




# NX-208E Two-Wire Smoke Loop Expander Installation and Startup

I-NX208E-IM  
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## Product Summary

The NX-208E is a microprocessor-controlled 2-wire smoke expander for the NetworX NX-6, NX-8, NX-8-CF, NX-8E and NX-8E-CF control panels. One NX-208E module can be added to the NX control panel with a maximum zone count of 8 zones. Each expander has an optional tamper input making it ideal for use in a remote location.

 Do not add normally open contact devices to an NX-208E loop (i.e. sounder, heat detectors, pull stations, water flow devices, etc.)

## Installation Guidelines

Inside the can, several 2-holed insertion points have been constructed. This allows for either vertical or horizontal placement of the modules. Notice that each insertion point has two sizes of holes - a larger hole and a smaller hole. (Figure 1)

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.
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 screw 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* PBC guide should be positioned opposite the first (grooved edge up) and placed in the lower insertion point, using the same procedures described above. Once mounted, screw it in securely.
3. The PC Board should slide freely in the grooves of both guides.

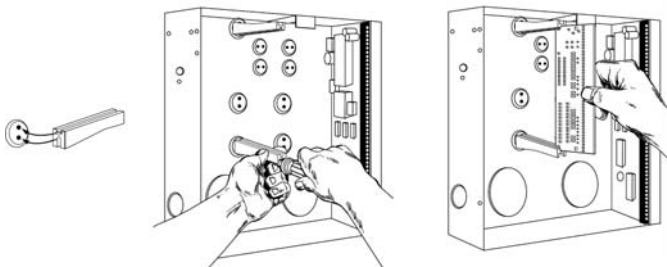


Figure 1. Board Installation



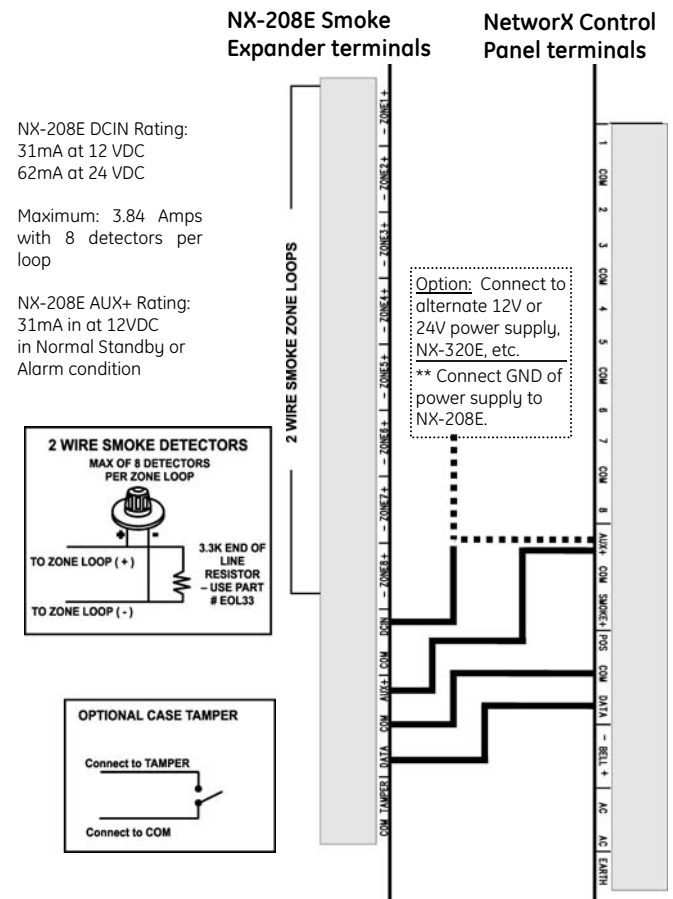
**CAUTION** You must be free of static electricity before handling circuit boards. Wear a grounding strap or touch a bare metal surface to discharge static electricity.

## Wiring References


The following references were taken from the "Reference Data for Radio Engineers" (6<sup>th</sup> edition).

Gauge	Ohms per/1,000 feet	Gauge	Ohms per/1,000 feet
12	1.0588	16	4.016
13	2.003	18	6.385
14	2.525	20	10.15
15	3.184		

## Wiring Connections



## Terminal Descriptions

COM	
TAMPER	Connect normally closed tamper switch between this pin and COM.
DATA	Connect to the DATA terminal of the control panel. (See the wiring diagram)
COM	Connect to the COM terminal of the control panel.
AUX +	Connect to the AUX+ terminal of the control panel.
COM	
DCIN	Connect to the AUX PWR+ terminal of the control panel. Optionally, connect to an auxiliary 12V or 24V power supply (i.e. NX-320E, etc.)  Be sure to connect GND of power supply to NX-208E.
ZONE8-	Connect (Zone 8 negative) to negative side of smoke detector. Open (trouble) or short (alarm) causes a smoke condition and sounds the keypad by default, but is programmable. (See wiring diagram)
ZONE8+	Connect (Zone 8 positive) to the positive side of the smoke detector. Open or short causes a smoke condition and sounds the keypad. (See wiring diagram)
ZONE7-through ZONE1+	Connect as described above for ZONE8- & ZONE8+.

## Enrolling The Module

The NetworX control panels have the ability to automatically find and store in memory the presence of all keypads, zone expanders, wireless receivers and any other module connected to the data terminal. This allows these modules to be supervised by the control panel.

To enroll the modules, enter the Program Mode of the control panel (refer to the installation manual for the specific control panel). When the Program Mode is exited, it will automatically enroll the devices. The enrolling process takes about 12 seconds, during which time the "Service" 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 panel the "Service" LED will illuminate.

## Module Address

This 2-wire smoke module has a fixed address of **95**. When programming the expander module, enter the Program Mode and select the device address as 95. (Refer to "Programming Mode" section for further details.)

## Programming Mode

- To enter the program mode, press **[\*]-[8]**. All of the function key LEDs will begin to flash.
- Enter the "Go To Program" code (factory 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.
- Press **[9]-[5]-[#]** for the fixed address of the 2-wire smoke module. The Armed LED will illuminate while it is waiting for a programming location to be entered.
- Enter the desired programming location. The Armed LED will begin to flash while a programming location is being entered.
- Press **[#]**. 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.
- 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. Pressing the **[#]** key will exit from this location. 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.

Programming data is always one of two types of data. The first type is numerical, and can take on values from 0-255 or 0-15 depending on the segment size. The second type is a feature selection type. Feature selection data is used to turn features on or off.

**LCD Keypad Users:** 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 # (5)", it is reminding you that location 5 was the last location you programmed. In feature selection data, the numbers of the enabled features will be displayed. However, the features not enabled will display a hyphen (-).

## Programming Location Guide

The programming for all zone information is performed in the NetworX control panels. For instructions on accessing and programming the control panel as well as changing the characteristics of a configuration group, refer to the installation manual for the corresponding control panel.


### LOCATION 0 - ENABLING THE ZONES (LOOPS)

(1 segment, feature selection data) Location 0 is used to enable / disable the zone(s). Factory default = all zones disabled.

1 = Zone 1	3 = Zone 3	5 = Zone 5	7 = Zone 7
2 = Zone 2	4 = Zone 4	6 = Zone 6	8 = Zone 8

### LOCATION 1 - SETTING THE ZONE BANK DURING COMMUNICATION


(1 segment, numerical data) Location 1 is used to select the bank used by zones 1-192 during communication. A zone may reside in any one of the 24 banks.

 If you enter [1] through [23], then zones 1-8 in location 0 become the corresponding zones as shown in the following chart. Example: Entering [9] in Location 1 causes zone 1 to become zone 73, and zone 8 becomes 80. Factory default = 1 (Zones 9-16)

0 = Zones 1 - 8	8 = Zones 65 - 72	16 = Zones 129 - 136
1 = Zones 9 - 16	9 = Zones 73 - 80	17 = Zones 137 - 144
2 = Zones 17 - 24	10 = Zones 81 - 88	18 = Zones 145 - 152
3 = Zones 25 - 32	11 = Zones 89 - 96	19 = Zones 153 - 160
4 = Zones 33 - 40	12 = Zones 97 - 104	20 = Zones 161 - 168
5 = Zones 41 - 48	13 = Zones 105 - 112	21 = Zones 169 - 176
6 = Zones 49 - 56	14 = Zones 113 - 120	22 = Zones 177 - 184
7 = Zones 57 - 64	15 = Zones 121 - 128	23 = Zones 185 - 192

### LOCATION 2 SPECIAL FLAGS

(1 segment, feature selection data) Location 2 is used to select special flags for communication. Factory default = all flags disabled.

 Seg 1 - 24V Configuration requires a total of four 12V, 17AH batteries - Connect 2 batteries in parallel, and connect the other 2 batteries in parallel. Then connect those two sets in series.

- 1 = enables the 24 V power supply option (see Note)
- 2 = disables the temporal
- 3 = enables temporal regardless of panel programming
- 4 = enables tamper
- 5 = disables voltage reversal (not perform voltage reversal functions when in alarm; used in con-junction with smokes that have sounders)

## Compatible Smoke Detector List

- S09A Compatible Devices  
429AT, 521B/BXT (SW1 ON), 521NB/NBXT
- S10A Compatible Devices  
521NB,521NBXT,521NCSXT, 429C, 429CT, 521B/BXT (SW1 OFF), 711U/UT, 721U/UT
- S11A Compatible Devices  
429CRT,429CST, 521CRXT, 521NCRXT, 521NCSRXT, 731U

## Programming Worksheet

Loc	Description	Default	Your Data
0	<b>ZONE ENABLE (1 segment)</b> 1 = Zone 1            5 = Zone 5 2 = Zone 2            6 = Zone 6 3 = Zone 3            7 = Zone 7 4 = Zone 4            8 = Zone 8	0 (disabled)	-----
1	<b>BANK SELECTION (1 segment)</b> 0 = Zones 1 - 8        12 = Zones 97 - 104 1 = Zones 9 - 16      13 = Zones 105 - 112 2 = Zones 17 - 24     14 = Zones 113 - 120 3 = Zones 25 - 32     15 = Zones 121 - 128 4 = Zones 33 - 40     16 = Zones 129 - 136 5 = Zones 41 - 48     17 = Zones 137 - 144 6 = Zones 49 - 56     18 = Zones 145 - 152 7 = Zones 57 - 64     19 = Zones 153 - 160 8 = Zones 65 - 72     20 = Zones 161 - 168 9 = Zones 73 - 80     21 = Zones 169 - 176 10 = Zones 81 - 88    22 = Zones 177 - 184 11 = Zones 89 - 96    23 = Zones 185 - 192	1	—
2	<b>SPECIAL FLAGS (1 segment)</b> 1 = 24 Volt Power Supply ♦ 2 = Disable temporal 3 = Temporal regardless 4 = Enable tamper 5 = Disable voltage reversal	0 (disabled)	

♦ Loc 2, Seg 1 - 24V Configuration requires a total of four 12V, 17AH batteries - Connect 2 batteries in parallel, and connect the other 2 batteries in parallel. Then connect those two sets in series.

## Underwriters Laboratories

UL609	Local Grade A Mercantile, Police Station Connect with Basic Line Security (* requires #NX-003-C enclosure)
UL864	Control Units for Fire-Protective Signaling Systems
UL985	Household Fire Warning Systems & Units
UL1023	Household Burglary Alarm Systems & Units
UL1610	Grade B & C Central Station Burglar Alarm Unit
Canada / ULC	
S303	Local Burglar Alarm Units and Systems
S304	Central and Monitoring Station Burglar Alarm Units
S545	Standard for Residential Fire Warning System Control Units

## Specifications

OPERATING POWER	12VDC Supplied from NetworX models: NX-6, NX-8, NX-8-CF, NX-8E, NX-8E-CF or NX-320E <b>IMPORTANT:</b> Supplied power from external supplies <u>must</u> be UL listed for Commercial Fire or Burglary.
AUXILIARY POWER	Supplied from NetworX models: NX-6, NX-8, NX-8-CF, NX-8E, NX-8E-CF or NX-320E; Current limited to 100mA
CURRENT DRAW	30mA
DCIN CURRENT DRAW	31mA maximum @ 12VDC 62mA maximum @ 24VDC 3.84 Amps MAX (with 8 detectors per loop)
AUX+ RATING	13mA @ 12VDC in Normal Standby 53mA @ 12VDC in Alarm
LOOP RESISTANCE	12 Volt Loop = 20 Ohms Maximum 24 Volt Loop = 50 Ohms Maximum
LOOP RESPONSE	180ms
OPERATING TEMPERATURE	32 to 120 degrees F
DIMENSIONS	9.5" Wide 3.5" High 1.0" Deep
SHIPPING WEIGHT	2 lbs.

## Ordering Information

PART #	DESCRIPTION
NX-208E	Two Wire Smoke Loop Expander
EOL33	3.3K End-of-Line Resistor device
NX-8-CF-KIT-7	NX-8 Commercial Fire Kit Includes NX-8-CF Control, (2) NX-148E-CF LCD Keypads, NX-870E Fire Supervision & 16.5V, 50VA Transformer
Other available NetworX modules:	
NX-216E	16 Zone Expander Module
NX-320E	Smart Power Supply and Buss Extender
NX-507E	Seven Relay Module