NX-584
HOME AUTOMATION MODULE

Installation Manual

GENERAL DESCRIPTION

The CADDX NX-584 is a low cost add-on module that fits neatly into any NetworX family system enclosure and provides a standard RS-232 bi-directional DB-9 connector for connection to a home automation host system. A simple three-wire connection to the main control is all that is required to fully integrate this card into the system.

The NX-584 has several levels of security that can be programmed in at the time of installation to allow as much or as little security system information to be passed to the host system. It can also be set to limit the commands that will be accepted from the host system to prevent unauthorized attempts to override the security system status.

The unit can be easily configured for communication in an ASCII or Binary protocol. A selectable baud rate can be set from 600 baud to 76.8k baud with hardware RTS and CTS handshaking. The ASCII implementation is easy to use and debug with standard programming tools while the Binary version is a more efficient for method for transferring information between the two systems. The system integrator can select any number of events or conditions to cause the NX-584 to send the relevant information to the host without polling. This allows for a faster response to activity than polling alone can provide.

All security system information can be requested at anytime if enabled to do so by the installer. This is useful at system initialization and at periodic intervals to keep the two systems in sync without worrying about missing any transitional event. This information is organized as System, Partition, Zones and Outputs. System information will contain such information as power status, phone line condition, module troubles, and other system wide condition. Partition information includes readiness of all zones assigned, armed state, entry / exit delays, last user number, alarm condition and many other conditions within a specific partition. Zone information includes faults, alarm memory, bypasses, troubles, tampers, low batteries, missing and partition assignments. Output messages include commands that can be passed to or from devices in X-10 compatible format.

WIRING INFORMATION

TERMINAL DESCRIPTIONS	
POS	Connect to the KP POS terminal of the NX-8.
COM	Connect to the KP COM terminal of the NX-8.
DATA	Connect to the KP DATA terminal of the NX-8.

DB-9 Pin-out				
Signal Name	**Direction** NX------PC	**Jumper Number**	**Pin Number**	
			A Position	**B Position**
Cts*	⟶	**J7**	**8****	**7**
Txd	⟶	**J8**	**2**	**3****
Rts*	⟵	**J9**	**8**	**7****
Rxd	⟵	**J10**	**2****	**3**
Sig.Gnd.	⟷	**--**	**5**	
Unused	**--**	**--**	**1,4,6,9**	

Note: Rts and Cts signals are not currently supported
**Note: Default jumper settings*

INSTALLATION / ENCLOSURE DIAGRAM

Inside the can, several 2-holed insertion points have been constructed. This allows for either vertical or horizontal placement of the modules. **Notice that the insertion points have two sizes of holes -- a larger hole and a smaller hole**.

Diagram 1: The black plastic PCB guides are grooved on one edge where the PC Board will be seated. The end with the half-moon protrusion fits into the larger hole. The smaller hole is for the screw.

Diagram 2: Place the *first* black plastic PCB guide in the top insertion point, grooved edge downward. The half-moon protrusion will be in the large hole. It does not require force. Insert one of the provided screws into the smaller hole (from inside the can) to secure it in place. A screwdriver should reach through the notch that runs the length of the guide to tighten the screw. The *second* PCB guide should be positioned opposite of the first (grooved edge up) and placed in the lower insertion point, using the same procedures described above. Once mounted, screw it in securely.

Diagram 3: The PC board should slide freely in the grooves of both guides.
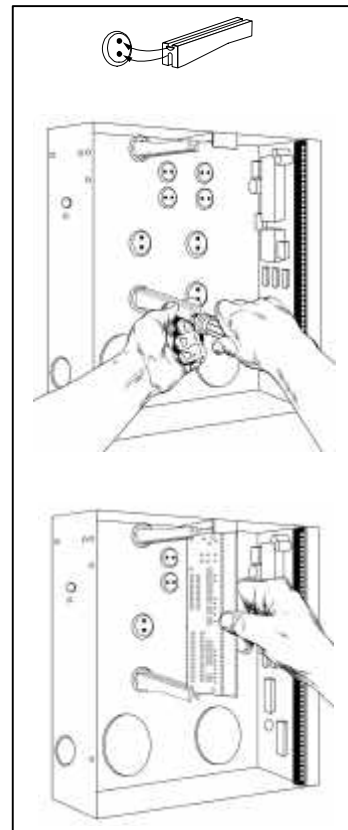
NX-584 DRAWING
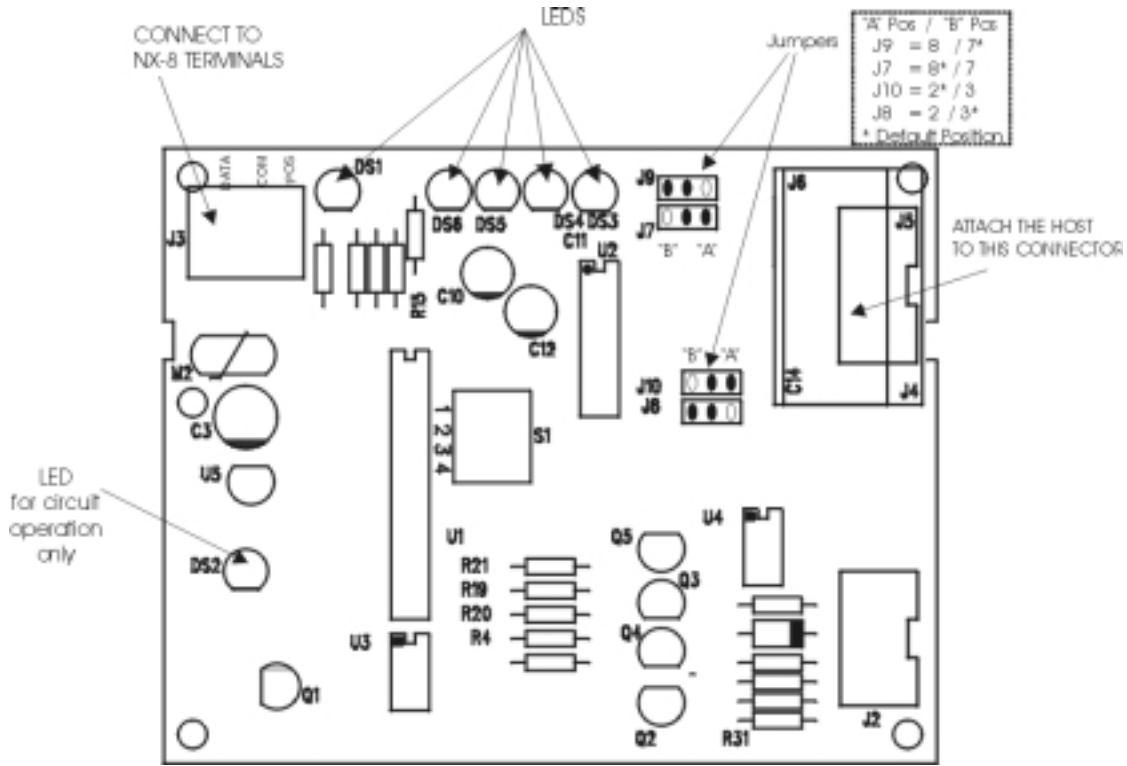
ENROLLING THE NX-584

The NetworX control panels have the ability to automatically find and store in memory the presence of all keypads, zone expanders, wireless receivers, output modules, and any other device on the keypad buss. This allows these devices to be supervised by the control panel. To enroll the devices, enter the Program Mode using the procedure outlined in the control panel Installation Manual. When the Program Mode is exited, the NX-8 control will automatically enroll the devices. The enrolling process takes about 12 seconds, during which time the ΛService@ LED will illuminate. User codes will not be accepted during the enrolling process. Once a module is enrolled, if it is not detected by the control, the ΛService@ LED will illuminate.

PROGRAMMING THE NX-584

Using the LED Keypad

➢ **To enter the Program Mode:**
   ▪ Enter [✱]-[**8**] (all of the function key LEDs will begin to flash).
   ▪ Enter the "Go To Program" code (default is [**9**]-[**7**]-[**1**]-[**3**]). If the code was valid, the Service LED will flash, and the function LEDs will illuminate steady, indicating the device to program should be entered.
➢ **Enter the address** of the NX-584, which is [**7**] [**2**] followed by [**#**]. At this point, the Armed LED will illuminate while it is waiting for a programming location to be entered.
➢ **Enter the desired programming location** followed by the [**#**] key.
   ▪ The Armed LED will begin to flash while a programming location is being entered. If this is a valid location, the Armed LED will extinguish, the Ready LED will illuminate, and the binary data for the first segment of this location will be shown on the zone LEDS.
   ▪ If the desired location is the next sequential location, press the [POLICE] key.
   ▪ If the previous location is desired press the [FIRE] key.
   ▪ If the same location is desired press the [AUXILIARY] key.
➢ **To change the data**, enter the data followed by [✱].
   ▪ The data will be entered, and the location will automatically increment to the next segment. The data for that segment will be displayed. This procedure is repeated until the last segment is reached.
➢ **To exit this location** without changing the data, press the [**#**] key.
➢ **To review the data**, repeat the above procedure, pressing the [✱] key without entering data first. Each time the [✱] key is pressed, the next segment is displayed. After the last segment of a location is programmed, pressing the [✱] key will exit that location, turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location. If an attempt is made to program an invalid entry for a particular segment, the keypad sounder will emit a triple error beep (beep, beep, beep) and remain in that segment awaiting a valid entry.
➢ **To exit the Program Mode**, press the [**Exit**] key to exit this programming level. Pressing the [**Exit**] key again will exit the Program Mode.

Using the LCD Keypad

All steps required for programming are the same as the aforementioned LED keypad. The LCD keypad display will prompt you for the data required. While in the programming mode, and not in a location, the number in parenthesis is the location you were previously changing. For example, if the display reads "Enter location, then #   (2)", it is reminding you that location 2 was the last location you programmed. In feature selection data, the numbers of the enabled features will be displayed. The features **not** enabled will display a hyphen (-).

PROGRAMMING DATA

Programming data is always one of two types. One type of data is numerical, which can values from 0 -15 or 0-255 depending on the segment size. The other type of data, feature selection data, is used to turn features on or off. Use the following procedures with these two data types:

Numerical Data: Numerical data is programmed by using the numeric keys of the system keypad to enter a number from 0-255. To view the data in a location, a binary process is used. With this process, the LED's for zones 1 through 8 are utilized, and the numeric equivalents of their illuminated LED's are added together to determine the data in a programming location. The numeric equivalents of these LED's are as follows:

Zone 1 LED = **1**	Zone 3 LED = **4**	Zone 5 LED = **16**	Zone 7 LED = **64**
Zone 2 LED = **2**	Zone 4 LED = **8**	Zone 6 LED = **32**	Zone 8 LED = **128**

Example: If the numerical data to be programmed in a location is "66", press [**6**]-[**6**] on the keypad. The LED's for Zone 2 and Zone 7 will become illuminated indicating 66 is in that location (2 + 64 = 66). Once the data is programmed, press the [✱] key to enter the data and advance to the next segment of that location. After the last segment of a location is programmed, pressing the [✱] key will exit that location, turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location. If an attempt is made to program a number too large for a particular segment, the keypad sounder will emit a triple beep, indicating an error, and remain in that segment awaiting a valid entry.

Feature Selection Data: Feature selection data will display the current condition (on or off) of eight features associated with the programming location and segment selected. Pressing a button on the touchpad (1 through 8) that corresponds to the "feature number" within a segment will toggle (on/off) that feature. Pressing any numeric key between [**1**] and [**8**] for selection of a feature will make the corresponding LED illuminate (feature ON). Press the number again, and the LED will extinguish (feature OFF). You will see that numerous features can be selected from within one segment. For instance, if all eight features of a segment are desired, pressing [**1**]-[**2**]-[**3**]-[**4**]-[**5**]-[**6**]-[**7**]-[**8**] will turn on LED's 1 through 8 as you press the keys, indicating that those features are enabled.

 LCD KEYPAD USERS NOTE:

The numbers of the enabled features will be displayed. However, the features not enabled will display a hyphen (-). After the desired setting of features is selected for this segment, press the [✱] key. This will enter the data and automatically advance to the next segment of the location. When you are in the last segment of a location and press the [✱] to enter the data, you will exit that location. This will now turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location.

WHAT THE LEDS INDICATE

LED	INDICATIONS
DS1	Flashes for NetworX buss
DS3	Flashes for each valid packet received from host
DS4	Flashes for each packet transmitted to host
DS5	On when waiting for NetworX function to be completed
DS6	On when waiting for acknowledgement from host

PROGRAMMING LOCATIONS

LOCATION 0   PROGRAMMING THE OPTION FLAGS

(1 segment of feature selection data) The NX584 protocol can operate in one of two possible modes - binary or ASCII. Consult the home automation application information to determine the proper mode for your application and program it in Location 0.

Option 1	**LED 0ff** = Binary	**LED On** = ASCII
Options 2 - 8	Reserved	

LOCATION 1   BAUD RATE TABLE

(1 segment of numerical data) The NX584 can operate on a number of different baud rates. Consult the home automation application information to determine the best baud rate for your application and program it in Location 1.

DATA	BAUD RATE	DATA	BAUD RATE
0	600 Baud	4	9600 Baud (9.6K)
1	1200 Baud (1.2K)	5	19200 Baud (19.2K)
2	2400 Baud (2.4K)	6	38400 Baud (38.4K)
3	4800 Baud (4.8K)	7	76800 Baud (76.8K)

LOCATION 2   ENABLING THE TRANSITIONS

(2 segments of feature selection data) The NX584 can be programmed to automatically send information to the home automation system whenever there has been a change in this information. This is referred to as 'transition-based broadcasting'. Which information packets use 'transition-based broadcasting' is dependent upon the application and the capabilities of the home automation system. Location 2 is used to enable and disable the appropriate transition based broadcasts. Consult the home automation application information and enable the appropriate transition based broadcasts in Location 2.

Segment 1:

DATA	ENABLES TRANSITION
1	Reserved
2	Interface Configuration at power-up / end of download / program mode
3-4	Reserved
5	Zone Status Message
6	Zones Snapshot Message
7	Partition Status Message
8	Partitions Snapshot Message

Segment 2:

DATA	ENABLES TRANSITION
1	System Status Message
2	X-10 Message Received
3	Log Event Message
4	Keypad Message Received
5 - 8	Reserved

LOCATION 3   PROGRAMMING THE COMMAND / REQUEST ENABLES

(4 segments of feature selection data) The NX584 has the ability to perform a variety of commands asked of it by the home automation system. For example, it is possible to allow arming and disarming of the security system, programming of the security system, or bypassing of zones by the home automation system. Location 3 is used to select which commands, if any, you wish the home automation system to have access. Consult the home automation application information and enable the appropriate commands for your application. *CAUTION: IT IS IMPORTANT TO UNDERSTAND THE CAPABILITES OF THE HOME AUTOMATION SYSTEM TO AVOID COMPROMISING THE SECURITY OF YOUR SYSTEM WHEN PROGRAMMING THIS LOCATION*.

DATA	SUPPORTED REQUEST / COMMAND
1	Reserved
2	Interface Configuration Request
3	Reserved
4	Zone Name Request
5	Zone Status Request
6	Zones Snapshot Request
7	Partition Status Request
8	Partitions Snapshot Request

Segment 2:

DATA	SUPPORTED REQUEST / COMMAND
1	System Status Request
2	Send X-10 Message
3	Log Event Request
4	Send Keypad Text Message
5	Keypad Terminal Mode Request
6 - 8	Reserved

Segment 3:

DATA	SUPPORTED REQUEST / COMMAND
1	Program Data Request
2	Program Data Command
3	User Information Request with PIN
4	User Information Request without PIN
5	Set User Code Command with PIN
6	Set User Code Command without PIN
7	Set User Authorization Command with PIN
8	Set User Authorization Command without PIN

Segment 4:

DATA	SUPPORTED REQUEST / COMMAND
1	Reserved
2	Reserved
3	Store Communication Event Command
4	Set Clock / Calendar Command
5	Primary Keypad Function with PIN
6	Primary Keypad Function without PIN
7	Secondary Keypad Function
8	Zone Bypass Toggle

LOCATION 4   PROGRAMMING THE LCD KEYPAD ADDRESS

(1 segment) Certain commands in the NX584 require it to know the location of at least 1 LCD keypad (if one exists in the system). If your system has an LCD keypad it is recommended that it be placed in partition 1 keypad 1. This will allow location 4 to be left at the factory default. If the LCD keypad is selected as something other than partition 1/keypad 1, program the appropriate address in location 4. Select the address from the following chart.

KEYPAD	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8
1	192	193	194	195	196	197	198	199
2	200	201	202	203	204	205	206	207
3	208	209	210	211	212	213	214	215
4	216	217	218	219	220	221	222	223
5	224	225	226	227	228	229	230	231
6	232	233	234	235	236	237	238	239
7	240	241	242	243	244	245	246	247
8	248	249	250	251	252	253	254	255

PROGRAMMING WORKSHEETS

(Defaults are printed in ***bold italics*** text in a shaded area.)

LOC	PAGE	DESCRIPTION	
0	7	**Option Flags (1 segment)**	
		Option 1	***Off = Binary*** On = ASCII
		Options 2 - 8	Reserved
1	7	**Baud Rate (1 segment)**	
		0 = 600 Baud	***4 = 9600 (9.6K)***
		1 = 1200 (1.2K)	5 = 19200 (19.2K)
		2 = 2400 (2.4K)	6 = 38400 (38.4K)
		3 = 4800 (4.8K)	7 = 76800 (76.8K)
2	7	**Enabling the Transitions (2 segments)**	
		Segment 1	1 = Reserved ***2 = Interface Configuration*** 3 –4 = Reserved 5 = Zone Status Message 6 = Zones Snapshot Message ***7 = Partition Status Message*** 8 = Partitions Snapshot Message
		Segment 2	***1 = System Status Message*** ***2 = X-10 Message Received*** 3 = Log Event Message 4 = Keypad Message Received 5 – 8 = Reserved
3	8	**Programming the Command / Request Enables (4 segments)**	
		Segment 1	1 = Reserved ***2 = Interface Configuration Request*** 3 = Reserved ***4 = Zone Name Request*** ***5 = Zone Status Request*** ***6 = Zones Snapshot Request*** ***7 = Partition Status Request*** ***8 = Partitions Snapshot Request***

LOC	PAGE	DESCRIPTION							
3	**8**	Segment 2	*1 = System Status Request* *2 = Send X-10 Message* *3 = Log Event Request* *4 = Send Keypad Text Message* *5 = Keypad Terminal Mode Request* 6 – 8 = Reserved						
		Segment 3	1 = Program Data Request 2 = Program Data Command 3 = User Information Request with PIN 4 = User Information Request without PIN 5 = Set User Code Command with PIN 6 = Set User Code Command without PIN 7 = Set User Authorization Command with PIN 8 = Set User Authorization Command without PIN						
		Segment 4	1 – 2 = Reserved 3 = Store Communication Event Command *4 = Set Clock / Calendar Command* 5 = Primary Keypad Function with PIN 6 = Primary Keypad Function without PIN *7 = Secondary Keypad Function* 8 = Zone Bypasss Toggle						

LOC	PAGE								
4	**9**	**LCD Keypad Address (1 segment)**							

KEYPAD	PART 1	PART 2	PART 3	PART 4	PART 5	PART 6	PART 7	PART 8
1	*192*	193	194	195	196	197	198	199
2	200	201	202	203	204	205	206	207
3	208	209	210	211	212	213	214	215
4	216	217	218	219	220	221	222	223
5	224	225	226	227	228	229	230	231
6	232	233	234	235	236	237	238	239
7	240	241	242	243	244	245	246	247
8	248	249	250	251	252	253	254	255

SPECIFICATIONS

NX-584 DIMENSIONS	**4 " Width x 3.25 " Length x 1 " Depth**
OPERATING POWER	**12 VDC, Supplied from NX-8 or NX-320**
AUXILIARY POWER	**Supplied by NX-8 or NX-320**
NX584 CURRENT DRAW	**30 mA**
OPERATING TEMPERATURE	**32 to 120 degrees F**
SHIPPING WEIGHT	**1 lb.**

FIVE YEAR LIMITED WARRANTY