *Range width:* 10 degrees |
| Sleep/Settings Button: | Single button on edge of panel for placing panel in sleep mode, for powering off the panel, and for accessing the Settings app. |
| Microphone: | -42dB ± 3dB sensitivity FET microphone |
| Speakers: | 4 ohm, 2 Watt, 300Hz cutoff frequency |
| **Rear Panel Components:** | |
| USB Port: | USB connector used for keyboard and mouse connections, or for firmware uploads. |
| Ethernet 10/100 Port: | 10/100 Base-T RJ-45 connector for Ethernet connectivity and PoE. |
| **Touch Panel Display:** | |
| Display Type: | TFT Active Matrix Color LCD with Fringe Field Switching (FFS) - Wide viewing angle technology |
| Display Size: | • *Landscape:* 7.3" x 4.8" (186 mm x 122 mm), 8.8" (222 mm) diagonal<br>• *Portrait:* 4.8" x 7.3" (122 mm x 186 mm), 8.8" (222 mm) diagonal |
| Viewable Area<br>(W x H): | • *Landscape:* 6.05" x 3.54" (154 mm x 90 mm), 7.0" (178 mm) diagonal<br>• *Portrait:* 3.54" x 6.05" (90 mm x 154 mm), 7.0" (178 mm) diagonal |
| Viewing Angle: | • Vertical: ± 89°<br>• Horizontal: ± 89° |

| MXD-701 Specifications (Cont.) | |
|---|---|
| **Touch Panel Display (Cont.):** | |
| Screen Resolution (W x H): | • *Landscape:* 1024x600<br>• *Portrait:* 600x1024 |
| Aspect Ratio (W x H): | • *Landscape*: 16:9<br>• *Portrait*: 9:16 |
| Brightness: | 400 cd/m2 |
| Contrast Ratio: | 700:1 |
| Color Depth: | 16,7M colors |
| Backlight Type: | LED |
| Touch Overlay: | Projected Capacitive; Multi-touch support, 3 simultaneous max. |
| **Communications:** | |
| Ethernet: | 10/100 port, RJ-45 connector and cable. Supported IP and IP-based protocols: UDP, TCP, ICMP, ICSP, IGMP, DHCP, SSH, DNS, RFB (for VNC), HTTP |
| USB: | 1 - USB host 2.0, Type A ports |
| Near Field Communications (NFC): | Supports standards ISO/IEC 15693, ISO/IEC 14443A, ISO/IEC 14443B; Unique Identifier (UID), Typical Range = .25", Maximum Range = .5" |
| **Video:** | |
| Supported Video Codecs: | • MPEG2-TS: MPEG-2 Main Profile @High Level up to 720p at 25 fps, H.264 (decode only)<br>• MJPEG up to 720p at 25 fps (decode only) |
| Streaming/File Formats: | MPEG-TS for H.264, MPEG2; HTTP for MJPEG |
| **Audio:** | |
| Streaming/File Formats: | WAV, MP3 |
| Intercom: | Full Duplex VoIP* **(see note)** |
| Operating Environment: | • Operating Temperature: 32° F to 104° F (0° C to 40° C)<br>• Storage Temperature: 4° F to 140° F (-20° C to 60° C)<br>• Humidity Operating: 20% to 85% RH<br>• Humidity Storage: 5% to 85% RH<br>• Power ("Heat") Dissipation: On: 27.3 BTU/hr, Standby: 10.9 BTU/hr |
| Dimensions (HWD): | • *Landscape:* 4.8" x 7.3" x 2.5" (122 mm x 186 mm x 63 mm)<br>• *Portrait:* 7.3" x 4.8" x 2.5" (186 mm x 122 mm x 63 mm) |
| Weight: | 1.4 lbs (0.64 Kg) |
| Certifications: | • FCC Part 15 Class B<br>• C-Tick CISPR 22 Class B<br>• CE EN 55022 Class B and EN 55024<br>• CB Scheme IEC 60950-1<br>• IC<br>• IEC/EN-60950<br>• RoHS/WEEE compliant |
| Included Accessories: | • MXD-701 Installation Guide (**93-5968-54**)<br>• MXA-CLK Modero X Series Cleaning Kit (**FG5968-16**)<br>• MXD-701 Installation Template (**68-5968-04**)<br>• MXD-701 Back Box (**68-5968-04**) |
| Other AMX Equipment: | • PS-POE-AF-TC, POE Injector, 802.3af Compliant (**FG423-83**)<br>• CB-MXP7, Rough-In Box and Cover Plate for Modero X Series Touch Panel, 7" (**FG039-18**)<br>• NXA-ENET8-2POE, Gigabit Switch, 8 Port POE, 2 Port SFP (**FG2178-63**)<br>• MXA-RMK-07, Rack Mount Kit (**FG5969-63**)<br>• MXA-FMK-07, Flush Mount Kit (**FG5968-71**) |

**NOTE**

***** - Feature will be supported in a future firmware update*
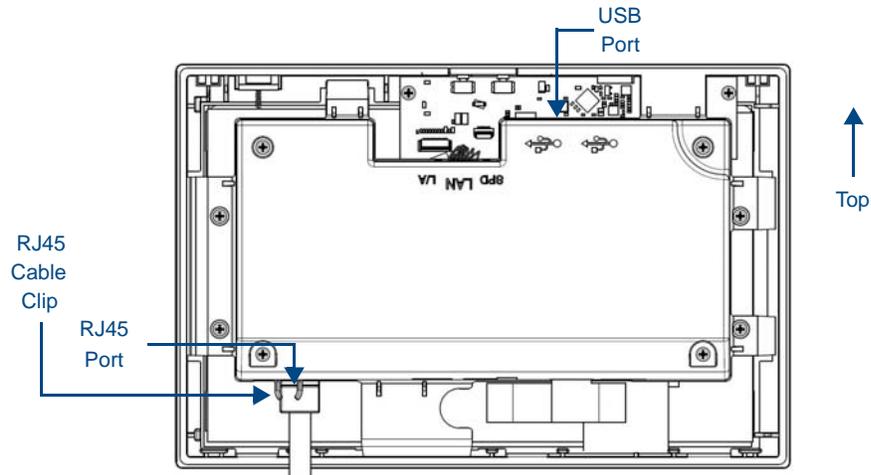


**FIG. 6** Rear of the MXD-701 (Landscape)

### A Note On The Touch Panel Aspect Ratio

While the touch panel's screen's physical dimensions fall between 16:9 and 16:10, any incoming video stream can be scaled to 16:9 if needed. This may lead to some letter boxing around the video in some cases.

### Memory

The MXD-701 comes with 2GB of SDRAM and 16GB of Flash memory, neither of which can be upgraded. A maximum of 12GB is available to the user for projects.

### Basic Operation

The MXD-701 is operated using its integral touchscreen, as well as the **Sleep/Settings** button on the top of the device (FIG. 4). If the device has gone into its Sleep Mode, a touch of the touchscreen or of the **Sleep/Settings** button will reactivate it.

### Powering on the MXD-701

The MXD-701 may be powered on by touching and holding the **Sleep/Settings** button on the top of the device.

### Microphone

The MXD-701 contains a built-in microphone above the touch screen for video and audio conferencing capabilities. This microphone is concealed by the casing.

### Audio/Video Capabilities

The MXD-701 has the capability of displaying multiple JPEG and PNG files at one time. The device also supports streaming motion JPEG video (of the sort used by many IP and Web cameras), as well as MP3 and WAV audio files.

# MXD/T-701 Features

## Configuration

The MXT-701 and MXD-701 are equipped with a Settings app that allows you to set and configure various features on the panels. For more information on connecting and configuring the touch panels to a network, please refer to the *Modero X Series G5 Programming Guide*, available at **www.amx.com**.

## NFC

Both the MXT-701 and the MXD-701 support Near Field Communications™ (NFC) Technology. NFC technology facilitates making transactions, exchanging digital content, and connecting electronic devices with a touch. NFC transmissions are short-range (from a touch to a few centimeters), working with existing contactless card technologies and containing built-in capabilities to support secure applications. By using NFC technology, users may receive access to touch panels and touch panel pages through access badges and other card options.

| Common Access Card (CAC) Support In MXT/D-1000 | | | |
|---|---|---|---|
| **Card Type** | **Card Unique Identifier (UID)** | **Card Data** | **Personal Identity Verification (PIV) Card holder UID** |
| 15693 | 8 byte UID | Not Supported | N/A |
| 14443A Non-Gov't | 4, 7 or 10 byte UID (1) | Not Supported | N/A |
| 14443A Gov't | 4, 7 or 10 byte UID (1) | Not Supported (2) | Not currently |
| 14443B Non-Gov't | 4 byte UID | Not Supported | N/A |
| 14443B Gov't | 4 byte UID | Not Supported (2) | Not currently |
| FeliCa | Not Supported | Not Supported | N/A |
| (1) The UID can be a fixed unique number or a random number dynamically generated by the card. | | | |
| (2) Requires contact card reader (not accessible via NFC) | | | |

The maximum range for the NFC antenna is 0.5" (12.7 mm), but the typical usage range is 0.25" (6.35 mm). The antenna itself is accessible from the front of the panel, 3.25" (82.55 mm) from the left corner of the panel and 0.375" (9.53 mm) from the top edge. When using an NFC device with the MXT-701, you should align your device's antenna with the center of the touch panel's antenna (FIG. 1 and FIG. 4).

*To facilitate NFC antenna access, you may want to add an icon to the panel's page(s), pointing to the location of the antenna on the panel.*

NOTE

## Cleaning the Touch Overlay and Case

Both the MXT-701 and the MXD-701 come with the MXA-CLK Modero X Series Cleaning Kit (**FG5968-16**), which may be used to clean fingerprints and dirt from the device. This kit comes with cleaning cloths and a bottle of cleaning fluid specifically for use with the device.

When cleaning the device, **do not directly spray the device with cleaning fluid**. Instead, spray the cloth and then apply the cloth to the touch screen. Do **NOT** use abrasives of any type to clean the device, as abrasives may permanently damage or remove the device's finish.

# Installation

## MXT-701 Installation

Any USB peripherals (mouse, keyboard, etc.) may be connected to one of the two USB ports on the rear of the device (FIG. 7). Updates to the device's firmware are also made via the USB ports.



**USB Ports**   **Entry for RJ45/ PoE Cable**   **Speaker**
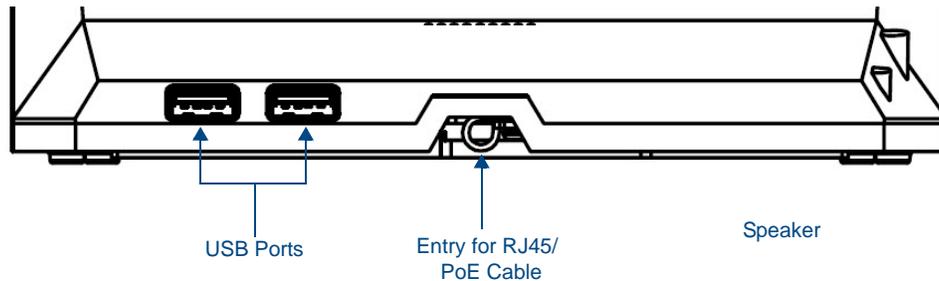
**FIG. 7**  Connectors on the rear of the MXT-701

## Power via Power Over Ethernet

Power for the MXT-701 is supplied via Power Over Ethernet (PoE), utilizing an AMX-certified, capacitive touch-compliant PoE injector or other approved AMX PoE power source. The incoming Ethernet cable should be connected to the RJ45 port on the cable attached to the device (FIG. 8).



**Cable length edited for clarity**
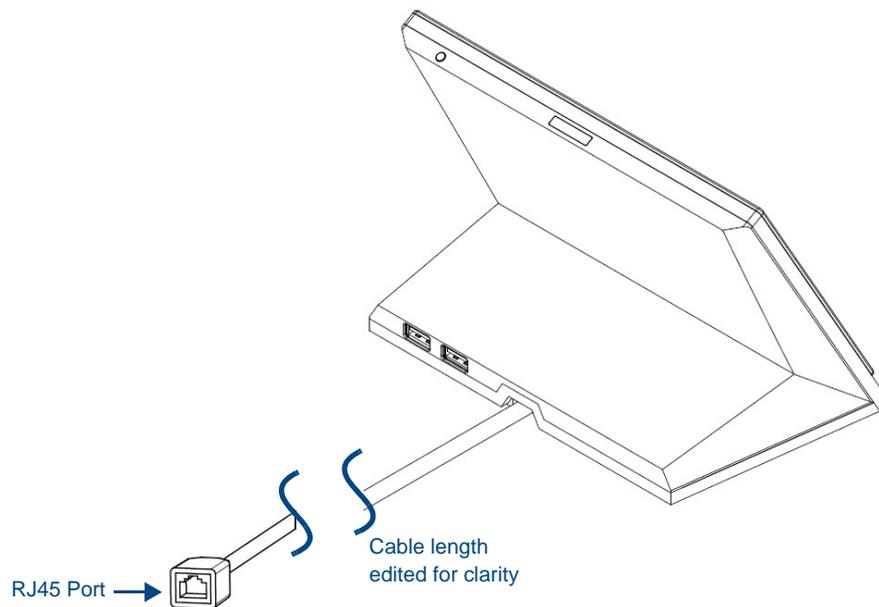
**RJ45 Port**

**FIG. 8**  Back of the MXT-701, showing RJ45 port and cable for PoE

## Ethernet Cable Installation and Modification

In installations where you wish to conceal the Ethernet cable, a hole at least 1.00" (2.54 cm) in diameter is required in the surface to allow passage of the female RJ45 connector (FIG. 8). If using a smaller hole is unavoidable, you will need to disconnect the Ethernet cable (**ECA5968-05**) from the device.

> *The minimum diameter hole through which the Ethernet cable may pass is 0.50"*
> *(1.27 cm).*

**NOTE**
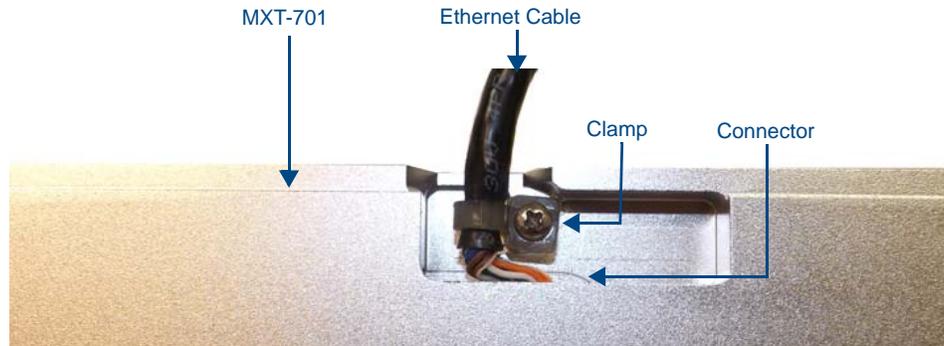
**FIG. 9** Bottom of the MXT-701

To disconnect and reconnect the MXT-701's Ethernet cable to allow use of a hole smaller than 1.00" in diameter:

1. On a soft surface, turn the MXT-701 face-down to access the bottom of the device.

2. Remove the clamp holding the Ethernet cable (FIG. 9) until the Ethernet cable moves freely.

3. Remove the Ethernet cable connector and pull the cable out of the clamp.

4. Pass the Ethernet cable (**ECA5968-05**) through the hole, with the RJ45 connector on the other side of the installation surface from the device.

5. Press the Ethernet cable back into the clamp. Do **NOT** tighten the clamp at this time.

6. Using a nonconductive item such as a wooden stick, reinsert the Ethernet cable connector into the device. Use the stick to ensure that the connector is properly seated.

7. Tighten the clamp to secure the Ethernet cable. Make sure the clamp is around the bundled black cable, not the individual wires

8. Connect the RJ45 connector to its incoming Ethernet cable and apply power.

# 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.

FIG. 10 shows an AMX device installed in a wall with a filled volume (such as with insulation or concrete), as well as with a closed volume (such as between studs in an otherwise finished wall). The diagram shows how heat generated by the device or other devices may have no way to escape, and may build up to levels that may affect device operation.
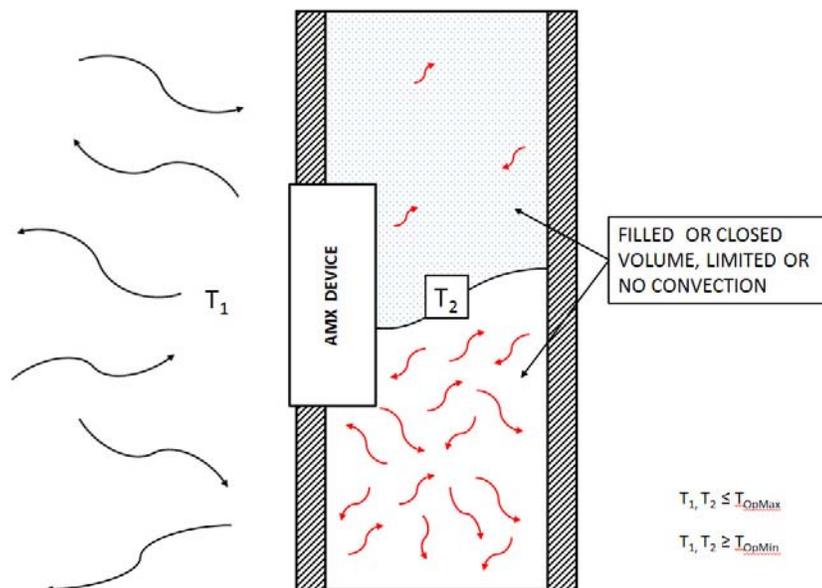


**FIG. 10** Heat convection in filled or closed volume, limited or no convection

In FIG. 11, 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.
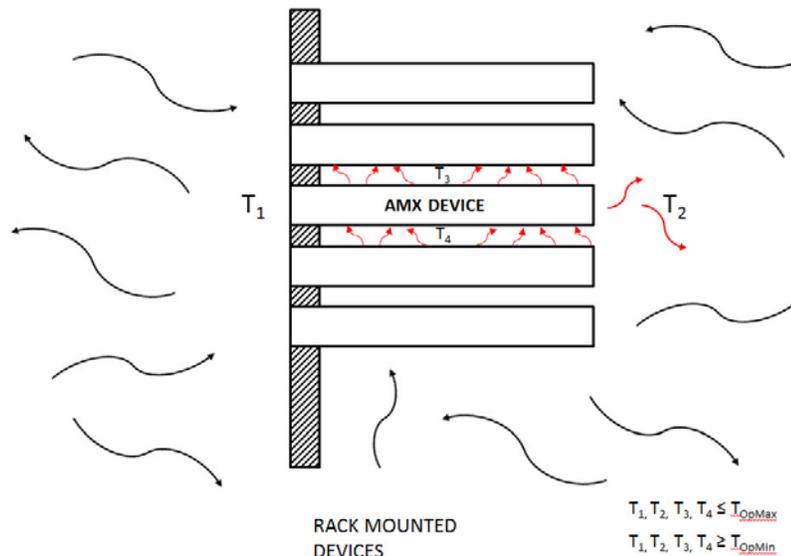


**FIG. 11** Heat convection in rack-mounted devices

### 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.

*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.*

## MXD-701 Installation

The MXD-701 may be installed directly into a solid surface environment, using either solid surface screws or the included locking tabs for different mounting options. Once installed, the MXD-701 is contained within a clear outer housing known as the back box (FIG. 12). This back box is removed when installing the device into a wall or when using the optional Rough-In Box accessory (**FG039-18**).
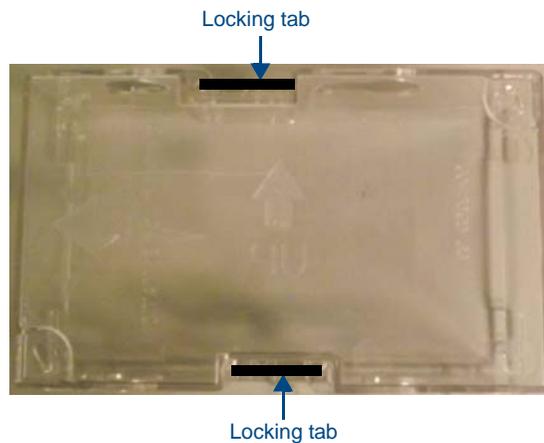


**FIG. 12** MXD-701 Back Box

### Power Via Power Over Ethernet

Power for the MXD-701 is supplied via Power Over Ethernet (PoE), utilizing an AMX-certified, capacitive touch-compliant PoE injector or other approved AMX PoE power source. The incoming Ethernet cable should be connected to the RJ45 port on the MXD-701 (FIG. 13 and FIG. 14).
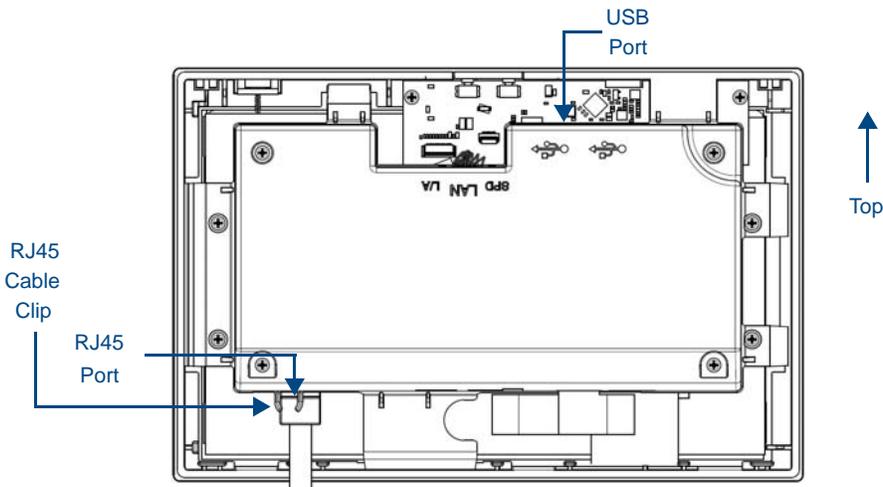


**FIG. 13** Rear of the MXD-701 (Landscape)
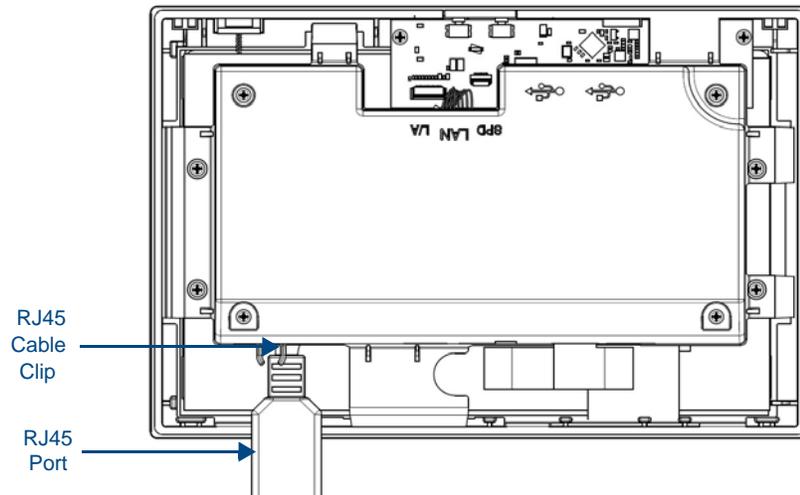
**FIG. 14** Rear of the MXD-701 (with RJ45 connection extended)

## Installing the MXD-701 into a wall

The MXD-701 comes with a clear plastic backbox (designed to attach the panel to most standard wall materials. This backbox has two locking tabs (one on top and one on bottom) to help lock the backbox to the wall. These locking tabs are only extended AFTER the backbox is inserted into the wall. (FIG. 15).
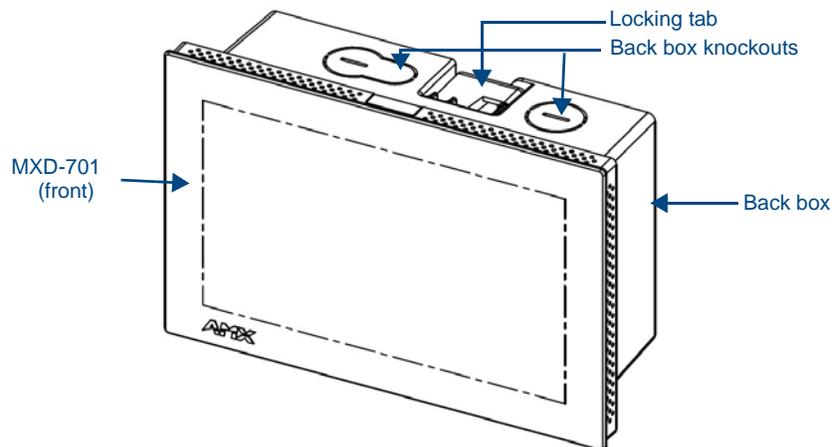


**FIG. 15** Oblique view of MXD-701 (Landscape)

*When installing the backbox, make sure that the assembly is in the correct position and in the correct place. Once the locking tabs are extended and locked into place, removing the backbox may be difficult without having access to the back of the wall or causing damage to the wall.*

*For typical mounting surfaces, such as drywall, use the locking tabs as the primary method for securing the back box to the surface. For thin walls or solid surfaces, use mounting screws (not included).*

*In order to guarantee a stable installation of the MXD-701, the thickness of the wall material must be a minimum of .50 inches (1.27cm) and a maximum of .875 inches (2.22cm). The mounting surface should also be smooth and flat.*

*The maximum recommended torque to screw in the locking tabs on the plastic back box is 5 IN-LB [56 N-CM]. Applying excessive torque while tightening the tab screws, such as with powered screwdrivers, can strip out the locking tabs or damage the plastic back box.*

To install the back box:

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

2. For best results, use the MXD-701 Installation Template (**68-5968-04**) to ensure proper placement (FIG. 16). The template is marked on one side with directions for both landscape and portrait installations to ensure that the touch panel and back box are properly aligned.
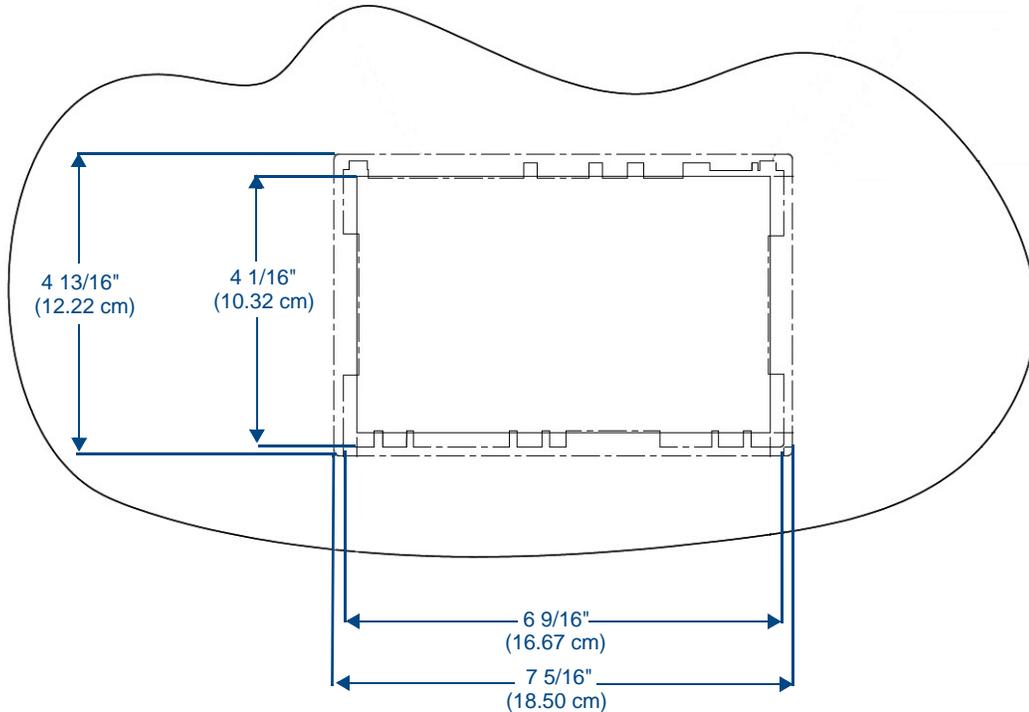


**FIG. 16** MXD-701 Installation Template

*Using the included template to select the final placement of the back box is highly recommended. The outside edges of the template are the same dimensions as the touch panel, which allows you to troubleshoot possible conflicts with wall edges, doors, and other potential obstacles.*

3. After ensuring proper placement, cut out the mounting surface for the back box, using the MXD-701 Installation Template as a guide.

*Making sure the actual cutout opening is slightly smaller than the provided dimensions is highly recommended. This action provides the installer with a margin for error if the opening needs to be expanded. Too little wall material removed is always better than too much.*

4. Thread the incoming Ethernet from their terminal locations through the surface opening (FIG. 17). *Leave enough slack in the wiring to accommodate any re-positioning of the panel.*
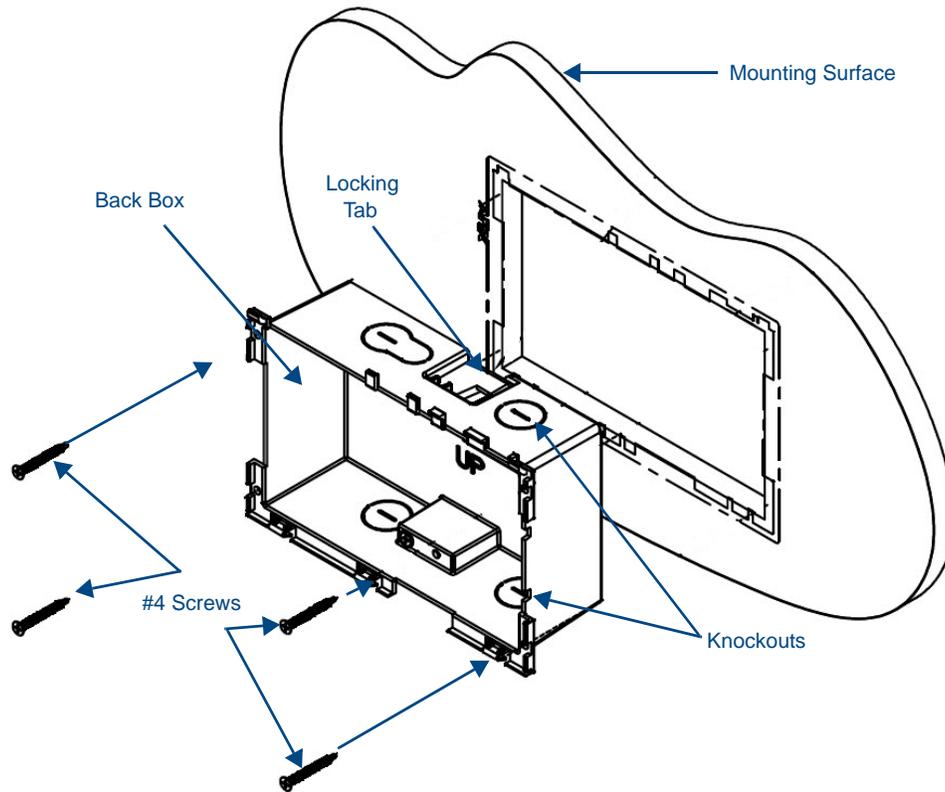


**FIG. 17** MXD-701 Back Box Installation (Landscape)

5. Remove the back box knockouts (FIG. 17) and thread the incoming wiring through the knockout holes.To facilitate installation, thread the Ethernet cable through a bottom knockout (Landscape) or a right-side knockout (Portrait), and the USB cable through a top knockout (Landscape) or left knockout (Portrait)

6. Thread the incoming Ethernet and USB wiring (if USB access is desired) from the surface opening and through the knockouts.

7. Push the back box into the mounting surface. Insure that the locking tabs lie flush against the back box and that the back box goes freely into the opening.

8. Extend the locking tabs on the sides of the back box by tightening the screws inside the box until snug. Not all of the tabs must be extended to lock the back box in place, but extending a minimum of the top and bottom tabs is highly recommended. Apply enough pressure to the screw head to keep the box flush with the wall: this ensures that the locking tabs will tighten up against the inside of the wall.
The back box is clear to allow visual confirmation that the tabs have been extended and are gripping the wall, as well as in assisting with removal if necessary.

9. For additional strength, #4 mounting screws (not included) may be secured through circular holes located at the left and right sides of the MXD-701 (FIG. 17). In order to prevent damage to the touch panel, make sure that these are flush with the back box.

10. Insert each connector into its corresponding location along the back of the device (FIG. 13). To reach the RJ45 connector, gently pull it from beneath the electronics cover (FIG. 14). Attach the Ethernet cable and gently push the connection back under the cover.

*To facilitate connection of the RJ45 connector to the Ethernet cable, press the RJ45's cable into the RJ45 cable clip to hold it in a stable position. Make sure to remove the cable from the cable clip before continuing the rest of the installation.*

NOTE

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

*Do not disconnect the connectors from the touch panel. The unit must be installed with the attached connectors before being inserted into the mounting surface.*

**12.** Latch the panel onto the top hooks on the back box and push it down (Landscape) onto the bottom snaps or on the left side and push it to the right (Portrait) (FIG. 18). Press gently but firmly on the ends until the snaps "click" to lock it down.
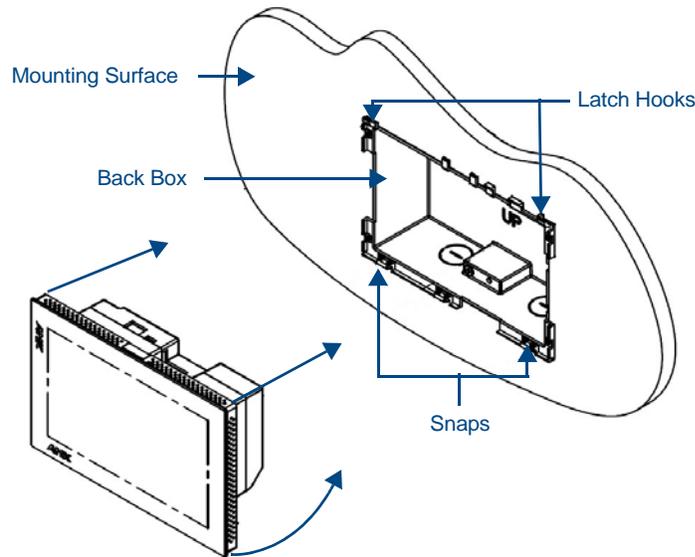


**FIG. 18** Installing the MXD-701

*If you see a gap between the panel and the back box, or feel any binding while locking down the panel, stop immediately and verify that no cables or other items are in the way. Do not force the panel into position, as this can cause damage to the touch screen or the panel electronics.*

**13.** Reconnect the terminal Ethernet and USB to their respective locations on the Ethernet port.

## Uninstalling the MXD-701

The MXD-701 is held in place to the back box via latch hooks and clips on the back box (FIG. 19), securing it to the mounting surface. In certain circumstances, such as firmware updates or other maintenance that requires accessing the device's USB port, the device may need to be removed from the back box. The clips that lock down the MXD-701's bottom edge (Landscape) or right edge (Portrait) may be unlatched in order to remove the device from the mounting surface.

To remove an MXD-701 from its back box:

1.  The bottom (Landscape) or right side (Portrait) of the MXD-701 has a series of ventilation holes along the molding (FIG. 19). From each end, count to the fifth holes on the center row.
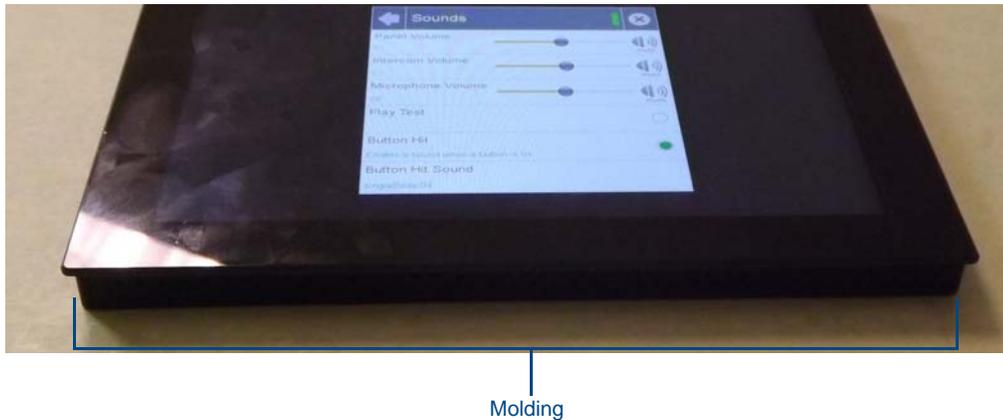


Molding

**FIG. 19** Underside of MXD-701

2.  With a stout, strong point (a push pin or straightened paper-clip, for example), carefully press into the access holes in either end of the molding (FIG. 20) until the snap is disconnected. To facilitate the disconnection, grasp the bottom of the panel (Landscape) or right side (Portrait) and pull gently outward until the side of the panel is free of the snap. Use your other hand to hold stable the front of the touch panel.



Access holes

**FIG. 20** Location of access holes on MXD-701 molding

**WARNING**

*Always pull on the frame of the touch panel. NEVER pull on the glass edge.*

3.  When the first side is free, repeat the process with the other.

4.  With the edge of the touch panel free, carefully lift up and out (Landscape) or to the left and out (Portrait) to remove the touch panel from the back box. Be careful not to pull on the cables or connectors.

5.  To reattach the panel to its back box, repeat the installation procedure on page 18.

# Configuration and Programming

*Programming the MXT-701 and MXD-701 require the use of the latest versions of NetLinx Studio and TPDesign 5, both available at www.amx.com.*

## Modero X Series G5 Programming Guide

Information on the *Settings* app, panel configuration, and programming is included in the *Modero X Series G5 Programming Guide*, available at **www.amx.com**.

# Upgrading Firmware

## Overview

The latest firmware (*.kit) file for each panel is available to download from **www.amx.com**. To download firmware files, go to the catalog page for your panel type, and click the link under "**Firmware Files**" on the right side of the catalog page. The ZIP file that is downloaded via this link contains the firmware (*.kit) file that can be loaded on the panel, as well as release notes and any relevant programming instructions.

## Upgrading Firmware via USB Flash Drive

Firmware and TPDesign5 files may be transferred to the panel via USB flash drive. When looking at the device from the front, the MXT-701 has two USB ports on the rear right of the device (FIG. 3).

### Load the Firmware on a USB Flash Drive

1. Insert the USB flash drive in an available USB port on your PC.
   - The flash drive must be in either FAT32 or FAT16 format.
   - For wall-mounted panels (MXD-xxx), accessing the USB ports may require removing the panel from the wall mount (if a USB extension was not already installed).

2. Copy the firmware (.kit) file to be transferred (for example, "*SW5968_ModeroX_v2_103_52.kit*") into a directory on the flash drive, or at the root.

*Make sure this is the only .kit file in this directory - if not, the latest version will be used.*

3. Eject or unmount the flash drive from the PC.

### Transfer the Firmware File From the Flash Drive to the Touch Panel

*Accessing the Reset & Update menu requires a password. The default password is 1988.*

The *Reset & Update* menu (FIG. 21) allows resetting and updating of touch panel settings and firmware, including installation of new firmware from an external drive.

Reset and Update

DEVICE RESET

Factory data reset
Erases all data on device

Reset Settings
Reset the Settings values to default

FIRMWARE UPDATE

Update Firmware
Update the firmware on the device

PANEL PAGES

Install Pages from External Disk

Remove User Pages
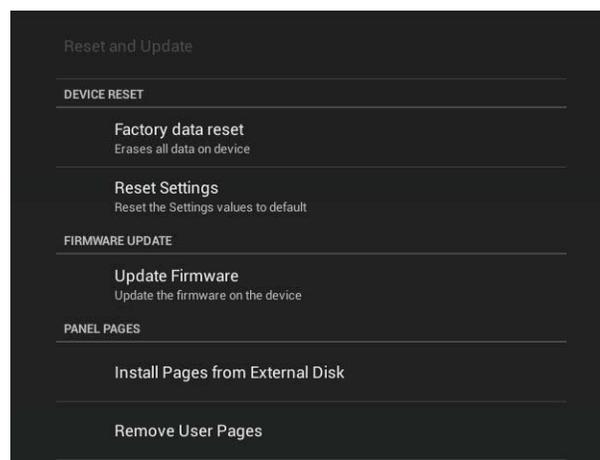
**FIG. 21** Reset & Update menu

## Removing All Data From The Touch Panel

To reset the touch panel to its factory defaults and remove all data stored in the device:

1.  From the *Reset & Update* menu, select *Factory Data Reset* to open the *Factory Data Reset* window (FIG. 22).
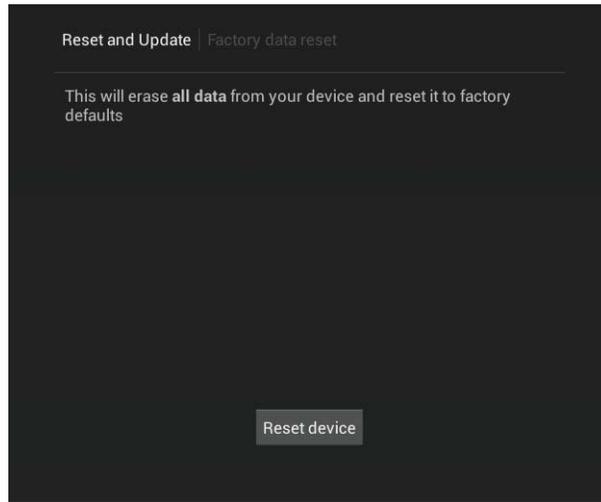


**FIG. 22** Factory Data Reset window

2.  To erase all data from the touch panel, click the **Reset Device** button at the bottom of the window. To return to the *Reset and Update* menu without making any changes, select *Reset and Update* at the top of the window.

## Resetting the Touch Panel Settings to Factory Defaults

1.  From the *Reset and Update* menu, select *Reset Settings* to open the *Reset Settings* window (FIG. 23).
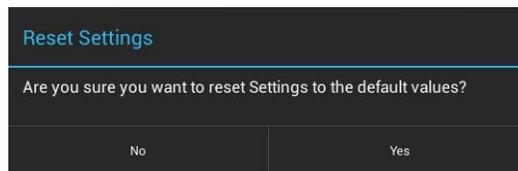


**FIG. 23** Reset Settings window

2.  To reset the touch panel's settings to factory defaults, click **Yes**. To return to the *Reset and Update* menu without saving any changes, click *No*.

### Resetting to Factory-Installed Firmware

In certain circumstances, it may be necessary to uninstall the current firmware on a touch panel and return the panel to its original factory default firmware. To reset the touch panel to its original factory firmware:

**1.** From the *Reset and Update* menu, select *Update Firmware* to open the *Firmware Update* window (FIG. 24).



```
Firmware Update

Revert To Previous Firmware Version

Revert To Factory Firmware Version : v1.0.2

Install Firmware From USB
```
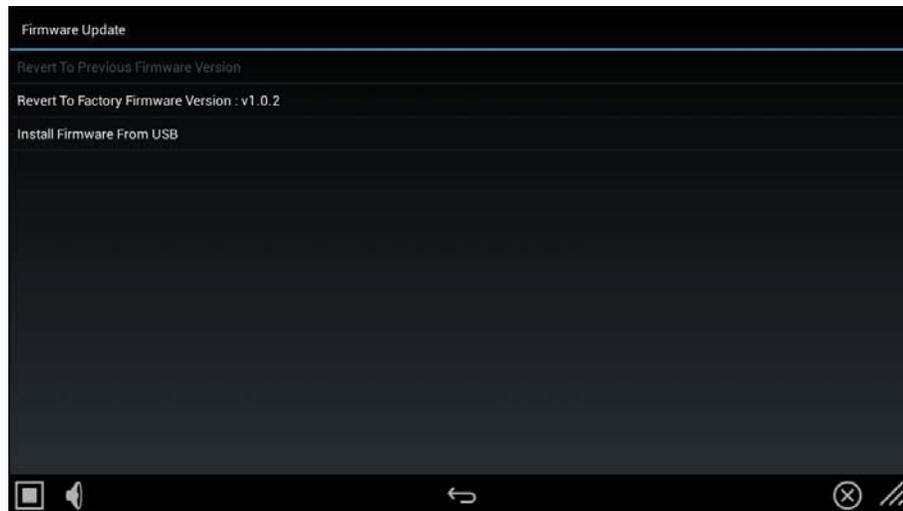
**FIG. 24** Firmware Update window

**2.** From the *Firmware Update* window, select the *Revert to Factory Firmware Version* option.

**3.** A *Revert to Factory Firmware Version* window appears, asking "Are you sure you want to install?", with the version "Factory Firmware" listed below (FIG. 25).



```
Revert To Factory Firmware Version

Are you sure you want to install : v1.0.2

          No                          Yes
```
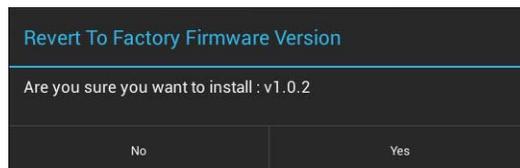
**FIG. 25** Revert to Factory Firmware Version window

**4.** Select **Yes** to install the factory firmware and **No** to return to the *Firmware Update* page.

**5.** If you choose **Yes**, the touch panel will reboot and restart with the factory default firmware.

*Resetting the touch panel to its original factory firmware will remove all previous changes to the Settings app.*

### Installing Previous Firmware

In certain circumstances, it may be necessary to revert to a previously installed version of the touch panel firmware.To reset the touch panel to its previously installed firmware via the *Settings* app:

**1.** From the *Firmware Update* window, select *Revert to Previous Firmware Version*. If no previous version is available, this field is disabled.

**2.** A System Message window appears, asking "Are you sure you want to install the following firmware?", with the previous firmware version listed below.

**3.** Select **Yes** to install the previous firmware version and **No** to return to the *Install Firmware* page.

**4.** If you choose **Yes**, the touch panel will reboot and restart with the previously installed firmware.

### Installing New Firmware From An External USB Stick

To install new firmware to the touch panel from an external disk via the *Settings* app:

1.  Download the latest Modero X Series G5 touch panel firmware from **www.amx.com** and save it to a USB stick or other external drive with USB capability.

*The firmware can be saved at the root directory, or be saved in a folder in the USB stick directory.The folder name is not case sensitive.*

2.  Insert the USB stick into an available USB port. This may require disassembling wall-mounted touch panels to access the USB ports if a USB extension was not already installed.

3.  From the *Firmware Update* window, select *Install Firmware from USB* to open the *KIT File Browser* window (FIG. 26).



**FIG. 26**  KIT File Browser window

4.  Select the KIT file to be installed.

5.  The device will now upload the new firmware (FIG. 27) and then reboot.



**FIG. 27**  Update Progress display

*For more information on updating firmware for your touch panel, please refer to the Modero X Series G5 Programming Guide, available at **www.amx.com**.*

### Installing Touch Panel Pages From An External Disk

TPDesign5 page files may be loaded onto a touch panel, both via TPDesign5 and through files saved to a USB-enabled external drive.To load TPD5 pages via USB:

1.  Download the panel pages and save them to a USB stick or other external drive with USB capability.

2.  Insert the USB stick into an available USB port. This may require disassembling wall-mounted touch panels to access the USB ports if a USB extension was not already installed.

3.  From the *Reset & Update* window, select *Install Pages from External Disk* to open the TP5 File Browser window (FIG. 28). The page files or the folder in which they are stored will appear in the window.



**FIG. 28**  TPDesign5 File Browser window

4.  Select the files, and click *OK*.

5.  The pages will be uploaded to the touch panel.

### Removing User Pages From a Touch Panel

In order to remove user pages from a Modero X Series G5 touch panel:

1.  From the *Reset and Update* menu, select *Remove User Pages* to open the *Remove User Pages* window (FIG. 29).
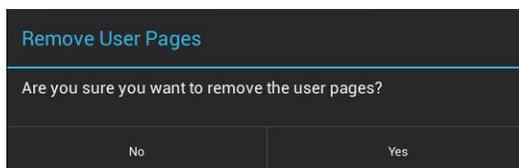


**FIG. 29**  Remove User Pages window

2.  To return to the *Reset and Update* menu without saving any changes, click **No**. To remove the user pages from the touch panel, click **Yes**.

## Upgrading Firmware Via NetLinx Studio (v3.4 or higher)

G5 touch panels use an Ethernet connection for programming, firmware updates, and touch panel file transfer via NetLinx Studio. If you have access to the panel's network, you may transfer files directly to the panel through NetLinx Studio.

NetLinx Studio (v3.4 or higher) features the ability to transfer G5 firmware files directly to a G5 touch panel via HTTP (via a stand-alone web server). This feature is provided to shorten the amount of time required for transferring a G5 *.kit file by removing the NetLinx Master from the transfer path.

*.kit files for G5 panels contain a token to signify to NetLinx Studio that a web server file transfer can take place, as indicated in the file information window of the S*end To NetLinx Device* dialog:

Look for `"**** HTTP File Transfer Capable ****"` at the end of the file (see FIG. 31 on page 28).

When NetLinx Studio detects that the file is a G5 *.kit file, it will automatically attempt to send the file via HTTP (using the stand-alone web server that is started by NetLinx Studio).

**NOTE**

*The steps for initiating a firmware transfer to a G5 touch panel are essentially the same as for any other NetLinx device. Refer to NetLinx Studio (v3.4 or higher) online help for details on using NetLinx Studio for firmware file transfers.*

1.  In NetLinx Studio's Device Tree, select the target G5 Panel for the firmware download (FIG. 30):
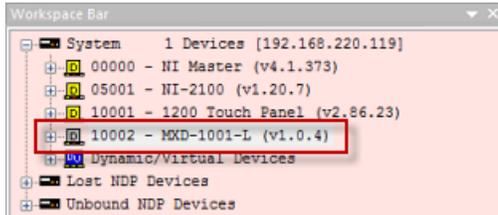


**FIG. 30**  NetLinx Studio v3.4 or higher - Device Tree indicating a G5 (MXD-1001-L) Panel

2.  Right-Click on the G5 panel, and select **Firmware Transfer** from the context menu. This invokes the *Send To NetLinx Device* dialog.

3.  Click the **Browse (...)** button to locate and select the directory containing the G5 firmware (*.kit) file that will be transferred, in the *Browse For Folder* dialog.

4.  Click **OK** to close the *Browse For Folder* dialog and populate the *Files* window with a listing of *.kit files found in the selected folder.

5.  In the *Files* window, click to select the G5 *.kit file to transfer (FIG. 31):
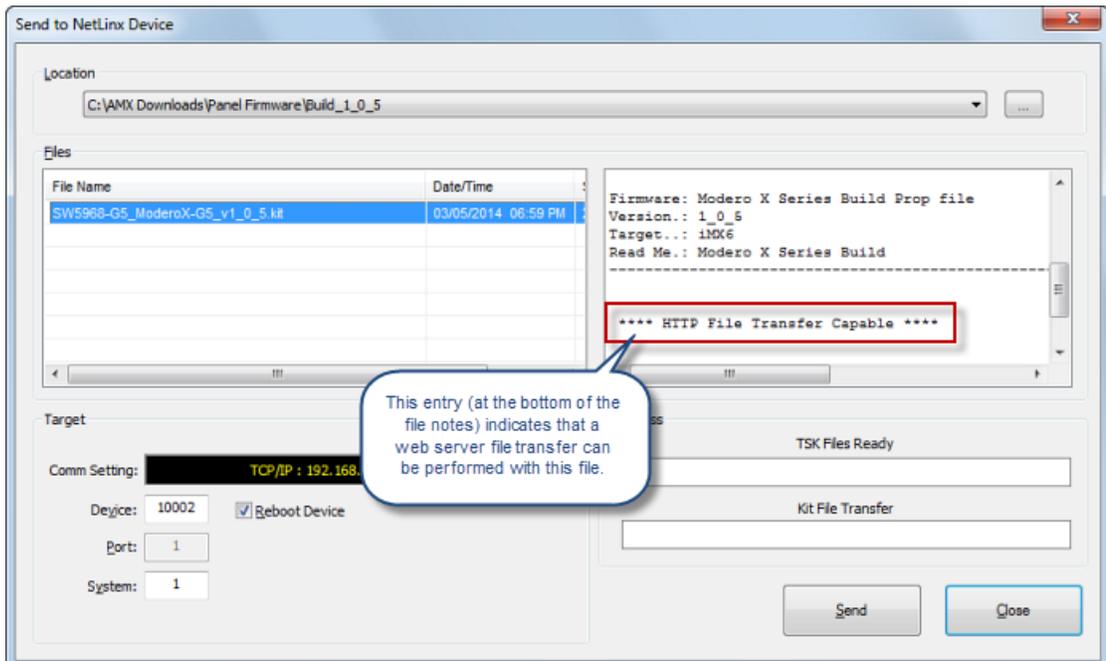


**FIG. 31**  NetLinx Studio v3.4 or higher - Send To NetLinx Device dialog - G5 Firmware file sample

6.  Click **Send** to initiate the firmware file transfer. The progress of the transfer is indicated in the progress bars

7.  The Panel will display the Message "*Updating System Files*", then restart itself.

8.  The *Installing System Update* page will be displayed on the panel until the firmware upgrade process is complete. At this point, the panel will reboot and open it's home page.

If an error occurs during this type of transfer, then the *HTTP Server Transfer Error* dialog is invoked (FIG. 32):
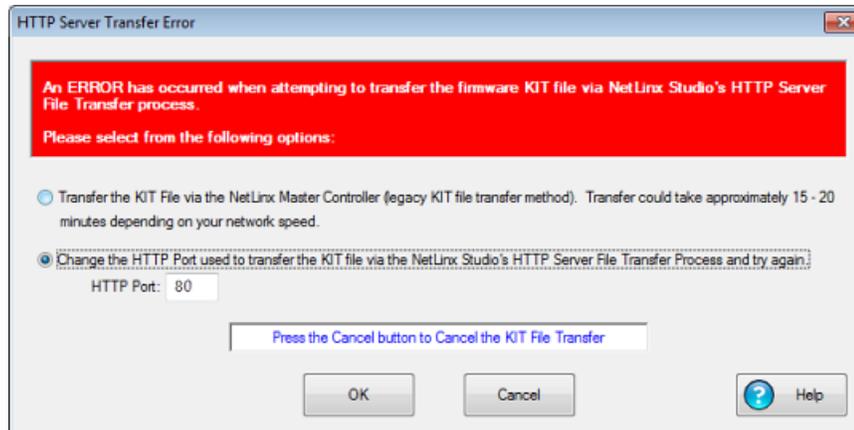
**FIG. 32** NetLinx Studio v3.4 or higher - HTTP Server Error dialog

In this case, there are two options for proceeding with the firmware transfer:

- Select **Transfer the KIT File via the NetLinx Master Controller (legacy KIT file transfer method)...** to proceed using the standard (non-HTTP) method used for other NetLinx Devices (via the master controller) when **OK** is clicked.

  Note that depending on network speed and the size of the *.kit file, this method could take up to 20-30 minutes to complete. More specifically, timed tests indicate that it takes approximately 60 seconds per 9.5MB of a *.kit file to transfer. The following table indicates the approximate length of time to send a *.kit file via the legacy file transfer method:

| File Size | Time Required to Complete Transfer (legacy file transfer method) |
|-----------|------------------------------------------------------------------|
| 0-150MB | 10 - 15 minutes |
| 150-200MB | 15 - 20 minutes |
| 200-250MB | 20 - 25 minutes |
| 250-300MB | 25 - 30 minutes |
| 300-350MB | 30 - 35 minutes |
| >350MB | > 35 minutes |

- By default, **Change the HTTP Port used to transfer the KIT file...** is selected. Use this option to change the HTTP port assignment, in cases where the IP port (default = 80) is in conflict or blocked on the PC. This option will restart the web server with a different HTTP port assignment and restart the file transfer when **OK** is clicked.
- Select the appropriate option and click **OK** to restart the file transfer.
- Click **Cancel** to cancel the current file transfer.

# Appendix: Troubleshooting

## Overview

This section describes the solutions to possible hardware/firmware issues that could arise during the common operation of a Modero X Series G5 touch panel.

### Panel Doesn't Respond To Touches

**Symptom:** The device either does not respond to touches on the touch screen or does not register the touch as being in the correct area of the screen.

If the screen is off:

- *The device may be in Display Sleep Mode.* Press and hold the **Sleep** button to wake up the panel.
- *The device may not be connected to power.* Verify that the power source is connected to the device and receiving power.

### Panel Isn't Appearing In The Online Tree Tab

1. Verify that the System number is the same on both the NetLinx Studio Project Navigator window and the System Settings page on the device.

2. Verify the proper NetLinx Master IP and connection methods entered into the Master Connection section of the *System Settings* page.

### Can't Connect To a NetLinx Master

**Symptom:** I can't seem to connect to a NetLinx Master using NetLinx Studio.

Select *Settings > Master Comm Settings > Communication Settings > Settings (for TCP/IP)*, and uncheck the "Automatically Ping the Master Controller to ensure availability".

The pinging is to determine if the Master is available and to reply with a connection failure instantly if it is not. Without using the ping feature, a connection may still be attempted, but a failure will take longer to be recognized.

> *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.*

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.

### Only One Modero Panel In My System Shows Up

**Symptom:** I have more than one Modero panel connected to my System Master and only one shows up.

Multiple NetLinx Compatible devices can be associated for use with a single Master. If the user does not assign a device number, one will be assigned automatically to the panel. When using multiple panels, different Device Number values have to be assigned to each panel.

1. Press and hold the **Sleep** button to open the *Settings* app.

2. Select the *NetLinx* menu, enter **1988** into the on-screen Keypad's password field, and press **Done** when finished.

3. Enter a Device Number value for the panel into the Device Number Keypad. The range is from 1 - 32000.

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