Installation Guide

NXI NetLinx® Integrated Controller

Overview

The NXI NetLinx Integrated Controller (**FG2101)** represents the new generation of AMX multi-port central controllers. The NXI can be programmed to control RS-232/422/485, Relay, IR/Serial, and Input/Output devices using the NetLinx programming language and NetLinx Studio program. For detailed product information, refer to the *NXI NetLinx Integrated Controller* Instruction Manual on the **www.amx.com** website.

For use as a master controller, the NXI accepts the NXC-ME260 NetLinx Master Card (**FG2010-60**).

NXI Front Panel Components

FIG. 1 shows the front panel components of the NXI:

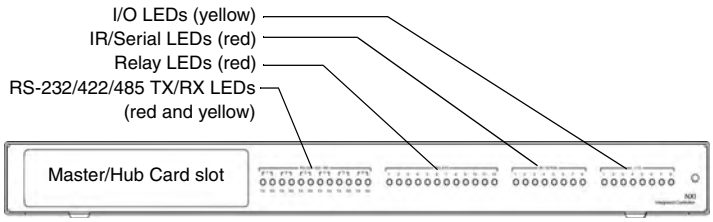

FIG. 1 NXI - Front Panel Components

NXI Rear Panel Components

FIG. 2 shows the rear panel components of the NXI:

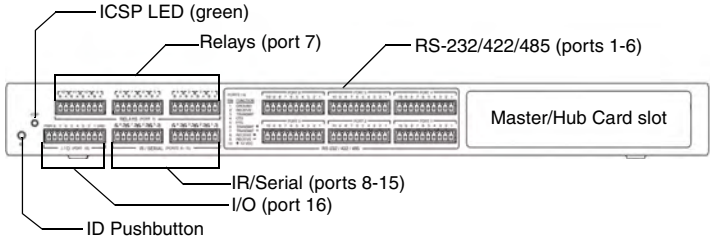

FIG. 2 NXI - Rear Panel Components

Specifications

NXI Specifications	
Dimensions (HWD):	1.72" x 17.0" x 8.80" (43.68 mm x 431.80 mm x 223.52 mm)
Weight:	4.10 lbs (1.85 kg)
Power Requirement:	1.09 A @ 12 VDC (NXI only/no card)
Memory:	64K of IR memory:· • 32K IR memory for IR ports 8-11 • 32K IR memory for IR ports 12-15
Port Assignments:	• Ports 1-6 = RS-232/422/485 Ports • Port 7 = 12 Relays • Ports 8-15 = IR/IR Serial Ports • Port 16 = 8 I/O Channels
Front Panel Components:	
Master/Hub Card slot:	Accepts an NXC-ME260 or Hub Card.
RS-232/422/485 TX/RX LEDs:	6 sets of red and yellow LEDs light to indicate ports 1-6 are transmitting or receiving RS-232, 422, or 485 data: TX LEDs (red) blink when transmitting data. RX LEDs (yellow) blink when receiving data.
Relay LEDs:	12 red LEDs light to indicate relay channels 1-12 are active (closed).
IR/Serial LEDs:	8 red LEDs light to indicate IR/Serial channels 1-8 are transmitting control data.
I/O LEDs:	8 yellow LEDs light when I/O channels 1-8 are active.
Rear Panel Components:	
ID Pushbutton:	Sets the D:P:S assignment for the NXI.
ICSP LED:	Green LED Blinks in unison with the Master card's NetLinx LED indicating the ICSP bus is synchronized. This LED flashes rapidly when the NXI is in ID Mode (see *Using the ID Button* for details).

NXI Specifications (Cont.)	
RS-232/422/485 Ports (#1-6):	6 RS-232/422/485 control ports with XON/XOFF (transmit on/ transmit off), and CTS/RTS (clear to send/ready to send), 300-230,400 baud.· • Channel range = 1-255 • Channels 1-254 provide feedback only. • Channel 255 (CTS Push channel) reflects the state of the CTS Input if a 'CTSPSH' command was sent to the port.
Relays Port (# 7):	12-channel relay port. Channel range = 1-12 You can connect up to 12 independent external relay devices to the Relay connectors on the NXI (port 7). Connectors labeled A are for common and B are for Output. Each relay is isolated and normally open.
IR/Serial Ports (# 8-15):	8 IR/Serial control ports that support high-frequency carriers up to 1.14 MHz: • Channel range = 1-32,000 • Channels 1-253 (output): IR commands. • Channel 254 (feedback): PowerFail (used with 'PON' and 'POF' commands). • Channel 255 (feedback): Power status (when IOLink is set).
I/O Port (# 16):	8-channel I/O port for contact closure, 0-5 VDC voltage sensing, or interactive power sensing for IR ports. Channel range = 1-8.

Master/Hub Card Slot

The Master/Hub Card slot houses a NetLinx Master or Hub Card. The card mounts in a horizontal position, through the master card slot on the rear panel of the NXI enclosure. To install a Master or Hub Card in an NXI:

1. Discharge the static electricity from your body by touching a grounded object.
2. Disconnect the power, and unplug all connectors from the NXI.
3. Align the edges of the card with the guide slots inside the Master Card slot on the NXI.
4. Slide the card about halfway into the slot.
5. Inside the Master Card slot, locate the 4-pin control cable connector.
6. Plug the connector from the NXI into the 4-pin terminal on the Master Card. This connector is keyed to ensure correct orientation.
7. Once the control cable is connected, gently slide the card all the way in until you feel the rear edge of the card lightly snap into place.
8. Re-apply power and other connections as necessary.

Compatible NetLinx Hub Cards

For use as a hub device, the NXI accepts the following NetLinx Hub Cards:

- NXC-NH ICSNet Hub Card (**FG2060**)
- NXC-HS ICSHub Server Card (**FG2061**)
- NXC-HE ICSHub Expander Card (**FG2062**)

Connections and Wiring

RS-232/422/485 Wiring Specifications:

RS-232/422/485 Wiring Specifications					
Pin	**Signal**	**Function**	**RS-232**	**RS-422**	**RS-485**
1	GND	Signal ground	X	X	
2	RXD	Receive data	X		
3	TXD	Transmit data	X		
4	CTS	Clear to send	X		
5	RTS	Request to send	X		
6	TX +	Transmit data		X	X (strap to pin 8)
7	TX -	Transmit data		X	X (strap to pin 9)
8	RX +	Receive data		X	X (strap to pin 6)
9	RX -	Receive data		X	X (strap to pin 7)
10	12 VDC		optional	optional	

Relay Wiring Specifications

You can connect up to 12 independent external relay devices to the Relay connectors on the NXI (port 7).

- Connectors labeled A are for common and B are for Output.
- Each relay is isolated and normally open.
- A metal commoning strip is supplied with each NXI to connect multiple relays.

IR/Serial Connector Wiring Specifications

You can connect up to eight IR- or serial-controllable devices to the IR/Serial connectors (ports 8-15). These connectors accept a IR emitter (CC-NIRC) that mounts on the device's IR window, or a mini-plug (CC-NSER) that connects to the device's control jack.

IR/Serial Connector Wiring Specifications

No.	Port	Signal	Function
1	8	GND (-) Signal 1 (+)	Signal GND IR/Serial data
2	9	GND (-) Signal 2 (+)	Signal GND IR/Serial data
3	10	GND (-) Signal 3 (+)	Signal GND IR/Serial data
4	11	GND (-) Signal 4 (+)	Signal GND IR/Serial data
5	12	GND (-) Signal 5 (+)	Signal GND IR/Serial data
6	13	GND (-) Signal 6 (+)	Signal GND IR/Serial data
7	14	GND (-) Signal 7 (+)	Signal GND IR/Serial data
8	15	GND (-) Signal 8 (+)	Signal GND IR/Serial data

I/O Port Wiring Specifications

The I/O port responds to switch closures or voltage level (high/low) changes, or can be used for logic-level outputs. You can connect up to eight devices to the I/O connectors (port 16). A contact closure between GND and an I/O port is detected as a Push. When used for voltage inputs, the I/O port detects a low (0-1.5 VDC) as a Push, and a high (3.5-5 VDC) signal as a Release. When used for outputs, the I/O port acts as a switch to GND and is rated at 200 mA @ 12 VDC.

The PWR pin (+12 VDC @ 200 mA) is designed as a power output for the PCS2 or VSS2 (or equivalent). The GND connector is a common ground and is shared by all I/O ports. The following table lists the wiring specifications for the I/O connectors.

I/O Port Wiring Specifications

Pin	Signal	Function
1	GND	Signal GND
2	I/O 1	Input/output
3	I/O 2	Input/output
4	I/O 3	Input/output
5	I/O 4	Input/output
6	I/O 5	Input/output
7	I/O 6	Input/output
8	I/O 7	Input/output
9	I/O 8	Input/output
10	12 VDC	PWR

Using the ID Button

The ID Button on the rear panel of the NXI (see Figure 1) is used in conjunction with the NetLinx Studio software program to allow you to assign a new Device number to the NXI.

1. Using NetLinx Studio, place the system in Identify (ID) Mode. ID Mode means that the entire system is put on hold while it waits for an event from any NetLinx device in the named system (for example, pushing the ID button on the NXI). The device that generates the first event is the device that is identified.
2. Press the ID Mode button to generate an event from the NXI and assign new Device number in NetLinx Studio.

Device:Port:System (D:P:S)

A device is any hardware component that can be connected to an AXlink or NetLinx (ICSNet) bus. Each device must be assigned a unique number to locate that device on the bus. The NetLinx programming language allows numbers in the range 0-32,000. Device 0 (zero) refers to the master, and numbers greater than 32,000 are reserved.

NetLinx requires a Device:Port:System (D:P:S) specification. This D:P:S triplet can be expressed as series of constants, variables separated by colons, or as a DEV structure. For example:

```
STRUCTURE DEV
{
INTEGER Number  // Device number
INTEGER Port    // Port on device
INTEGER System  // System the device belongs to
}
```

The D:P:S notation is used to explicitly represent a device number, port and system. For example, 128:1:0 represents the first port on the device TP on this system.

If the Port and System numbers are omitted, Port #1 (the first port) and System #0 (this system) are assumed. Here's the syntax:

```
NUMBER:PORT:SYSTEM
```

where:

- NUMBER: 16-bit integer representing the device number
- PORT: 16-bit integer representing the port number (in the range 1 through the number of ports on the Controller or device)
- SYSTEM: 16-bit integer representing the system number (0 = this system)

NetLinx Device Number Conventions

NXI Integrated Controllers typically occupy the device number range from 5001 to 5999.

By default, all NXI's are shipped with a virtual device ID assigned to 32,001. You must assign a real device number (via NetLinx Studio) before use.

In NetLinx Studio, select Tools > NetLinx Diagnostics to open the NetLinx Diagnostics dialog. Set the device number in the Device Addressing tab, using either the **Change Address** or **ID Mode** option (see *Using the ID Button*).

Send_Commands

Refer to the NXI Integrated Controller Instruction Manual for detailed programming information.

RS-232/422/485 Port Configuration Send_Commands

SET BAUD Sets the RS-232/422/485 port's communication parameters.	Syntax: `SEND_COMMAND <DEV>,'SET BAUD (Baud),(Parity),(Data),(Stop) (485 DISABLE/ENABLE)'` • Baud: 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 (factory set default), 57600, 76800, 115200, 230400 • Parity: N (none), O (odd), E (even), M (mark), S (space) • Data: 7 or 8 data bits • Stop: 1 or 2 stop bits • 485 Disable: Disables RS-485 mode and enables RS-422 • 485 Enable: Enables RS-485 mode and disables RS-422
TSET BAUD Temporarily sets the RS-232/422/485 port's communication parameters.	Syntax: `SEND_COMMAND <DEV>,'TSET BAUD (Baud),(Parity),(Data), (Stop) (485 DISABLE/ENABLE)'` TSET BAUD works the same as SET BAUD, except that the changes are not permanent, and the previous values will be restored if the power is cycled on the device.
HSOFF Disables hardware handshaking (default).	Syntax: `SEND_COMMAND <DEV>,'HSOFF'`
HSON Enables RTS and CTS hardware handshaking.	Syntax: `SEND_COMMAND <DEV>,'HSON'`
CAROFF Disables the carrier signal until a CARON command is received.	Syntax: `SEND_COMMAND <DEV>,'CAROFF'`
CARON Enables carrier signals (default setting).	Syntax: `SEND_COMMAND <DEV>,'CARON'`
ZAP LOW Deletes all IR data stored in the NXI ports 8-11.	Syntax: `SEND_COMMAND <DEV>, 'ZAP LOW'`
ZAP HIGH Deletes all IR data stored in the NXI ports 12-15.	Syntax: `SEND_COMMAND <DEV>, 'ZAP HIGH'`

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