NX10-FACP-1C

Compact Single Loop
Fire Alarm Control Panel

Installation & Operation Manual

Table of Contents Page

Index of Figures

Page

Limitations of Fire Alarm and Emergency Communication Systems

An automatic fire alarm system and when required, interfaced emergency communication system (various emergency messages with or without live voice communications) can provide early warning and notification of the development of a fire. It cannot, however, assure protection against loss of property or loss of life.

It is recommended that smoke and/or heat detectors and notification appliances be installed throughout the building in accordance with the requirements detailed in NFPA 72, local/state codes, and with the instructions supplied with the equipment.

The type(s) of detector employed, and their physical location must be selected carefully to make sure that they detect the types of fire likely to occur in the protected area. Even so, many factors may prevent the necessary levels of combustion products from reaching the sensing chambers and thus the system may not indicate an alarm condition.

Heat detectors protect property, not life.

INSTALLATION OF A FIRE ALARM SYSTEM MAY LOWER INSURANCE RATES, BUT IT IS NOT A SUBSTITUTE FOR FIRE INSURANCE!

Smoke detectors shall be installed in the same room(s) as the FACP, any equipment used for transmission of the alarm condition, and in locations where power supplies are mounted. Otherwise, a developing fire may damage the system and its ability to report the fire alarm condition, refer to NFPA 72.

The system will not operate without power. Standby batteries shall be properly maintained and replaced regularly.

Regular maintenance will make sure that the system is operating at its optimum performance. Arrange a maintenance agreement with the manufacturer's local representative to make sure that the system is maintained by a professional fire alarm installer in accordance with National and any local/state codes. Maintain a written record of all inspections and maintenance performed.

General Installation Notes

Before you install this product make sure that you comply with the ratings shown inside the equipment and in the specifications section of this manual.

Make sure that you have read and understood the instructions provided in this manual before you work on the panel. If you are not sure, stop work and seek guidance from the manufacturer or supplier.

This equipment contains electrostatic discharge sensitive devices. Make sure that you obey anti-static precautions at all times when working on the system. Failure to obey ESDS procedures can damage the equipment.

This equipment generates, uses, and can radiate radio frequency energy. If it is not installed in accordance with the instructions in this manual, it may cause interference to radio communications.

Make sure that the installation wire sizes are adequate to deliver the required load current and maintain compatibility with the specific device operating voltages.

A secure dedicated ground connection is required. Although no system is immune to the effects of lightning strikes, a secure ground connection will reduce susceptibility. The use of overhead or outside aerial wiring is not recommended.

Following installation or after any system change (including changes to operating software or configuration settings) the system shall be tested in accordance with the acceptance requirements in NFPA 72 and any local/state codes. All affected functions or devices shall be 100% tested. In addition, at least 10% of initiating devices not directly affected by the change must be tested.

This equipment has been tested and found to be compliant with the limits for a Class A computing device, pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case, the user will be required to correct the interference at their expense.

Ambient Temperature and Environment

This equipment meets the requirements for operation at 32°F - 120°F (0°C - 49°C) and relative humidity of 93% RH. However, standby battery life is drastically reduced at higher temperatures. The recommended room temperature for installation is 60°F - 86°F (15°C - 27°C).

Product Firmware and Software

Shield continuously strives to keep up with the latest industry enhancements and changes, as such; periodic upgrades occur to the panels internal firmware and to its Windows™ based Shield, Dynamix Tools, Neo NX Config Tool and Neo NX NX10-AMP software. To make sure that the correct version of firmware and software are being used, Shield recommends that our partners be vigilant of technical information received from Shield and periodically review the Shield secured website for the most current versions of both. If you have any questions or concerns about the appropriate software and/or firmware, contact the Shield Technical Support Team.

1 Introduction / Overview

1.1 Product Description

This manual covers the installation and operation of the NeoNXNX10-FACP-1C FACP, also referred to as Fire Alarm Control Panel or FACP. Each FACP comes in its standard Shield red colour.

- The NX10-FACP-1C is a single loop analog addressable FACP with two notification appliance circuits.

The NX10-FACP-1C cannot support Shield optional NX10-EM-LPD.

The NX10-FACP-1C is compatibility tested for use with the Shield range of intelligent detectors and modules, refer to Section 1.2.2 SLC Devices for a full list of devices. The SLC (Signalling Line Circuit) loop supports the connection of 126 devices in any combination of intelligent detectors and modules.

1.2 System Components

1.2.1 Internal Peripherals

The following internal peripherals can be installed in an Neo NX NX10-FACP-1C:

		Document
NX10-FANET4	Network Interface Module, Style 4 (Class B)	NX686-013
NX10-FANET7	Network Interface Module, Style 7 (Class A)	NX686-013

1.2.2 SLC Devices

	Addressable Pull Stations	Document
S-A4061	Polycarbonate Dual Action Pull Station	APD0519A130107
	Intelligent Analog/Addressable Detectors	
S-A5011	Enhanced Photoelectric Smoke Detector	39215-388
S-A5014	Enhanced Multi-Criteria Smoke Detector	39215-388
S-A5013	New Intelligent Heat Detector	39215-388
	Base	
S-A5001	SA Series 4” Low-Profile Detector Base (Isolating)	39215-388
	Addressable Modules	
S-A5041	Enhanced Switch Monitor Module	APD00994 A220503
S-A5043	Enhanced Relay Output Module	APD1000 A220503
S-A5044	Enhanced NAC Module	APD1002 A220503
S-A5042	Enhanced Dual Switch Monitor Module	APD0996 A220503
S-A4043	Switch Monitor Module	39214-426
S-A4041	Mini Monitor Module	39214-632
S-A4044	Priority Switch Monitor Module	39214-426
S-A4042	Dual Switch Monitor Module	39214-432
S-A4045	I/O Relay Output & Switch Monitor Module	39214-427
S-A4046	NAC Output Module	39214-428
S-A4050	Relay Module	39214-425
	Loop Isolator Module	
S-A4051	Isolator Module (requires S-A4002 Isolator Mounting Base)	39214-424
S-A4002	Isolator Mounting Base for S-A4051 (fits 3” octagon electrical box)	39214-424
	Loop Powered Sounder/Beacons and Sounder Beacon Bases	
S-A4025	Enhanced Open Area Sounder/Beacon (Loop Powered) - Red	69214-690
S-A4021	Open Area Sounder (Loop Powered) - Red	39214-633
	Apollo XP95 Analog/Addressable Detectors	
S-A4011E	XP95A Photoelectric Smoke Detector	39215-388
S-A4014E	XP95A Multi-Criteria Smoke Detector	39215-388
S-A4013E	XP95A Heat Detector	39215-388
S-A4011	Photoelectric Smoke Detector	39214-035
S-A4014	Multi Sensor Detector	39214-035
S-A4013	Heat Detector	39214-035

If you have a device with an APO suffix or no suffix at all, contact Shield Technical Support for compatibility information.

1.2.3 NAC Devices

On board notification appliance circuits (NACs) are 24 VDC filtered and regulated. Any constant 24 VDC or pulsed 24 VDC, non-synchronized, signalling device that meet the voltage and current requirements of the signal circuit are considered compatible. For a list of compatible synchronization protocol devices refer to Shield Device Compatibility Document NX686-081:

1.2.4 Network Devices

The following additional Ad-NeT-PluS network nodes can be added to the NeoNX NX10-FACP-1C:

		Document
NX10-FAN-C	Remote Control Annunciator, Style 4 (Class B)	NX686-003
NX10-FAN-C/ST7	Remote Control Annunciator, Style 7 (Class A)	NX686-003
NX10-FAN-D	Remote Annunciator Only, Style 4 (Class B)	NX686-003
NX10-FAN-D/ST7	Remote Annunciator Only, Style 7 (Class A)	NX686-003
NX10-FA-PENN/ST4	Peripheral Expansion Network Node Module, Style 4 (Class B)	NX686-059
NX10-FA-PENN/ST7	Peripheral Expansion Network Node Module, Style 7 (Class A)	NX686-059
NX10-FA-BMS	Building Management Ad-VIEW Graphics Interface, Style 4 (Class B)	NX686-042
NX10-FA-BMS/ST7	Building Management Ad-VIEW Graphics Interface, Style 7 (Class A)	NX686-042

1.3 Programming Manuals

Neo NX NX10-FACP-1C is programmed with Shield, Dynamix Tools, Neo NX Config Tool and Neo NX NX10-AMP software. Installers and programmers must be Shield factory certified, for additional information regarding certification contact Shield customer service/technical support.

		Document
Neo NX Config Tool	PC-NeT Programming Manual	NX686-100
Neo NX NX10-AMP Software	NX10-AMP Amplifier Programming Manual	NX686-055

2 Agency Listings / Approvals / Requirements

2.1 UL864 10th Edition

This product is listed for the following services and applications.

- Local
- Smoke Control
- Manual
- Automatic
- Waterflow
- Supervisory

This product must be installed, serviced, and maintained in accordance with the following standards and any local / state codes.

- NFPA 70 National Electrical Code
- NFPA 72 National Fire Alarm Code

3 Enclosure Installation and Inner Door Assembly

The NX10-FACP-1C is delivered fully assembled in a red enclosure. All wiring should be in accordance with National Electric Code (NEC), State and Local codes.

The area should be readily accessible with enough room to easily install and maintain the panel. Enough knockouts are provided for wiring convenience in both the top and side walls of the backbox

1. Carefully unpack the system and check for shipping damage.
2. Remove the panel's outer door, inner display plate with NX10-ACS-DSP PCB and remove all circuit boards.
3. Mount the enclosure's backbox in a clean, dry, vibration-free area where extreme temperatures are not encountered.
4. Locate the top of the cabinet approximately 5½ feet (1.7 m) above the floor with the hinge mounting on the left.
5. Determine the number of conductors required for the devices and circuits to be installed.
6. Select the appropriate knockout(s) and pull the required conductors into the backbox, separating power limited from non-power limited conductors. (Refer to the recommended cable routing diagram Section 6).

3.1 Enclosure Mounting and Dimensions

The NX10-FACP-1C incorporates a surface mount enclosure.

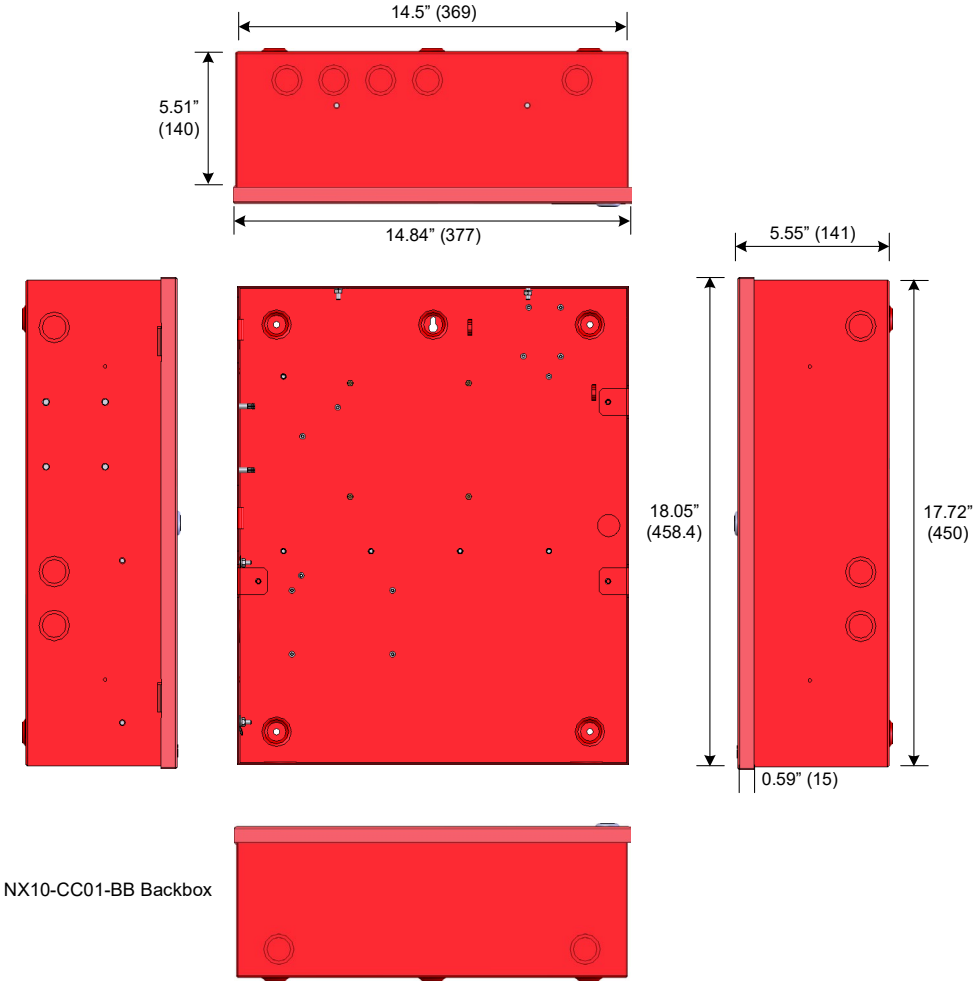


Figure 1 – NX10-FACP-1C Enclosure Dimensions

The backbox includes thirteen double knockouts (1/2" or 3/4") for wiring requirements. Care should be taken when using the inner 1/2" knockout to avoid knocking out the 3/4" knockout.

To mount the enclosure there are five pre-drilled holes located on the rear of the backbox (Figure 1). The top centre mounting hole is keyed for ease of mounting.

1. Place the backbox on the wall and mark the top keyed mounting hole.
2. Drill the marked location and partially install the mounting screw in the wall.
3. Hang the backbox on the mounting screw.
4. Level the backbox and mark the remaining holes and then drill the holes.
5. Insert all screws and firmly tighten.

4 Main System Modules

This product must be installed, serviced, and maintained in accordance with local, regional, and national codes/standards. All NX10-FACP-1Cs are shipped fully assembled and tested. Additional circuit cards/modules for field expansion (present and future) are available and shipped in separate packing for protection, refer to Section 1.2 for optional modules available for these systems.

As the FACP is shipped fully assembled, the following required modules are shipped within the enclosure.

FACP	NX10-ACS-ACB	NX10-ACS-1L	NX10-ACS-DSP PCB with Display Plate
NX10-FACP-1C	✓	✓	✓

✓ = Shipped with this module installed.

Below is a diagram depicting the modules installed in the NX10-FACP-1C.

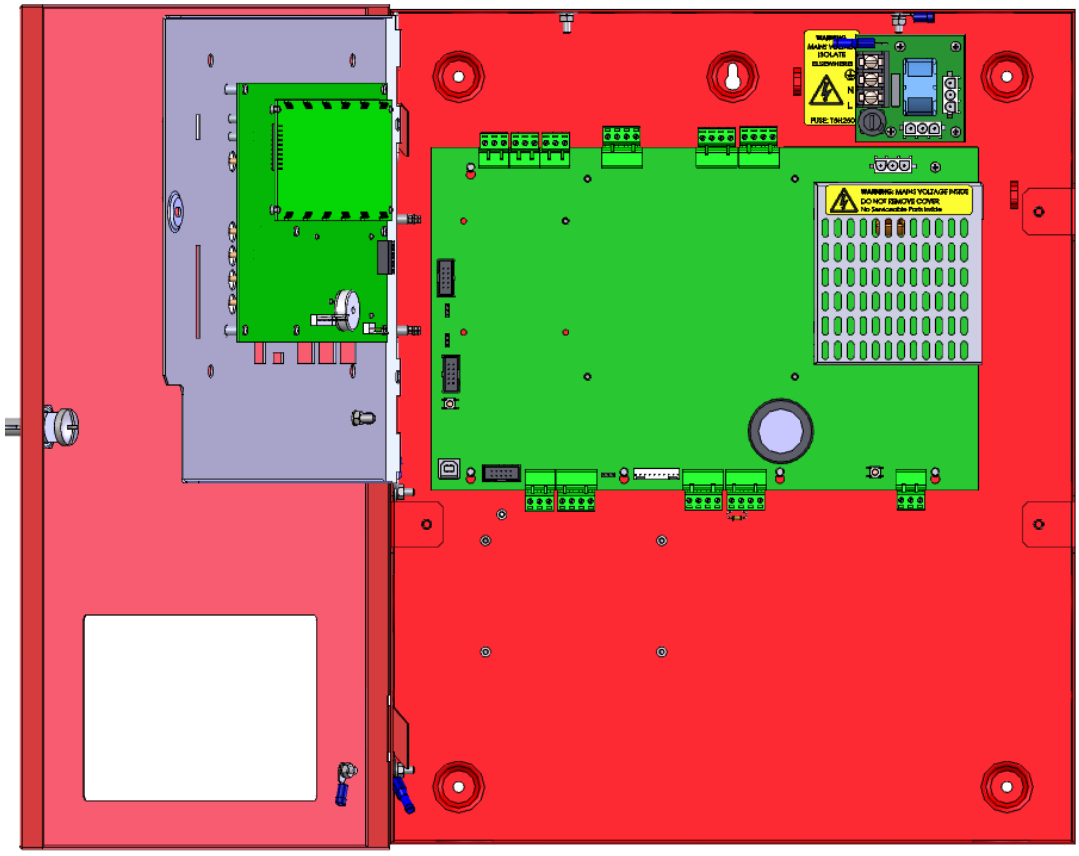


Figure 2 – NX10-FACP-1C Enclosure and Modules

4.1 NX10-ACS-ACB AC Board

The NX10-ACS-ACB AC board is the AC interface board for the NX10-FACP-1C. The NX10-ACS-ACB is pre-mounted to standoffs on the rear of the backbox above the NX10-ACS base card.

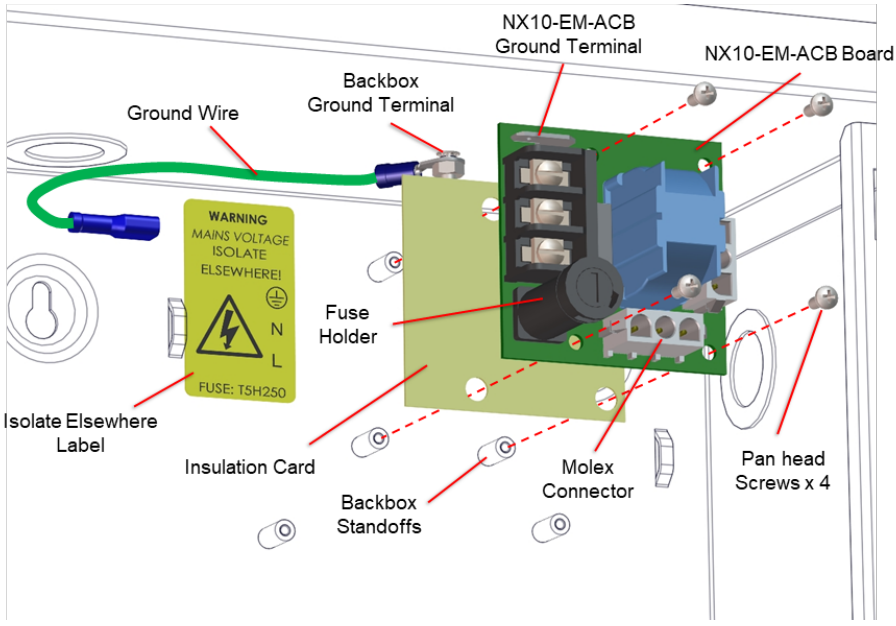


Figure 3 - NX10-ACS-ACB Location

When you choose your wiring route, make sure that any AC Mains wiring is kept separate from the low voltage wiring (SLC Loop, NAC Circuits, and any other power limited circuits).

If you do not tighten the four (4) panhead screws correctly, you will defeat the protection circuitry designed to protect the card from damage caused by lightning or static electricity

4.1.1 Installation

4.1.1.1 Package Contents

Carefully unpack the NX10-ACS-ACB Board from the box, inside the box you will find:

- One (1) NX10-ACS-ACB Board
- One (1) NX10-ACS-ACB fiberglass laminated insulation card.
- One (1) Plastic bag containing:
  - One (1) Earth ground cable with washer, lock washer and hex nut
  - Four (4) panhead screws
  - One (1) Spare 5A, 250VAC Ceramic, Time Delay Fuse
  - One (1) AC isolate elsewhere label.

4.1.1.2 Remove

1. Isolate the equipment from the AC Mains supply.
2. Disconnect the battery power supply.
3. Disconnect the Primary 3-pin Molex connector.
4. Disconnect the Earth, Neutral and Live mains cables from the NX10-ACS-ACB Board (TB1).
5. Disconnect the earth cable spade connector from the NX10-ACS-ACB Board spade terminal.
6. Remove the four (4) panhead mounting screws.
7. Carefully remove the NX10-ACS-ACB Board from the backbox.

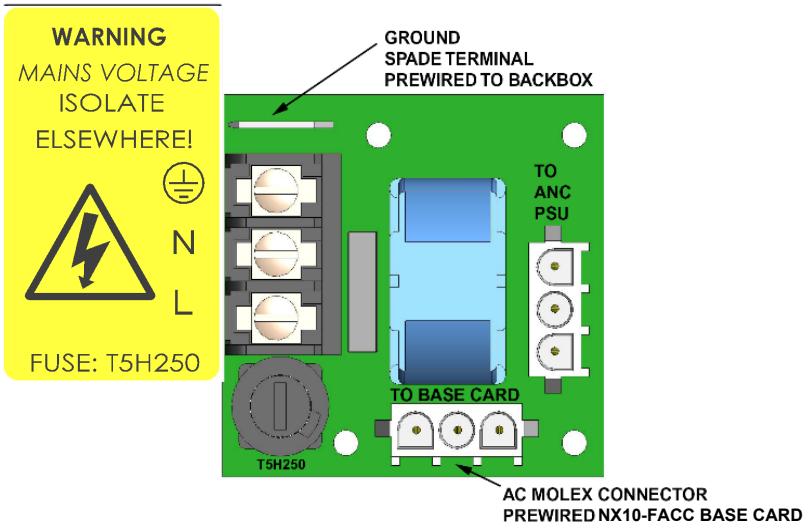
4.1.1.3 Install

1. Make sure that the correctly rated fuse is installed in the NX10-ACS-ACB fuse holder.
2. Make sure that the Fiberglass Laminated Insulation Card is in position on the backbox standoffs (Figure 3).
3. Put the NX10-ACS-ACB in position on the backbox standoffs.
4. Fit the four (4) panhead mounting screws.
5. Connect the earth cable spade connector to the NX10-ACS-ACB Board spade terminal.
6. If the AC Isolate elsewhere label is not fitted to the backbox or not visible, install the new label supplied. Make sure that the label is aligned with the Earth, Neutral and Live terminals.
7. Connect the Earth, Neutral and Live mains cables to the NX10-ACS-ACB Board (TB1).
8. Connect the Primary 3-pin Molex connector.
9. Connect the battery power supply to the NX10-ACS Base Card.
10. Connect the equipment to the AC Mains supply.

4.1.2 Wiring

The NX10-ACS-ACB has three (3) AC installation wiring terminals. In addition to the installation wiring requirements, the NX10-ACS-ACB board is prewired to the NX10-ACS base card via an AC Molex connector and connected to an enclosure's backbox stud via the NX10-ACS-ACB preconnected Spade terminal with a 1-way blade connector cable (Figure 3).

4.1.2.1 Terminal Summary



Designation	Description
⏚	Earth Ground
N	AC Power Neutral
L	AC-Power Load (Hot)

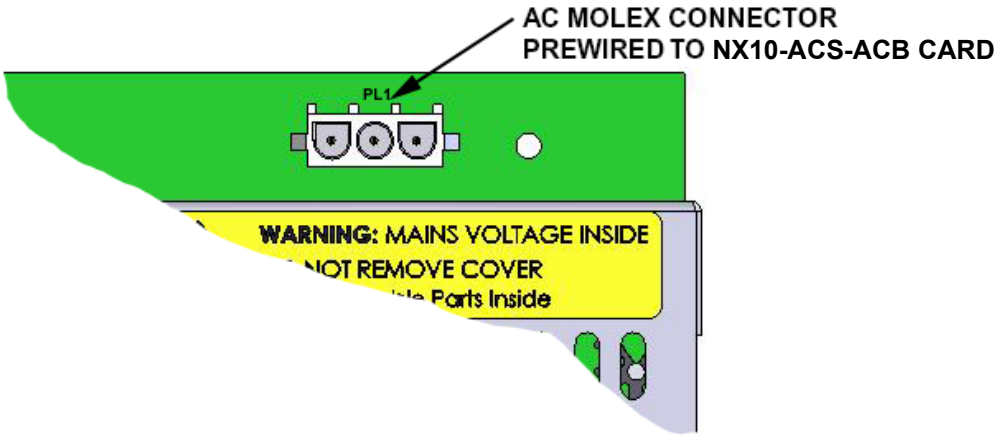
Figure 4 - NX10-ACS-ACB Wiring/Terminal Designations

4.1.2.2 Electrical Specifications

Mains Input	Supervised
Nominal Voltage **Frequency**	120V (1.4A [1 loop]) 240V (0.7A [1 loop]) 50/60Hz
Dedicated AC Branch Circuit Requirement	15A (over-current protection for this circuit must comply with Article 760 of the National Electrical Code (NEC) and/or local codes)
Brown-out	98V nominal
On-Board AC Fuse	5A, 250VAC Ceramic, Time Delay (size 5x20mm) Bussmann S505-5-R, Littelfuse 0215005.XP)
AC Wiring	#14 or #12 AWG Refer to NEC. If multiple AC wires are required under any of the input terminals, use 12AWG twin cable ferrule grey or Weidmuller part number 9037530000. If #10 AWG wire is required use TE Connectivity Plasti-Grip wire pin 12-10
Ground Terminal	Must be connected to a solid earth ground. Use #14 AWG (2 mm2) or larger wire with 600v insulation rating

4.2 NX10-ACS-1L One-Loop Base Card

The NX10-ACS-1L one-loop base card (referred to as NX10-ACS base card) is the main board of the Neo NX10-FACP-1C, it is pre-mounted to standoffs on the rear of the backbox. The NX10-ACS base card's mains supply voltage originates from the NX10-ACS-ACB board via a prewired AC Molex connector (below).



The one-loop base card (NX10-ACS-1L) installed in the NX10-FACP-1C includes various required inputs and outputs for a FACP and many none required ones. Prewired inputs and outputs of the NX10-ACS base card include the NX10-ACS-ACB board AC Molex connector, as previously discussed, a 0 OHM end-of-line (EOL) resistor installed across the ANC PSU FAULT terminals and a 10-pin flat-ribbon cable connection (PL2) originating from the preinstalled NX10-ACS-DSP PCB keyboard display with display plate.

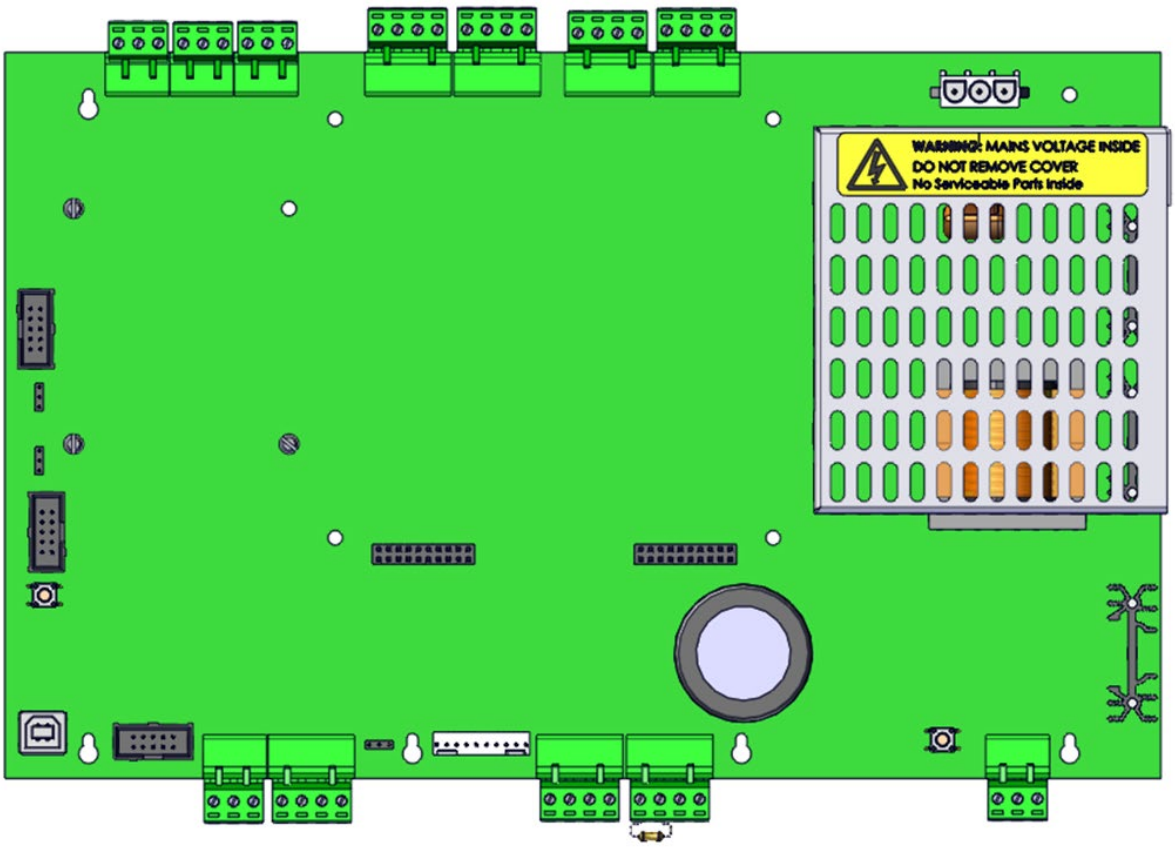


Figure 5 – NX10-ACS One-Loop Base Card (NX10-FACP-1C)

This equipment contains electrostatic discharge sensitive devices. Make sure that you obey anti-static precautions at all times when working on the system. Failure to obey ESD procedures can damage the equipment.

If you do not tighten the three (3) panhead screws correctly, you will defeat the protection circuitry designed to protect the card from damage caused by lightning or static electricity.

If multiple wires are required under any of the terminals, use Shield or Weidmuller twin cable ferrules.

Keep a minimum of 1/4" (6.4 mm) separation between all power-limited and non-power-limited conductors. AC and battery wiring are non-power limited.

4.2.1 Installation

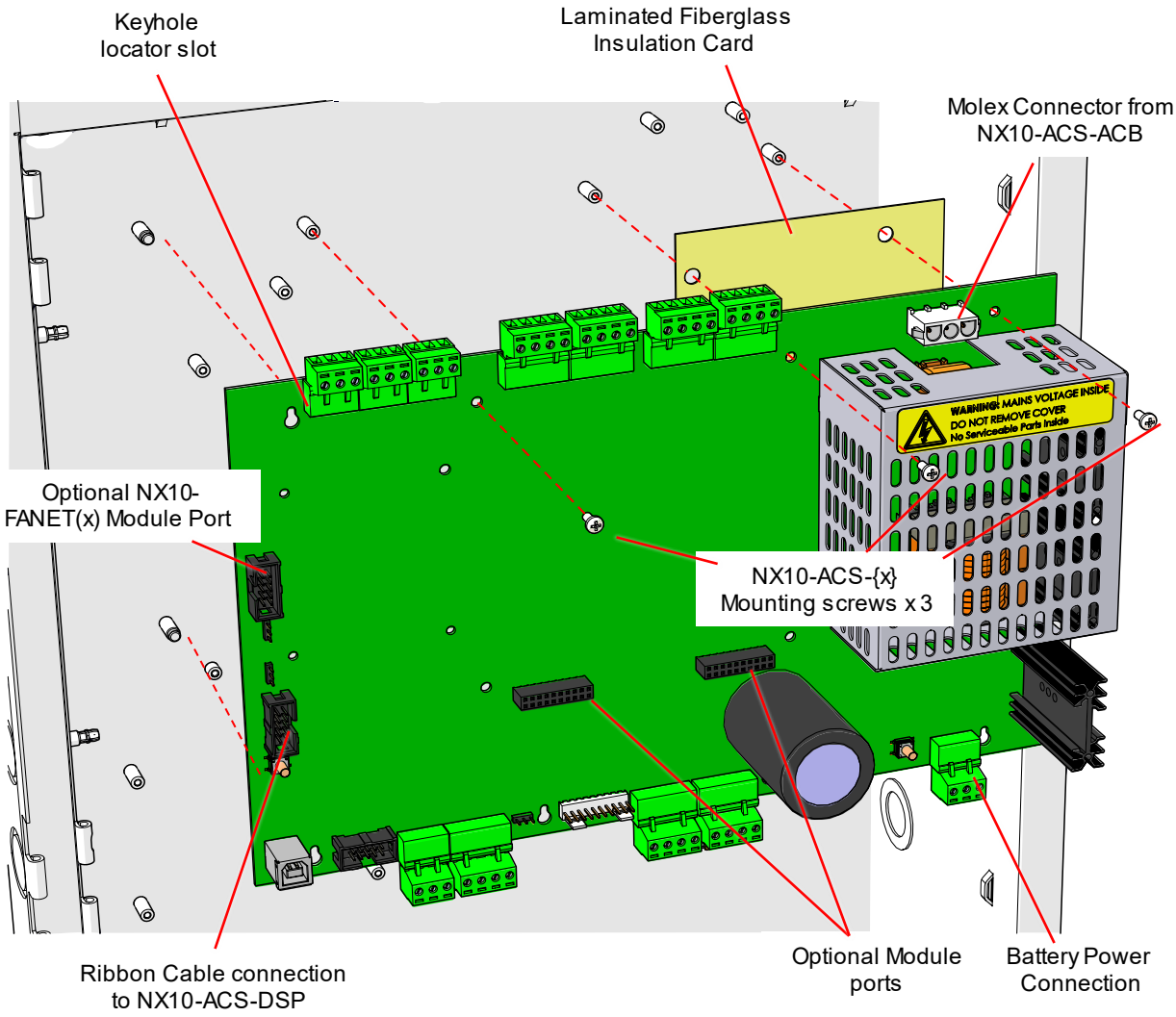


Figure 6 - NX10-ACS-1L Base Card Installation

4.2.1.1 Package Contents

- One (1) NX10-ACS-1L
- One (1) NX10-ACS fiberglass laminated insulation card.
- One (1) NX686-300 Quick Start Document.
- One (1) Plastic bag containing:
    - One (1) double ended 3-pin male Molex cable harness.
    - Four (4) UL 10K Class B End of Line resistors
    - Three (3) panhead screws
    - One (1) red (+) and One (1) black (-) battery lead
    - One (1) battery link with 10A, 250V fuse
    - One (1) Spare 2-pin little jumper

4.2.1.2 Remove

1. Disconnect all AC and DC power from the system.
2. Disconnect all the field wiring terminal blocks and the 3-pin Molex cable.
3. Disconnect the 10-pin ribbon cable that leads to the NX10-ACS-DSP PCB keyboard display.
4. Remove the NX10-FANET module if connected to the NX10-ACS base card.
5. Remove the three (3) panhead screws that secure the NX10-ACS base card to the backbox.
6. Carefully lift the NX10-ACS base card from the five (5) top-hat stand-offs.

4.2.1.3 Install

1. Put the laminated fiberglass insulation card in position on the backbox (**Figure 6**).
2. Carefully slide the NX10-ACS base card onto the five (5) top-hat stand-offs.
3. Fit the three (3) panhead screws that secure the NX10-ACS base card to the backbox.
4. Connect the 3-pin Molex cable and field wiring terminal blocks.
5. Connect the 10-pin ribbon cable that leads from the NX10-ACS-DSP PCB keyboard display.

4.2.2 Wiring

4.2.2.1 Terminal Summary

Not Visible Terminal Designation	Visible Terminal Designation	Terminal Description
TB1	ANC PSU Fault B ANC PSU Fault A	Supervised normally closed relay contact input. Shipped with 0 Ohm EOL (end-of-line) resistor. Any ancillary contact monitored must be located within 20 feet of the NX10-ACS base card in rigid conduit.
TB2	BAT – BAT +	Negative power connection of battery Positive power connection of battery
TB3	NAC-1 B+ NAC-1 B- NAC-1 A+ NAC-1 A-	Notification appliance circuit 1, Class B positive Notification appliance circuit 1, Class B negative Notification appliance circuit 1, Class A positive, Return Notification appliance circuit 1, Class A negative, Return
TB4	NAC-2 B+ NAC-2 B- NAC-2 A+ NAC-2 A-	Notification appliance circuit 2, Class B positive Notification appliance circuit 2, Class B negative Notification appliance circuit 2, Class A positive, Return Notification appliance circuit 2, Class A negative, Return
TB5 Fail-Safe Trouble Relay (default)	RELAY 2 NC RELAY 2 NO RELAY 2 COM	NC (open contact as relay is inverted on power up) NO (closed contact as relay is inverted on power up) COM (relay contact common)
TB6 Supervisory Relay (default)	RELAY 3 NC RELAY 3 NO RELAY 3 COM	NC (closed contact) NO (open contact) COM (relay contact common)
TB7 Alarm Relay (default)	RELAY 1 NC RELAY 1 NO RELAY 1 COM	NC (closed contact) NO (open contact) COM (relay contact common)
TB8	AUX-1 0V AUX-1 V+ AUX-2 0V AUX-2 V+	Resettable 24 VDC Auxiliary Power, 0V (negative) Resettable 24 VDC Auxiliary Power, V+ (positive) Non-Resettable 24 VDC Auxiliary Power, 0V (negative) Non-Resettable 24 VDC Auxiliary Power, V+ (positive)
TB9	RS-232 Ground RS-232 Receive RS-232 Transmit	DB9 Printer Cable Interface:
TB10	PBUS B PBUS A PBUS B PBUS A	PBUS B = COMM B Output PBUS A = COMM A Output PBUS B = COMM B Output PBUS A = COMM A Output
TB11	LOOP-1 OUT+ LOOP-1 OUT- LOOP-1 IN+ LOOP-1 IN-	LOOP-1 OUT+ = Class B positive output LOOP-1 OUT- = Class B negative output LOOP-1 IN+ = Class A positive Return LOOP-1 IN- = Class A negative Return
J1	LOCK MEM	Upload/download lock, position one locked, position two unlocked
J2	MASTER UC PROGRAM	Position one PROG firmware, position two panel RUN
PL1	Molex Connector	AC Mains Molex connector, prewired to NX10-ACS-ACB board
PL2	DISPLAY	10-Pin Serial Port for NX10-ACS-DSP PCB Keyboard Display
PL3	NETWORK	10-Pin Serial Port for optional NX10-FANET4 or NX10-FANET7 Network Module
PL5	USB	USB Port for Uploading/Downloading Shield, Dynamix Tools, Neo NX Config Tool and for Downloading to the Shield, Dynamix Tools, Neo NX Service Tool.

RS232 wiring must be located within 20 feet of the NX10-ACS base card within the same room wired in rigid conduit. In addition, this Port is shared with the USB and Serial Expansion Ports.

4.2.2.2 Electrical Specifications

NX10-ACS Base Card	5A Power (Section 4.2.4.2.)
Battery Circuit Supervision	Non-Power-Limited, Supervised for Short Circuit, Open Circuit, Ground Fault, Charger Failure, Battery Disconnection and Battery Cell Failure If the batteries are disconnected the charger output is turned off.
Battery Charging Current	2.3 Amp, Temperature Compensated
Nominal Charging Voltage	27.4 VDC
Battery Type	Sealed Lead-Acid
Minimum Battery Capacity	7Ah
Maximum Battery Capacity	75Ah
Battery Deep Discharge Protection	Battery Disconnection < 19 VDC Nominal
Battery Link Wire Fuse	10A, 250 VAC Ceramic, Time Delay (size 5x10mm) Bussmann Part#: S505-10-R Littelfuse Part#: 0215010.XP

4.2.3 LEDs

LED	Function	Description
1	Heartbeat LED – PSU	Normal: Flashes at 1Hz
2	Heartbeat LED – Main Microprocessor	Normal: Flashes at 1Hz
3	Serial Expansion Card	ON = Serial Expansion Card Connected
4	USB	ON = USB Connected
5	PBUS Communications – Transmit	Flashes when data transmitted to PBUS modules
6	PBUS Communications – Receive	Flashes when data received from PBUS modules
7	Heartbeat LED – SLC #1	Flashes when communicating on the SLC
9	Serial Communications – Transmit	Flashes when data transmitted
10	Serial Communications – Receive	Flashes when data received

4.2.4 Battery Charger

4.2.4.1 Wiring

To wire batteries to the NX10-ACS base card, connect the two (2) supplied battery leads to the BAT+ (red battery lead) and BAT- (black battery lead) terminals of the NX10-ACS base card. Connect the red battery lead (BAT+) to the positive lead of one 12 VDC battery and connect the black battery lead (BAT-) to the negative lead of the second 12 VDC battery. Finally, connect the supplied battery link with 10A, 250V fuse from the negative lead of the first 12 VDC battery to the positive lead of the second 12 VDC battery. If a fully charged set of batteries are connected to the NX10-ACS base card, the panel can be powered without AC by pressing the Start from Battery Button (Figure 7).

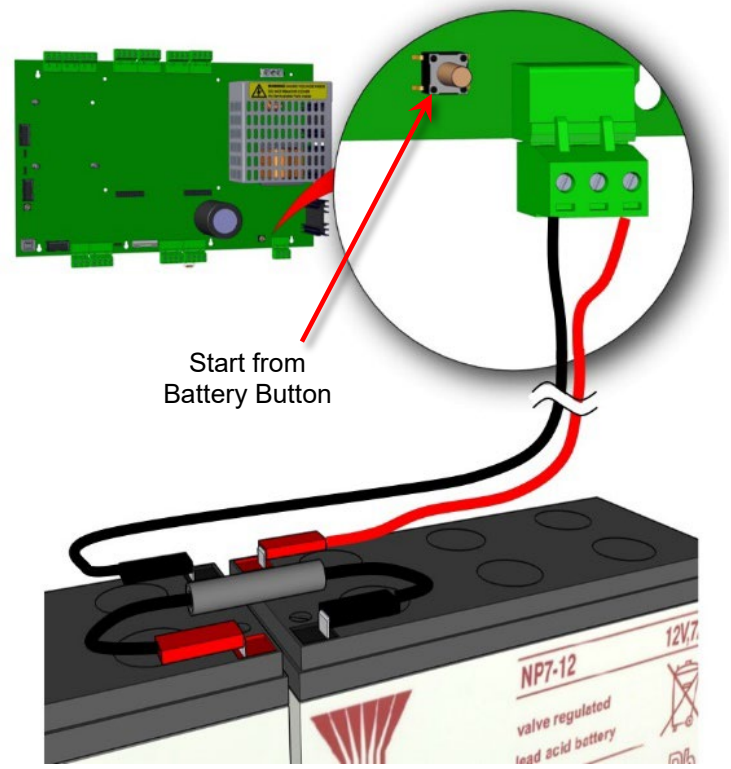


Figure 7 - Battery Connection

4.2.4.2 Standby Battery Calculations

4.2.4.2.1 NX10-FACP-1C One-Loop FACP

		Quiescent Load			Alarm Load		
Equipment		I (A)	x	Total	I (A)	x	Total
NX10-ACS-1L (One-Loop)		0.110	1.0	= 0.110	0.195	1.0	= 0.195
Sensor / SLC Current[1]	SLC #1		1.25[2]	=		1.25	=
NX10-FANET4 or NX10-FANET7 Network Card		0.02 or 0.062	1.0	=	0.02 or 0.062	1.0	=
NX10-FAN-C (D) – Style 4 or 7		0.078	1 to (x)[3]	=	0.140	1 to (x)	=
AUX #1 (Resettable) Supply Output[4]			1.0	=		1.0	=
AUX #2 Supply Output[5]			1.0	=		1.0	=
NAC Output 1[5]						1.0	=
NAC Output 2[6]						1.0	=
Total		ΣQuiescent Load		=	ΣAlarm Load		=
		x 24 hr. or 60 hr.		Ah	x 0.0833[6] hr.		Ah
		Total Quiescent Current		Ah	Total Alarm Current		Ah
		Total Load (Quiescent + Alarm)					Ah
		Total Load x 1.25 (battery de-rating factor)					Ah

[1] Maximum 0.5A load per SLC. Refer to the technical information for each device to calculate the load on the loop for both the quiescent condition and fire alarm condition for all loop devices. By default, a maximum of 5 detector LED indicators will be turned on in an alarm condition. (This number can be changed via the Advanced, Dynamix Tools, NeoNX Config Tool).

[2] The calculated loop loading must be multiplied by a factor of 1.25 to account for the efficiency of the SLC loop DC/DC converters which maintain a constant voltage output on the SLC loops even when the system is on battery backup.

[3] The NX10-FAN is a networked remote annunciator, the number of annunciators is based on network nodes and power available.

[4] Maximum 0.5A load per AUX. Calculate the required load for each auxiliary output in both the quiescent and alarm conditions. Refer to the technical information for each device that is to be powered from the panel AUX Output to determine the overall AUX loading currents. The sum of all these additional currents should be entered in these fields.

[5] Maximum 2.0A load per notification appliance circuit.

[6] 5 minutes in alarm, change to .166 for 10 minutes in alarm.

4.2.5 Signalling Line Circuit (SLC)

The NX10-FACP-1C provides one Class X, A or B signalling line circuit.

Class X wiring requires the use of Shield devices with built-in isolators.

4.2.5.1 Wiring

To wire the signalling line circuit Class B, wire the NX10-ACS base card Loop OUT + and OUT - to the positive and negative inputs of the field analog/addressable devices. Also, wire (jumper) the Loop OUT + and OUT – terminals to the Loop IN + and IN – terminals, as shown in (Figure 8). This wiring (jumper arrangement) of the OUT and IN terminals is to maintain signalling line circuit voltage monitoring of the SLC circuit.

For multiple wires to be used during Class B wiring under the Loop OUT + and OUT – terminals use Shield twin cable ferrules 18AWG to 12AWG, manufactured by Weidmuller.

To wire the signalling line circuit Class A, wire the NX10-ACS base card Loop OUT + and OUT - to the positive and negative inputs of the field analog/addressable devices, at the last wired analog/addressable device wire the positive and negative outputs to the Loop IN + and IN – terminals of the NX10-ACS base card.

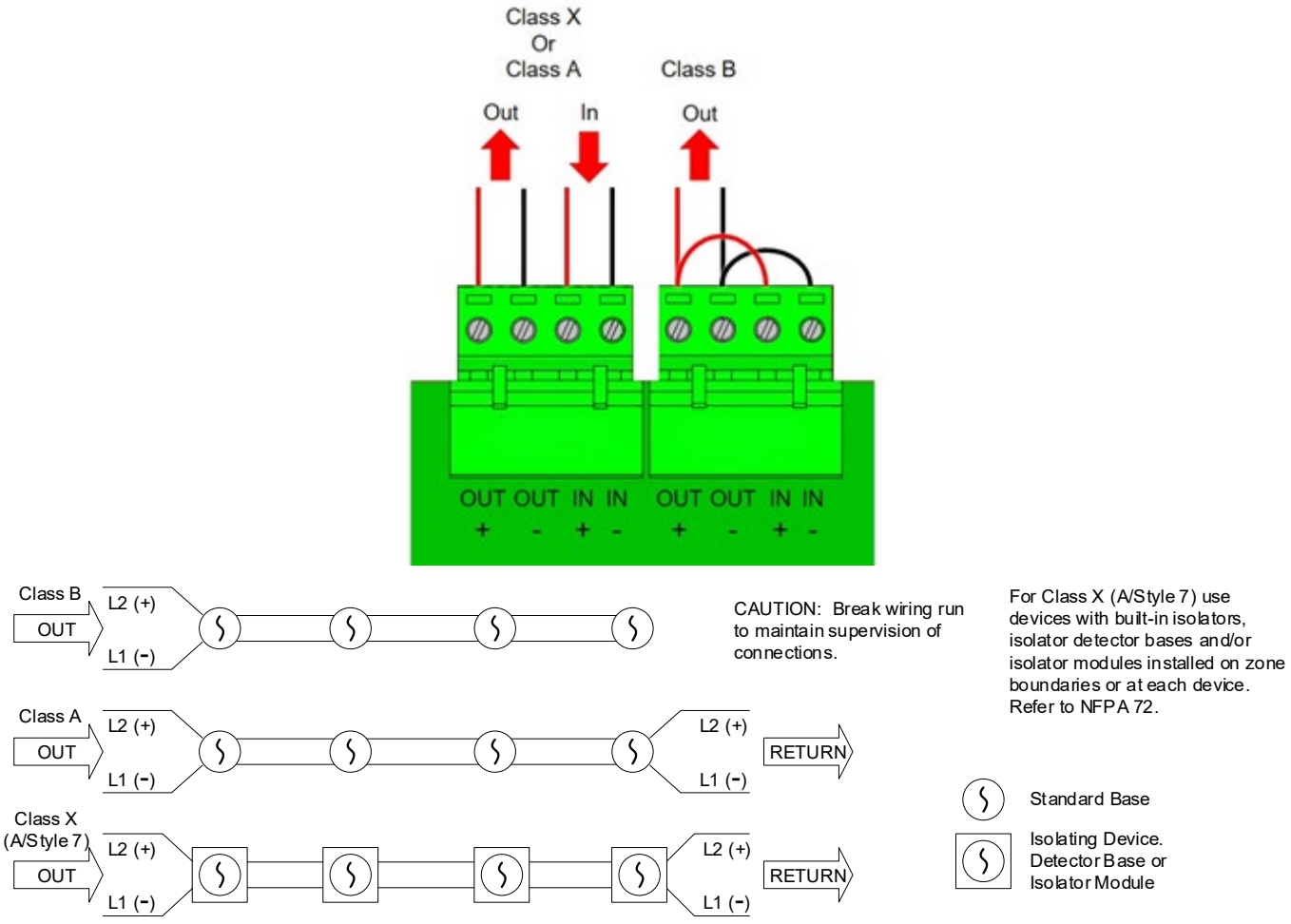


Figure 8 - Base Card SLC Circuit Wiring

During normal operation, the FACP will drive the SLC from the OUT connections, if a short circuit or open circuit condition is detected it will drive the SLC from both OUT and IN (RETURN) sides. While in panel programming, the FACP will drive the SLC from the OUT connections only to enable easier SLC wiring trouble diagnosis.

4.2.5.1.1 Terminal Summary

Not Visible Terminal Designation	Visible Terminal Designation	Terminal Description
TB11	LOOP-1 OUT+ LOOP-1 OUT- LOOP-1 IN+ LOOP-1 IN-	LOOP-1 OUT+ = Class B positive output LOOP-1 OUT- = Class B negative output LOOP-1 IN+ = Class A positive Return LOOP-1 IN- = Class A negative Return

4.2.5.1.2 Electrical Specifications

Supervision	Supervised for Short Circuit, Open Circuit and Ground Fault POWER-LIMITED
Max. Voltage, Rated Current and Frequency	24 VDC, Filtered Regulated 0.5 Amp Total Output Load must not exceed panel supply rating, maximum 5A
Minimum Return Voltage	17 VDC
Max. Line Impedance	Below
Analog/Addressable Device Compatibility	Refer to Section 1.2.2 SLC Devices
Wiring Classification	Class A, Class X or Class B
Impedance values for testing at which ground faults are annunciated	0 Ohms

Signalling Line Circuit (SLC) Line Impedance

Maximum circuit impedance depends on the SLC loop load current. The voltage-drop (load current x cable resistance) over the cable always needs to be considered to make sure the devices are receiving an adequate supply voltage (table below):

Maximum Circuit Impedance	72Ω
Insulation Resistance (Core-Core and Core-Screen)	2M Ω
Maximum Circuit Impedance is the sum of the resistance of both cable conductors.	

Circuit Loading	Max. Circuit Impedance
100mA	55.0Ω
200mA	27.5Ω
300mA	18.3Ω
400mA	13.7Ω
500mA	11.0Ω

4.2.6 Notification Appliance Circuit (NAC)

The NX10-FACP-1C provides two Class A or B notification appliance circuits. Each notification appliance circuit can be programmed for synchronized or non-synchronized strobes/signal patterns. Protocols include Gentex, Wheelock and System Sensor. In addition to the synchronization programming, silenceable or non-silenceable strobe programming is available.

For a list of notification appliance compatibilities refer to Shield Device Compatibility Document NX686-081.

The default operation of each notification appliance circuit is non-synchronized, turn ON steady for any alarm condition and turn off when silenced or reset. If non-silenceable synchronization strobes are programmed, strobes will continue to flash after signal silence. In addition, each notification appliance circuit is capable of being programmed for Positive Alarm Sequence (P.A.S.) signalling.

4.2.6.1 Wiring

To wire the notification appliance circuits Class B, wire B+ and B- to the positive and negative inputs of the notification appliance devices, B+ to positive and B- to negative. Terminate the supplied UL Listed 10K end-of-line (EOL) resistor at the last notification appliance.

To wire the notification appliance circuits Class A, wire B+ and B- to the positive and negative inputs of the notification appliance devices, B+ to positive and B- to negative. At the last notification appliance, return the B+ wire to A+ and the B- wire to A- on the notification appliance circuit terminals.

Notification appliance circuit polarity markings represent alarm (active) condition.

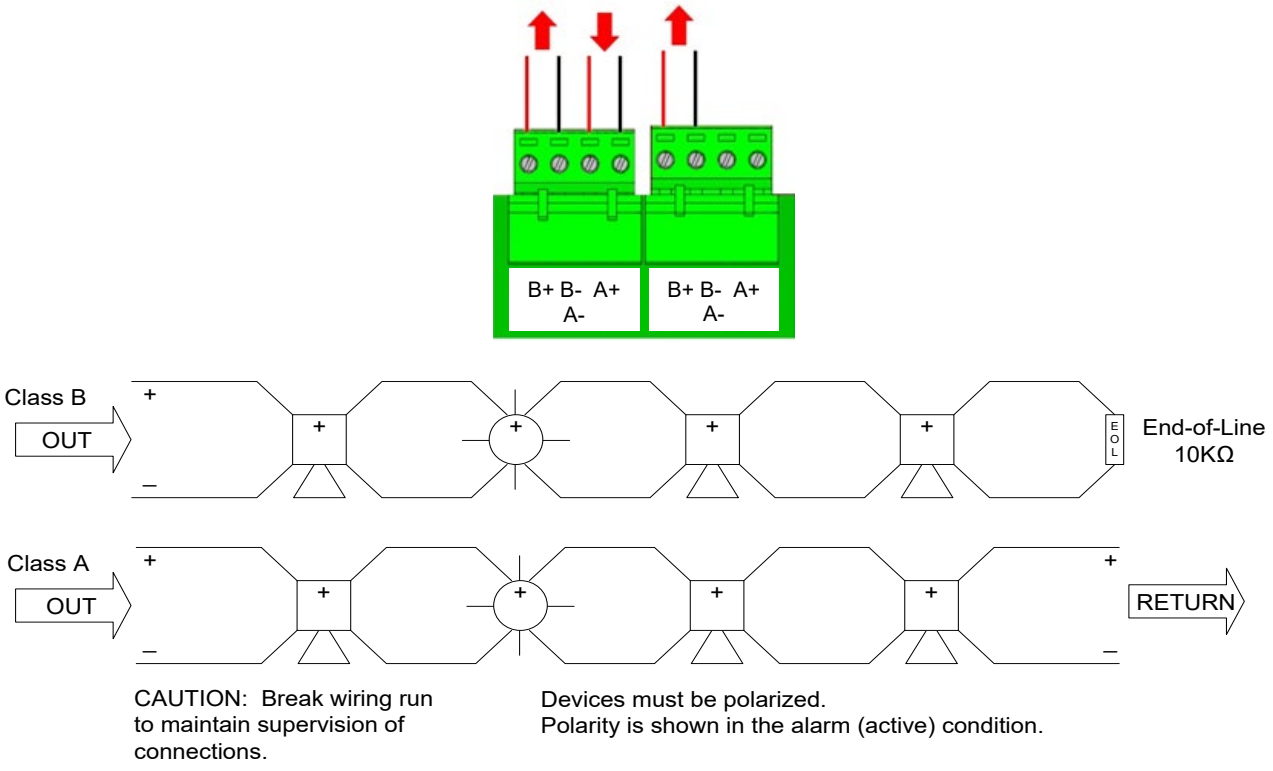


Figure 9 - Base Card NAC Circuit Wiring

4.2.6.1.1 Terminal Summary

Not Visible Terminal Designation	Visible Terminal Designation	Terminal Description
TB3	NAC-1 B+	Notification appliance circuit 1, Class B positive
	NAC-1 B-	Notification appliance circuit 1, Class B negative
	NAC-1 A+	Notification appliance circuit 1, Class A positive, Return
	NAC-1 A-	Notification appliance circuit 1, Class A negative, Return
TB4	NAC-2 B+	Notification appliance circuit 2, Class B positive
	NAC-2 B-	Notification appliance circuit 2, Class B negative
	NAC-2 A+	Notification appliance circuit 2, Class A positive, Return
	NAC-2 A-	Notification appliance circuit 2, Class A negative, Return

4.2.6.1.2 Electrical Specifications

Supervision	Supervised for Short Circuit, Open Circuit and Ground Fault POWER-LIMITED
Max. Current, Rated Voltage and Frequency	2 Amps @ 24 VDC, Filtered and Regulated Power, per NAC circuit, not to exceed 4 Amps
Max. Line Impedance	1.5Ω
Rating Designation	Filtered, Regulated 24 VDC
Max. RMS Voltage Range Limits for Non-Synchronized Appliance (non-pulsing load)	16 – 33 VDC (below)
Synchronized NAC Appliance (Repetitive pulsing load)	Magnitude Impedance load equal to 5 times the maximum circuit rating for a duration of 16.7ms @ a frequency of 2 Hz, rated RMS value (16 – 33) during individual application of surge impedance. For a list of synchronized notification appliance compatibilities, refer to Shield Device Compatibility Document NX686-081
Wiring Classification	Class A or Class B
Impedance values for testing at which ground faults are annunciated	0 Ohms
Class B EOL (end-of-line) Resistor	10K, (supplied with the FACP)

Notification Appliance Circuit Voltage Drop

The voltage drop on notification appliance circuits should be calculated to make sure that the minimum voltage at the end of the circuit does not exceed the minimum required by each notification appliance at the minimum alarm circuit output voltage.

The voltage at the end of the circuit is given by:

Minimum Alarm Voltage = VOUT(MIN) – (IALARM x RCABLE)

Minimum Output Voltage (VOUT(MIN)) is VBAT(MIN) – 0.5V = 20.5V

Alarm Current (IALARM) is the sum of the loads presented by the notification appliances in alarm.

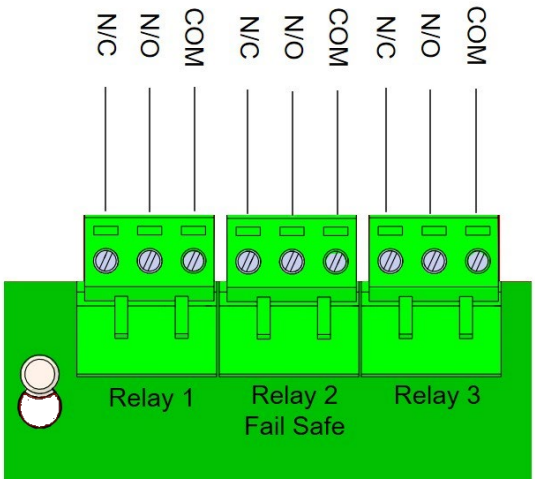
Cable Resistance (RCABLE) is the sum of the cable resistance in both wires x cable length.

Typical wire size	Resistance (RCABLE):	Loop Resistance (2 Wires)
18 AWG solid:	~ 6.5 Ohms/1000ft	13 Ohms /1000ft
16 AWG solid	~ 4.1 Ohms/1000ft	8.2 Ohms /1000ft
14 AWG solid	~ 2.6 Ohms/1000ft	5.2 Ohms /1000ft
12 AWG solid	~ 1.8 Ohms/1000ft	3.6 Ohms / 1000ft

4.2.7 Relay Contacts

The NX10-ACS base card includes three programmable Form C relay contacts, defaulted Alarm, Trouble (fail-safe configured) and Supervisory.

4.2.7.1 Wiring



4.2.7.1.1 Terminal Summary

Not Visible Terminal Designation	Visible Terminal Designation	Terminal Description
TB5 Fail-Safe Trouble Relay (default)	RELAY 2 NC RELAY 2 NO RELAY 2 COM	NC (open contact as relay is inverted on power up) NO (closed contact as relay is inverted on power up) COM (relay contact common)
TB6 Supervisory Relay (default)	RELAY 3 NC RELAY 3 NO RELAY 3 COM	NC (closed contact) NO (open contact) COM (relay contact common)
TB7 Alarm Relay (default)	RELAY 1 NC RELAY 1 NO RELAY 1 COM	NC (closed contact) NO (open contact) COM (relay contact common)

4.2.7.1.2 Electrical Specifications

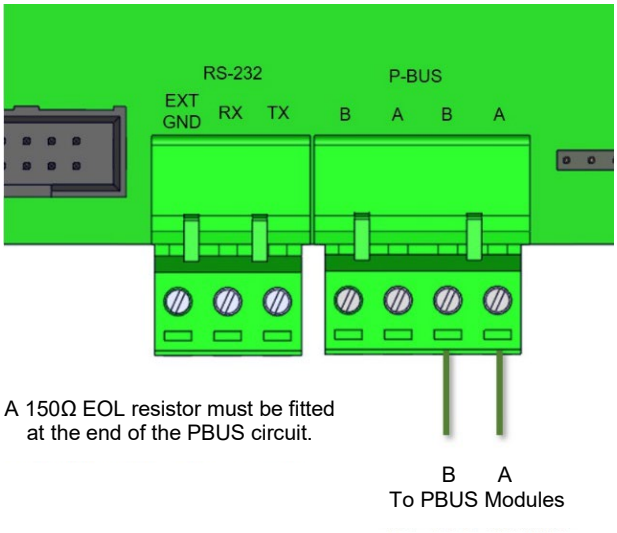
Wiring	POWER-LIMITED
Designation	Programmable (Defaulted Common Alarm, Trouble and Supervisory)
Voltage, Current **Frequency** **Power Factor**	30 VDC/VAC 1 Amp PF=1 (resistive)

4.2.7.2 Peripheral Bus (PBUS) Communication Circuit

The peripheral bus (PBUS, RS-485) communications circuit of the NX10-ACS base card is for the connection of optional peripheral bus modules available for use with the NX10-FACP-1C.

4.2.7.2.1 Wiring

To wire to a peripheral bus module, wire either of the A and B terminals of the NX10-ACS base card to the optional peripheral bus module A and B terminals, A to A and B to B. At the last peripheral bus module terminate the wiring with either a built on-board or supplied 150 Ohm end-of-line (EOL) filtering resistor.



4.2.7.2.1.1 Terminal Summary

Not Visible Terminal Designation	Visible Terminal Designation	Terminal Description
TB10	PBUS B PBUS A PBUS B PBUS A	PBUS B = COMM B Output PBUS A = COMM A Output PBUS B = COMM B Output PBUS A = COMM A Output

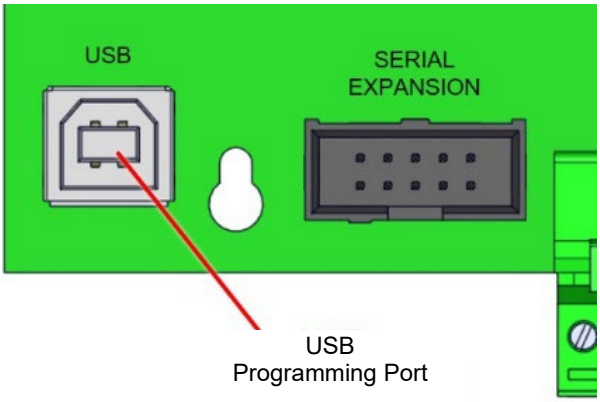
4.2.7.2.1.2 Electrical Specifications

PBUS Circuit Supervision	SUPERVISED, POWER-LIMITED
Communication Method	CCITT RS-485
Max. Line Impedance	50 Ohms
Max. Peripheral Bus Modules	32
Max. Type of Peripheral Bus Module	16
Filtering Resistor End-Of-Line (EOL)	150 Ohm, Built On-Board or Supplied with Peripheral Bus Module

Peripheral Bus optional modules MUST be mounted within 20 feet of the NX10-ACS base card in the same room in rigid conduit, the peripheral bus circuit is not protected for short circuit and ground fault conditions. For multiple wires to be used under the PBUS terminals use Shield twin cable ferrules 18AWG to 12AWG, manufactured by Weidmuller

4.2.8 USB Port

The NX10-ACS base card provides a USB port for Shield, Dynamix Tools, Neo NX Config Tool upload/download programming and for use with the Shield, Dynamix Tools, Neo NX Service Tool.



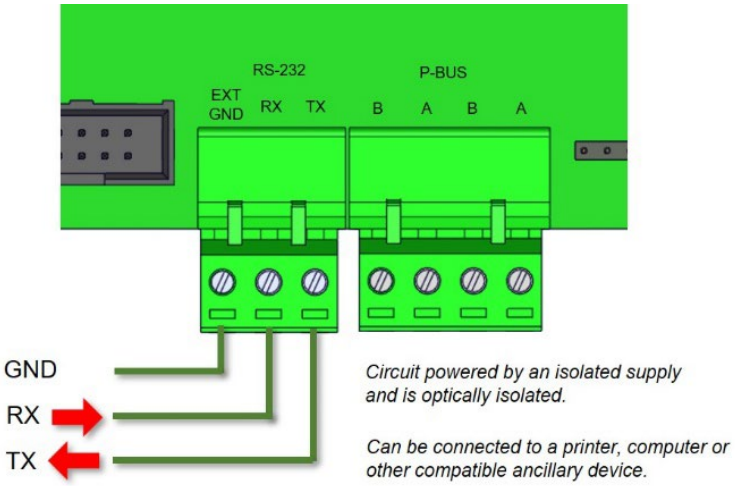
This Port is shared with the Printer and Serial Expansion Ports

4.2.9 RS-232 Port

The NX10-ACS base card provides an RS-232 port for programming and connection of ancillary reporting devices (i.e., printer, CRT, etc.)

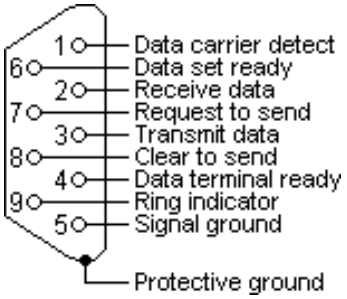
4.2.9.1 Wiring

RS232 wiring must be located within 20 feet of the NX10-ACS base card within the same room wired in rigid conduit.

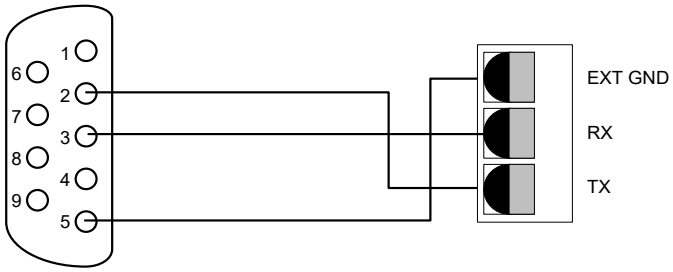


4.2.9.1.1 Terminal Summary

RS-232 Pin Assignments



RS-232 to NX10-ACS



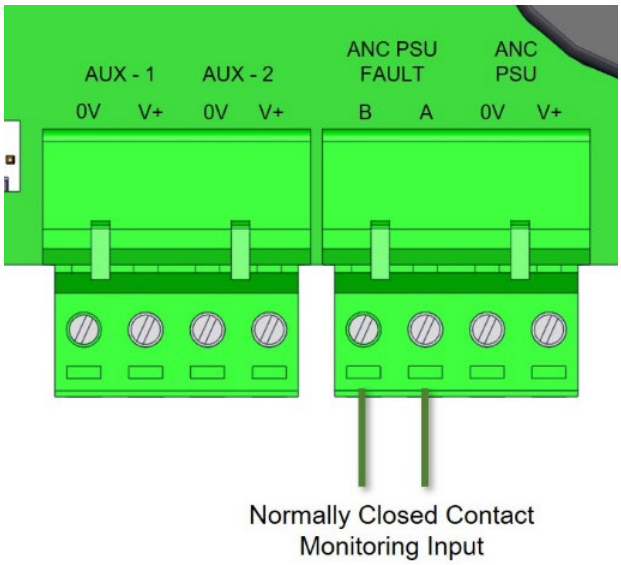
4.2.9.1.2 Electrical Specifications

Supervision	SUPERVISED, POWER-LIMITED
Communication Method	CCITT RS-232
Wire Range	22-12 AWG
Baud Rate:	9600
Parity	None
Date Bits	Eight (8)
Stop Bits	One (1)

4.2.10 Ancillary Contact Monitoring Input

NX10-ACS base card provides an ancillary contact monitoring input which allows the NX10-ACS to monitor any normally closed contact for supervision. If the contact opens a trouble/fault is generated by the NX10-ACS base card.

Any ancillary contact monitored must be located within 20 feet of the NX10-ACS base card in the same room and in rigid conduit.



Normally Closed Contact Monitoring Input

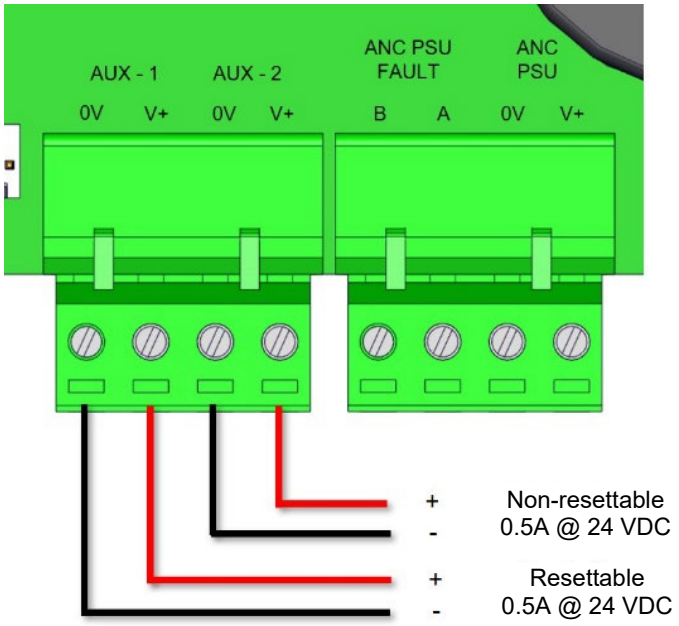
4.2.11 AUX Power Outputs

The NX10-ACS base card provides two 24 VDC power outputs, one resettable and one non-resettable.

Circuit Supervision	SUPERVISED, POWER-LIMITED
Voltage -current	24 VDC @ 0.5A[7]
Aux#1	4-wire smoke detector power or similar application. Power turns OFF for 10-15 seconds on reset.
Aux#2	24 VDC (nominal) power output for internal peripheral cards or external equipment.
Wire Range	22-12 AWG

Use appropriately sized wire for the current load to ensure device compatibility.

4.2.11.1 Wiring

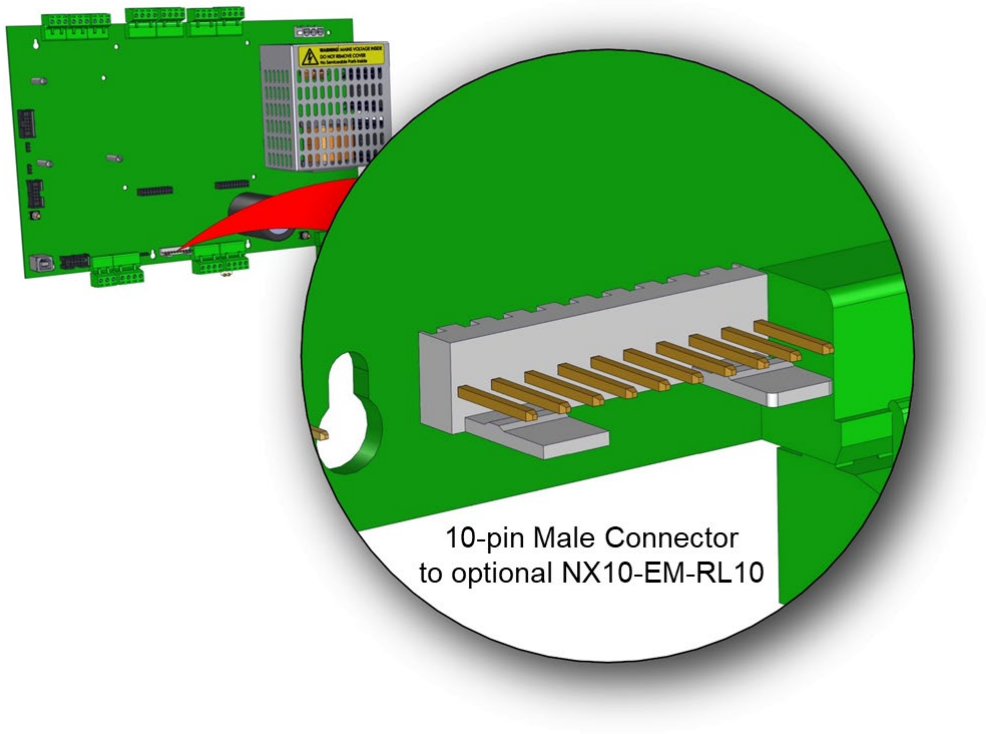


[7] TOTAL OUTPUT LOAD must not exceed panel supply rating – maximum 5A.

4.2.12 Open Collector Output

4.2.12.1 Wiring

The NX10-ACS base card includes a 10-pin O/C (Open Collector) output keyed header for connection to an optional Shield NX10-EM-RL10 10-Point Relay Module. For information regarding the installation of the optional NX10-EM-RL10 module refer to NX10-EM-RL10 10-Point Relay Module section of this manual.



4.3 NX10-ACS-DSP PCB Alphanumeric Graphical Display with Display Plate

The NX10-ACS-DSP PCB alphanumeric graphical display with display plate, also referred to as keyboard display, is the colorized human interface with slide-in labels for status and control of the NX10-FACP-1C (Figure 10).

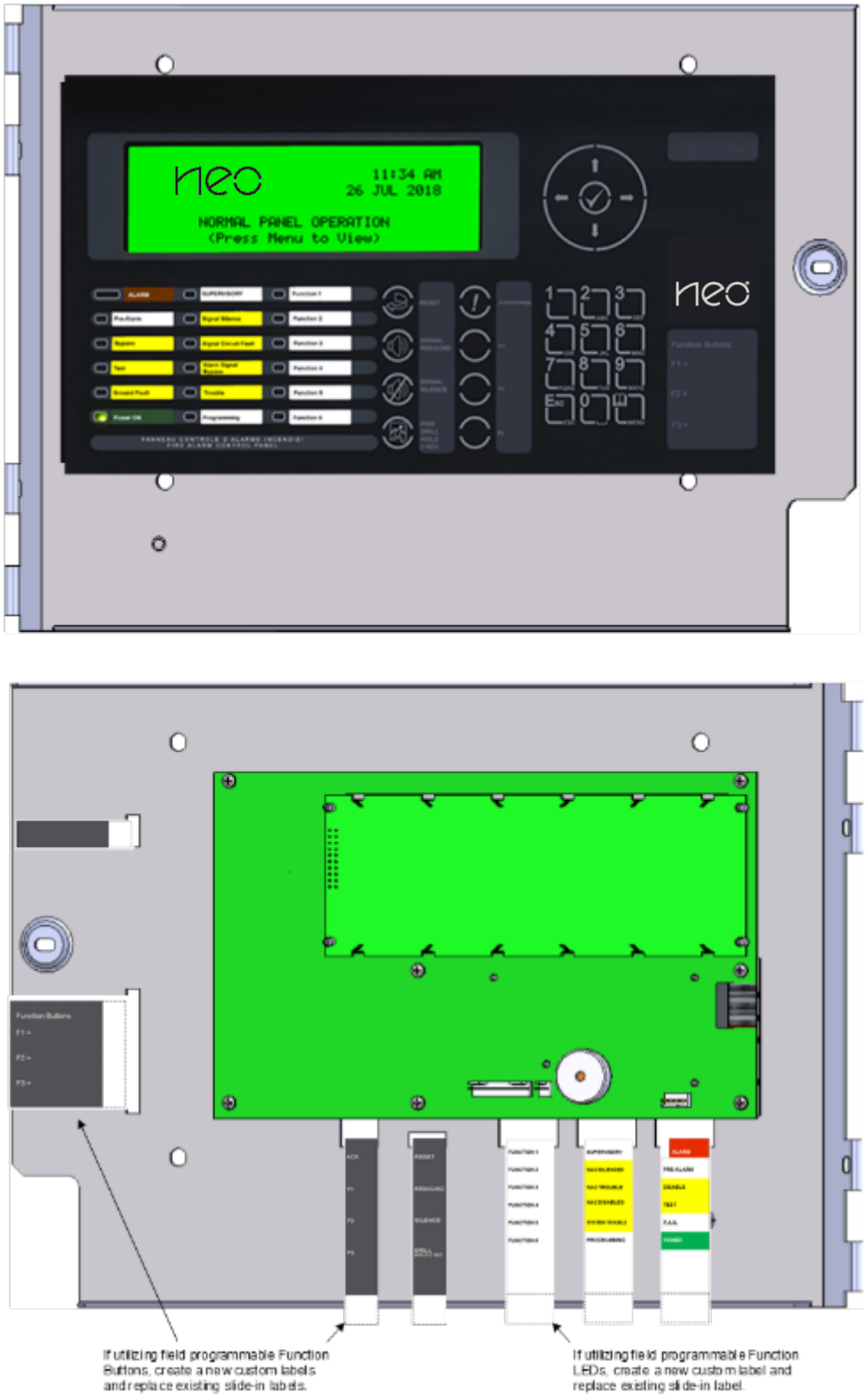


Figure 10 – Display Plate and NX10-ACS-DSP with Slide-In Labels

4.3.1 Installation

The NX10-ACS-DSP PCB is mounted on an internal removable display plate of the NX10-FACP-1C fire alarm control panel and is connected to the NX10-ACS base card via a flat ribbon cable plugged into DISPLAY (PL2).

4.3.1.1 Package Contents

- One (1) Alphanumeric Graphical Display Unit
- One (1) Plastic bag containing:
  - One (1) 10-pin flat ribbon cable
  - Seven (7) panhead screws

4.3.1.2 Remove

1. Disconnect the 10-pin flat ribbon cable from the DISPLAY port on the NX10-ACS Base Card
2. Disconnect any switch inputs from the display unit.
3. Remove the seven (7) panhead screws (see Figure 11)
4. Remove the graphical display unit from the display plate.
5. Transfer any custom label inserts to the new graphical display unit.

4.3.1.3 Install

1. Put the unit in position on the display plate.
2. Fit the seven (7) panhead screws.
3. Connect the switch inputs to the display unit.
4. Connect the 10-pin flat ribbon cable to the DISPLAY port on the NX10-ACS Base Card.
5. Install any customized display labels.

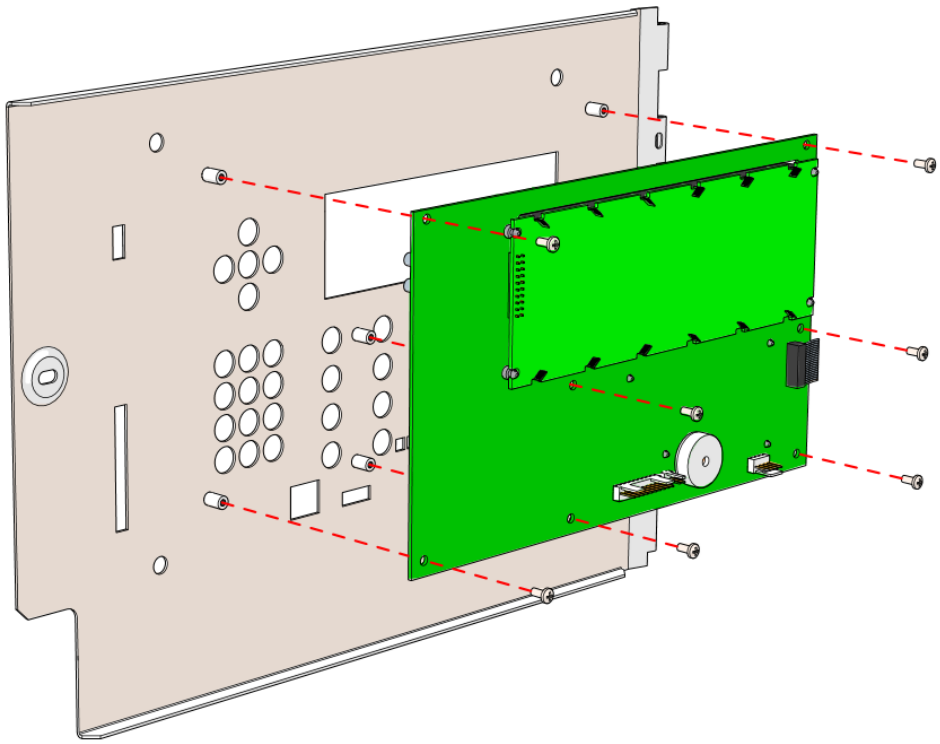


Figure 11 - NX10-ACS-DSP Module and display mounting plate.

4.3.2 Wiring

This equipment contains electrostatic discharge sensitive devices. Make sure that you obey anti-static precautions at all times when working on the system. Failure to obey ESD procedures can damage the equipment.

4.3.2.1 NX10-ACS-DSP PCB Switch Inputs

On the back of the NX10-ACS-DSP PCB keyboard display are two (2) male plug-in connectors; one 10-pin and one 2-pin. The 10-pin male connector includes two (2) Common pins and eight (8) separate switch input pins. The second 2-pin male connector is a duplicate of the 10-pin's Common and input eight (Figure 12).

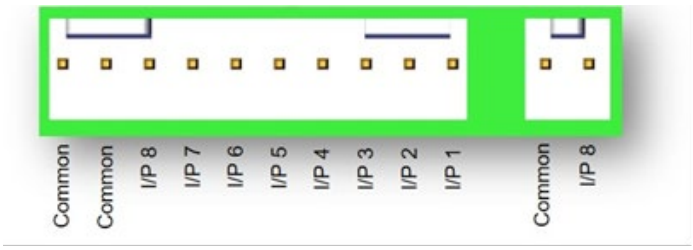


Figure 12 - NX10-ACS-DSP PCB Switch Input Wiring

Switch input contacts of the NX10-ACS-DSP PCB keyboard display must be located within 20 feet of the NX10-ACS-DSP PCB in the same room and in rigid conduit.

4.3.2.2 NX10-ACS-DSP PCB Switch Input Programming

Programming of switch inputs of the NX10-ACS-DSP PCB keyboard display is done via the Shield, Dynamix Tools, Neo NX Config Tool. To program the switch inputs, access the NX10-ACS base card, On-Board Devices/Points programming area and configure a specific input action for each used input (Figure 13).

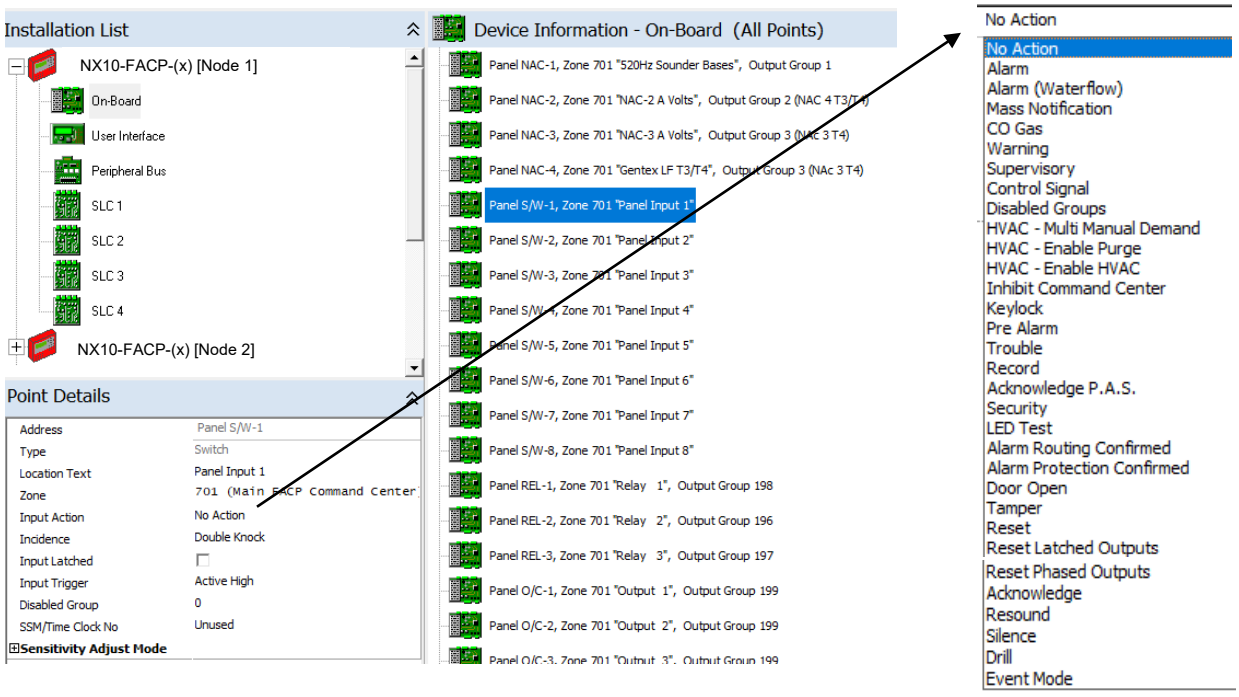


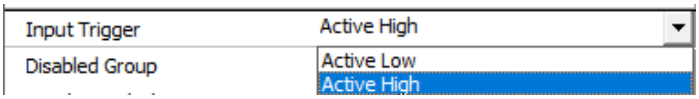
Figure 13 - NeoNX Config Tool, NX10-EM-DSP Switch Input Programming

The NX10-FACP-1C is not approved for Mass Notification or Security applications, the use of these Input Actions is not permitted unless approved by the Authority Having Jurisdiction.

HVAC Actions are for smoke control purposes only.

Non-Latching inputs are not Listed and must not be utilized unless requested by the authority having jurisdiction. If utilized, caution should be used as this device would not require human intervention to return the alarm condition to normal (non-alarm).

In addition to assigning an Input Action to the input point, the input point can monitor for a relay contact closure (Active High) or a relay contact opening (Active Low). Default setting is to monitor for a relay contact closure (Active High) [see below].



4.3.2.3 Terminal Summary

Not Visible Terminal Designation	Visible Terminal Designation	Terminal Description
PL1	Base Card	10-Pin Flat Ribbon Cable with Connector for Base Card
PL3		4-Pin Male Connector, Unused
PL4		10-Pin Male Connector
	Common	Common Voltage
	Common	Common Voltage
	I/P 8	Input 8
	I/P 7	Input 7
	I/P 6	Input 6
	I/P 5	Input 5
	I/P 4	Input 4
	I/P 3	Input 3
	I/P 2	Input 2
	I/P 1	Input 1
PL8		2-Pin Male Connector
	Common	Common Voltage
	I/P	Input 8

4.3.2.4 Electrical Specifications

Supervision	Supervised POWER-LIMITED
Operating Voltage	24 VDC
PL4 and PL8 Common	5 VDC
Operating Current	Included within NX10-ACS Base Card Currents

4.3.3 LEDs

The NX10-ACS-DSP PCB keyboard display includes twelve (12) predefined LED status indicators and six (6) field programmable LED indicators.

DESIGNATION	COLOR	VISUAL STATUS
ALARM	Red	Flashes whenever an alarm condition has occurred. Turns steady when ACK is pressed. (Only turns off when RESET is pressed).
PRE-ALARM	Yellow	Flashes to indicate that a detector has sensed the early signs consistent with an alarm condition. The levels of smoke or heat are not yet confirmed as an alarm. Turns steady when ACK is pressed. The indication automatically turns off when the condition is no longer present or when the levels change from pre-alarm to alarm.
DISABLE	Yellow	Turns on steady whenever a part of the system (zone, output, and/or individual point) has been disabled. Turns off when all disabled conditions have been re-enabled.
TEST	Yellow	Turns on steady whenever a zone(s) or device(s) is in a walk test state. Turns off when the test condition has been cancelled.
P.A.S.	Yellow	Turns on when the POSITIVE ALARM SEQUENCE feature is used.
POWER	Green	On steady when AC Power is available. Flashes when AC Power lost. Off when not powered.
SUPERVISORY	Yellow	Flashes whenever a supervisory condition has occurred. Turns steady when ACK is pressed. The indication automatically turns off (unless a latching Supervisory event) when the condition is no longer present.
NAC SILENCED	Yellow	Turns on steady when the SILENCE key is pressed, and silenceable notification appliance circuit outputs are turned off. Turns off when RESOUND or another zone or device enters an alarm condition causing the reactivation of the silenced outputs.
NAC TROUBLE	Yellow	Flashes whenever there is a trouble condition with one or more NAC circuits, including SLC NAC modules (System Trouble LED will also be activated). Turns steady when ACK is pressed. The indication automatically turns off when the trouble condition is no longer present.
NAC DISABLED	Yellow	Turns on steady whenever one or more notification appliance circuits have been disabled, including SLC NAC modules. Turns off when all disabled notification appliance circuits have been re-enabled.
SYSTEM TROUBLE	Yellow	Flashes whenever there is a trouble condition. Turns steady when ACK is pressed. The indication automatically turns off when the condition is no longer present.
PROGRAMMING	Yellow	Turns on steady whenever the panel is in programming mode. Turns off when the panel is returned to normal operation.
FUNCTION 1	Red	Configurable LED. Default is not used.
FUNCTION 2-6	Yellow	Configurable LEDs. Default is not used.

4.3.4 Programmable LEDs and Buttons

NX10-ACS-DSP PCB keyboard display field programmable LEDs and control buttons are configured using the Shield, Dynamix Tools, Neo NX Config Tool. After the LEDs and control buttons are programmed, the Display Plate with NX10-ACS-DSP PCB keyboard display slide-in labels can be changed to accommodate the defining of the added LEDs and control buttons (Figure 10).

4.3.5 Control Buttons

The NX10-ACS-DSP PCB keyboard display includes five (5) predefined control buttons and three (3) field programmable buttons.

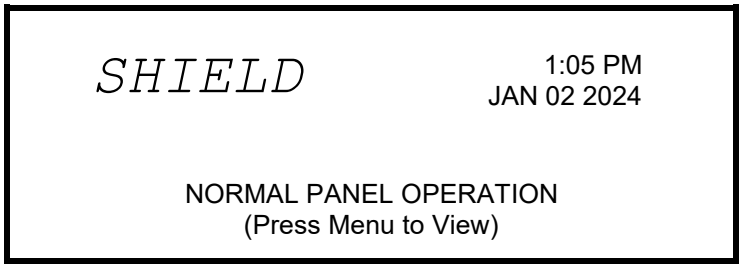
SYMBOL	FUNCTION	OPERATION
	RESET	Press to reset the panel from a latched alarm (or other programmed latched input i.e., latching trouble or supervisory condition) or press to deactivate a Drill condition.
	ACK	Press to acknowledge an alarm, CO, supervisory and/or trouble condition. LED indications on the panel change from flashing to steady and zone/device display removes the word “New.” All current conditions are simultaneously acknowledged “Global Acknowledgement.”
	RESOUND	Press to reactivate any silenced notification appliances connected to system NAC circuits or any output programmed as “Silenceable.”
	SILENCE	Press to silence active notification appliances connected to system NAC circuits or any output programmed as “Silenceable.”
	DRILL (Hold 2 seconds)	Press and hold for 2 seconds to activate a Drill condition. All notification appliance circuits programmed to activate on Drill will be activated. Press and hold for 2 seconds to deactivate a drill condition.
	F1, F2, F3	Programmable function (control) buttons.
	Navigation Keys	UP, DOWN, LEFT and RIGHT arrow keys are used to scroll through multiple status events, device details, and to navigate through the various displays and menus. Check Mark (✔) “Enter” key confirms entry of numeric or letter information. In addition, confirms selection of menu options and changes some of the configuration options. It is also used to view detailed information regarding events.
	Keypad	NUMBER keys are used during menu operations to enter numbers. During specific programming options these are also used for alphabet entry. ESC key is used to exit a menu. MENU key is used anytime to display or return to the menu options.

4.3.6 Piezo Sounder

The NX10-ACS-DSP PCB keyboard display includes a Piezo sounder for audible event status indications.

CONDITION	AUDIBLE STATUS
Alarm	Continuous tone from the piezo sounder with associated red alarm LED
CO Alarm	Continuous tone from the piezo sounder. If programmed, associated red or yellow LED
Pre-Alarm	Continuous tone from the piezo sounder with associated pre-alarm red LED
Supervisory	Pulsed piezo sounder with associated supervisory LED
Trouble	Pulsed piezo sounder with associated system trouble LED

4.3.7 Graphical LCD Event Status Indications



The graphical LCD display provides detailed information on the operational status of the FACP. Above is an example of the normal standby state of the display.

Event status display/information of the graphical LCD display is prioritized with alarms and CO events having the highest priority.

- Alarms[1]
- CO Alarm [1]
- Pre-Alarms[1]
- Supervisory Events[2]
- Trouble Events[3]
- Other Events including Disable, Test and Warning Conditions[4]

4.3.7.1 Alarm and CO Conditions

To minimize confusion and only provide pertinent information during emergency situations, the FACP when in an alarm state will only display fire alarm and if applicable CO and supervisory events. The display will also provide a tally of these three (3) events. All other non-emergency events such as troubles, disabled zones/points, etc. are suppressed. These events, however, can be viewed at any time by accessing the panel menu and selecting the view button.

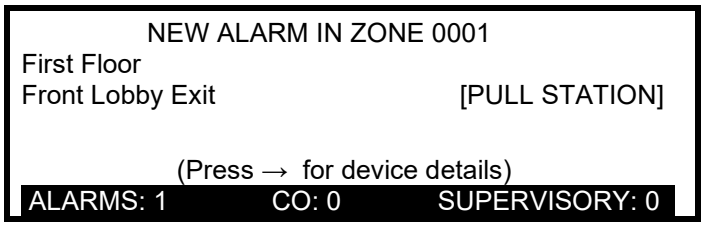
Different messages are displayed during an alarm event, the message types depend on whether the alarm has been acknowledged and whether a CO and/or supervisory event is present.

4.3.7.1.1 Unacknowledged and Acknowledged Alarms with/without CO or Supervisory Events

When the system registers an alarm event, the alarm LED will flash, the internal buzzer will sound (continuously), and the display will indicate “NEW ALARM IN ZONE xxxx” (unacknowledged event). In addition, the zone in alarm message (32 characters), the device in alarm message (26 characters) and the type of device for the specific zone/device in alarm will be displayed. The bottom line of the display will be highlighted and will indicate a tally of the number of alarms, CO events and supervisory events. Also, the notification appliances, relays, and other outputs, depending upon programming options selected by the installer will activate.

During an alarm event, the display will only indicate the first alarm and a tally of any additional alarms, CO events and supervisory events. If multiple alarm, CO, and supervisory events are present, the additional events may be viewed by scrolling (Scroll ↓) through the display. The (Scroll ↓) feature is only active when multiple viewable events are present.

Example of an unacknowledged alarm event:

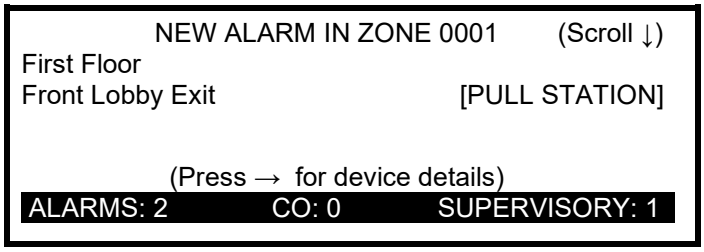


< New unacknowledged alarm message

< Zone alarm text (32 Characters)
< Device text (26 Characters) / type of device

< Further device details
< # Alarms, # CO and # Supervisory events

Example of unacknowledged multiple alarms, CO, and supervisory events:



< 1st New alarm message, w/Scroll active
< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device (English or French)
< Further device details
< # Alarms, # CO and # Supervisory events

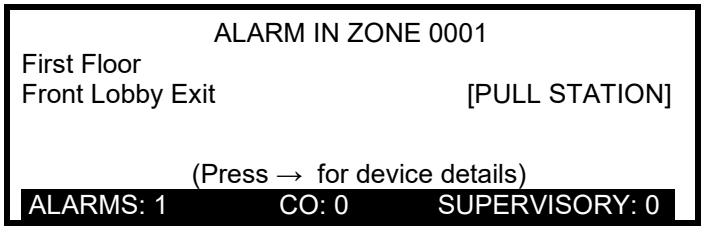
Pressing the “ACK” button will acknowledge the alarm condition(s). This changes the red Alarm LED to steady, the internal buzzer silences, and the display will show “ALARM IN ZONE xxxx” (acknowledged event) with zone/device messages for the specific device in alarm.

The Neo NX NX10-FACP-1C FACP acknowledges on a “Global” basis; all active events are acknowledged with the single activation of the acknowledge button.

After acknowledgement, the display will indicate the first alarm and a tally of any additional alarms, CO, and supervisory events. To view additional alarm, CO, and supervisory events the user must scroll (Scroll ↓) through the display. Displayed events are based on system priority and the order in which the panel received the individual event (i.e.: alarms are listed first then CO and then supervisory each are labelled; 1st Alarm, 2nd Alarm, 3rd Alarm, 4th Alarm, 1st CO, 2nd CO, 1st Supervisory, 2nd Supervisory, etc.).

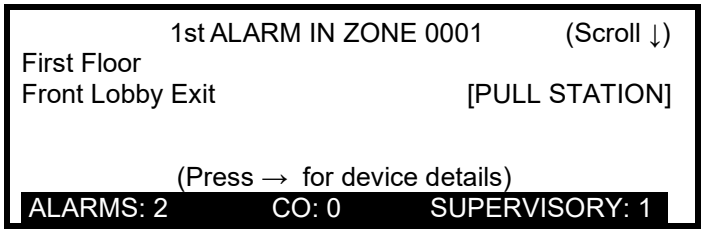
The (Scroll ↓) feature is only active when multiple viewable events are present. When using the scroll buttons, if the buttons are not activated for approximately 15 seconds, the display will return to the 1st Alarm message.

Example of acknowledged single alarm event:



< Acknowledged alarm message
< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device
< Further device details
< # Alarms # CO and # Supervisory events

Example of acknowledged multiple alarm and supervisory events:



< 1st alarm message, w/scroll active
< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device
< Further device details
< # Alarms # CO and # Supervisory events

If a new alarm, CO, or supervisory event occurs after a previously acknowledged alarm, CO and/or supervisory event, the event type LED (alarm, CO or supervisory) will begin to flash, the internal buzzer will resound (continuously for alarm or CO and pulsed for supervisory), and the alarm, CO and/or supervisory tally will increase. The display, however, will not advance to the new event instead the display will continue showing the 1st Alarm as this is the highest priority and is required by NFPA 72. The new event may be acknowledged by simply pressing the “ACK” button and may be viewed by using the scroll (Scroll ↓) button.

If a supervisory event occurs without an alarm or CO event refer to the below Non-Alarm, Non-CO Conditions section.

4.3.7.2 Non-Alarm, Non-CO Conditions

4.3.7.2.1 Unacknowledged and Acknowledged Non-Alarm, Non-CO Events

When the system registers a non-alarm or non-CO event (pre-alarm, warning, supervisory and/or trouble condition), the event LED will flash, the internal buzzer will sound (pulsing) and the display will indicate “NEW xxxxxx (event type), ZONE xxxx” (unacknowledged assigned zone number), the zone event message (32 characters), the device event message (26 characters) and the type of device for the specific event. The bottom line of the display will be highlighted and will indicate a tally of the number of events active (Warnings [WRNs], Supervisory [SUPRVs], Disables [DISBLs] and Troubles [TRBLs]) prior to the event being acknowledged.

Example of an unacknowledged pre-alarm event:

```
        NEW PRE-ALARM      ZONE 0005
First Floor
Electrical Closet Rm 101              [MULTI.SENSOR]


          (Press →  for device details)
WRNs: 0     SUPRVs: 0     DISBLs: 0     TRBLs: 0
```

< New pre-alarm message (unacknowledged)
< Zone pre-alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Further device details
< # Warnings # Supervisory # Disables and # Troubles

Example of an unacknowledged warning event (system drill):

```
        NEW WARNING    ZONE 0701
Fire Alarm Control Panel
Drill Switch                          [SWITCH     ]


          (Press →  for device details)
WRNs: 1     SUPRVs: 0     DISBLs: 0     TRBLs: 0
```

< New warning message (unacknowledged)
< Zone warning text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Further device details
< # Warnings # Supervisory # Disables and # Troubles

Example of an unacknowledged supervisory event when no alarms or CO events are present (refer to Alarm and CO Conditions section of this manual for displaying supervisory events with alarms and/or CO events present):

```
        NEW SUPERVISORY    ZONE 0020
Electrical Room
Sprinkler System Riser                [SWITCH(MON.)]


          (Press →  for device details)
WRNs: 0     SUPRVs: 1     DISBLs: 0     TRBLs: 0
```

< New supervisory message (unacknowledged)
< Zone supervisory text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Further device details
< # Warnings # Supervisory # Disables and # Troubles

Example of an unacknowledged trouble event:

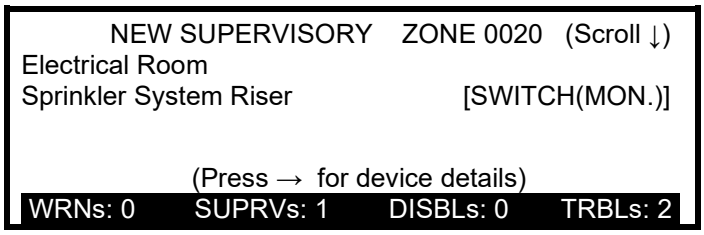
```
        NEW TROUBLE    ZONE 0010
First Floor West Wing
Conference Room                       [PHOTO SMOKE ]

DEVICE MISSING
          (Press →  for device details)
WRNs: 0     SUPRVs: 0     DISBLs: 0     TRBLs: 1
```

< New trouble message (unacknowledged)
< Zone trouble text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Type of Trouble
< Further device details
< # Warnings # Supervisory # Disables and # Troubles

Example of multiple unacknowledged events:



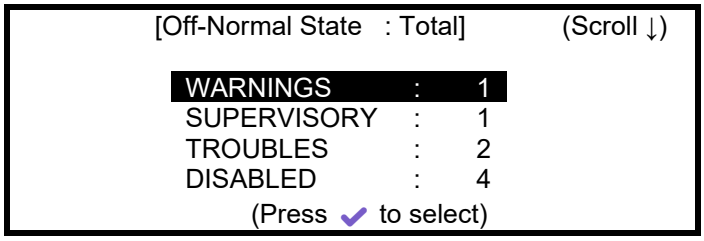
< New supervisory message, w/scroll active
< Zone supervisory text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device
< Further device details
< # Warnings # Supervisory # Disables and # Troubles

During unacknowledged, non-alarm and non-CO events, the display only indicates the highest priority event and a tally of any additional events. The additional events may be viewed by scrolling (Scroll ↓) through the display. The scroll (Scroll ↓) feature is only active when multiple unacknowledged viewable events are present.

Pressing the "ACK" button will acknowledge the event condition(s). This changes the event LED (pre-alarm, supervisory, disable, system trouble) to steady, the internal buzzer will silence, and the display will show "Off-Normal State: Total." Off-normal state totals are listed in order of system priority, Pre-Alarms, Warnings, Supervisory, Troubles and Disabled. Off-normal state totals are only displayed if an active event within that priority is present on the FACP.

The Neo NX NX10-FACP-1C FACP acknowledges on a "Global" basis; all events are acknowledged with the single activation of the acknowledge button.

Example of acknowledged non-alarm events (no pre-alarm events present on the system):

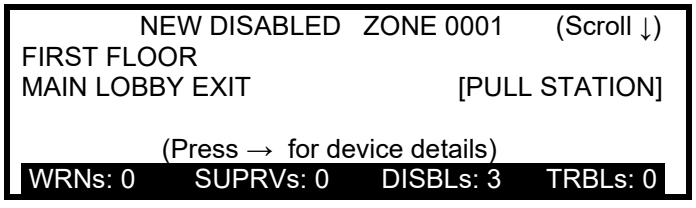


< Off-Normal line, w/scroll
(Scroll shown only with multiple events)
< More info pertaining to highlighted event

4.3.7.3 Disabled Condition

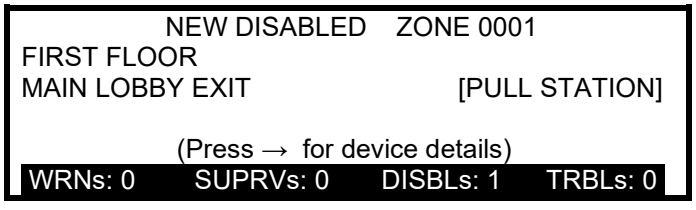
If any zone, input device or output device has been disabled, the DISABLE LED and if programmed via the Shield, Dynamix Tools, NeoNX Config Tool, the TROUBLE LED will illuminate. In addition, the NAC DISABLE LED will illuminate if one or more notification appliance circuits or NAC SLC devices have been disabled. The display will indicate "NEW DISABLED ZONE xxxx" and the zone and device messages will be displayed. In addition, the lower half of the display will indicate the quantity of disabled devices (i.e., DISBLs: x"). To view all disabled devices simply scroll through the list using the navigation down arrow button.

Unacknowledged Zone Disablement with Multiple Devices:



< New unacknowledged Disabled message
< Disabled zone text (32 Characters)
< Disabled device text (26 Characters) / Pre-assigned type of device
< Further device details
< # Warnings # Supervisory # Disables and # Troubles

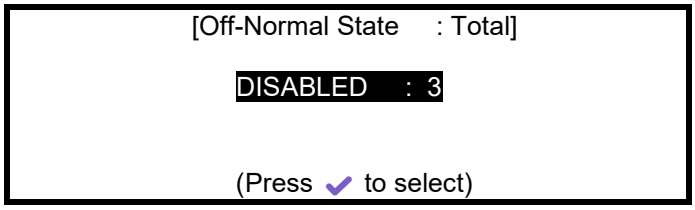
Unacknowledged Device Disablement:



< New unacknowledged Disabled message
< Disabled zone text (32 Characters)
< Disabled device text (26 Characters) / Pre-assigned type of device
< Further device details
< # Warnings # Supervisory # Disables and # Troubles

Pressing the “ACK” button will acknowledge the disable condition(s) and change the LEDs to steady. In addition, the display will change to showing “Off-Normal State: Total.”

Acknowledged Disablements:



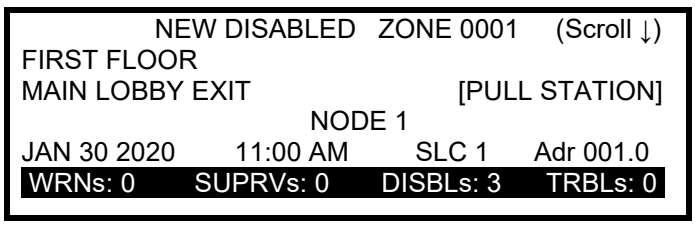
< Off-Normal line

< Off-Normal type and event total
Only active off-normal events are displayed.

< More info pertaining to highlighted event

When the disabled conditions are removed the appropriate indications are cleared. When all disabled conditions are removed, the DISABLE Indicator is also turned off and the display will revert to Normal System, if no other off-normal condition is present on the FACP.

To obtain detailed information about the disabled device, press the ➔ button on the keypad navigation.

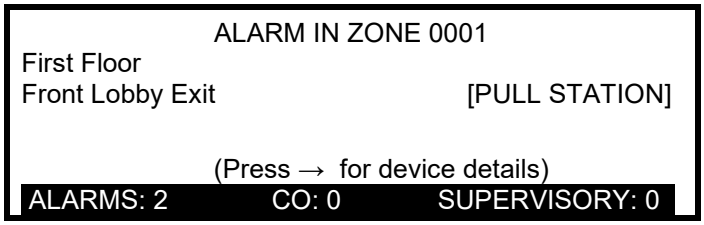


< New unacknowledged Disabled message
< Disabled zone text (32 Characters)
< Disabled device text (26 Characters) / Pre-assigned type of device
< Node # of device location
< Disabled device details
< # Warnings # Supervisory # Disables and # Troubles

4.3.7.4 Obtaining Detailed Device Information During Events

When any event message display indicates (Press → for device details), pressing ➔ button on the keypad navigation keys will allow the user to view further detailed information about the event/device.

Example of an event message display prior to device details lookup:

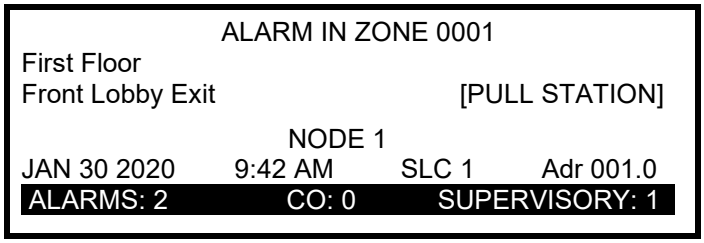


< Alarm message

< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Further device details
< # Alarms # CO and # Supervisory events

Example of a device details display:



< Alarm message

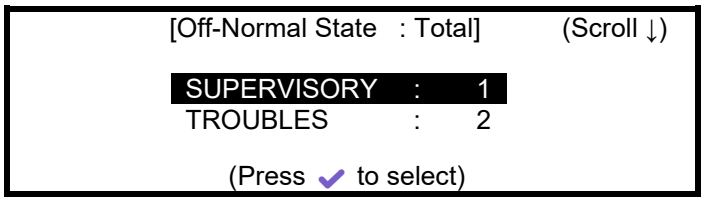
< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Node # of device location
< Alarm device details
< # Alarms # CO and # Supervisory events

The above details display indicates that Node 1, SLC loop 1, device address 001.0 alarmed on Jan. 30, 2020, at 9:42 AM. After approximately 15 seconds this display will revert to its original alarm display.

When the “Off-Normal State: Total” display indicates (Press ✔ to select), pressing the ✔ button on the keypad navigation keys will allow the user to view further detailed information about the specific off-normal event highlighted. Pressing the down arrow (↓) button on the keypad navigation keys will allow the user to scroll (Scroll ↓) to other off-normal event types and obtain further detailed information pertaining to its events by pressing the ✔ button on the keypad navigation keys.

Example of “Off-Normal State: Total” display prior to selecting event detail information:

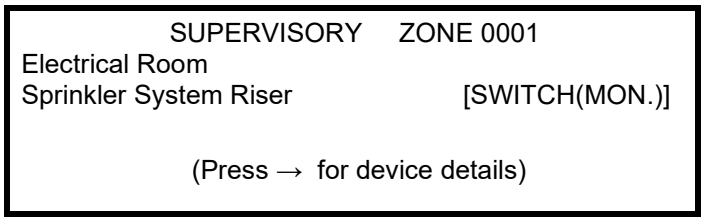


< Off-Normal line, w/scroll

< Off-Normal event type and total events
(Only active off-normal events are displayed)

< Detailed info pertaining to the highlighted event

Example of detailed information pertaining to a specific off-normal event:



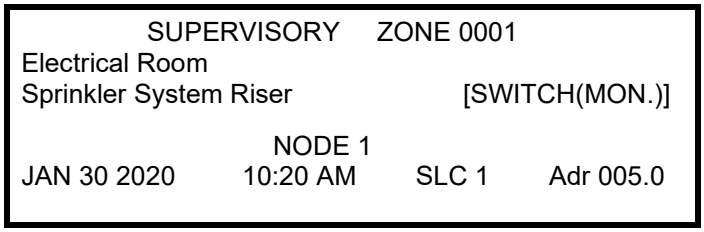
< Supervisory message

< Zone supervisory text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Further device details

If the display indicates (Press → for device details), pressing the ➔ button on the keypad navigation keys will allow the user to view further device details about the event/device.

Example of a device detailed display pertaining to a specific off-normal event:



< Supervisory message

< Zone supervisory text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Node # of device location
< Supervisory device details

5 Optional System Modules

Below is a list of optional modules available for the NX10-FACP-1C.

5.1 NX10-FANET4 and NX10-FANET7 Network Modules

The NX10-FANET4 and NX10-FANET7 modules are network modules (CCITT RS-485) used for connecting the Neo NX NX10-FACP-1C to the Shield Ad-NeT-PluS network. The Shield Ad-NeT-PluS network can support FACPs, Audio FACPs, local operating consoles, remote annunciators with/without control, and other network nodes. The NX10-FANET4 module is used with a Class B Ad-NeT-PluS network, while the NX10-FANET7 is used with a Class X (Class A) Ad-NeT-PluS network.

Optional NX10-FOC-MM Fiber Optic Converter Modules are available for converting NX10-FANET4 and NX10-FANET7 copper wiring to fibre optic.

5.1.1 Installation

This equipment contains electrostatic discharge sensitive devices. Make sure that you obey anti-static precautions at all times when working on the system. Failure to obey ESD procedures can damage the equipment.

Failure to tighten the panhead screws will defeat the protection circuitry designed to protect the module from damage due to lightning and static electricity.

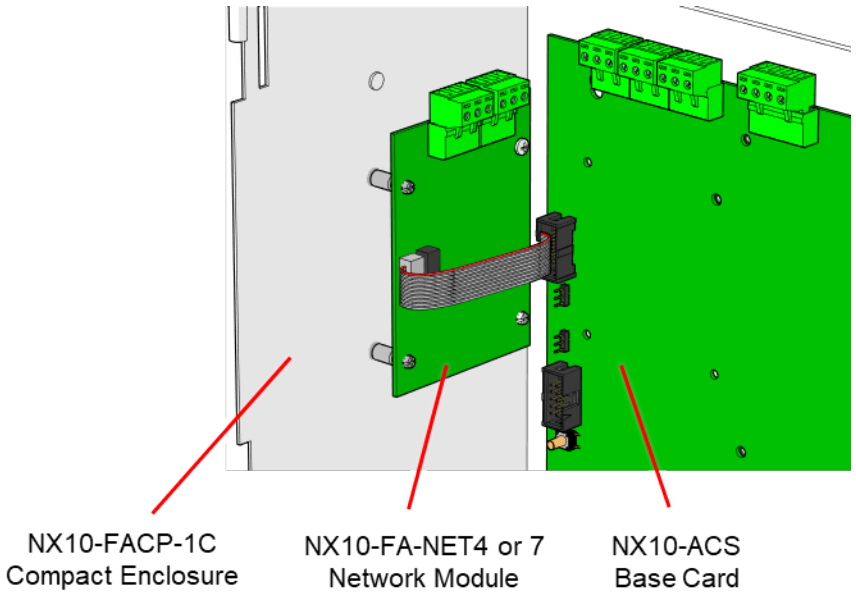


Figure 14 - NX10-FANET4 and NX10-FANET7 Installation

5.1.1.1 Package Contents

NX10-FANET4

- One (1) NX10-FANET4 Network Module
- One (1) plastic bag containing:
  - One (1) metal hexagon spacer (not used)
  - One (1) panhead screw
  - Three (3) nylon spacers (not used)
  - One (1) UL 150Ω filtering resistor.
  - 2-pin wire NX10-FANET4 to NX10-ACS-DSP PCB harness

NX10-FANET7

- One (1) NX10-FANET7 Network Module
- One (1) plastic bag containing:
  - One (1) metal hexagon spacer (not used)
  - One (1) panhead screw
  - Three (3) nylon spacers (not used)

5.1.1.2 Remove

1. Disconnect AC and DC power.
2. Remove the plugin terminal blocks. In addition, if replacing and NX10-FANET4 module that is providing network ground fault status, remove the 2-pin cable connecting the module to the keyboard display module.
3. Unplug the 10-pin female flat-ribbon cable connecter from the NX10-ACS base card.
4. Remove the panhead screw securing the network module to the side of the enclosure's backbox and snap the module off the standoffs.

5.1.1.3 Install

1. Snap the network module onto the three (3) installed standoffs on the side of the enclosure's backbox and secure with the supplied panhead screw.
2. Plug the 10-pin female flat-ribbon cable connector into the PL3 NETWORK male connector located on the NX10-ACS base card.
3. Install the supplied 150Ω filtering resistor between the IN A and B terminals of the module.

5.1.2 Wiring

Both the NX10-FANET4 and NX10-FANET7 modules have independent connectors for the outgoing and incoming Ad-NeT-PluS network wiring. Using twisted Shielded cable, connect from the "OUT" terminal on the previous network node to the "IN" terminal on the next network node; A to A, B to B and SCN to SCN (Figure 15).

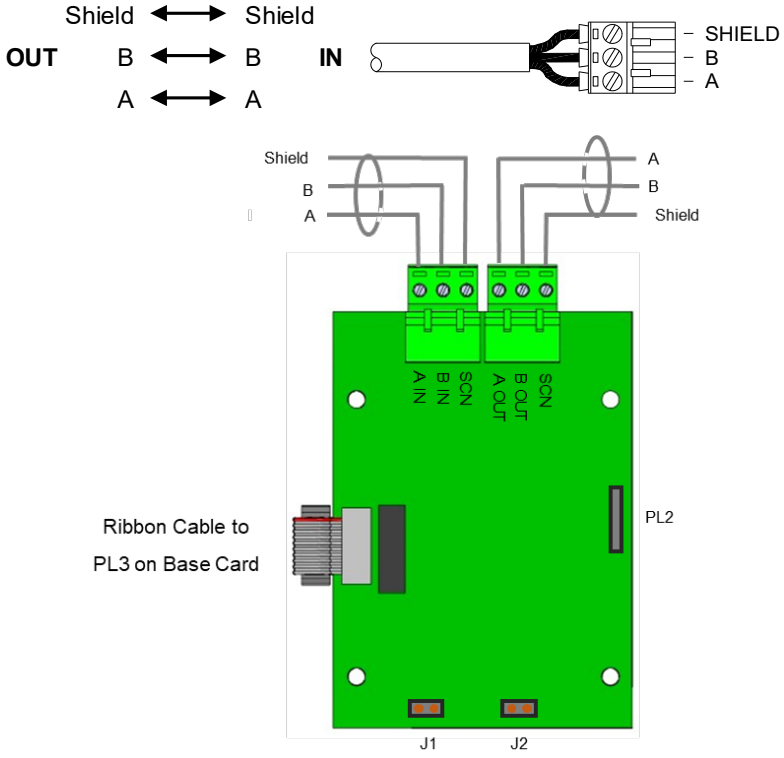


Figure 15 - NX10-FANET4 and NX10-FANET7 Wiring

5.1.2.1 Terminal Summary

Module	Not Visible Terminal Designation	Visible Terminal Designation	Terminals
NX10-FANET4	TB1	A IN B IN SCN	Ad-NeT-PluS Network A IN Ad-NeT-PluS Network B IN Ad-NeT-PluS Network Shield
	TB2	A OUT B OUT SCN	Ad-NeT-PluS Network A OUT Ad-NeT-PluS Network B OUT Ad-NeT-PluS Network Shield
NX10-FANET7	TB1	IN	Ad-NeT-PluS Network A IN Ad-NeT-PluS Network B IN Ad-NeT-PluS Network Shield
	TB2	OUT	Ad-NeT-PluS Network A OUT Ad-NeT-PluS Network B OUT Ad-NeT-PluS Network Shield

5.1.2.2 Electrical Specifications

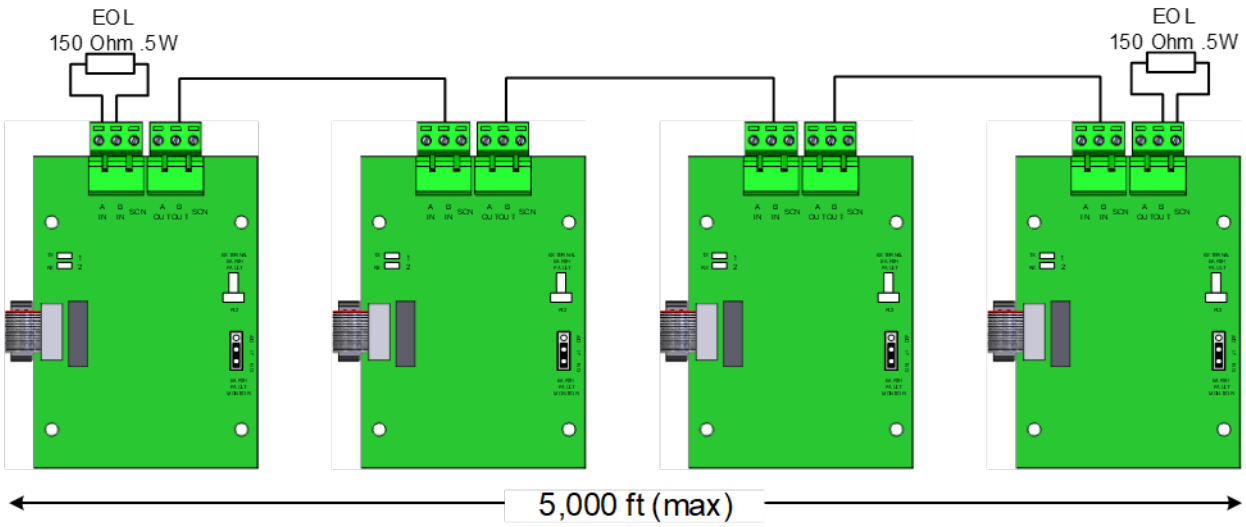
Specifications	
Circuit Supervision POWER-LIMITED CIRCUIT	Supervised for Short Circuit, Open Circuit and Ground Fault
Communications	CCITT RS485
Cabling Type	Twisted Shielded
NX10-FANET4	Class B Network Wiring
	32 Nodes Maximum
	5000ft (1500m) Maximum Cable Length
	Requires 150Ω filtering resistor at beginning and end of network
	2-Pin Programmable Network Ground Fault Output
NX10-FANET7	Class X (A) Network Wiring
	200 Nodes Maximum
	5000ft (1500m) Maximum Cable Length Between Nodes
	66000ft (20000m) Maximum Overall Cable Length

5.1.2.3 LEDs

LED	Function	Description
NX10-FANET4 1 2	 TX RX	 Network Transmit Network Receive
NX10-FANET7 1 2 3	 Heartbeat RX TX	 Network Receive Network Transmit

5.1.2.4 NX10-FANET4 Class B w/End-of-Line Filtering Resistors

The Ad-NeT-PluS Class B network wiring requires the IN terminals on the first network node and the OUT terminals on the last network node to be terminated with the supplied 150Ω end-of-line filtering resistors.



If the 150Ω filtering end-of-line resistor is not installed on the last network node a network ground fault will be reported.

5.1.2.4.1 NX10-FANET4 Class B Network Ground Fault Detection

The NX10-FANET4 module can be configured to monitor an entire Class B Ad-NeT-PluS network for ground fault conditions. This network monitoring must be implemented if the Class B Ad-NeT-PluS network does not incorporate at least one NX10-FAN-C or NX10-FAN-D remote annunciator.

To configure the NX10-FANET4 module (only one configured NX10-FANET4 per Class B Ad-NeT-PluS network is required) for network ground fault monitoring, simply move jumper J1 (Earth Fault Monitor) from its OFF position to its ON position (Figure 16). In addition, if a specific network ground fault indication is required, wire the supplied 2-pin NX10-FANET4 to NX10-ACS-DSP PCB harness from the PL2 header of the NX10-FANET4 module to the Common/IP8 input on the back of the NX10-ACS-DSP PCB keyboard display and program the input to the specific indication requirements (i.e., LED, etc.).

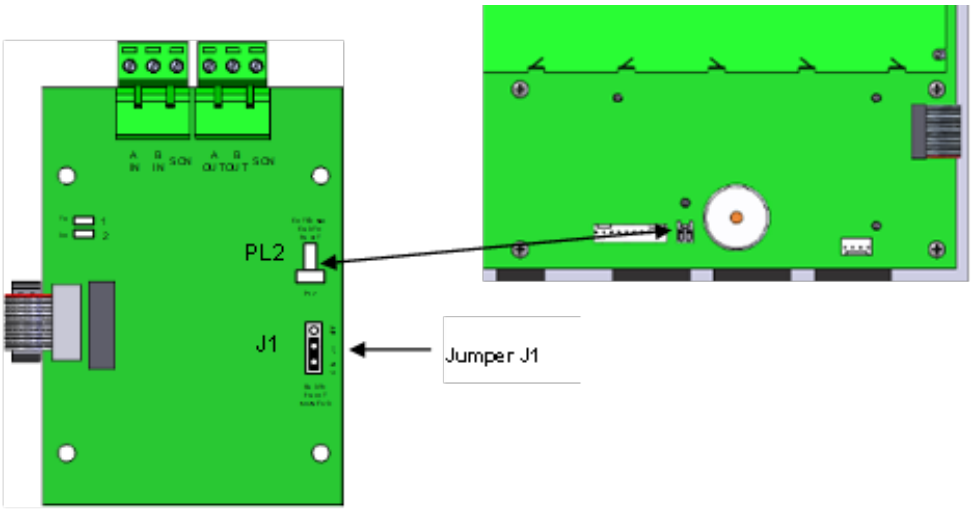
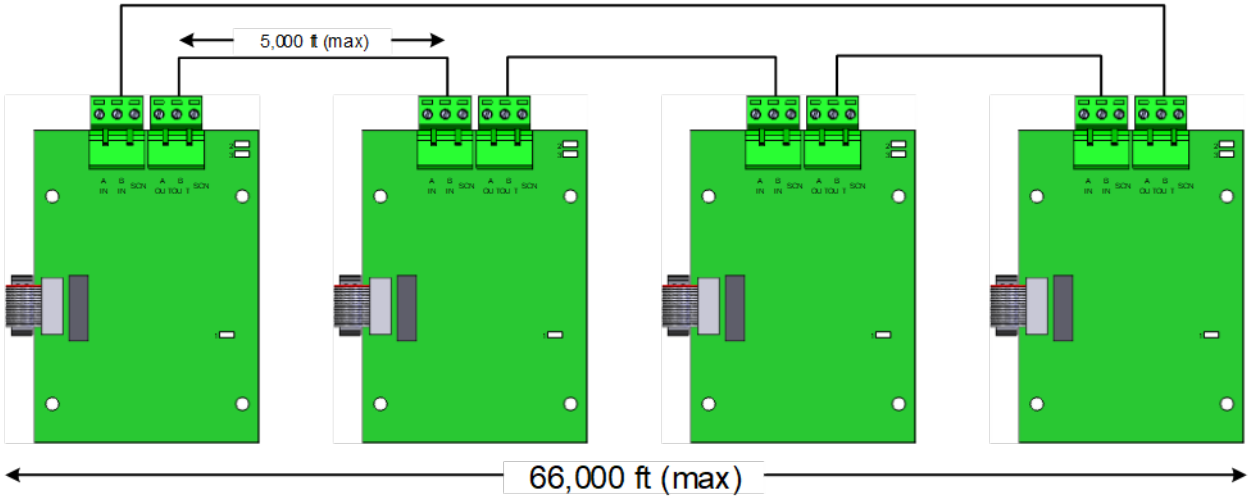


Figure 16 - NX10-FANET4 Network Ground Fault Detection Configuration

5.1.2.5 NX10-FANET7 Class X(A)

The Ad-NeT-PluS Class X(A) network wiring requires the OUT terminals on the last network node to be wired back to the IN terminals on the first network node, this forms a loop “ring.”



6 Recommended Cable Routing

Power limited and non-power limited circuit wiring must remain separate in the NX10-FACP-1C enclosure. All power limited circuit wiring must remain at least 0.25” (6.35 mm) away from any non-power limited circuit wiring. Furthermore, all power limited, and non-power limited circuit wiring must enter and exit the enclosure through different knockouts and/or conduits (Figure 17).

AC Wiring must be wire wrapped to the wire tie of the enclosure as indicated below. In addition, notification appliance circuits 2 and 4 must maintain a minimum of 0.25” (6.35mm) from the AC wiring via correct wire routing and the use of wire wraps (Figure 17).

For multiple wires to be used under any terminal, use Shield twin cable ferrules 18AWG to 12AWG, manufactured by Weidmuller.

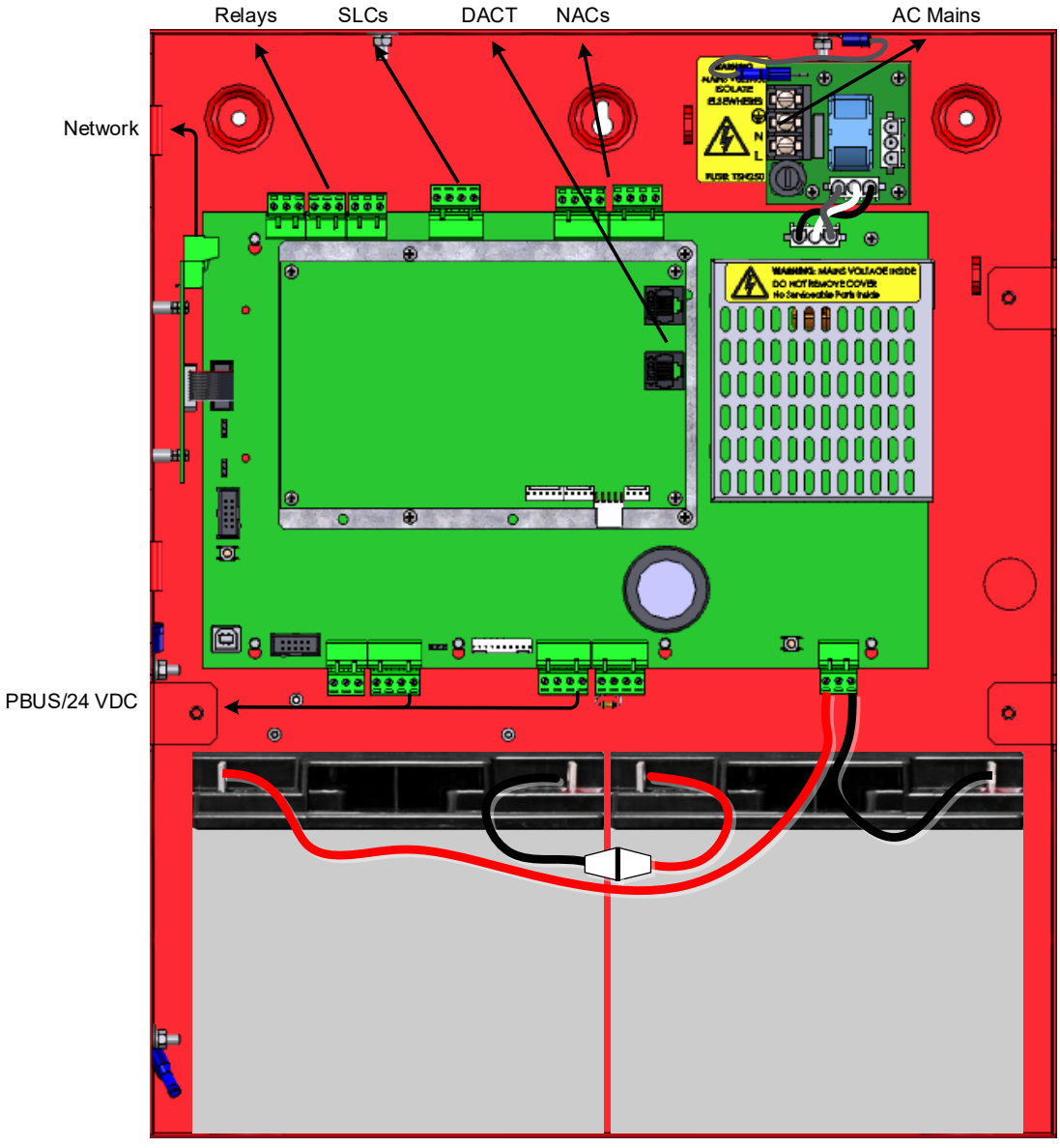


Figure 17 – NX10-ACS-1C Wire Routing

7 System Features

7.1 Drift Compensation

The Neo NX FACP incorporates drift compensation reporting and control, based on integral intelligent and enhanced smoke detector drift compensation. The drift compensation of the intelligent/enhanced smoke detectors are part of their internal signal-processing algorithm. The algorithm will compensate for changes in sensor output caused, for example, by dust in the chamber, and will therefore hold the sensitivity at a constant level even with severe chamber contamination. This increased stability is achieved without affecting the intelligent or enhanced detector's sensitivity to fire. The drift compensation level is stored in the detector's memory as a single value between 0 and 31. The Neo NX FACP takes this information and converts it to a more user-friendly value, detector Drift % (0-100). Device drift reports can be generated at any time from the FACP either by using the password protected NX10-ACS-DSP keyboard display or the Shield, Dynamix Tools, Neo NX Service Tool. The Shield, Dynamix Tools, Neo NX Service Tool allows viewing, printing, storage, etc. of clean/dirty drift values (0 to 100%) for all Neo NX FACP intelligent and enhanced detectors.

The programmed installation sensitivity of smoke detectors will not change unless the detector has already indicated a Device Dirty trouble signal (drift of 100%) on the FACP and the device is not cleaned or replaced.

There are two (2) methods the Neo NX FACP deals with drift compensation, Method 1 – No Calibration Clock Setting or Method 2 - Calibration Clock Setting.

Method 1 – No Calibration Clock (Default Setting)

When an intelligent or enhanced smoke detector reaches its internal drift compensation limit (100% drift), a drift flag will be set in the individual device. At the same time, the Neo NX FACP will initiate a trouble and report a Device Dirty for the specific intelligent/enhanced smoke detector. At the 100% drift, the intelligent/enhanced smoke detector will maintain its programmed sensitivity. The Device Dirty indication and it's programmed sensitivity will be maintained until the device is cleaned and recalibrated or replaced, however if the device is not cleaned or replaced, when a change in calibration is required again, the programmed sensitivity of the device can no longer be maintained.

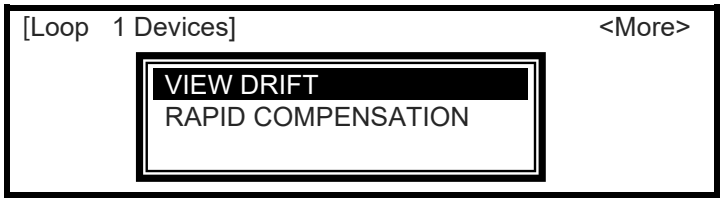
Method 2 - Calibration Clock (Programmable Setting)

This method is normally used when the installer has a maintenance agreement on the installed Neo NX FACP. With this method of drift compensation reporting, the installer would program a Calibration Clock for a specific time-of-day and days-of-week for the intelligent/enhanced smoke detectors to be calibrated. During calibration, if an intelligent/enhanced detector reaches a 100% drift, a Dirty Scale 1 for the address will be placed in the Neo NX FACP Problems Menu area. When placed in the Problems Menu area, the Dirty Scale 1 information can be viewed via the keyboard display during the service personnel's next scheduled maintenance. In addition, when the Dirty Scale 1 status is generated, specific CBE indications can occur. Like Method 1, the programmed sensitivity of the intelligent/enhanced detector will be maintained if the Dirty Scale 1 is either cleaned and recalibrated or replaced. If the device is not cleaned or replaced, when a calibration test occurs that requires an additional device calibration, the Neo NX FACP will indicate a Device Dirty status and device sensitivity can no longer be maintained.

With Method 2 of Dirty Scale 1 status, when the dirty device tries to recalibrate and it can no longer maintain its programmed sensitivity, a trouble signal Device Dirty will be generated at the Neo NX FACP.

7.1.1 Drift Compensation Viewing

If not using the Shield, Dynamix Tools, Neo NX Service Tool, intelligent detector drift compensation can be viewed via the Neo NX NX10-FACP-1C FACP's keyboard display. To view drift compensation, while in panel programming, navigate to the Loops/SLC area, select a Loop number, and enter the View/Edit area, select a detector, and scroll across (→) to the end of the detector type's programming area and under the Additional Info field area press the ✔ button and a View Drift/Rapid Compensation screen will appear.

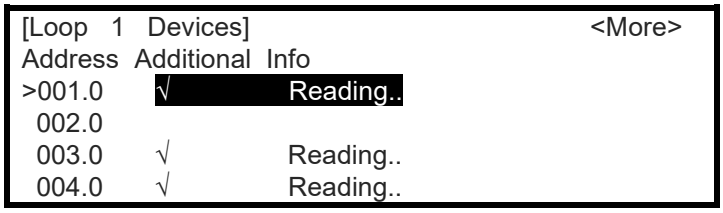


Confirm that you want to VIEW DRIFT which is highlighted by press the ✔ button.

7.1.1.1 View Drift

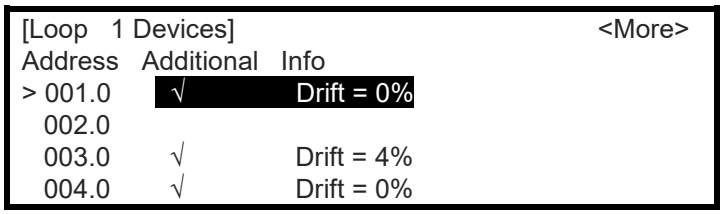
When View Drift is selected, the display shows the intelligent smoke detectors on the specific loop with a √ mark and Reading... Other devices that are not smoke detectors on the loop will have no √ mark.

For example, select the View Drift option and the display shows:



When the reading is complete, the display will show the drift (0-100%) per intelligent smoke detector on the SLC loop.

For example:



7.1.2 Rapid Compensation

Compensation for environmental conditions of an installation is a standard feature of all intelligent smoke detectors. Every 24 hours (default setting) intelligent detectors are evaluated and compensated, if required, for any changes to the installed environment due to device contamination and/or dust buildup.

A rapid compensation feature is built into the Neo NX NX10-FACP-1C, it is recommended that during commissioning, detector cleaning or when a detector is replaced, rapid compensation be performed to adjust the intelligent detector to present ambient conditions.

If rapid compensation is not employed during commissioning, detector cleaning or when a detector is replaced it could take up to 24 hrs. before the device is automatically compensated.

To perform a rapid compensation, refer to the Drift Compensation Viewing section above and select Rapid Compensation instead of Drift Compensation. After the Rapid Compensation selection, all smoke detectors on the SLC loop will be compensated.

7.2 Multiple Detection Operation for Evacuation

Notification and other output signal circuits may be configured to only activate when two or more automatic devices within a detection zone enter an alarm condition.

At least two automatic devices shall be placed in the protected space. The spacing shall be as per NFPA 72 and shall be no more than 0.7 times the linear spacing for public mode notification uses.

Smoke detectors employed in multiple detector operation must not be configured for Alarm Verification.

7.3 Positive Alarm Sequence

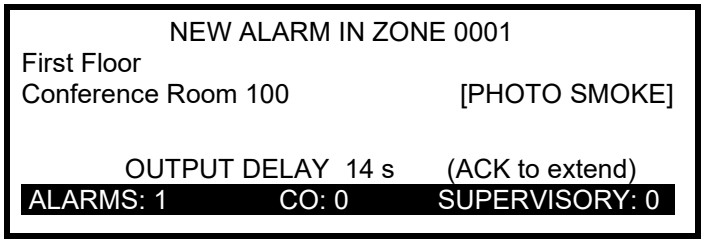
Positive Alarm Sequence (P.A.S) is a False Alarm Management programmable feature of the Neo NX NX10-FACP-1C. If the Positive Alarm Sequence (P.A.S.) option is programmed and enabled, an alarm condition originating from a configured P.A.S. device is registered at the panel; but will not immediately activate the notification appliances.

The Positive Alarm Sequence feature must be enabled using the NX10-ACS-DSP PCB keyboard display, refer to NX10-ACS-DSP PCB Keypad Menu Functions, P.A.S. section of this manual.

When the Neo NX NX10-FACP-1C registers a P.A.S. (Positive Alarm Sequence) alarm, the alarm LED will flash, the internal buzzer will sound (continuously), the display will indicate “NEW ALARM IN ZONE xxxx” (unacknowledged event), the zone message (32 characters), the device message (26 characters) and the type of device for the specific active device. At the same time, any outputs programmed to activate on an initial P.A.S. alarm will activate.

In addition to the above displayed P.A.S. alarm information, the display will show an Output Delay (Stage 1) time count down (acknowledgement time) for P.A.S. alarm acknowledgement. The bottom of the display will be highlighted indicating a tally of all alarms, CO, and supervisory events presently active on the system.

Example of an unacknowledged P.A.S. alarm:



< New unacknowledged P.A.S alarm message

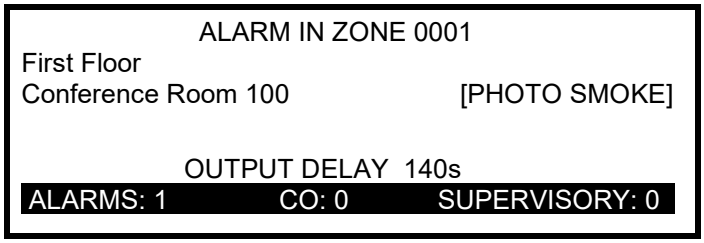
< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Output delay Stage 1 - time to “ACK”
< # Alarms # CO and # Supervisory events

If the alarm is not acknowledged before the Output Delay (Stage 1) time expires; the FACP will enter a full alarm condition and will activate all notification appliance circuits, relays, and other outputs programmed by the installer.

Pressing the “ACK” button within the allotted Output Delay (Stage 1) time will acknowledge the P.A.S. alarm, reset the Output Delay to a Stage 2 time period (investigation time), change the red Alarm LED to steady, silence the internal buzzer, and display “ALARM IN ZONE xxxx” (acknowledged event) with the zone/device messages.

Example of an acknowledged P.A.S. alarm:



< Acknowledged P.A.S alarm message

< Zone alarm text (32 Characters)
< Device text (26 Characters) / Pre-assigned type of device

< Output delay Stage 2 – time-period
< # Alarms # CO and # Supervisory events

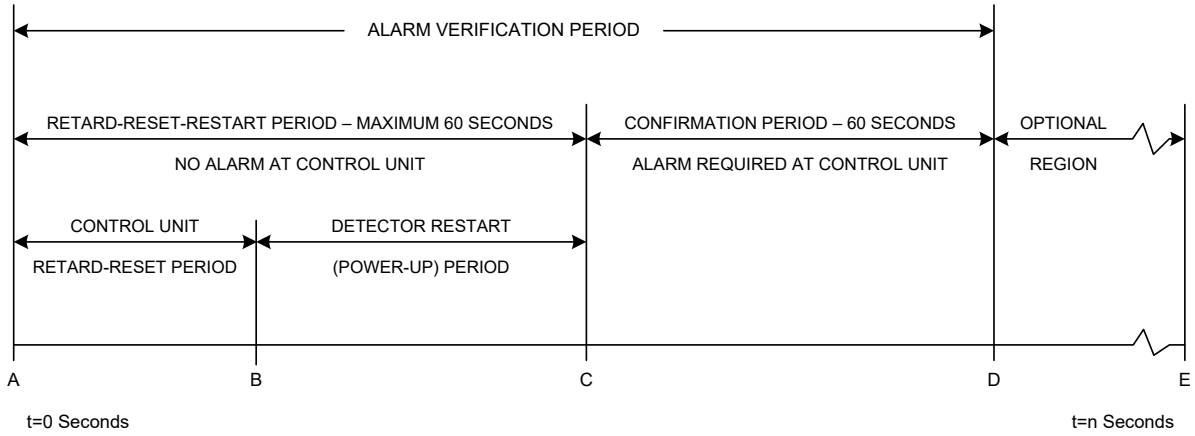
If the alarm is not reset before the Output Delay (Stage 2) time expires; the fire alarm control panel will enter a full alarm condition and will activate all notification appliance circuits, relays, and other outputs programmed by the installer.

If an additional alarm occurs on the FACP during a P.A.S. alarm cycle, the P.A.S. output delay time periods will be terminated, and a full alarm condition will be generated activating all notification appliance circuits, relays, and other outputs programmed by the installer. In addition, activating a manual pull station at any time during the P.A.S. output delay time periods will terminate the P.A.S. process and activate all programmed outputs.

7.4 Alarm Verification

Alarm Verification is a False Alarm Management programmable feature of the Neo NX NX10-FACP-1C. The alarm verification feature operates on a system or device basis (determined by programming) and is applicable to smoke detectors only. If required and programmed within the Shield, Dynamix Tools, Neo NX Config Tool, the alarm verification of a smoke detector in alarm can be indicated at the FACP and tied to a CBE (control-by-event) logic.

ALARM VERIFICATION TIMING DIAGRAM



Alarm Verification provides a mechanism to delay an alarm from a smoke detector due to transitory events. It should not, however, be used as a substitute for proper detector location/application or regular system maintenance.

If a smoke detector with alarm verification is activated and the smoke concentration is at or above the alarm threshold at the end of the retard-reset-restart period, the FACP will initiate an alarm condition.

If the smoke concentration level is below the alarm threshold at the end of the retard-reset-restart period, the FACP will enter a 60 second confirmation period. If verified smoke detector or any other smoke detector enters an alarm condition during the confirmation period, the FACP will enter an alarm condition.

Alarm verification shall not be used with multiple detectors or cross-zone applications.

7.5 Cross Zoning

Notification appliance circuits and other output circuits may be configured to only activate when two alarm zones enter an alarm condition.

Smoke detectors employed in cross-zone operation must not be configured for alarm verification or multiple detector operation.

7.6 Walk Test

The Neo NX NX10-FACP-1C provides a means to implement a one-person alarm walk test feature for manual pull stations and smoke detectors, refer to the NX10-ACS-DSP PCB Keypad Menu Functions, TEST, ZONES section of this manual for detailed information regarding walk test activations.

7.7 Zone, Group and Point Disablements

The Neo NX NX10-FACP-1C can perform disable functions via the NX10-ACS-DSP PCB keyboard display or via any button configurated as a disable button within the system. For information regarding the disabling of zones, groups, or individual points, refer to the NX10-ACS-DSP PCB Keypad Menu Functions, DISABLE section of this manual.

7.8 Day/Night Sensitivity

The Neo NX NX10-FACP-1C incorporates individual detector day/night sensitivity configurations. To configure a detector for day/night operation, the detector would be tied to one (1) of the ten (10) time clocks available within the FACP's software. Once the time clock has been allocated a Special Sensitivity Mode (SSM) programming area will be available for setting a different sensitivity while the time clock is active. Individual time clocks can be programmed based on time-of-day and days-of-week. Time clock settings can also incorporate two (2) different settings, i.e., ON – Off and ON-OFF again. In addition, individual time clocks can be gated by other FACP input functions, for example, allowing time clock usage only if a specific gated key switch is active.

7.9 Detection Sensitivity Adjustment

Each intelligent detector of the Neo NX NX10-FACP-1C is capable of being field programmed for one of five response/sensitivity modes (below). The Response modes correspond to unique response behaviours of a detector and the type of environment it is protecting, which can be broadly related to the characteristics of a fire. The detector response modes relate to different combinations of smoke sensitivity characteristics and programmable assessment times. Response mode 1 is more sensitive than response mode 5. Detectors set to response mode 1 would be more suitable for environments in which sources of unwanted alarms are rare (i.e.: clean rooms and computer rooms). Response mode 5 set detectors would be suitable for more dusty or harsh environments (i.e.: boiler rooms, loading dock areas). Response mode 3 (default programmed) would be the mid-sensitivity level used for most normal applications. Response mode setting and hysteresis of the individual detectors are stored within the detector's memory. The storing of this critical information in the detector rather than in the FACP allows the detector to maintain its programmed response settings and compensated values even when power is removed from the detector. If the detector is powered down or inadvertently placed in another location, the detector response mode and clean values are not lost.

	Clean Room, Computer Room					Hotel Room, Apartment					Office, Hospital Ward, Factory, Light Industry					Warehouse, Restaurant					Loading Dock, Parking Garage					Kitchen, Laundry (Enclosed and ventilated)					Boiler Room				
Mode	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Photoelectric	✓							✓	✓	✓			✓	✓	✓				✓					✓									✓	✓
Ionization								✓	✓	✓			✓	✓	✓			✓	✓															
Multi-Sensor	✓							✓	✓				✓	✓			✓	✓	✓	✓		✓	✓	✓	✓							✓			
Heat																✓	✓				✓	✓						✓	✓	✓			✓		✓

1, 2, 3, 4, 5 = Response/Sensitivity Modes
✓ = Mode Suitable for Installation

Photoelectric Detector		
Response Mode	**Sensitivity Characteristics**	**Programmable Assessment Time**
1	1.7 %/ft	5 sec
2	1.7 %/ft	30 sec
3	2.3 %/ft	5 sec
4	2.3 %/ft	30 sec
5	2.9 %/ft	5 sec

Multi-Sensor Detector			
Response Mode	**Smoke Sensitivity Characteristics**	**Temperature Sensitivity**	**Programmable Assessment Time**
1	1.7 %/ft	High	0-20 sec
2	2.3 %/ft	None	0-30 sec
3	2.7 %/ft	Medium	0-20 sec
4	3.3 %/ft	Medium	0-20 sec
5	None	135ºF	0-30 sec

Ionization Detector		
Response Mode	**Sensitivity Characteristics**	**Programmable Assessment Time**
1	.60 %/ft	5 sec
2	.60 %/ft	30 sec
3	.65 %/ft	5 sec
4	.65 %/ft	30 sec
5	.70 %/ft	5 sec

Heat Detector			
Response Mode	**UL521 Temperature Rating (ºF)**	**Sensitivity Characteristics**	**Spacing**
1	135ºF Ordinary	Static/Rate-of-Rise	70 ft
2	150ºF Ordinary	Static/Rate-of-Rise	70 ft
3	150ºF Ordinary	Static	70 ft
4	200ºF Intermediate	Static/Rate-of-Rise	70 ft
5	200ºF Intermediate	Static	70 ft

Analog values/answerbacks of each installed intelligent detector can be viewed at any time via the panel's alphanumerical graphical display. Analog values/answerbacks range from 0 to above 55 based on various status conditions of the intelligent detector, below.

Photoelectric Detector, Ionization Detector and Multi Sensor Analog Values

Analog Values	Status Condition
55 and above	Detector in Alarm
45-54	Pre-Alarm (Detector Close to Alarm Condition)
23 (+4/-0)	Quiescent (Normal)
8	Low Alarm Level
7	ASIC Communication Error
6	Compensation Limit Reached
4	Type Code Error
2	Secondary Sensor Fault
1	Primary Sensor Fault
0	Device Missing or Microprocessor Fault

Heat Detector Analog Values

Analog Values	Status Condition
55 and above	Detector in Alarm
45-54	Pre-Alarm (Detector Close to Alarm Condition)
10-44	Quiescent (Normal – Value Temperature Dependent)
8	Low Alarm Level
7	ASIC Communication Error
4	Type Code Error
1	Sensor Fault
0	Device Missing or Microprocessor Fault

7.10 NX10-ACS-DSP PCB Keypad Menu Functions

The following table gives a list of the Main Menu (user menu) Options and the Sub Menus available from the NX10-ACS-DSP PCB keyboard display. In addition, a brief description for each sub menu is provided.

Main Menu Option	Sub Menus	Description
VIEW	Alarms	View Zones and Inputs that are reporting an alarm condition.
	Off Normal	View Zones, Inputs and Outputs that are reporting an off-normal condition. (Alarms, CO-Alarm, Supervisory, Trouble, Disabled, Pre-Alarm, Warning and Problems)
	Network	View Network diagnostics
	Inputs	View the current state of Inputs (by zone/point).
	Outputs	View the current operational condition of Outputs (by zone/point).
	Log	View the Event Log and Alarm Counter
	Panel	View Local-Hardware, Software and Network-Hardware. Local-Hardware - view operational state, voltage and current loading of the panel input and output circuits. Software – view software revisions for Panel, Display, SLC, Network, PSU, and Peripherals. Network-Hardware – view network node voltage and current loading of the network node panel input and output circuits.
DISABLE	Zone / Inputs [8]	Disable a complete zone or an individual input device.
	Outputs 8	Disable NAC outputs or other output devices.
	Groups 8	Group Disable – Disable a programmed group of inputs / outputs
	Controls [9]	Disable NX10-ACS-DSP PCB controls
	User-ID 8	Exits User-ID timed password access
ENABLE	Zone / Inputs 8	Enable a complete zone or an individual input device.
	Outputs 8	Enable NAC outputs or other output devices.
	Groups 8	Group Enable – Re-enable a group of inputs / outputs
	Remote 8	Grant remote access for terminal mode
TEST	Zones 8	Configure one or more zones for walk test.
	Display	Test the Display, Status Indicators (including Switch LED Module LEDs) and Keyboard.
	Buzzer	Test the Internal Buzzer
	Printer	Test the connection to the Printer
	Outputs 8	Test Outputs in the system
	Audio 8	Test Audio area amplifier (s) with massage type (1 – 16 messages within amplifier [s])
	HVAC 8	Test Smoke Control fans and dampers
P.A.S.	Enabled 8	Enable P.A.S. operation
	Disabled 8	Disable P.A.S. operation
TOOLS	Program [10]	Enter the Level 3 Commissioning and Panel Programming Functions (Factory default Level 3 programming code 7654)
	Print 8	Setup printer and print inputs, outputs, troubles, disabled, log
	Change Time 8	Change time and date of the system
STATUS	---	Return to the Normal Operating Display immediately

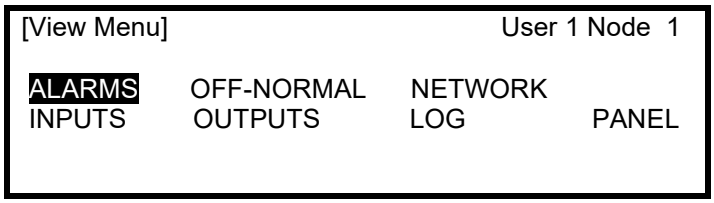
[8] This option requires a User-ID access password with time-out.

[9] This option should not be utilized as this will disable ACK, Silence, Resound, Drill and Reset controls.

[10] This option requires a user Level 3 commissioning/programming password.

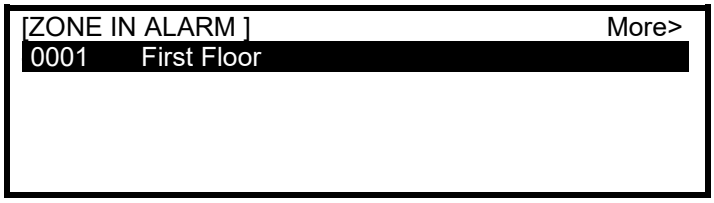
7.10.1 View

The View Menu area is normally only used by service technicians, below is an example of the View Menu.



7.10.1.1 Alarms

Fire alarm events are shown on the FACP without having to access the View Menu options area. To access the ALARMS area, the FACP must have an active alarm event. When in the ALARMS area, pressing the navigation ➔ button will provide additional information pertaining to the device in alarm, including Device Text, State, Type, Value, Lp Adrs, Sector and Node.



7.10.1.2 Off Normal

When accessing the OFF-NORMAL area an Off-Normal Menu will appear.

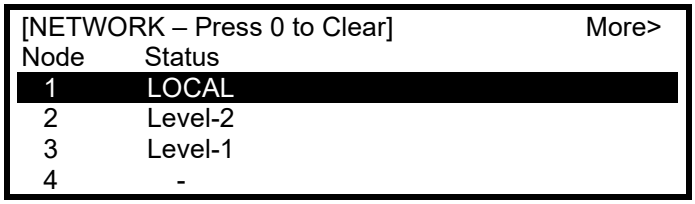
Like the previous ALARMS area, all the Off-Normal Menu events, with the exception, of the PROBLEMS area are shown on the FACP without having to access the View Menu options area. To access any of these Off-Normal Menu areas, the FACP must have an active event type. When in any of the event type areas, pressing the navigation ➔ button will provide additional information pertaining to the active event, including Device Text, State, Type, Value, Lp Adrs, Sector and Node.

The PROBLEMS area is for logging Dirty Scale 1 intelligent/enhanced detector events and is used when the Shield enhanced calibration programming is used.

7.10.1.3 Network

This view area can be used to obtain “real time” diagnostic information when a network is used to connect other panels or remote annunciators. The access level of all nodes can be viewed and if the navigation ➔ button is pressed specific node information is provided (i.e., Data Packets, Bad Packets, Comms lost, FT Ring Trbl and Next Node at).

Below is an example of access to the View NETWORK area.



Below is an example of the View NETWORK area after pressing the navigation ➔ button.

```
[NETWORK – Press 0 to Clear]
Data Packets   :    xxxxx
Bad Packets    :      0
Comms lost     :      0
FT Ring Trbl   :      0
Next Node at   :      x
```

Pressing the 0 key on the keyboard display keypad will Clear (reset) all network status information.

7.10.1.4 Inputs

This sub menu area shows the current operational state and condition for all zones and individual inputs (including zones/points of other network nodes). The display presents a list of all the zones containing input devices with the first zone highlighted. For example:

```
[Inputs]                                More>
Zone    Mode          Location
000 1   Enabled       BASEMENT WEST
0002    ALL DISABLED  BASEMENT EAST
0008    Enabled       GROUND FLOOR
0009    Enabled       MAIN RECEPTION AREA
```

Press the ↑↓ buttons to highlight the required zone and then press the ➔ button to view the full location text.

Press the ➔ button again to view additional information and the inputs within the zone and their status. For example, press the ➔ button 6 times:

```
[ Inputs in Zone  0008]                 <More
Mode       Lp   Adrs    Sector   Node
ENABLED    1    001.0     1        1
DISABLED   1    002.0     1        1
ENABLED    1    003.0     1        1
ENABLED    1    004.0     1        1
```

The display will show Mode (Enabled or Disabled status for each input device), Lp Adrs (SLC loop the specific device is programmed to), Sector (sector programming is an enhanced partitioning programming) and Node number the device is connected to.

Press the ↑↓ buttons to scroll through the inputs.

Press the Esc button on the NX10-ACS-DSP PCB keypad to return to the previous view.

7.10.1.5 Outputs

This sub menu area shows the current operational condition for all outputs (including outputs of other network nodes). The display presents a list of all the zones containing output devices with the first zone highlighted. For example:

```
[Outputs]                               More>
Zone    Mode          Location
0008    ENABLED       GROUND FLOOR WEST
0009    ENABLED       MAIN RECEPTION
0012    ENABLED       SECOND FLOOR WEST
0013    ENABLED       SECOND FLOOR EAST
```

Press the ↑↓ buttons to highlight the required zone.

Press the ➔ button again to view additional information and the outputs within the zone and their status. For example, press the ➔ button 4 times:

```
[  Outputs In Zone 0008 ]                    <More>
Mode      State      Type
Enabled   Off        RELAY
Enabled   Off        RELAY
Enabled   Off        VOLTAGE
Enabled   *On        RELAY
```

*A * symbol preceding the state (e.g., *On) indicates the device has been configured as an inverted output (i.e., a trouble relay that is designed to de-energize when a trouble occurs [loss of power]).*

7.10.1.6 Log

After selecting the LOG area, the display presents a pop-up window to allow selection viewing of ALL EVENTS, ALARM EVENTS ONLY or the ALARM COUNTER.

```
ALL EVENTS
ALARM EVENTS ONLY
ALARM COUNTER
```

Press the ↑↓ buttons to highlight the required view option and then press the ✔ button to select it. The display then shows the appropriate list of events.

While viewing the log, if a printer is connected to the RS232 port, the log will be sent to the printer.

7.10.1.6.1 All Events

Below is an example of the ALL EVENTS log, press the ↑↓ buttons to scroll through the logged events.

```
[View All Events]                          Entry 0248
Time/Date      Node      Lp:Addr   Zone
 7:54:23          1      2:001.0   0012
01/14/20      SUPERVISORY
BASEMENT                    64
SPRINKLER RISER                    SWITCH(MON.)
```

< View Mode ALL EVENTS and Displayed Event #
< Time, Node/Loop #, Device Address and Zone
< Date, Event Type
< Zone Text Description and Analog Value
< Device Text Description and Device Type

7.10.1.6.2 Alarm Events Only

Below is an example of the ALL-ALARM EVENTS log, press the ↑↓ buttons to scroll through the logged alarm events.

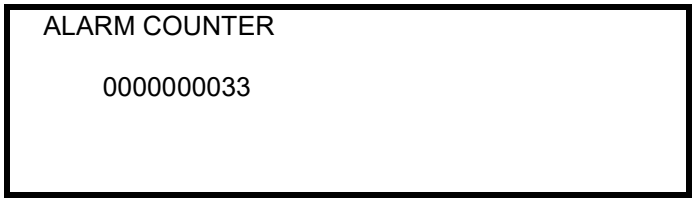
```
[View Alarm Events]                        Entry 0176
Time/Date      Node      Lp:Addr   Zone
 10:54:23         1      1:001.0   0001
11/14/19      ALARM
BASEMENT                                      64
ROOM 10                            PHOTO SMOKE
```

< View Mode ALL ALARM EVENTS and Displayed Event #
< Time, Node/Loop #, Device Address and Zone
< Date, ALARM Event
< Zone Text Description and Analog Value
< Device Text Description and Device Type

In the above example, the latest alarm occurred (Event No. 176) at 10:54 am on March 14, 2019. This alarm was located at device address 001 (Addr) on Loop 1 (Lp) on Panel No. 1 (Node). The device was in Zone 0001. The analog value registered by the device (64) has also been recorded. The lower two lines show the zone description, device text description and device type for ease of identification.

7.10.1.6.3 Alarm Counter

The FACP records the number of times that an alarm event has occurred since it's installation or since the last event log erase.



The FACP increments the alarm count each time it changes from the normal condition to an alarm state. While the panel is in alarm, if an additional alarm event occurs it does not advance the counter.

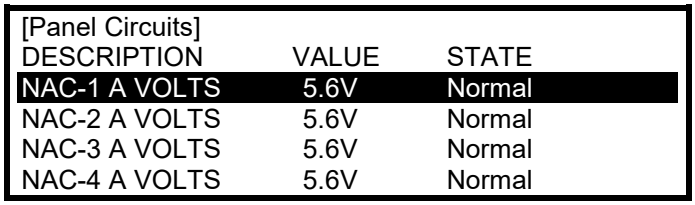
Press the "Esc" button to return to the main view menu.

7.10.1.7 Panel

When accessing the PANEL area, a Panel Information sub menu will appear allowing selection of LOCAL-HARDWARE, SOFTWARE or NETWORK-HARDWARE.

7.10.1.7.1 Local-Hardware

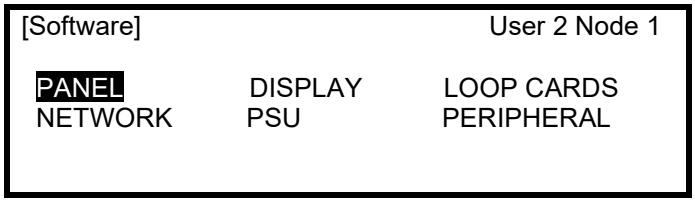
Entering the LOCAL-HARDWARE area allows the viewing of FACP's associated electronic circuits. Information includes each electronic circuits, DESCRIPTION, VALUE and STATE.



Press the ↑↓ buttons to scroll through the FACP's electronic circuits. Press the Esc button to return to the main view menu.

7.10.1.7.2 Software

Entering the SOFTWARE area will bring up a SOFTWARE sub menu. The SOFTWARE sub menu allows the viewing of the FACP's associated product firmware version.



7.10.1.7.3 Network-Hardware

Entering the NETWORK-HARDWARE area allows the selection of a network node's specific Zone number.

```
[HARDWARE]                                  MORE>
 ZONE    LOCATION
 0701    FACP Electrical Closet
 0702    Lobby Local Operating Panel
 0703    Remote Panel Third Floor
 0704    Ancillary Annunciator
```

Scroll ↓ to a network node Zone and scroll to the left → to view the network node's electronic circuits, Device Text, and Value.

```
  [   HARDWARE IN ZONE 0703]              <MORE>
DEVICE TEXT          VALUE
NAC-1  A VOLTS        5.6V
NAC-2  A VOLTS        5.6V
NAC-3  A VOLTS        5.6V
NAC-4  A VOLTS        5.6V
```

Press the ↑↓ buttons to scroll through the network nodes electronic circuits. Press the Esc button to return to the HARDWARE menu.

7.10.2 Disable

When entering the Disable area, a Disable sub menu will appear. The Disable sub menu allows the selection of ZONE/INPUTS, OUTPUTS, GROUPS, CONTROLS and USER-ID disablements.

```
[Disable]                              User 1 Node  1

 ZONE/INPUTS          OUTPUTS       GROUPS
 CONTROLS             USER-ID
```

Press the ←→, ↑↓ buttons to highlight the required menu option and then press the ✔ button to select it.

7.10.2.1 Zone/Inputs

This area provides a way to disable an entire zone, all inputs, selected inputs, only automatic detectors, only manual devices, or all other devices.

If the current User-ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent disablements.

When selecting this option, the display shows a list of the current zones and their current disable status. For example:

```
[ 0 ZONE (s)  with  INPUTS   DISABLED]        More>
Zone      Mode        Location
0001      Enabled     BASEMENT WEST
0002      Enabled     BASEMENT EAST
0008      Enabled     GROUND FLOOR
0009      Enabled     MAIN RECEPTION AREA
```

Press the ↑↓ buttons to scroll through the available zones or key in a specific zone number.

To disable the entire zone, move over to the Mode column and highlight the existing mode. Press the ✔ button and a pop-up window will appear showing the three possible options:

```
ALL INPUTS
SELECTED INPUTS
ONLY AUTOMATIC DETECTORS
ONLY MANUAL DEVICES                    ↓
```

Press the ↑↓ buttons to scroll through and highlight the required option and then press the ✔ button to select it.

If ALL INPUTS is chosen, the Zone Mode status will change from “Enabled” to “ALL DISABLED.”

[0 ZONE(s) with INPUTS DISABLED]		More>
Zone	Mode	Location
0001	ALL DISABLED	xxxxxxxxxxxxxxxxxx
0002	Enabled	xxxxxxxxxxxxxxxxxx
0008	Enabled	xxxxxxxxxxxxxxxxxx
0009	Enabled	xxxxxxxxxxxxxxxxxx

If SELECTED INPUTS is chosen, the pop-up window disappears and a list of the input devices within the selected zone is presented. For example:

[Inputs in Zone 0001]	More>
Mode	Device Text
Enabled	BASEMENT WEST
Disabled	BASEMENT EAST
Enabled	GROUND FLOOR
Enabled	MAIN RECEPTION AREA

Press the ➔ button for more information on the inputs, including loop number, address, device type, analog value, etc.

Press the ↑↓ buttons to scroll through and highlight the required input and then press the ✔ button to disable it. The Zone Mode status will change from “Enabled” to “PART DISABLED.”

[1 ZONE(s) with INPUTS DISABLED]		More>
Zone	Mode	Location
0001	PART DISABLED	xxxxxxxxxxxxxxxxxx
0002	Enabled	xxxxxxxxxxxxxxxxxx
0008	Enabled	xxxxxxxxxxxxxxxxxx
0009	Enabled	xxxxxxxxxxxxxxxxxx

Press the “Esc” button to return to the previous display.

If ONLY AUTOMATIC DETECTORS is chosen, the pop-up window disappears and all detectors within the zone will be disabled, and the Zone Mode status will change from “Enabled” to “PART DISABLED.”

If ONLY MANUAL DEVICES is chosen, the pop-up window disappears and all manual pull stations within the zone will be disabled, and the Zone Mode status will change from “Enabled” to “PART DISABLED.” If there are no pull stations within the zone nothing will be disabled.

If ALL OTHER DEVICES is chosen, the pop-up window disappears and all none alarm, including firefighter phones will be disabled and the Zone Mode status will change from “Enabled” to “PART DISABLED.”

7.10.2.2 Outputs

The Disable Outputs Option allows for the isolation of some or all outputs. If disabled, the outputs will not activate in the event of an alarm or other programmed event.

If the current User-ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent changes.

Once a valid access password has been entered, a pop-up window is shown on the display to select the type of outputs to disable. Scroll down to view / select the available options.

ALL OUTPUTS
NACS
RELAYS
ONLY SELECTED OUTPUTS

Strobes can be added to the disable outputs pop-up window via the Shield, Dynamix Tools, Neo NX Config Tool, under the Disable Outputs Menu Options.

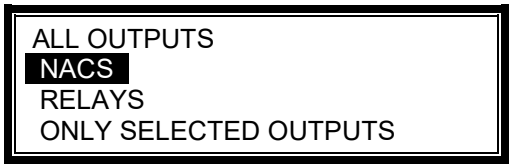
7.10.2.2.1 All Outputs

On access to the Disable – Output's sub menu, the ALL OUTPUTS will be highlighted and then pressing the ✔ button will disable all outputs. The display automatically reverts to the Main Menu – Disable.

On networked systems this only disables the outputs connected to the associated FACP.

7.10.2.2.2 NACS

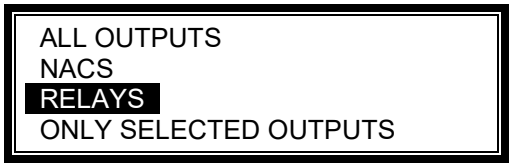
Press the ↑↓ buttons to scroll through and highlight the NACS option and then press the ✔ button to disable all NAC outputs. The display automatically reverts to the Main Menu - Disable and the NAC Disabled LED will illuminate, indicating NACs disabled.



On networked systems this only disables NACs connected to the associated FACP.

7.10.2.2.3 Relays

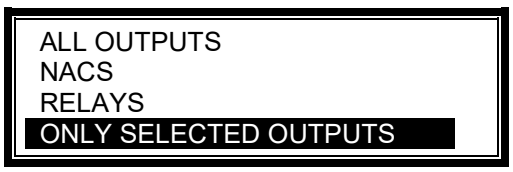
Press the ↑↓ buttons to scroll through and highlight the RELAYS option and then press the ✔ button to disable them. The display automatically reverts to the Main Menu – Disable.



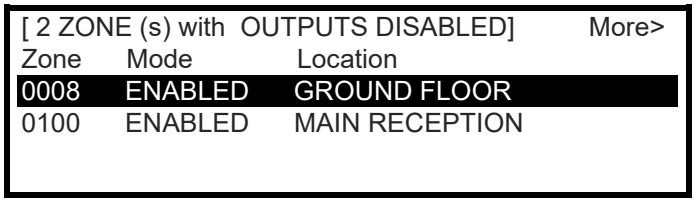
On networked systems this only disables relays connected to the associated FACP.

7.10.2.2.4 Only Selected Outputs

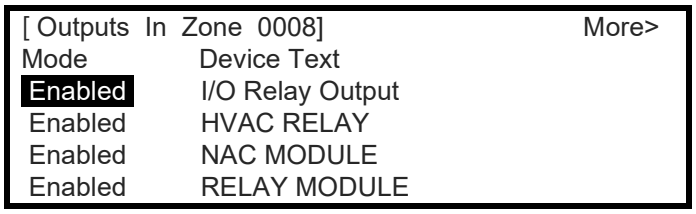
Press the ↑↓ buttons to scroll through and highlight the ONLY SELECTED OUTPUTS option and then press the ✔ button to select it.



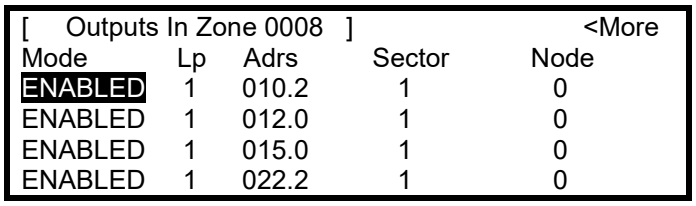
The display then shows a list of Zones containing outputs. For example:



Press the ↑↓ buttons to scroll through and highlight the required Zone and then press the → button to view the outputs within this zone. For example:



Press the → button to view more information on the outputs including Mode, Device Text, State, Type, Value, LP (loop), Adrs (address), Sector and Node. Below is an example of pressing the → button 6 times.



Press the ↑↓ buttons to scroll through and highlight the required output and then press the ✔ button to change the device mode from Enabled to Disabled. The device mode will change from Enabled to Disabled.

Press the “Esc” button to return to the Zone list and to the Main Menu – Disable.

7.10.2.3 Groups

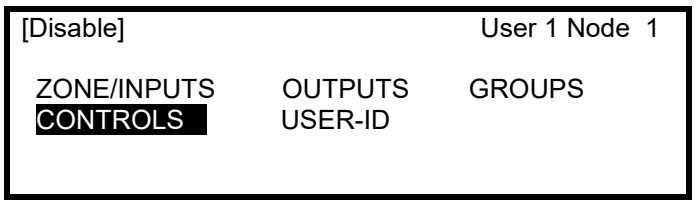
The Disable Groups option allows for the disablement of user defined disable groups that were created in the Neo NX Config Tool. When the Disable groups option is selected, a list of all configured Disable Groups with assigned Disable Group Text will be displayed. To disable one of the groups, press the ↑↓ buttons to scroll through and highlight the required disable group and then press the ✔ button. The disabled group mode will change from Enabled to Disabled.

7.10.2.4 Controls

Disabling Controls will disable all controls on the FACP including acknowledge, reset, signal silence, resound and drill.

The disablement of panel controls is not advised unless used for special applications such as a key switch in the display for enabling control key usage.

Press the ←→, ↑↓ buttons to highlight the Controls option and then press the ✔ button to select it.



If the current User-ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent changes.

Once a valid access password has been entered, the control button functions, and menu functions are disabled, and a access Level 1 menu will be shown:

```
        [ CONTROLS DISABLED ]

ENABLE CONTROLS          VIEW
LED TEST                 STATUS
```

The display will automatically revert to the normal operating display after 15 seconds.

7.10.2.5 User-ID

If a User-ID password has been used to access password protected areas, selecting the Disable User-ID cancels the current User-ID access. If access is required to additional areas, the User-ID password would need to be re-entered.

Press the ←→, ↑↓ buttons to highlight the User-ID option and then press the ✔ button to select it.

```
[Disable]                                User 5 Node  1

 ZONE/INPUTS      OUTPUTS      GROUPS
 CONTROLS         USER-ID
```

If there has been no User-ID activity (button presses) after the password access time-out, the panel will automatically cancel a User-ID level access. This is to make sure that access to restricted options is automatically cancelled.

7.10.3 Enable

When selecting the Main Menu – Enable Option, the display shows the available Enable functions.

```
[Enable]                                 User 1 Node  1

  ZONE/INPUTS      OUTPUTS      GROUPS
  REMOTE
```

Press the ←→, ↑↓ buttons to highlight the required sub menu option and then press the ✔ button to select it.

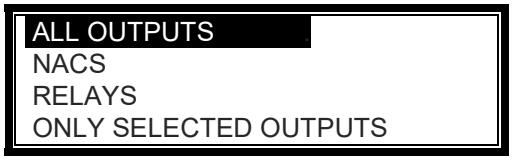
7.10.3.1 Zone/Inputs

Selecting this option will show a list of zones containing disabled input devices. Either the complete zone or individual devices within the zone can then be enabled.

```
[ 4 ZONE (s)  with INPUTS DISABLED]          More>
Zone      Mode          Location
0001      Disabled      BASEMENT WEST
0002      Disabled      BASEMENT EAST
0008      Disabled      GROUND FLOOR
0009      Disabled      MAIN RECEPTION AREA
```

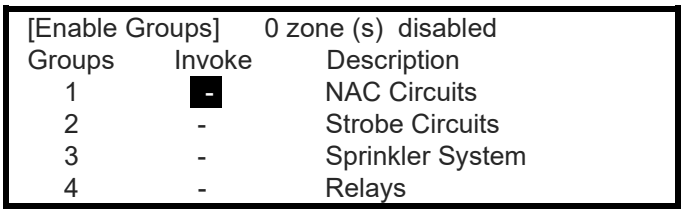
Outputs

When this option is selected, a pop-up sub menu appears asking if you want to enable ALL OUTPUTS, NACS, RELAYS or ONLY SELECTED OUTPUTS. If ONLY SELECTED OUTPUTS is selected, the display will list only zones containing outputs that have been disabled. The individual outputs within the zone can then be enabled.



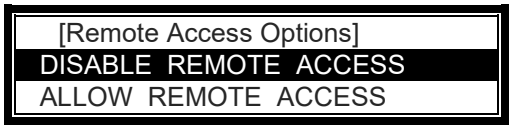
Groups

When this option is selected, a list of the disable groups will be available, press the ↑↓ buttons to scroll to the correct group requiring enablement and press the ✔ button.



Remote

When this option is selected, a pop-up window will be displayed, requesting the user to either disable or allow remote access.



Test

The Main Menu – Test area allows users to test various items of the FACP.

If a printer is connected to the FACP all activated tests will be sent to the printer.

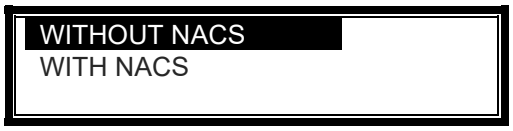
Press the ←→, ↑↓ buttons to highlight the required sub menu option and then press the ✔ button to select it.

7.10.3.2 Zones

The test ZONES function provides a means to implement a one-person walk test to test zones or specific detectors or manual pull stations.

If the current User-ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent changes.

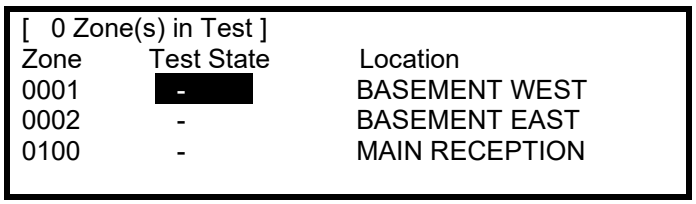
When the ZONES option is selected, a pop-up window is shown on the display to select whether the testing will or will not activate the NAC circuits for 10-seconds when the device is tested. For example:



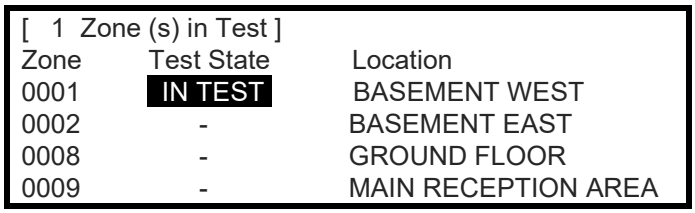
Press the ↑↓ buttons to scroll through and highlight the required option and then press the ✔ button to select it.

All NAC circuits are defaulted to activate during a walk test; however, the Shield, Dynamix Tools, NeoNX Config Tool allows for customization of walk test outputs (NACs and relays).

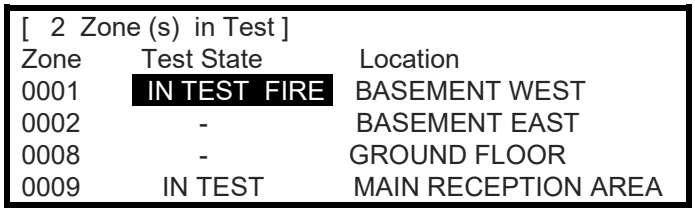
The display then shows a list of the available zones and their current test status. For example:



Press the ↑↓ buttons to scroll through and highlight the required zone and then press the ✔ button to change the test state. For example:



When one or more zones are placed in a test state, the Test LED will illuminate. When a device is activated (i.e., manual pull station or introduction of test smoke to a smoke detector), the notification appliances will activate (if selected), and the display will indicate that the zone is registering a test condition by showing “FIRE” on the test zone display.



When the manual pull station is reset or when the smoke clears from the detector chamber, the FACP will automatically reset and clear the test condition.

As an alternative to scrolling, a specific zone number can be entered by using the ← button to move to the zone number column and then typing in the required number followed by the ✔ button.

If several consecutive zones are to be tested, an alternative to selecting them all individually is to specify a range of zones as follows:

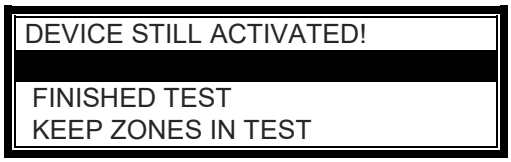
Move to the zone number column and highlight the first zone to test, then press the ✔ button, the display will then prompt for the last zone to be tested.

Individual zones can then be toggled in or out of test by pressing the ✔ button.

To leave the zone test sub menu, press the “Esc” button.

Selecting the FINISHED TEST option will cancel all zones that are in test mode. The Test LED will then extinguish.

If there are any zones still in a test or alarm condition, a pop-up window with the following options will appear:



Alternatively, it is possible to leave the Test – Zone’s sub menu with one or more zones still in test mode by selecting the KEEP ZONES IN TEST option. This will enable the use of other menu functions and return the display to the normal operating mode. The Test LED will stay illuminated if this option is selected.

If no zones are still in test condition, the display will revert to the Test Menu.

Display

The test DISPLAY option checks the operation of all the LEDs and the graphical display of the NX10-ACS-DSP PCB keyboard. All the LEDs are turned on and the entire display is shown in reverse (inverted). In addition to testing the NX10-ACS-DSP PCB, the Display test will also test all programmed LEDs of Switch LED Modules connected to the associated NX10-ACS base card peripheral bus.

The display test will also test all programmed LEDs of optional Shield Switch LED Modules connected to the associated NX10-ACS base card peripheral bus.

During this test it is possible to test the operation of the←, ↑, ↓, →, ✔ and 0-9 buttons. When a button is pressed it is indicated on the display. For example:

Press the Esc button to return to the Main Menu – Test. If no button is pressed for 10 seconds, the display will automatically revert to the normal operating display.

7.10.3.3 Buzzer

When the test BUZZER option is selected, the internal FACP buzzer will pulse for approximately five seconds.

7.10.3.4 Printer

To test the printer, highlight the PRINTER option and press the ✔ button to confirm. The panel transmits 16 lines of test characters to the printer. The information sent is also sent to the NX10-ACS-DSP PCB keyboard display.

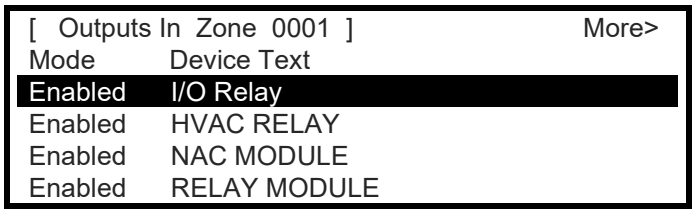
The printer test function will only work if a printer is programmed on the FACP. If no printer is programmed, the display will indicate NO PRINTER SELECTED!

When the test printer is completed, the display automatically reverts to the Main Menu – Test. Press the Esc button at any time to cancel the test printer.

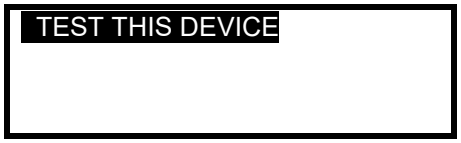
7.10.3.5 Outputs

To test outputs, highlight the OUTPUTS option and press the ✔ button to confirm.

Press the ↑↓ buttons to scroll through and highlight the required zone containing the output and then press the ➔ button to scroll to the specific output to be tested. For example:

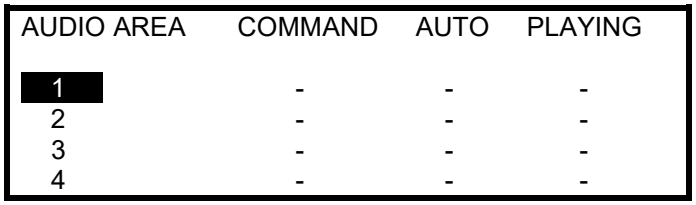


Press the ✔ button for the output you wish to test. Press the ✔ button again to begin the test, the device will activate until the ESC button is pressed.

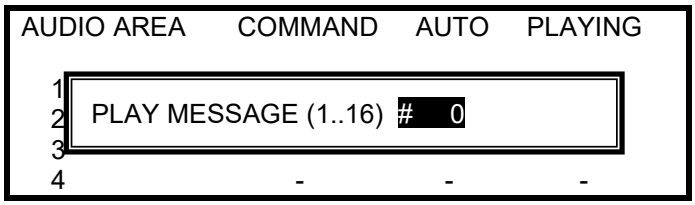


7.10.3.6 Audio

When the AUDIO option is selected, the user is given a list of AUDIO AREAs with COMMAND, AUTO and PLAYING information.

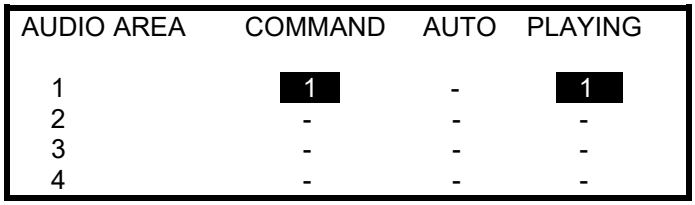


Press the ↑↓ buttons to scroll to an AUDIO AREA requiring testing and then press the → button to scroll to the COMMAND criteria and press the ✔ button.



Once the COMMAND has been selected, the user is capable of broadcasting one of the 16 audio amplifier stored messages.

The following is an example of audio message 1 (COMMAND 1) being tested in AUDIO AREA 1, PLAYING message 1.

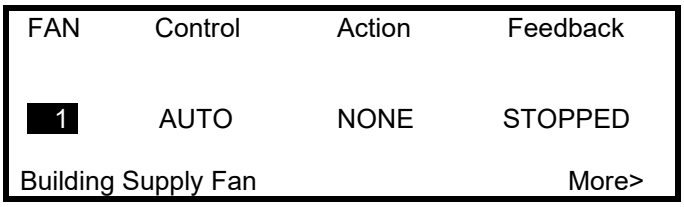


7.10.3.7 HVAC

To test the smoke control of the FACP, press the ↑↓ and/or → buttons to scroll to the HVAC test area and press the ✔ button.

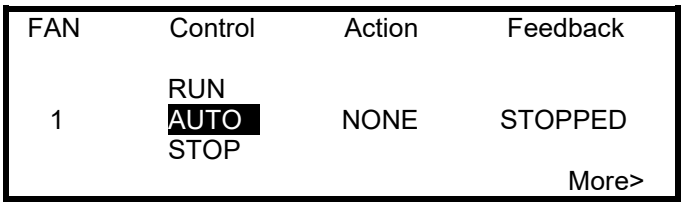
7.10.3.7.1 Fans

To test fans, highlight FANS and then press the ✔ button and the following screen will appear:



If the fan is not being monitored for Feedback, a dash (-) will be indicated under the Feedback section.

Enter the FAN number to be tested and press the → button to scroll and highlight the Control AUTO button. Once the AUTO button is highlighted, the following screen will be displayed:



Pressing the ↑ arrow will RUN the fan and the Action will than indicate RUN, if feedback is provided, the Feedback will indicate RUNNING. Pressing the ↓ arrow will STOP the fan and if feedback is provided, the Feedback will indicate STOPPED.

7.10.3.7.2 Dampers

Dampers are tested the same way as the fans, press the → button to scroll to DAMPERS and press the ✔ button, then press the ↑↓ buttons to select Close or Open:

DAMPER	Control	Action	Feedback
1	CLOSE **AUTO** OPEN	NONE	CLOSED
			More>

7.10.3.7.3 Auto Tests

The AUTO TESTS area will give the user status of the auto tests that have been performed by the FACP. Press the ↓ arrow and scroll through the AUTO TEST RESULTS.

The following Auto Test Status screen will appear:

[AUTO TEST RESULTS]				MORE>
	Pass	Fail	In Test	Untested
FAN	**4**	0	0	0
DAMPER	9	1	0	0

To retest a FAN or DAMPER that has Failed a test, press the ←→, ↑↓ buttons to scroll to the Failed FAN or DAMPER and press the ✔ button:

[AUTO TEST RESULTS]				MORE>
	Pass	Fail	In Test	Untested
FAN	4	0	0	0
DAMPER	9	**1**	0	0

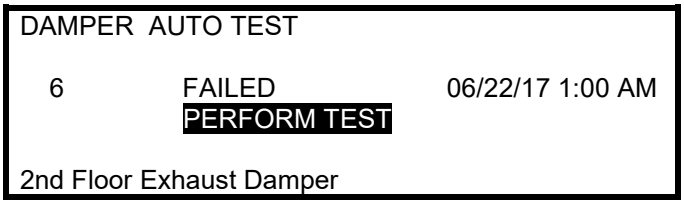
The following screen will appear:

DAMPER AUTO TEST		
6	FAILED	06/22/17 1:00 AM
	OPEN NOT CONFIRMED	
2nd Floor Exhaust Damper		

Press the → arrow scroll button to navigate to the FAILED text.

DAMPER AUTO TEST		
6	**FAILED**	06/22/17 1:00 AM
	PERFORM TEST	
2nd Floor Exhaust Damper		

Press the ↓ arrow scroll button to navigate to the PERFORM TEST and press the ✔ button.



7.10.3.7.4 Smoke Compartments

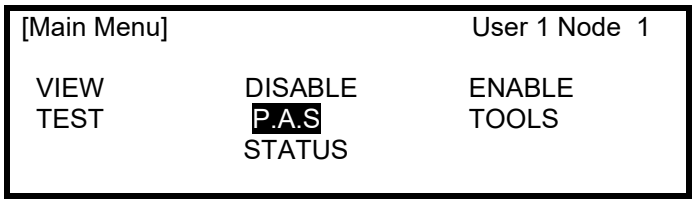
Once the test SMOKE COMPARTMENTS has been entered a user can either select to test all configured smoke compartments or select a specific smoke compartment to be tested.

7.10.3.7.5 Multi Selectors

Multi selectors (multi manual demands) are configured smoke control functions that control both a fan(s) and/or damper(s) together, rather than controlling one fan or one damper. To test multi selectors, access the MULTI SELECTORS area and select programmed individual multi selectors (multi manual demands) to be tested.

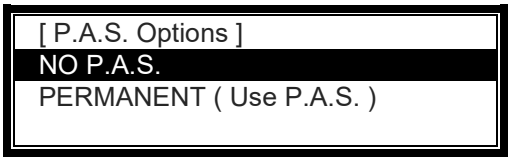
7.10.4 P.A.S. (Positive Alarm Sequence)

To enable or disable FACP programmed P.A.S. (positive alarm sequence) operation, press the ←→, ↑↓ buttons to scroll to the P.A.S. area and press the ✔ button.



If P.A.S delay functionality has not been configured, when accessing the P.A.S. area, the display will briefly show NOT CONFIGURED before returning to the Main Menu.

Once access to the P.A.S. area is granted, the display shows the following pop-up window.



Highlight the required option using the ↑↓ buttons and then press the ✔ button to confirm. The display then reverts to the Main Menu.

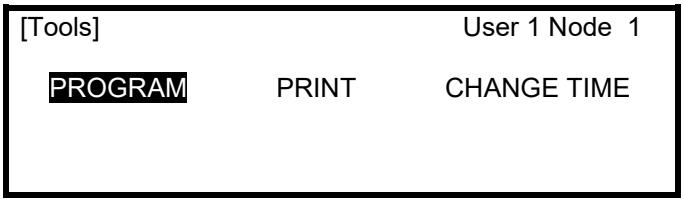
Select NO P.A.S. to disable the operation of the Positive Alarm Sequence investigation feature.

Select PERMANENT to enable the operation of the Positive Alarm Sequence investigation feature.

If using the investigation delays (PERMANENT) the “P.A.S.” LED Indicator will illuminate. When the investigation delays are disabled (NO P.A.S.), the P.A.S LED will be off.

7.10.5 Tools

When selecting TOOLS, the display shows three possible options:



7.10.5.1 Program

The PROGRAM area allows access to the front panel programming of the FACP, to access the PROGRAM area a Level 3 service password is required.

Refer to NX686-002 Front Panel Programming Manual for information and details on front panel programming capabilities.

7.10.5.2 Print

```
[Tools]                              User 1 Node  1

   PROGRAM        PRINT        CHANGE TIME
```

The data stream sent to a printer is in a serial format, if an external printer is used, make sure that the communications settings of the printer are set correctly.

- Interface Type: RS232
- Baud Rate: 9600
- Parity: None
- Data Bits: 8
- Stop Bits: 1

The following are Print Menu capabilities:

```
[Print Menu]                          User 1 Node 1

INPUTS     OUTPUTS      TROUBLES     DISABLED
LOG        FEED-PAPER   SETUP-PRINTER
```

Before any printing can be done the printer must be setup in the SETUP-PRINTER area.

7.10.5.2.1 Setup-Printer

To enable or setup the operating characteristics of the printer, highlight the SETUP-PRINTER option and press the ✓ button to confirm.

If the current User-ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent changes. Enter the password as normal.

The display then shows a pop-up window giving programming options as follows:

```
[ALARMS]  [OFF NORMAL]  [TRBL]  [TESTS]
   ✓           ✓          -        -

 (  Printer:     Internal      External/Wide )
       -            ✓                -
```

The upper line of options determines whether the panel will automatically print specific events as they occur. The lower line of options determines whether a printer is connected and the type of printer it is.

Use the ←, →, ↑,↓ buttons and ✔ buttons to highlight the required option and change its setting. Pressing the ✔ button turns the option on (✔ is shown) or off (– is shown) accordingly.

In the above option an external printer is selected with automatic printing of alarms and off-normal conditions.

Setting the wide option will change the printing from the default 40 characters per line to 80 characters per line.

On network systems only trouble events on the FACP controlling the printer are printed, trouble events from other nodes are not printed. To print all network events to a single printer on a FACP, configuration is required in the Shield, Dynamix Tools, Neo NX Config Tool.

7.10.5.2.2 Inputs

To print information on any input, highlight the INPUTS option and press the ✔ button to confirm. The display will show the following:

```
[Inputs]

  First Zone      :   1
  Last Zone       :   5

(Press → to Start Print)
```

The display will prompt the zones in use on the FACP. For networked systems it is possible to select any zone used within the network. Use the arrow ↑↓ buttons to highlight the first and last zone number and use the number keys to change the zone number.

Press the → button to start printing.

The display will show the following, while information is sent to the printer.

```
  WORKING ...

(Press Esc to Stop)
```

After all information has been printed, the display will automatically revert to the Print Menu. Press the Esc button to stop printing if required.

The printout will show all input points for the zones selected. Information printed includes zone number, device address with analog value, programmed detector mode (1-5), device text, device type and enabled status.

7.10.5.2.3 Outputs

To print information on any output, highlight the OUTPUTS option and press the ✔ button to confirm. The display will show the following:

```
[Outputs]

  First Zone      :   1
  Last Zone       :   5

(Press → to Start Print)
```

The display will prompt the zones in use on the FACP. For networked systems it is possible to select any zone used within the network. Use the arrow ↑↓ buttons to highlight the first and last zone number and use the number keys to change the zone number.

Press the → button to start printing.

The printout will show all output points for the zones selected. Information printed includes zone number, device address, device text, device type and enabled status.

7.10.5.2.4 Troubles

To print information on any troubles, highlight the TROUBLES option and press the ✔ button to confirm. The display will show the following:

```
[  2 Zones in Trouble]

 First Zone    :  1
 Last Zone     :  5

(Press → to Start Print)
```

The panel will analyse the network and the display will prompt the zones in trouble condition to be printed.

Use the arrow ↑↓ buttons to highlight the first and last zone number and use the number keys to change the zone number as required.

Press the ➔ button to start printing.

The printout will show the location and state of all input and output points in a trouble condition for the zones selected.

If there are no trouble conditions present, then selecting the TROUBLES option will have no effect.

7.10.5.2.5 Disabled

To print information on any disabled device(s) or zone(s), highlight the DISABLED option and press the ✔ button to confirm. The display will show the following depending on the disabled conditions present.

If there are zones with inputs disabled:

```
[  2 Zone(s) with Inputs Disabled]

 First Zone    :  1
 Last Zone     :  5

(Press → to Start Print)
```

If there are zones with outputs disabled:

```
[  1 Zone(s) with Outputs Disabled]

 First Zone    :  1
 Last Zone     :  5

(Press → to Start Print)
```

The panel will analyse the network and the display will prompt the zones in a disabled condition to be printed.

Use the arrow ↑↓ buttons to highlight the first and last zone number and use the number keys to change the zone number as required.

Press the ➔ button to start printing.

The printout will show the location and state of all input and output points in a disabled condition for the zones selected.

The display always presents the zones with inputs disabled first (if any exist). After printing the inputs, the display will present the information on disabled outputs (if any exist).

If there are no disabled conditions present, then selecting the DISABLED option will have no effect.

7.10.5.2.6 Log

To print information from the history log, highlight the LOG option and press the ✔ button to confirm. A pop-up window will be shown asking if all events or just alarms should be printed. Highlight the required option using the ↑↓ buttons and press the ✔ button to confirm.

When the history log is completely printed, the display will automatically revert to the Print Menu.

Press the Esc button at any time to cancel the log printing.

The pop-up window also allows selection of an Alarm Counter, when selected an alarm count is displayed on the NX10-ACS-DSP PCB display only, it is not printed.

7.10.5.2.7 Feed-Paper

Highlight the FEED-PAPER option and press the ✔ button to confirm. The display does not change but a command is sent to the printer to advance the paper.

7.10.5.3 Change Time

The Change Time area allows the changing of the FACP's system time clock. If the current User-ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent changes.

The displaying of the FACP's time is in 12 hr. format (Standard). If 24 hr. format (Military) is required, this can be configured in the Shield, Dynamix Tools, Neo NX Config Tool.

Example of SET TIME/DATE:

```
[ SET TIME/DATE ]

  TIME   =   5:28 PM
  DATE   =   04/15/19      MON  15  APR  2019
```

To change the settings, use the ↑↓, → buttons to highlight the required option. Directly enter the new time or date using the number buttons. As soon as a number button is pressed, the display will clear the current setting and show the new value as it is entered. For AM/PM changing use the ↑↓ buttons.

```
[ SET TIME/DATE ]

  TIME   =   1-:-- PM
  DATE   =   04/15/19      MON  15  APR  2019
```

If the FACP is node 1 on an Ad-NeT-PluS network, all network node panels will adjust to the new time value.

8 Maintenance and Troubleshooting

The FACP shall be inspected, tested, and maintained in accordance with the recommendations outlined in NFPA72.

The recommendations provide for weekly, monthly, quarterly, bi-annual, and annual inspections/tests.

Adequate records shall be maintained to document all inspections, tests and maintenance undertaken. Trouble conditions and their resolution to normal shall be recorded.

The Neo NX NX10-FACP-1C includes circuitry for signalling line circuit (SLC) and notification appliance circuit (NAC) supervision for opens and short circuits, to test these circuits perform the following procedure:

Open Circuit: Break (disconnect) one of the wires leading to an addressable module or notification appliance and confirm an open circuit trouble condition is indicated at the NX10-ACS-DSP PCB keyboard display.

Short Circuit: Short the positive and negative wires of an SLC or NAC circuit and confirm that a short circuit trouble condition is indicated at the NX10-ACS-DSP PCB keyboard display.

In addition to the various supervised circuits of the Neo NX NX10-FACP-1C, each panel incorporates ground fault monitoring and detection. To test the ground fault circuitry, place a wire from the positive or negative (positive or negative ground fault) terminal of the auxiliary power supply output to ground and confirm the panel indicates a ground fault condition and the ground fault LED, if one is programmed illuminates.

8.1 Batteries

Power supply chargers of the Neo NX NX10-FACP-1C provide charging voltage and current to their associated attached batteries. Using the panel's integral multi meter, charging voltage, charging current and internal enclosure temperature can be viewed at any time via the NX10-ACS-DSP PCB keyboard display. The power supply chargers also automatically subject the batteries to a load equivalent to full load during normal operation. If the internal resistance of any attached battery rises beyond approximately 0.8 ohm, the FACP will report a battery cell failure trouble condition.

Respect the Environment.
Batteries must be disposed of responsibly and in accordance with any local regulations.

8.1.1 Battery Recommendations

Expected Life: 3-5 years at an ambient temperature of 68°F.

Replacement Schedule: As above. However, note that the expected battery life is shortened by increase in ambient temperature. The life reduces by 50% for every 18°F rise above ambient. Refer to battery manufacturer for further information.

Manufacturer / Part Numbers:

YUASA		POWERSONIC	
4AH	NP4-12FR	5AH	PS-1250 FR
7AH	NP7-12FR	7AH	PS-1270 FR
12AH	NP12-12FR	12AH	PS-12120 FR
17AH	NP18-12FR	18AH	PS-12180 FR
24AH	NP24-12BFR	20AH	PS-12200 FR
38AH	NP24-38FR	26AH	PS-12260 FR
		28AH	PS-12280 FR
		35AH	PS-12350 FR
		38AH	PS-12380 FR
		40AH	PS-12400 FR
		55AH	PS-12550 FR
		75AH	PS-12750S FR

For optimum performance and charge retention, Yuasa recommends that batteries are 'top-charged' prior to installation.

For batteries up to 6 months old from date of manufacture, charge at 2.4v per cell (i.e., 14.4v per battery) for 20 hours prior to installing the batteries.

It is not recommended to use batteries that are more than 6 months old from their date of manufacture on a new installation.

It is normal for lead-acid batteries to vent hydrogen when being charged.

The panel is adequately ventilated to dissipate this hydrogen. DO NOT seal the enclosure or install in a sealed enclosure.

8.2 Performing a Fire Drill

Pressing and holding the Drill button for 2 seconds will activate a fire drill. The internal buzzer will sound (pulsing), and the display will indicate NEW WARNING ZONE 0701 (unacknowledged event). In addition, the drill zone and device message will be displayed. The bottom line of the display will be highlighted and will indicate a tally of the number of events active (Warnings, Supervisory, Disabled and Troubles). In most cases, no other events will be present on the FACP so the bottom highlighted display will only indicate WRNs: 1.

Example of unacknowledged fire drill:

NEW WARNING ZONE 0701	< New warning message (unacknowledged)
Fire Alarm Control Panel	< Zone text (32 Characters)
Drill Switch [SWITCH]	< Device text (26 Characters) / type of device
(Press → for device details)	< Further device details
WRNs: 1 SUPRVs: 0 DISBLs: 0 TRBLs: 0	< # Warnings, # Supervisory, # Disables and # Troubles

By pressing the ➔ button, the user can view further detailed information about the drill activation.

Example of device detailed display pertaining to a specific drill event:

NEW WARNING ZONE 0701	< New warning message (unacknowledged)
Fire Alarm Control Panel	< Zone text (32 Characters)
Drill Switch [SWITCH]	< Device text (26 Characters) / type of device
NODE 1	< Node # of drill location
JAN 30 2020 11:00 AM	< Drill details
WRNs: 1 SUPRVs: 0 DISBLs: 0 TRBLs: 0	< # Warnings, # Supervisory, # Disables and # Troubles

If the drill were activated from an addressable device at a remote location, rather than from the drill button on the FACP, the SLC loop number and device address would be displayed in the drill details line.

Pressing the "ACK" button while in a fire drill will acknowledge the drill event. This silences the internal buzzer, and the display will show Off-Normal State. Off-normal state totals are listed in order of system priority, Pre-Alarms, Warnings, Supervisory, Troubles and Disabled.

Example of acknowledged fire drill:

[Off-Normal State : Total]	< Off-Normal line
WARNINGS : 1	< Off-Normal type and event total Only active off-normal events are displayed.
(Press ✔ to select)	< More info pertaining to highlighted event

8.3 Built-in Electronic Multi-Meter

Designed with the technician in mind, each module of the Neo NX NX10-FACP-1C is easy to install and service. All inputs and outputs of the NX10-ACS base card are addressable and provide precise information of status condition. To help in the installation, maintenance and troubleshooting of the Neo NX NX10-FACP-1C, a user-friendly built-in multi-meter allows technicians to interrogate any input / output and diagnose potential time-consuming trouble issues.

8.3.1 NX10-ACS Base Card I/O Addresses and Electronic Values

The following is a list of NX10-ACS base card input and output circuit addresses for maintenance and troubleshooting purposes.

Item (Address)	Description	Value (Real-Time)	State
01.0	NAC-1 A Volts	(Voltage)*	(State of Output Voltage)
01.1	NAC-2 A Volts	(Voltage)	(State of Output Voltage)
01.2	NAC-3 A Volts	(Voltage)	(State of Output Voltage)
01.3	NAC-4 A Volts	(Voltage)	(State of Output Voltage)
	* ~5.5V quiescent and ~ 27V alarm = Normal		
	If system has only 2 NACs quiescent and alarm voltages for NAC-3 & NAC-4 = 0V		
02.0	NAC-1 A Load	(Current)*	(State of Output Current)
02.1	NAC-2 A Load	(Current)	(State of Output Current)
02.2	NAC-3 A Load	(Current)	(State of Output Current)
02.3	NAC-4 A Load	(Current)	(State of Output Current)
	* Dependent upon quiescent, and alarm current draw of notification appliances per circuit		
	If only 2 NAC circuits per system quiescent and alarm currents for NAC-3 & NAC-4 = 0mA		
03.0	Battery	(~27V = Normal)	(State of Battery Voltage)
04.0	Charger Volts	(~27V = Normal)	(State of Charger Voltage)
04.1	Charger Amps (Current)*		(State of Charger Current)
	* Dependent upon whether batteries are being charged, 0mA if not charging		
04.2	Charger Temp.	(ºF = Norma [Int. Temp])	(State of Charger Temp. in ºF)
05.0	Ground Volts	(~13.5V = Normal*)	(State of Ground Voltage)
	* Higher voltage = positive ground, lower voltage = negative ground (voltage dependent upon ground potential)		
05.1	System Volts	(~27V = Normal)	(State of System Voltage)
06.0	Aux Supply 1	(Current)*	(State of Aux 1 Output Current)
06.1	Aux Supply 2	(Current)*	(State of Aux 2 Output Current)
	* Dependent upon current draw of auxiliary supply output		
07.0	1st SLC Load	(Current)*	(State of 1st SLC Loop Current)
07.1	2nd SLC Load	(Current)	(State of 2nd SLC Loop Current)
07.2	3rd SLC Load	(Current)	(State of 3rd SLC Loop Current)
07.3	4th SLC Load	(Current)	(State of 4th SLC Loop Current)
	* Dependent upon quiescent and alarm current draw of SLC devices per loop		
08.0	1st SLC V. Out	(~23V = Normal*)	(State of 1st SLC Loop Voltage Out)
08.1	2nd SLC V. Out	(~23V = Normal*)	(State of 2nd SLC Loop Voltage Out)
08.2	3rd SLC V. Out	(~23V = Normal*)	(State of 3rd SLC Loop Voltage Out)
08.3	4th SLC V. Out	(~23V = Normal*)	(State of 4th SLC Loop Voltage Out)
	* If system has only 2 SLCs voltage, for SLC-3 & SLC- 4 = 0V, and State is RESET		
09.0	1st SLC V. In	(~23V = Normal*)	(State of 1st SLC Loop Voltage In)
09.1	2nd SLC V. In	(~23V = Normal*)	(State of 2nd SLC Loop Voltage In)
09.2	3rd SLC V. In	(~23V = Normal*)	(State of 3rd SLC Loop Voltage In)
09.3	4th SLC V. In	(~23V = Normal*)	(State of 4th SLC Loop Voltage In)
	* 0V if Class B, if Class A and only 2 SLCs voltage, for SLC-3 & SLC- 4 = 0V at 0V State is RESET		
10.0	1st Switch Input (LCD)	L	(State of Control Circuitry)
10.1	2nd Switch Input (LCD)	L	(State of Control Circuitry)
10.2	3rd Switch Input (LCD)	L	(State of Control Circuitry)
10.3	4th Switch Input (LCD)	L	(State of Control Circuitry)
10.4	5th Switch Input (LCD)	L	(State of Control Circuitry)
10.5	6th Switch Input (LCD)	L	(State of Control Circuitry)
10.6	7th Switch Input (LCD)	L	(State of Control Circuitry)
10.7	8th Switch Input (LCD)	L	(State of Control Circuitry)
	Only shown if used.		

	* Normal Low (L – open contact), Active High (H – closed contact)		
11.0	Relay 1	-*	(State of Relay Circuitry*)
11.1	Relay 2	-	(State of Relay Circuitry*)
11.2	Relay 3	-	(State of Relay Circuitry*)
11.3	Output 1	-	(State of Relay Circuitry*)
11.4	Output 2	-	(State of Relay Circuitry*)
11.5	Output 3	-	(State of Relay Circuitry*)
11.6	Output 4	-	(State of Relay Circuitry*)
11.7	Output 5	-	(State of Relay Circuitry*)
11.8	Output 6	-	(State of Relay Circuitry*)
11.9	Output 7	-	(State of Relay Circuitry*)
11.10	Output 8	-	(State of Relay Circuitry*)
	No state shown.		
13.0	Control Panel	RESET*	(State of Control Panel Circuitry*)
	* = No meter readings available		
	State normally equals RESET it only changes on circuitry failure.		
14.0	AC Supply	H*	(State of AC Supply Circuitry*)
14.1	Anc. Supply	H	(State of Anc. Supply Circuitry)
	* Normal High (H – closed contact), Active Low (L – open contact)		
	State only changes on circuitry failure.		
21.0	Network Ground	0V	(State of Network Ground Potential)
	Only shown if network module used.		
23.0	Monitored Printer		(State of Monitored Printer)

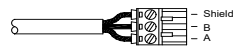
8.4 FACP Recommended Wiring Guide

Unless otherwise noted, all circuits permitted to be in same conduit. Check local codes for additional restrictions. Twisted Shielded cable provides a degree of protection and immunity to electrical noise interference (RFI/EMI) compared to twisted pair or untwisted wire. If Shielded cable is used, connect the Shield to the panel enclosure (out and return) and to the dedicated Shield terminations in the bases only.

If Shielded cable is used, the Shield connection must be a continuous circuit around the loop and must not be in contact with any other earth/ground point (including electrical backboxes).

If running NAC and/or 24 VDC circuits in the same conduit as other signals, you can reduce problems by exclusively using electronic sounders instead of electronically noisy notification appliances (such as electromechanical bells or horns).

For multiple wires to be used under any terminal, use Shield twin cable ferrules 18AWG to 12AWG, manufactured by Weidmuller.

Circuit Type	Circuit Function	Wire Types	Maximum Distance	Typical Wire Size (AWG)	Comments
SLC (Power limited)	Connects to intelligent modules and smoke detectors.	Twisted Unshielded Pair * Maximum resistance is dependent on SLC loop loading	12,500 feet	12-18 AWG	If multiple loops are inside the same conduit, it is acceptable to use twisted unshielded wire as SLCs will not interfere with one another. It is acceptable to run other signals inside the same conduit; however, it is recommended that the other wires are either twisted or twisted Shielded. The Neo NX panels contain loop power technology. The SLC circuits can driving high current loads in alarm, which affects the load characteristics including V/I drops along the wire length. Therefore, it is important to use Shield loop calculator in determining wire gauge and length.
		Twisted Shielded Pair	12,500 feet	12 -18 AWG	Shield must only be connected to earth ground at one location - at the fire panel.
		Untwisted, Unshielded Pair	1,000 feet		It is not recommended to mix inside conduit with other signals unless other signals use either twisted or twisted Shielded wire.
PBUS EIA-485 (Power limited)	Connects peripheral modules to NX10-ACS base card	Twisted Unshielded or Twisted Shielded	20 feet within the same room	18-20 AWG	Twisted unshielded or twisted Shielded wire is acceptable whenever the PBUS is wired internal and/or external to the fire panel enclosure. Must install a 150-ohm resistor at end of the PBUS wire run. When using Shielded wire, you must install a 2.2 µfd non polarized capacitor from Shield to ground at one end and terminate Shield to panel ground at the other end.
EIA-232 (Power limited)	Connects to printers or PC	Shielded	50 feet	18-20 AWG	
NACs (Power limited)	Connects to horns, strobes, solenoids, etc.	Twisted Shielded, Twisted Unshielded, Untwisted Unshielded.	4000 feet	12-22 AWG	If supporting highly inductive/noisy loads use twisted Shielded wire.
Network EIA-485 (Power limited)	Ad-NeT-PluS peer-to-peer network	Twisted Shielded or Fiber Optic Cable	5000 feet Class B 66000 feet Class A(X) (5000 ft between Nodes)	18-20 AWG	Fiber Optic – 16,404 ft between nodes max. Jacket material must be rated for application. *Note: Network node to node communications is optically isolated and each node has an independent ground fault detection circuit. To ensure prevention of earth "ground loops," the Shield must be terminated at one node and not both. This is accomplished internally at each node via dedicated Shield terminals.* Each network node module has isolated outgoing and incoming network wiring terminals. Connect from the "OUT" terminal on the first node to the "IN" terminal on the next node (A, B and Shield). OUT Shield ↔ Shield, B ↔ B, A ↔ A IN 
Telephone Riser (power limited)	Firefighter Phone communication	Twisted Shielded Pair	4000 feet	18-20 AWG	
Audio Riser (Power limited)	Audio input signal to amplifiers	Twisted Shielded Pair	4000 feet	18-20 AWG	
Speaker Circuits (power limited)	Speaker circuit to speakers	Twisted Pair or Twisted Shielded Pair	3000 feet (Load dependent)	12-22 AWG	Twisted Shielded wire if mixed inside same conduit as the audio and/or telephone riser(s)

Circuit Type	Circuit Function	Wire Types	Maximum Distance	Typical Wire Size (AWG)	Comments
24 VDC (Power limited)	24 Volts DC resettable or non-resettable	Untwisted Unshielded, Twisted Pair or Twisted Shielded Pair	4000 feet	12-18 AWG	Size conductors per acceptable voltage drop. If supporting highly inductive/noisy loads, twisted Shielded wire is recommended.
IDCs (Power limited)	SLC based initiating device input circuits & conventional smoke zones	Untwisted Unshielded, Twisted Pair or Twisted Shielded Pair.	300 feet	18-20 AWG	EOL resistor value varies depending upon module.

8.5 NX10-ACS-DSP PCB Liquid Crystal Display

Expected Life: > 10 years.

Replacement Schedule: When the display becomes difficult to read due to gradual fading over time.

Manufacturer / Part Number: Consult Shield

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