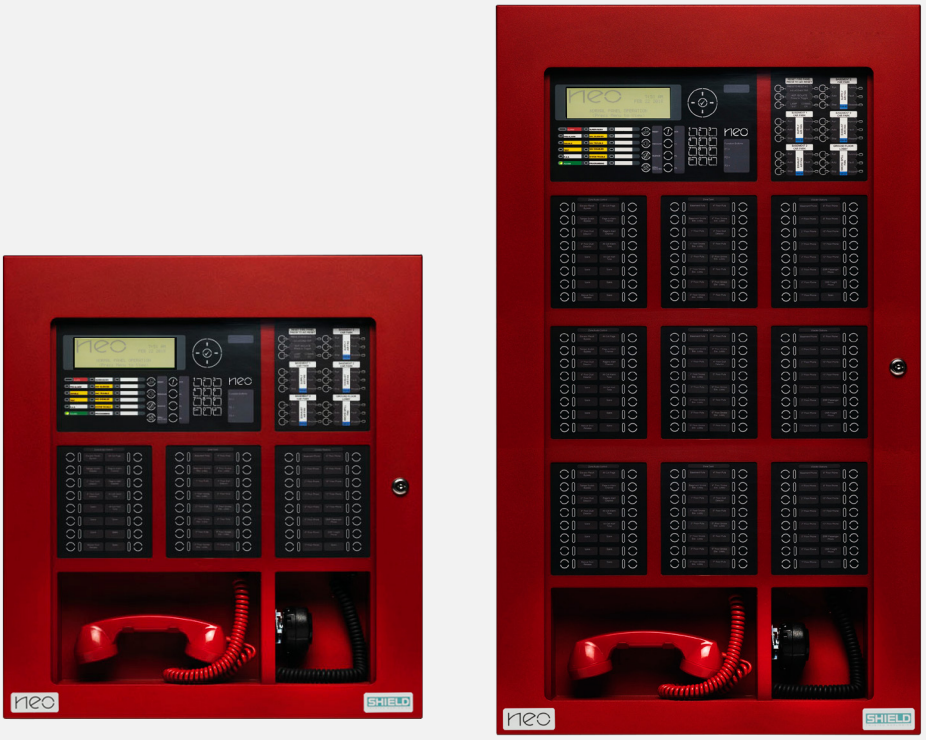
MANUAL

SHIELD
TRUSTED WORLDWIDE

neo®

NX-FACC-[x], NX-CC01-BB & NX-CC02-BB

Pre-Configured & Modular Command Centers



Installation & Operation Manual

Table of Contents

Page

1 Introduction / Overview

1.1 Product Description

This manual covers the installation and operation of the NEO NX-FACC-1 command center systems with integrated PBUS (RS485) audio and modular command centers NX-CC01-BB/NX-CC02-BB. Though these command centers could also be designed with hardwired audio, the majority of this manual deals with PBUS (RS485) audio. For information regarding hardwired audio design refer to Section 4.4.2 of this manual.

Note: This manual references MNS (Mass Notification System) features and operations which are programmable and usable. The user should understand that this product was designed to be compliant with the UL2572 Mass Notification Standard, however, its listing is pending. Please consult factory for updated UL2572 Mass Notification Standard listing status.

The NX-FACC-1 command center is a factory assembled PBUS (RS485) audio command center which can be expanded in the field, while the NX-CC01-BB/NX-CC02-BB are completely modular command centers that are built in the field based on installation requirements. The NX-FACC-1 and NX-CC01-BB command centers are equivalent in size, while the NX-CC02-BB command centers are larger.

The NX-FACC-1 command center includes an NX-FACP one loop base card or NX-FACP two loop base card with or without an optional NX-EM-LPD expander module (NX-FACC-1one loop, NX-FACC-2 two loop or NX-FACC-4 four loop), an NX-ACS-ACB AC board, an NX-AMP-80 microphone bus amplifier, an NX-EM-PSU6 power supply charger, an NX-MIC microphone assembly and one NX-EM-ASW-1616 switch LED module (see figure 1 and 1a).

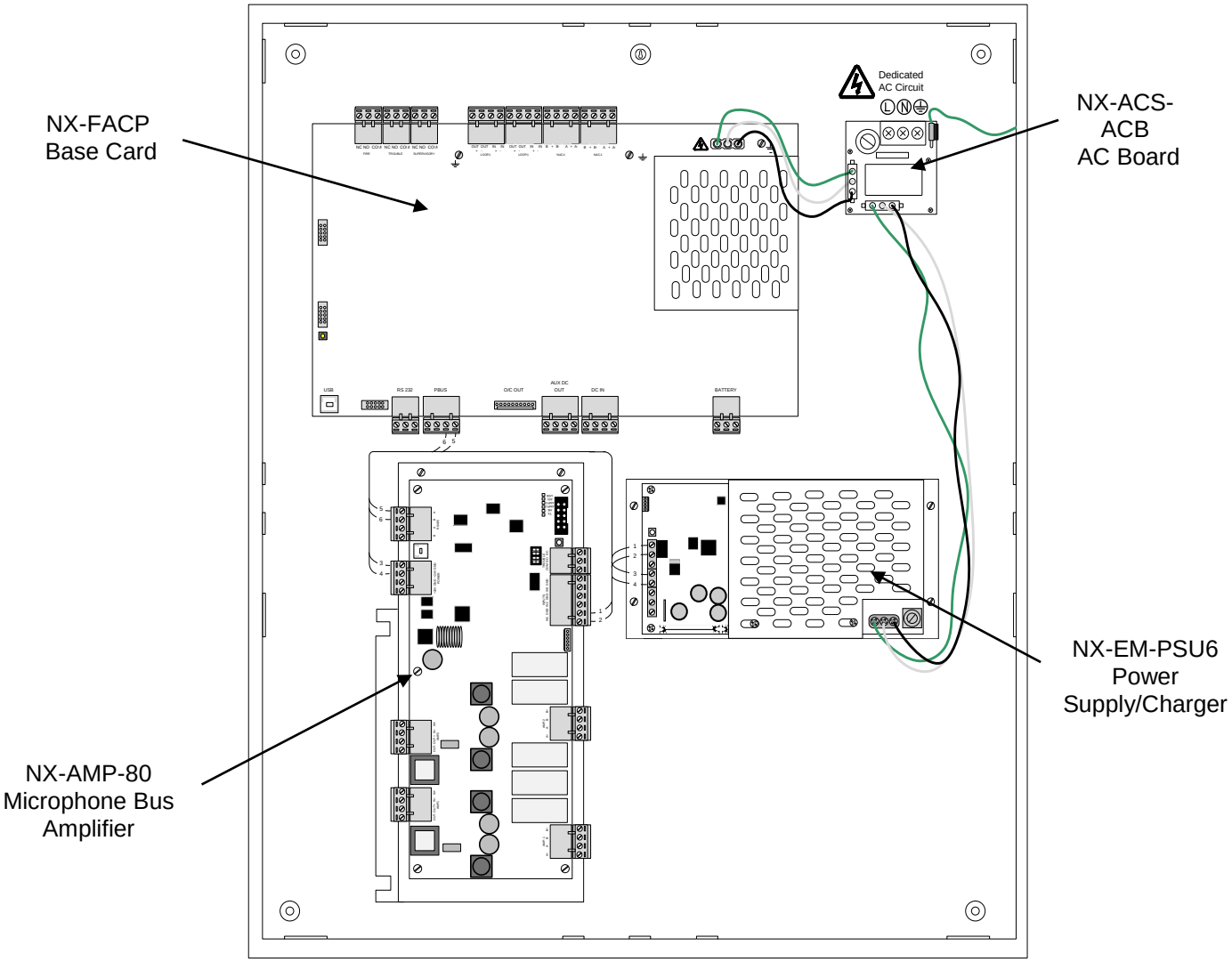


Figure 1 – NX-CC01-BB Back box (included with NX-FACC-1, NX-FACC-2and NX-FACC-4)

When NX-FACC-1 command centers are utilized in a PBUS (RS485) amplifier installation, the associated amplifier (NX-AMP-80) is utilized as the microphone bus amplifier for all other PBUS (RS485) floor (area) amplifiers. In addition, if the NX-FACC-1 command center is utilized in a PBUS (RS485) amplifier installation as a remote command center, the associated amplifier (NX-AMP-80) is utilized as the remote microphone bus amplifier which gets connected to the PBUS (RS485) microphone bus amplifier refer to Section 4.4.1.1 of this manual.

Note: The NX-FACC-1 PBUS (RS485) amplifier can be utilized in a single amplifier installation where all 16 messages and live voice communications are done on an "all call" basis (no selective messaging or paging) refer to floor (area) amplifier configuration (keying the attached microphone overrides messaging for "all call" voice paging) Section 4.4.1.2 of this manual.

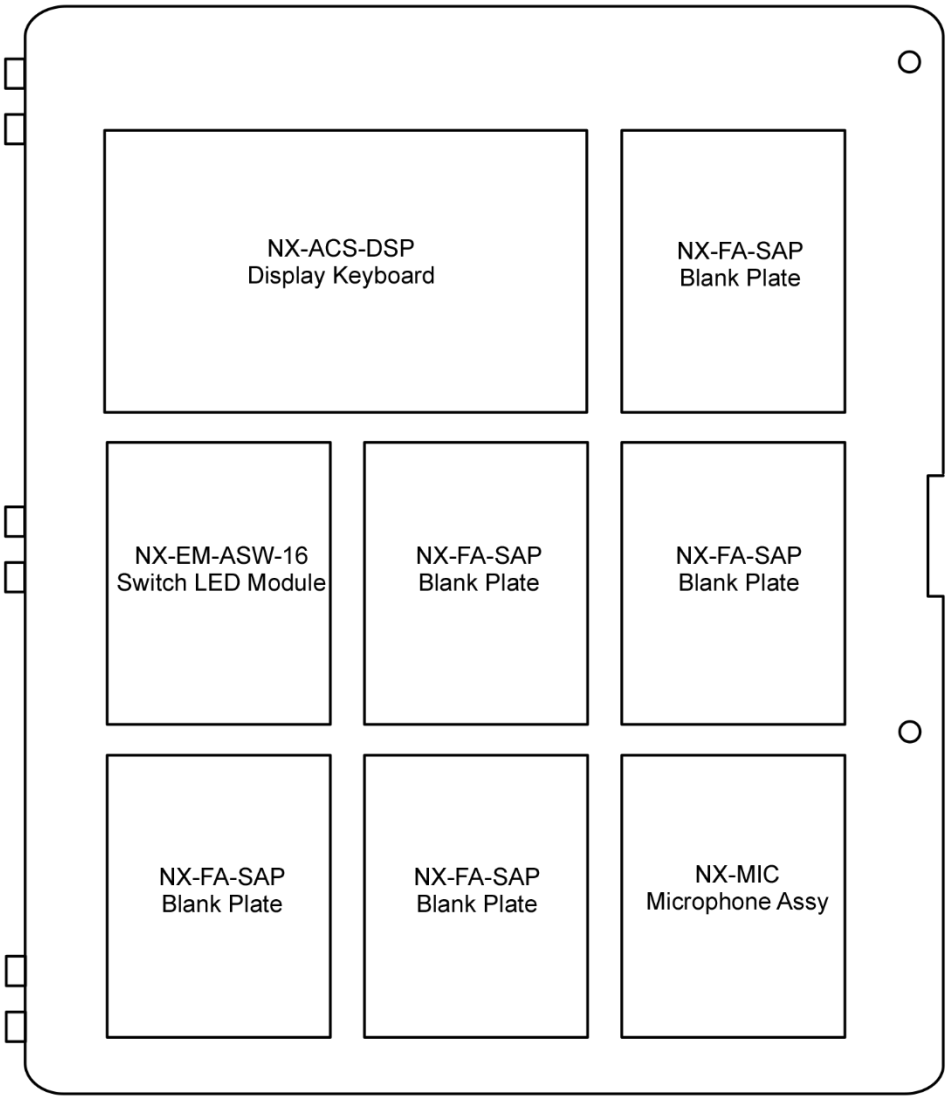


Figure 1a – NX-CC01 Inner Door (included with NX-FACC-1, NX-FACC-2and NX-FACC-4)

The NX-FACC-1 command center systems with Integrated PBUS (RS485) audio and modular command centers NX-CC01-BB/NX-CC02-BB are designed to provide life safety/fire protection with live voice and audio signaling during an emergency situation. When configured as PBUS (RS485) audio command centers, multiple synchronized and prioritized messages can be generated for alarm, alerts, warnings, mass notification, and other audio messaging events.

The NX-FACC-1 is a single loop, analog addressable command center with one signaling line circuit, two notification appliance circuits, one microphone bus amplifier and one switch/LED module.

The NX-FACC-2 is a multiple loop analog addressable command center with two signaling line circuits, two notification appliance circuits, one microphone bus amplifier and one switch/LED module.

The NX-FACC-4 is a multiple loop, analog addressable command center with four signaling line circuits, four notification appliance circuits, one microphone bus amplifier and one switch/LED module.

The NX-CC01-BB/NX-CC02-BB modular command centers are completely customer field configurable command centers for job specific installations. The NX-CC01-BB is the smaller of the command centers measuring 22.6”H x 20.3”W x 5.5”D. The NX-CC02-BB command centers are larger and measure 35.9”H x 20.3”W x 5.5”D. Command centers can contain an NX-FACP one loop or an NX-FACP two loop base card with or without an optional NX-EM-LPD two loop expander module, audio evacuation modules, switch cards, firefighter telephone and other optional NEO modules (see figure 1 and 2).

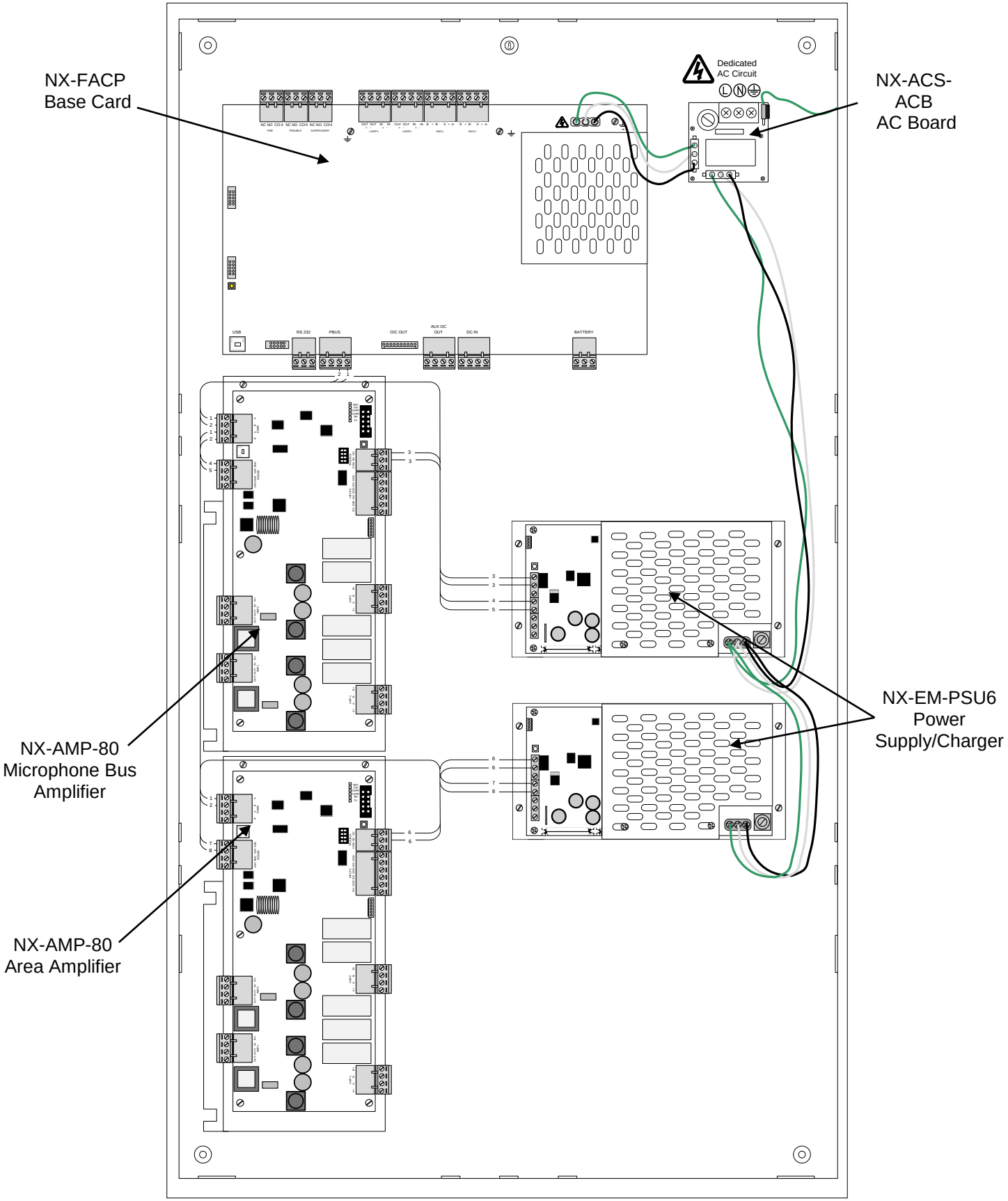


Figure 2 – NX-CC02-BB-BB Back box
(Configured with NX-FACP, One Microphone Bus Amplifier and One Area Amplifier)

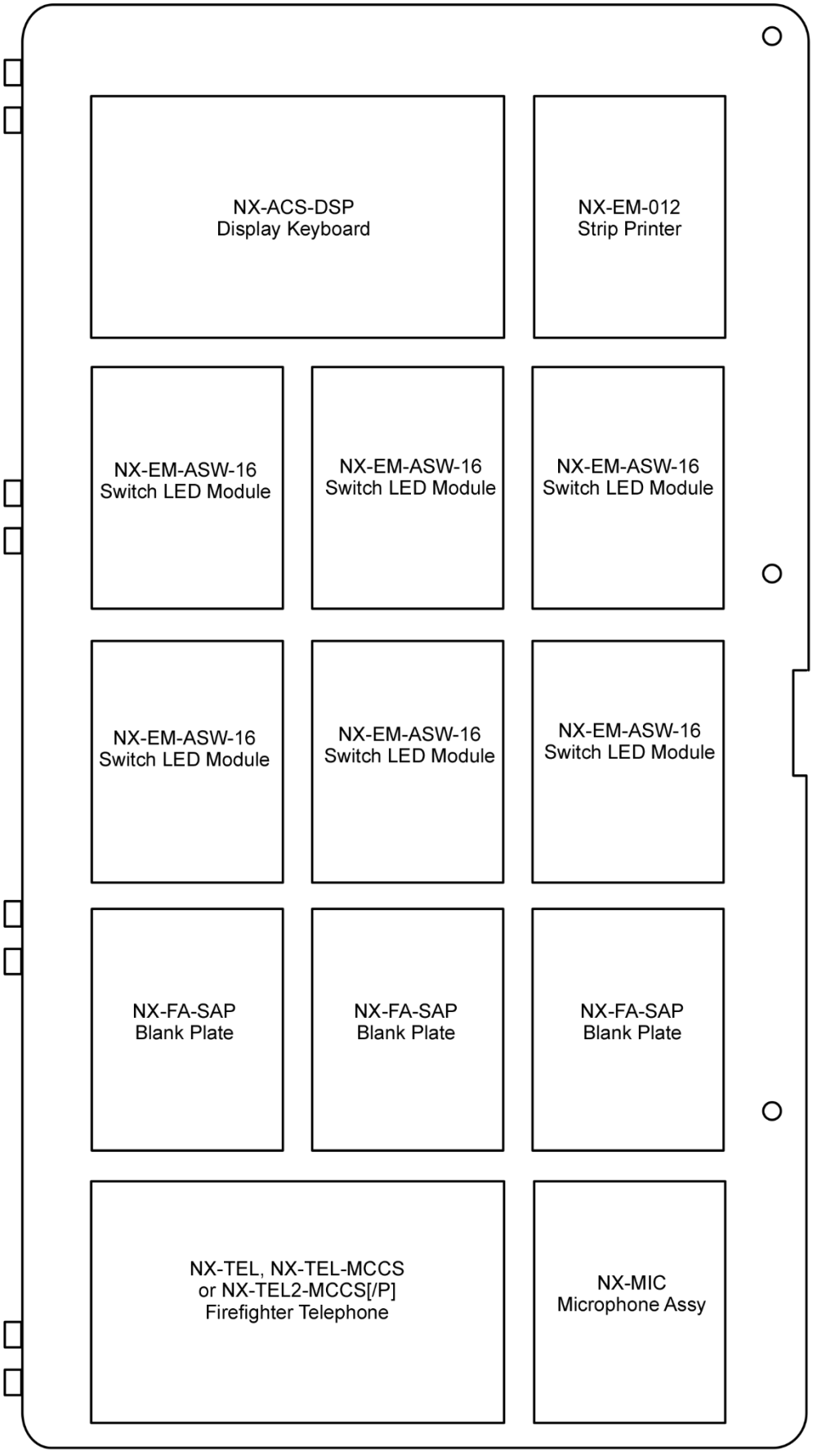


Figure 2a – NX-CC02-BB-ID2 Inner Door Shown with Option Modules

All models of command centers are compatibility tested for use with the SHIELD range of detector and module devices. Refer to Section 1.2.2 SLC Devices for a full list of devices.

Each SLC supports connection of 126 devices in any combination of intelligent detectors and modules.

Each command center NX-FACP base card has a resettable and non-resettable power output each rated .5 Amps @ 24 VDC, for connection to four-wire conventional smoke detectors and ancillary devices. Each base card contains three (3) field programmable Form C relays rated 1 Amp @ 30 VDC, defaulted as a fail-safe trouble relay, alarm relay and supervisory relay. In addition, a USB serial port is available on the NX-FACP base card and NX-AMP-80 amplifier for direct PC connection for field configuration and amplifier message/tone programming.

The command centers NX-FACP base cards are compact, flexible and feature rich, providing ease of installation and operation and are based on well proven dual, flash based microprocessor technology with on-board Real Time Clocks.

The operating software features, installer friendly “Auto-Learn” and “Loop Detection” facilities for uncomplicated, trouble-free, commissioning and trouble shooting. The NX-FACP base card is fully field-programmable via the connected NX-ACS-DSP alphanumeric graphical display and keypad or from a Windows® based PC configuration tool.

1.2 System Components

1.2.1 Internal Peripherals

The following internal peripherals can be installed in any one of the NEO command centers:

		Document
NX-ACS-ACB	AC Board	NX682-033
NX-ACS-1L	One Loop Panel PCB	NX682-034
NX-ACS-2L	Two Loop Panel PCB	NX682-034
NX-EM-LPD	Dual SLC/NAC Expander Module (cannot be used with NX-ACS-1L)	NX682-011
NX-EM-NAC	Dual NAC Expander Module (cannot be used with NX-ACS-1L)	NX682-011
NX-EM-PSU	5 Amp Expansion Power Supply Module (cannot be used with NX-ACS-1L)	NX682-012
NX-ACS-DSP	Alphanumeric Graphical Display and Keyboard	NX682-035
NX-FANET4	Network Interface Module, Style 4 (Class B)	NX682-013
NX-FANET7	Network Interface Module, Style 7 (Class A)	NX682-013
NX-FOC-MM	Fiber Optic Converter Module for NX-FANET4 or NX-FANET7	NX682-260
NX-DCI	24 VDC Isolator Module for NX-FOC-MM	NX682-260
NX-EM-RL8	Eight Relay Output Module	NX682-006
NX-EM-RL4	Four Relay Output Module	NX682-026
NX-EM-MDM	24 VDC Modem Card	NX682-024
NX-AMP-80	Audio Amplifier with two 40 Watt Speaker Circuits	NX682-032
NX-ZS	Audio Zone Splitter Module	NX682-054
NX-EM-PSU6	6 Amp Power Supply Charger for NX-AMP-80 Amplifier	NX682-028
NX-VB	Distributed Audio Booster	NX682-027
NX-EM-ASW-16	Switch Module with 16 Switches and 48 LEDs	NX682-020
NX-FA-LED16	LED Annunciator Module, 16 Red and 16 Yellow	NX682-020
NX-FA-LED32R	LED Annunciator Module, 32 Red	NX682-020
NX-FA-LED32Y	LED Annunciator Module, 32 Yellow	NX682-020
NX-EM-IO48	16 Switch Input and 48 LED Driver Outputs	NX682-020
NX-EM-RL10	10-Way Relay Output Card (used with NX-EM-IO48)	NX682-020
NX-MIC	Microphone Assembly	NX682-030
NX-TEL2-MCCS	Firefighter Phone System2 Command Center Phone with Enclosure	NX682-060
NX-TEL2-MCCS/P	Firefighter Phone System2 Command Center PTT Phone with Enclosure	NX682-060
NX-TEL2-RISE	Firefighter Phone System2 Telephone Riser	NX682-060
NX-TEL2-PPB	NX-TEL2-RISE Plug-in Audio Module	NX682-060
NX-DCF	DC Supply Filter Module	NX682-031
NX-RMIC	All Call Remote Microphone (for single hardwired amplifier installation ONLY)	NX682-046

1.2.3 SLC Devices

The following intelligent addressable peripherals can be installed on NEO command center SLC loops:

		Document
S-A4061	Polycarbonate Dual Action Pull Station	39214-837 (APD0559 A130718)
S-A4013	Intelligent Heat Detector	39214-819
S-A4012	Intelligent Ionization Smoke Detector	39214-819
S-A4011	Intelligent Photoelectric Smoke Detector	39214-819
S-A4014	Intelligent Multi Sensor Detector	39214-819
S-A4042	Dual Switch Monitor Module	39214-820
S-A4043	Switch Monitor Module	39214-827
S-A4044	Priority Switch Monitor Module	39214-827
S-A4049	120V I/O Relay & Monitor Module	
S-A4045	I/O Relay Output & Switch Monitor Module	
S-A4046	NAC Output Module	39214-825
S-A4050	Relay Module	
S-A4041	Mini Monitor Module	39214-815
S-A4047	Mini Priority Switch Monitor Module	39214-827
S-A4048	Mini Switch Monitor Module	39214-827
NX-SL-DAA-N	Analog Addressable Duct Smoke Detector – ION – 2 Wire	
NX-SL-DAA-P	Analog Addressable Duct Smoke Detector – PHOTO – 2 Wire	
NX-SL-DA4R-N	Analog Addressable Duct Smoke Detector – ION – 4 Wire	
NX-SL-DA4R-P	Analog Addressable Duct Smoke Detector – PHOTO – 4 Wire	
S-A4051	Isolator Module (requires S-A4002 Isolator Mounting Base)	39214-821
S-A4002	Isolator Mounting Base for S-A4051 (fits 3” octagon electrical box)	
S-A4025	Enhanced Open Area Sounder/Beacon (Loop Powered) - Red	
S-A4021	Open Area Sounder (Loop Powered) - Red	
S-A4022	Open Area Sounder (Loop Powered) - White	
NX-TEL2-MWPB	Master Addressable Module (for use with master addressable firefighter phone)	
Bases		
S-A4006	E-Z-Fit Low Profile Base (fits 4” square or octagon electrical box)	
S-A4024	Sounder/Beacon Base (Loop Powered) – Red Beacon	39214-824
S-A4023	Sounder/Beacon Base (Loop Powered) – Amber Beacon	39214-824
Bases Cont’d		Document
S-A4001	Standard Base (fits 3” octagon electrical box)	39214-821
S-A4005	Relay Base (fits 3” octagon electrical box)	39214-822
S-A4007	Isolating Base (fits 3” octagon electrical box)	

1.2.4 NAC Devices

NAC outputs are 24V DC Regulated. Any Listed Notification Appliance with compatible ratings may be installed, including previously installed devices in existing facilities.

Compatible Pre-Action/Deluge Releasing Solenoid

1.2.5 Network Devices

The following additional network nodes can be added to the NEO command centers:

		Document
NX-FAN-C	Remote Control Annunciator, Style 4 (Class B)	NX682-003
NX-FAN-C/ST7	Remote Control Annunciator, Style 7 (Class A)	NX682-003
NX-FAN-D	Remote Annunciator Only, Style 4 (Class B)	NX682-003
NX-FAN-D/ST7	Remote Annunciator Only, Style 7 (Class A)	NX682-003
NX-FA-LAN	IP Gateway, Style 4 (Class B)	NX682-250
NX-FA-LAN/ST7	IP Gateway, Style 7 (Class A)	NX682-250
NX-FA-BMS	Building Management Ad-VIEW Graphics Interface, Style 4 (Class B)	NX682-042
NX-FA-BMS/ST7	Building Management Ad-VIEW Graphics Interface, Style 7 (Class A)	NX682-042

1.3 Limitations of Fire Alarm Systems

An automatic fire alarm system can provide early warning and notification of the development of a fire. It can't, 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 ensure that they detect the types of fire likely to occur in the protected area. Even so, a number of 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 fire alarm control panel, 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 ensure that the system is operating at its optimum performance. Arrange a maintenance agreement with the manufacturer's local representative to ensure 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.

1.4 General Installation Notes

WARNING: Disconnect all sources of power (AC and battery) before installing components or servicing the system.

DO NOT install/remove circuit cards while the fire alarm control panel is supplied with power (either AC or battery).

ENVIRONMENT: INSTALL the equipment in a clean, dry environment.

The equipment meets the requirements for operation at 32°F - 120°F (0°C - 49°C) and relative humidity of 85% 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).

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

USE an anti-static wrist strap whenever handling circuit cards.

STORE circuit cards in static suppressive packaging.

CAUTION: Acceptance / Re-acceptance Tests

Following installation, or after any system change (including changes to operating software or configuration settings), the system shall be tested in accordance with the 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 shall also be tested.

Follow the recommendations of NFPA 72.

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.

2 Agency Listings / Approvals / Requirements

2.1 ANSI/UL864

This product is listed for the following services and applications.

- Local
- Local & Shunt Trip
- Auxiliary
- Central Station (Requires DACT)

- 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

2.2 FCC

2.2.1 Emissions

WARNING: 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.

This equipment has been tested and found to be in compliance 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.

3 Enclosure Installation and Inner Door Assembly

Carefully unpack the system and check for shipping damage (modular command centers are not assembled, unpack boxes containing system enclosure). If installed, remove all circuit boards and mount the cabinet in a clean, dry, vibration-free area where extreme temperatures are not encountered. The area should be readily accessible with sufficient room to easily install and maintain the panel. Locate the top of the cabinet approximately 5½ feet (1.7 m) above the floor with the hinge mounting on the left. Determine the number of conductors required for the devices and circuits to be installed. Sufficient knockouts are provided for wiring convenience in both the top and side walls of the back box. Select the appropriate knockout(s) and pull the required conductors into the box, separating power limited from non-power limited conductors – refer to the recommended cable routing diagram Section 5. All wiring should be in accordance with National Electric Code (NEC), State and Local codes.

3.1 Enclosure Mounting and Dimensions

The NX-FACC-1 command center with integrated audio and NX-CC01-BB/NX-CC02-BB modular command centers may be either surface or semi-flush mounted.

3.1.1 NX-FACC-1 Command Center and NX-CC01-BB Modular Command Center

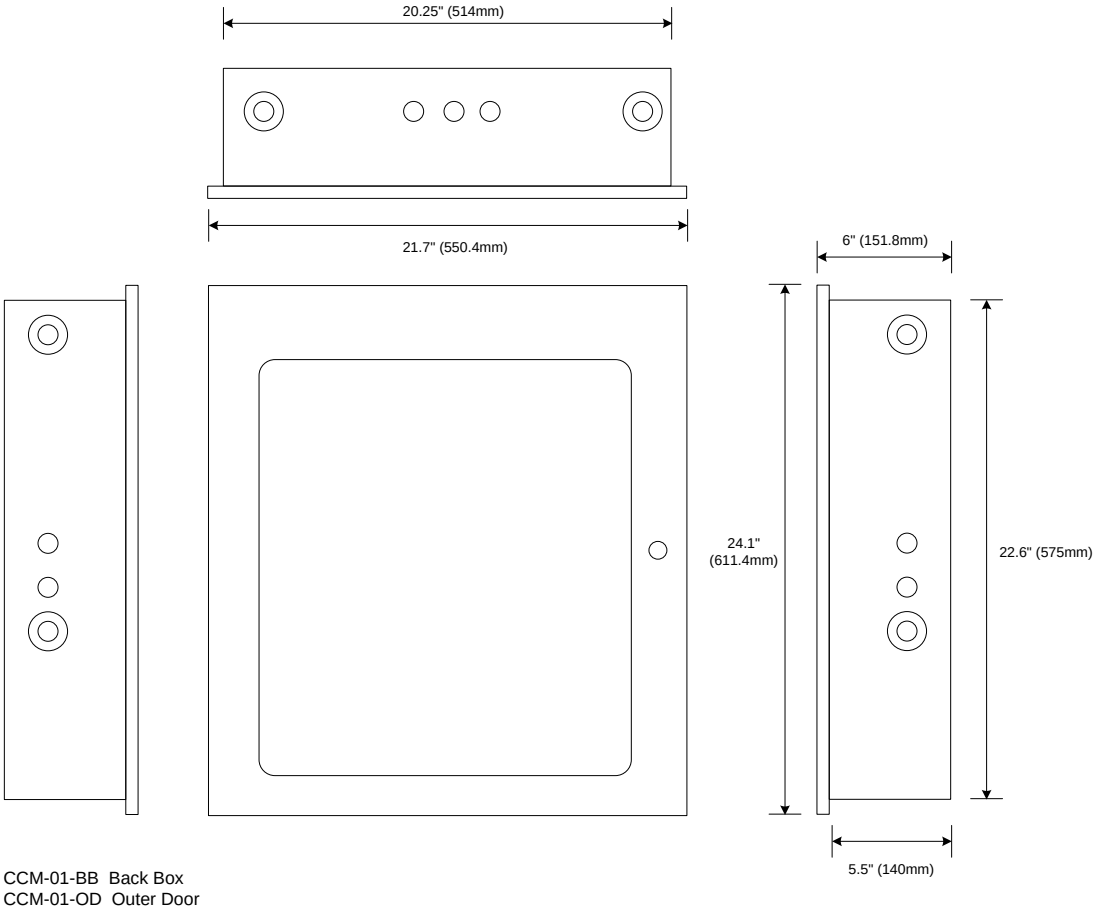


Figure 3 - NX-CC[x]-16 and NX-CC01 Enclosure Dimensions

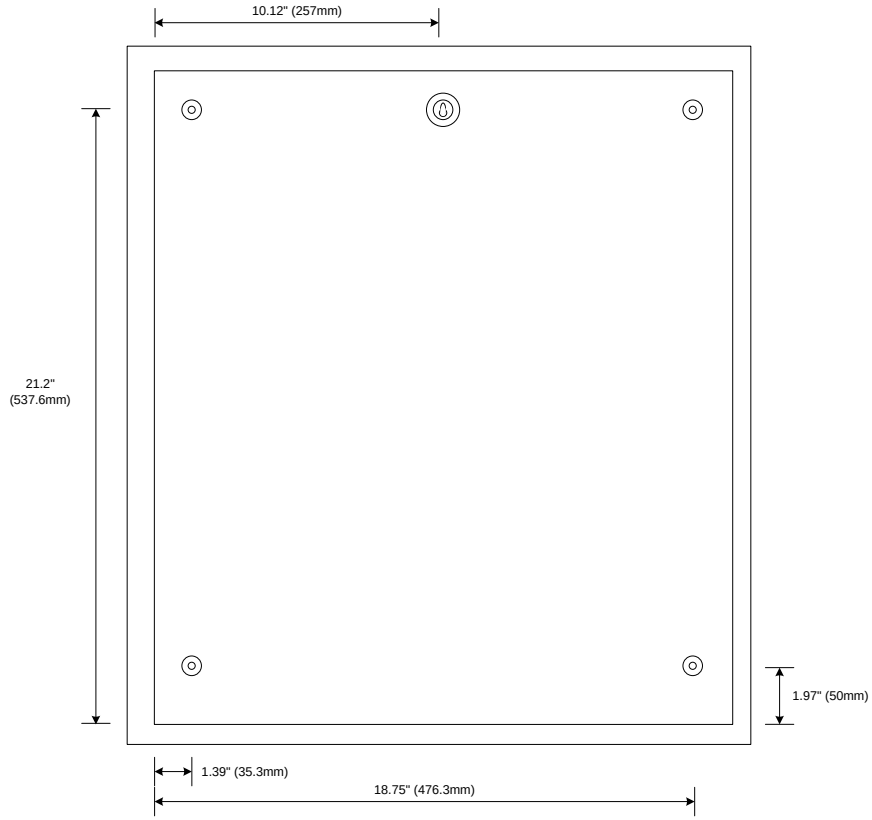


Figure 3a - NX-CC01-BB Mounting Dimensions

Note: The NX-CC01-BB-BB back box includes seven single knockouts (7/8”) and seven double knocks (7/8” or 1 ¾”, two located on the bottom of the back box). Care should be taken when utilizing the inner 7/8” knockout of the 1 ¾” to avoid knocking out the 1 ¾” (see figure 3).

For surface mounting, there are five pre-drilled holes located on the rear of the back box (see figure 3a). The top center mounting hole is keyed for ease of mounting.

Place the back box on the wall and mark the top keyed mounting hole.
Drill the marked location and partially install the mounting screw in the wall.
Hang the cabinet on the mounting screw.
Level the cabinet and mark the remaining holes then and drill holes.
Insert all screws and firmly tighten.

For semi flush mounting (in addition to the rear mounting holes) 1/8” knockouts are located on the sides and top of the back box.

3.1.2 NX-CC02-BB Modular Command Centers

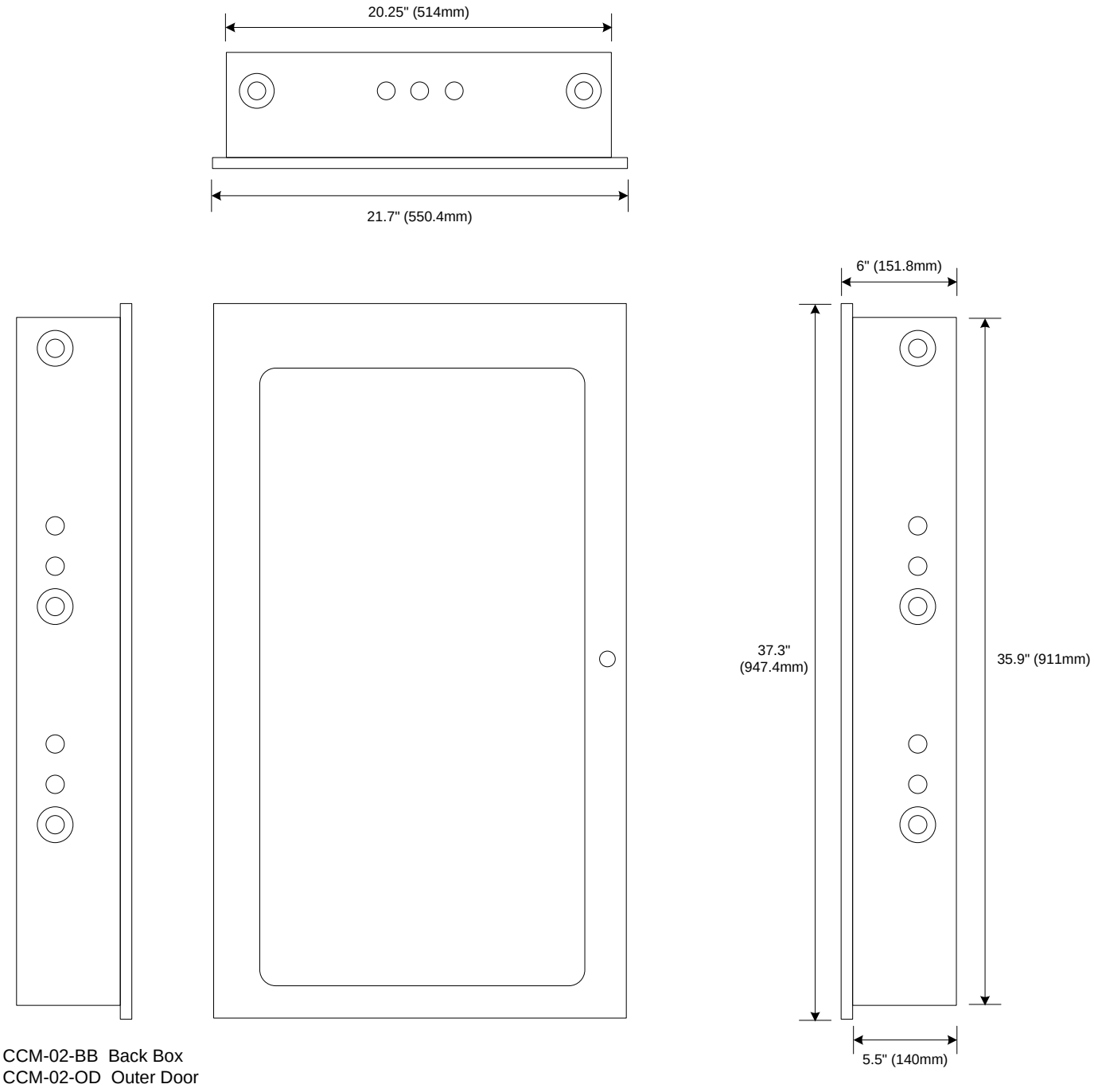


Figure 4 - NX-CC02-BB Enclosure Dimensions

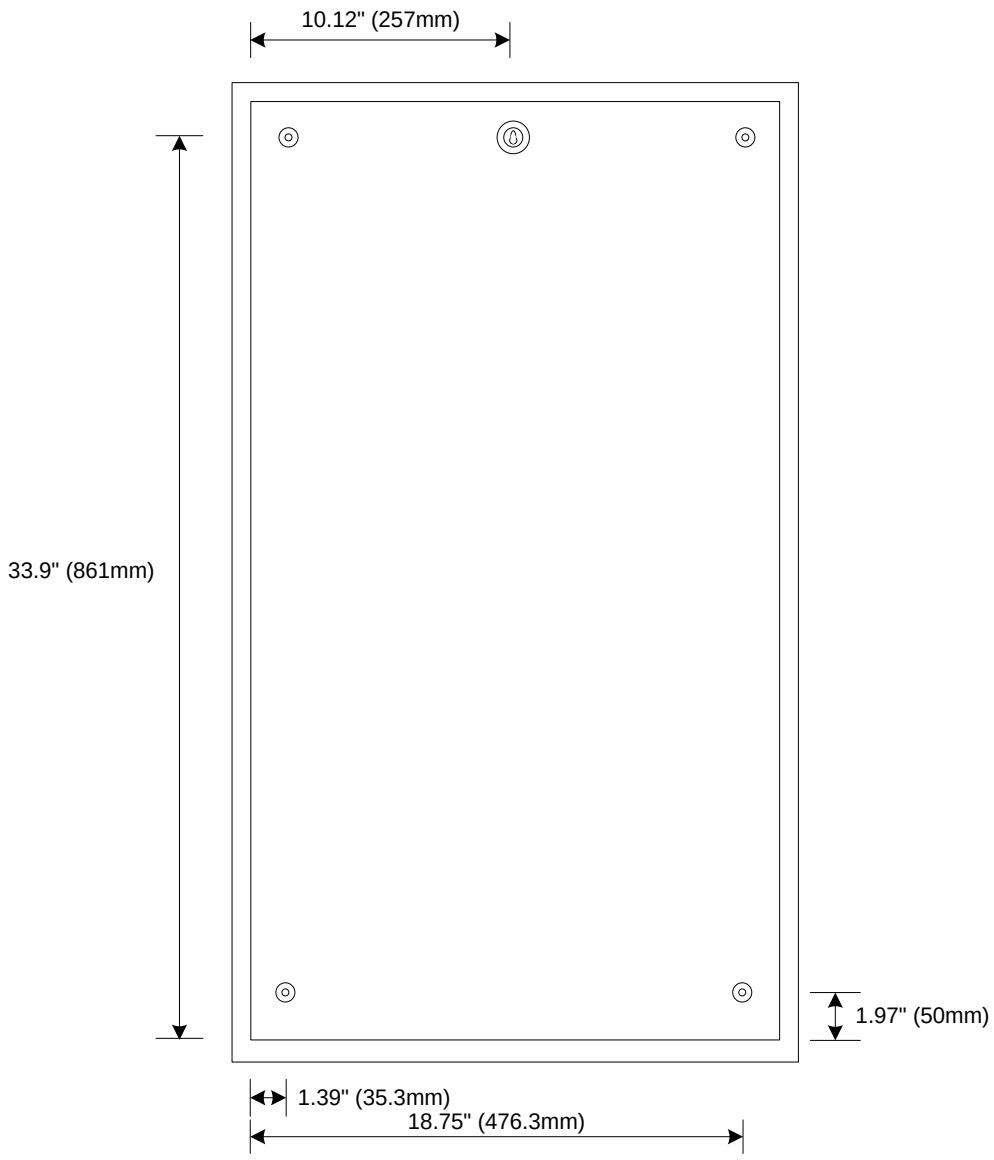


Figure 4a - NX-CC02-BB-BB Mounting Dimensions

Note: The NX-CC02-BB-BB back box includes eleven single knockouts (7/8") and nine double knocks (7/8" or 1 ¾", two located on the bottom of the back box). Care should be taken when utilizing the inner 7/8" knockout of the 1 ¾" to avoid knocking out the 1 ¾" (see figure 4).

For surface mounting, there are five pre-drilled holes located on the rear of the back box (see figure 4a). The top center mounting hole is keyed for ease of mounting.

Place the back box on the wall and mark the top keyed mounting hole.
Drill the marked location and partially install the mounting screw in the wall.
Hang the cabinet on the mounting screw.
Level the cabinet and mark the remaining holes and then drill the holes.
Insert all screws and firmly tighten.

For semi flush mounting (in addition to the rear mounting holes) 1/8" knockouts are located on the sides and top of the back box.

3.2 Inner Door Assembly and Installation

The NX-FACC-1 command center, is a factory assembled audio command center with an installed NX-CC01-BB-ID1 inner door. The NX-CC01-BB and NX-CC02-BB are modular command centers that are built in the field based on installation requirements, inner doors are ordered separately to meet aperture module needs.

Note: Inner and outer doors are mounted to NX-CC01-BB and NX-CC02-BB back boxes with NX-FA-HPINs.

3.2.1 NX-FACC-1 Command Center and NX-CC01-BB Modular Command Center Inner Doors, also referred to as a 3x3 Command Center

There are three (3) inner door options available for the NX-CC01-BB modular command center (see figure 5). As previously stated, the NX-FACC-1 is preassembled with the NX-CC01-BB-ID1 inner door.

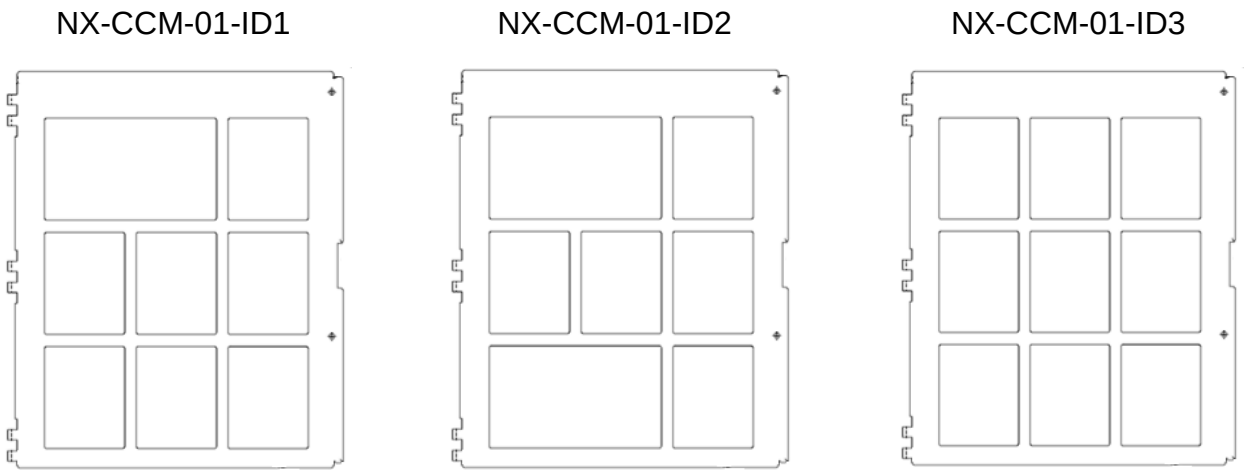


Figure 5 – NX CCM-01 Modular Command Center Inner Doors

The NX-CC01-BB-ID1 is a 3x3 command center inner door for both the NX-FACC-1 command centers and the NX-CC01-BB modular command center that supports one (1) double aperture module and seven (7) single aperture modules.

Note: The NX-FACC-1 NX-CC01-BB-ID1 inner door is preassembled with; one NX-ACS-DSP (Alphanumeric Graphic Display) in the double aperture location, one NX-EM-ASW-16-16 (Switch/LED Module) installed in the first single aperture location on the second row, and one NX-MIC (Microphone Assembly) installed in last single aperture location on the third row (bottom row). The remaining single aperture locations have NX-FA-SAPs (Single Aperture Plates) installed (see figure 1a).

The NX-CC01-BB-ID2 is a 3x3 modular command center inner door that supports two (2) double aperture modules and five (5) single aperture modules. The double aperture in the bottom row typically supports the NX-TEL, NX-TEL-MCCS, NX-TEL2-MCCS or NX-TEL2-MCCS/P firefighter telephone option.

The NX-CC01-BB-ID3 is a 3x3 modular command center inner door that supports nine (9) single aperture modules.

3.2.2 NX-CC02-BB Modular Command Center Inner Doors, also referred to as a 3x5 Command Center

There are three (3) inner door options available for the NX-CC02-BB modular command center (see figure 6).

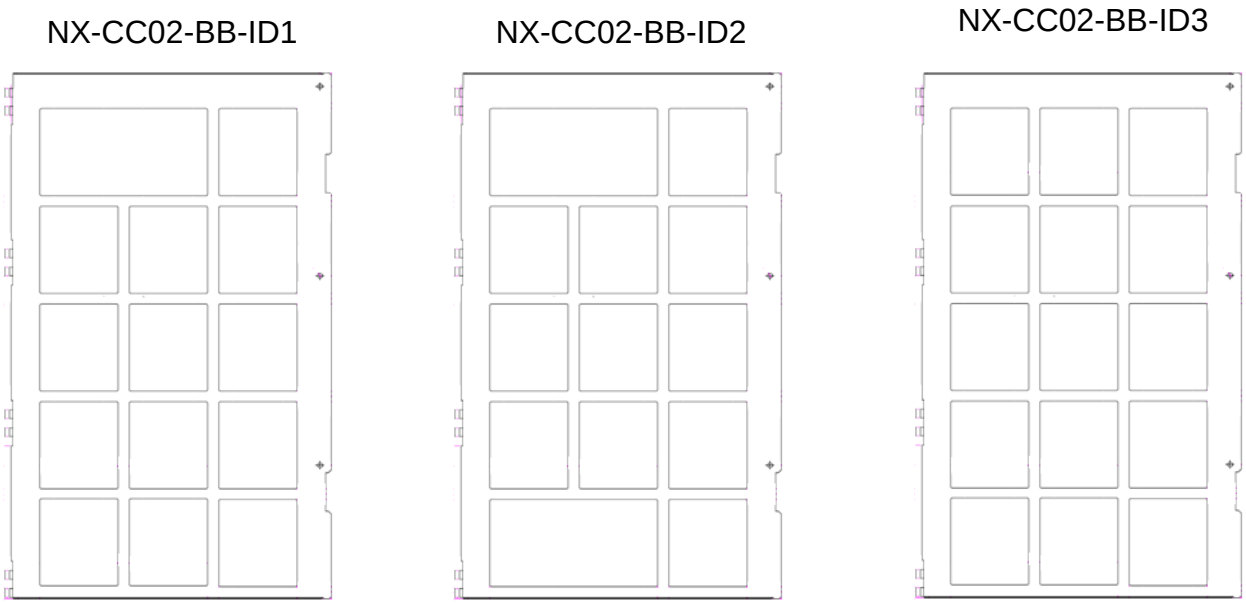


Figure 6 – NX-CC02-BB Modular Command Center Inner Doors

The NX-CC02-BB-ID1 is a 3x5 modular command center inner door that supports one (1) double aperture module and thirteen (13) single aperture modules.

The NX-CC02-BB-ID2 is a 3x5 modular command center inner door that supports two (2) double aperture modules and eleven (11) single aperture modules. The double aperture in the bottom row typically supports the NX-TEL, NX-TEL-MCCS, NX-TEL2-MCCS or NX-TEL2-MCCS/P firefighter telephone option.

The NX-CC02-BB-ID3 is a 3x5 modular command center inner door that supports fifteen (15) single aperture modules.

3.2.3 Inner Door Aperture Modules and Blank Plates

Below is a list of inner door optional modules/plates available for the NX-FACC-1 and NX-CC01-BB/NX-CC02-BB modular command centers. As previously indicated, these modules are either single aperture or double aperture.

Double Aperture Modules and Blank Plate (size; 6 ⅝”H x 11 ¼”W):

1. NX-ACS-DSP Display/Keyboard
2. NX-TEL Firefighter Phone w/Telephone Riser
3. NX-TEL-MCCS Multiple Command Center Firefighter Phone
4. NX-TEL2-MCCS Firefighter Phone System2 Command Center Phone with Enclosure
5. NX-TEL2-MCCS/P Firefighter Phone System2 Command Center PTT Phone with Enclosure
6. NX-FA-DAP Double Aperture Plate

Single Aperture Modules and Blank Plate (size; 6 ⅝”H x 5 ⅝”W):

1. NX-EM-ASW-16 Switch/LED Module
2. NX-FA-LED16 LED Annunciator Module, 16 Red and 16 Yellow
3. NX-FA-LED32R LED Annunciator Module, 32 Red
4. NX-FA-LED32Y Led Annunciator Module, 32 Yellow
5. NX-EM-IO48 Switch and LED Driver
6. NX-MIC Microphone
7. NX-EM-012 Panel Strip Printer
8. NX-FA-SAP Single Aperture Plate

With the exception of the NX-FACC-1 command centers, which has an NX-ACS-DSP, NX-EM-ASW-16-16, NX-MIC and five (5) NX-FA-SAPs installed, all command center inner doors require the purchase of double and single aperture modules/plates based on installation requirements.

3.2.3.1 Mounting Inner Door Aperture Modules/Blank Plates

To install an aperture module or blank plate onto an inner door of an NX-FACC-1 or NX-CC01-BB/NX-CC02-BB modular command center, simply remove the nuts and washers secured to the inner door aperture location.

Place the aperture module or if installing a blank plate, the blank plate, into the aperture location between the aperture screws. Reinstall the previously removed washers and nuts.

For individual aperture module wiring refer to the specific module within this manual.

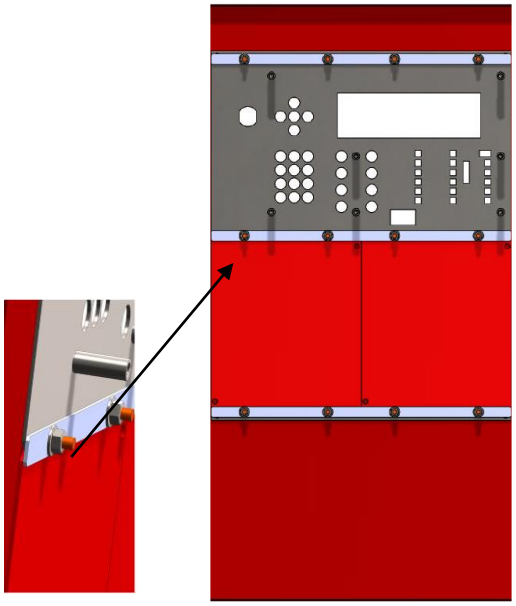


Figure 7 – Aperture Installation

4 Circuit Card Installation and Electrical Specifications

With the exception of the NX-FACC-1 command centers, modular command centers NX-CC01-BB and NX-CC02-BB are shipped unassembled. Modules such as NX-FACP, NX-ACS-ACB, NX-ACS-DSP, NX-EM-PSU, NX-EM-PSU6, NX-AMP-80, etc. are all purchased individually in separate packaging and installed in the field. Prior to mounting any modules in the enclosure, locate and install the system enclosure(s).

This equipment is constructed with static sensitive components. Observe anti-static precautions at all times when handling printed circuit boards. Wear an anti-static ground strap connected to panel enclosure earth ground.

CAUTION: Before installing or removing any printed circuit boards remove all sources of power (AC and battery).

4.1 NX-ACS-ACB AC Board

The NX-ACS-ACB AC board is the AC (120 / 240 VAC) interface for the NX-FACC-1 command center, NX-FACP base card, and modular command centers NX-CC01-BB/NX-CC02-BB, NX-FACP base cards.

4.1.1 Installing the NX-ACS-ACB AC Board

The NX-ACS-ACB AC board is mounted in the upper right corner of the modular command center NX-CC01-BB-BB and NX-CC02-BB-BB back boxes. In addition, it is pre-mounted in the NX-FACC-1 command center in the same location as the NX-CC01-BB-BB back box.

To install the NX-ACS-ACB board, place the board over the four (4) standoffs located in the upper right corner of the NX-CC01-BB-BB or NX-CC02-BB-BB back box, and secure with the four (4) screws provided with the NX-ACS-ACB board (see figure 8). It is critical that these screws be tightly secured as they are required for proper earth ground connection.

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

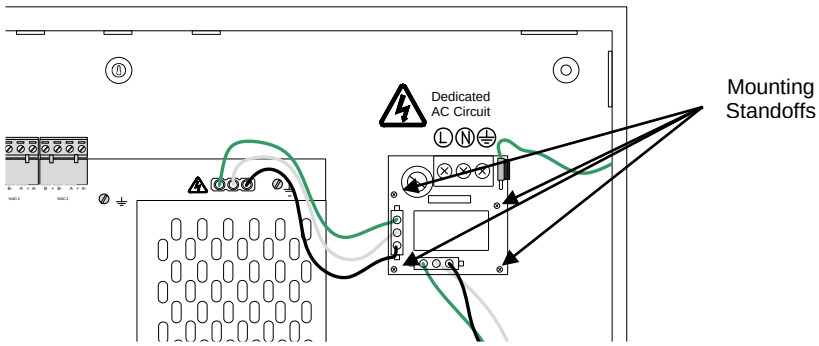


Figure 8 - NX-ACS-ACB AC Board

Place the screw lug of the green ground wire connected to the NX-ACS-ACB board onto the back box ground screw (stud) located to the right of the NX-ACS-ACB board, on the right side-wall of the back box, and secure with provided washer and nut. It is critical that this nut be tightly secured as it is required for proper earth grounding.

Note: Failure to connect NX-ACS-ACB green ground wire to the ground screw (stud) of the back box will defeat the protection circuitry designed to protect against lightning and static electricity.

Plug one end of the provided Molex cable into the bottom Molex connector on the NX-ACS-ACB, plug the other end of the Molex cable to the Molex connector located on the top right side of the NX-FACP base card (see figure 8). The other Molex connector on the NX-ACS-ACB is utilized for AC connection to either the NX-EM-PSU or NX-EM-PSU6 module, if installed.

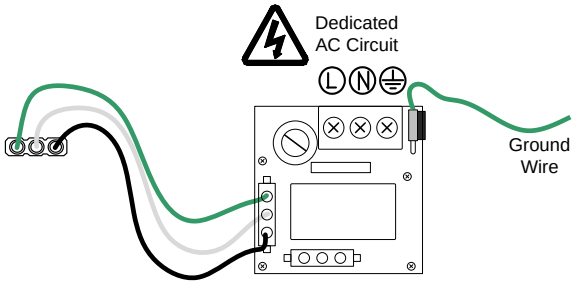
4.1.2 NX-ACS-ACB Electrical Specifications

AC Branch Circuit Ratings:
120V (1.4A [1 or 2 loop] / 2.8A [4 loop]) – 240V (0.7A [1 or 2 loop] / 1.4A [4 loop]) 50/60Hz
Brown-out – 98V nominal
15A Branch Circuit

Fuse: 5A, 250VAC Ceramic, Time Delay (size 5x20mm) (Bussmann S505-5-R, Littelfuse 0215005.XP)

AC Wiring: #14 or #12 AWG, refer to National Electric Code

Over-current protection for this circuit must comply with Article 760 of the National Electrical Code (NEC) and/or local codes.



The panel must be connected to a solid earth ground. Use #14 AWG (2.00 mm^2) or larger wire with 600 volt insulation rating.

4.1.3 Replacing the NX-ACS-ACB AC Board

If replacing the NX-ACS-ACB AC board, remove power (AC and battery) from the system. Remove all Molex connector plugs and the green ground wire plug from the NX-ACS-ACB board. Remove the four (4) screws holding the NX-ACS-ACB board to the back box.

Place the new NX-ACS-ACB board over the four (4) mounting standoffs and secure with the four (4) removed screws. Replace the removed Molex connector cables and green ground wire plug, and reconnect AC and battery power.

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

4.2 NX-FACP Base Card

The NX-FACP base card is the heart and soul of the NEO fire alarm control panel, providing interface to numerous NEO option modules/devices based on installation requirements.

4.2.1 Installing the NX-FACP Base Card

The NX-FACP base card is mounted to standoffs located on the rear of the back box. In addition, it is pre-mounted in the NX-FACC-1 command center.

The base card is hung on five top-hat (screw-less [*]) standoffs and secured with three (3) screws [p] (see figure 9). It is critical that these screws are tightly secured as they are required for proper earth ground connection.

To install the NX-FACP base card, slide the NX-FACP base card over the five top-hat (screw-less [*]) standoffs and secure the card to the back box with the three (3) provided screws [p] (see figure 9).

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

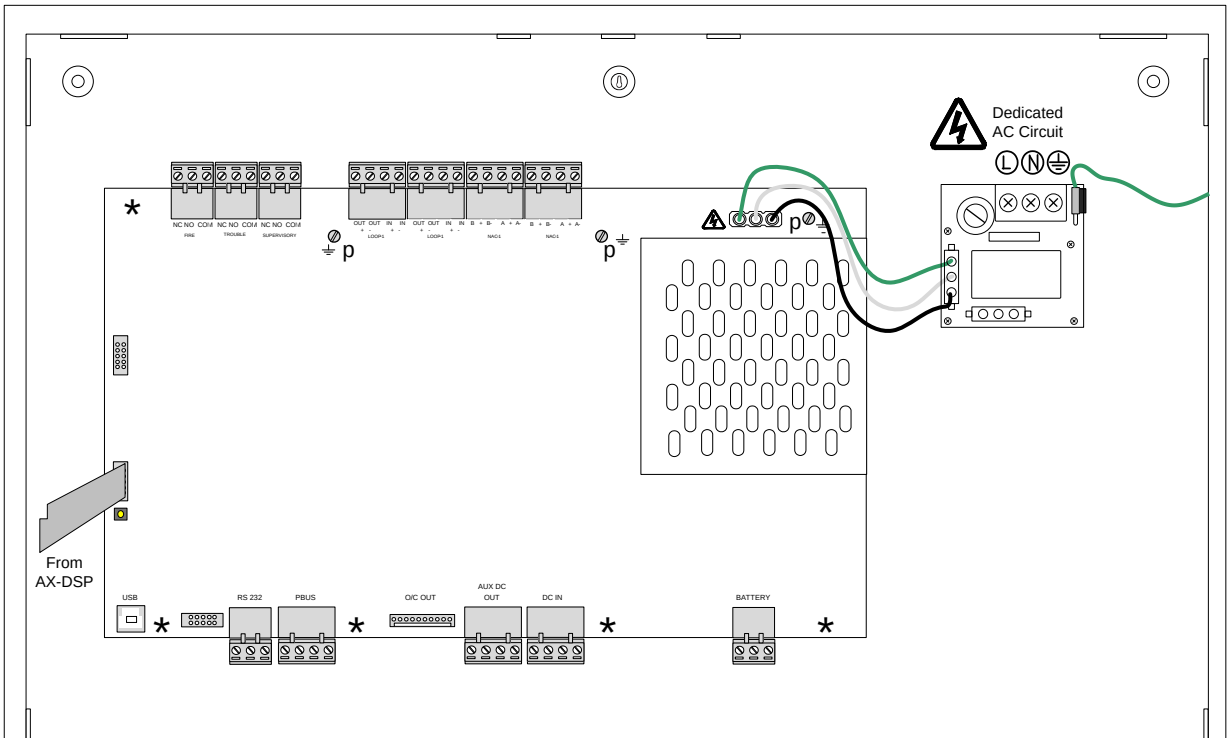


Figure 9 - NX-FACP Base Card

4.2.2 NX-FACP Base Card Wiring

4.2.2.1 NX-FACP Base Card Battery Circuit

24 VDC Nominal

27.4V nominal charging voltage, 2.0A temperature compensated charging current. 0.83 manufacturer battery de-rating factor.

Minimum 7Ah, Maximum 48Ah batteries.
SUPERVISED. NON-POWER LIMITED.

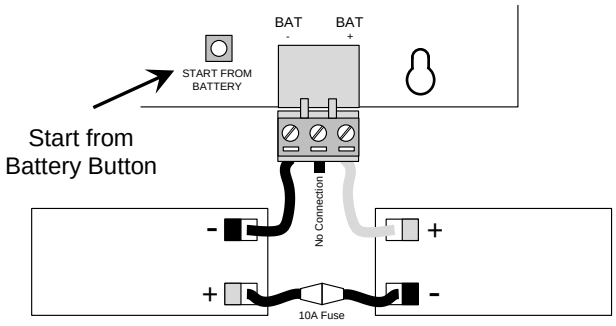
Battery link wire fuse:
Fuse: 10A, 250VAC Ceramic, Time Delay
(size 5x20mm)
(Bussmann S505-10-R, Littelfuse 0215010.XP)

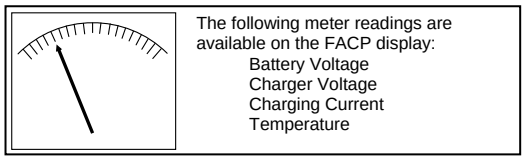
Start the panel on AC power first then connect batteries. If AC power is not available, the system can be started from the batteries, simply connect a fully charged set of batteries and press the “START FROM BATTERY” button.

The panel provides deep discharge protection. Battery power will be disconnected when voltage falls below 19V (nominal).

Note: If the batteries are disconnected the charger output is turned off.

Internal series resistance of the batteries is continuously checked. If the internal series resistance increases above 0.8Ω the panel will indicate a trouble condition.





(Refer to Section 11.1.1)

4.2.2.2 NX-FACP SLC Circuits

The NX-FACP base card provides either one (NX-ACS-1L) or two (NX-ACS-2L) SLC circuits. The circuit ratings for each SLC are as follows:

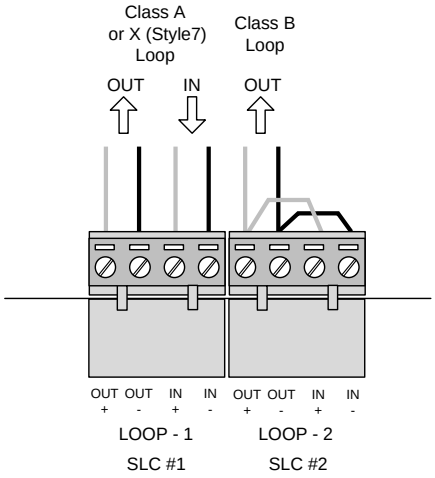
24 VDC, 0.5A[1]
SUPERVISED. POWER LIMITED.

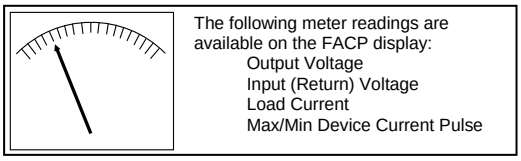
Class A, X (Style 7) or B

Minimum return voltage permitted is 17V.

Wire range – 22-12 AWG

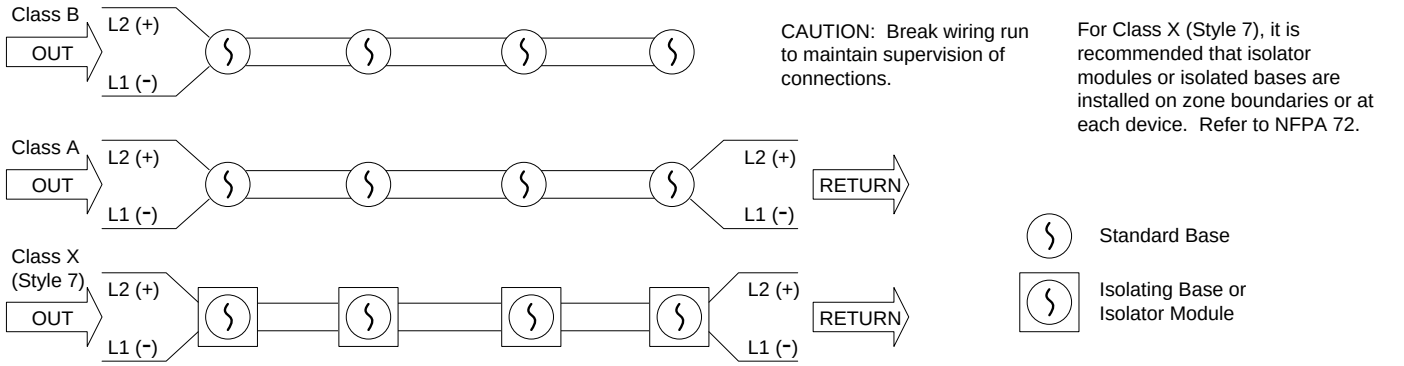
Refer to NEO Wiring Guide Section 10.





(Refer to Section 11.1.1)

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



Note: During normal operation the panel 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. During programming mode, the panel will drive the SLC from the OUT connections only to enable easier wiring trouble diagnosis.

4.2.2.2.1 SLC Peripheral Devices

Communications between the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card and intelligent smoke detectors, addressable input devices and addressable output devices takes place through the Signaling Line Circuit (SLC), which can be wired NFPA Class A, X (Style 7) or B.

4.2.2.2.1.1 Intelligent Smoke Detectors

Intelligent Smoke Detectors offer a wide range of capabilities. Each detector provides dual-alarm LEDs for a complete 360^0 view of a devices status. In addition, the LEDs can be programmed to flash or not flash during quiescent mode.

Detectors are individually addressed through their associated base by a patented address ("XPerT") card. The address is set by removing "pips" on the XPerT card according to the chart below, which is supplied with each detector base (see figure 10). Once the address is set on the XPerT card, it is slid into the detector base and locked in place.

XPerT Card

Note: Addressing the detector at the base rather than internally to the detector minimizes errors associated with detector removal and maintenance.

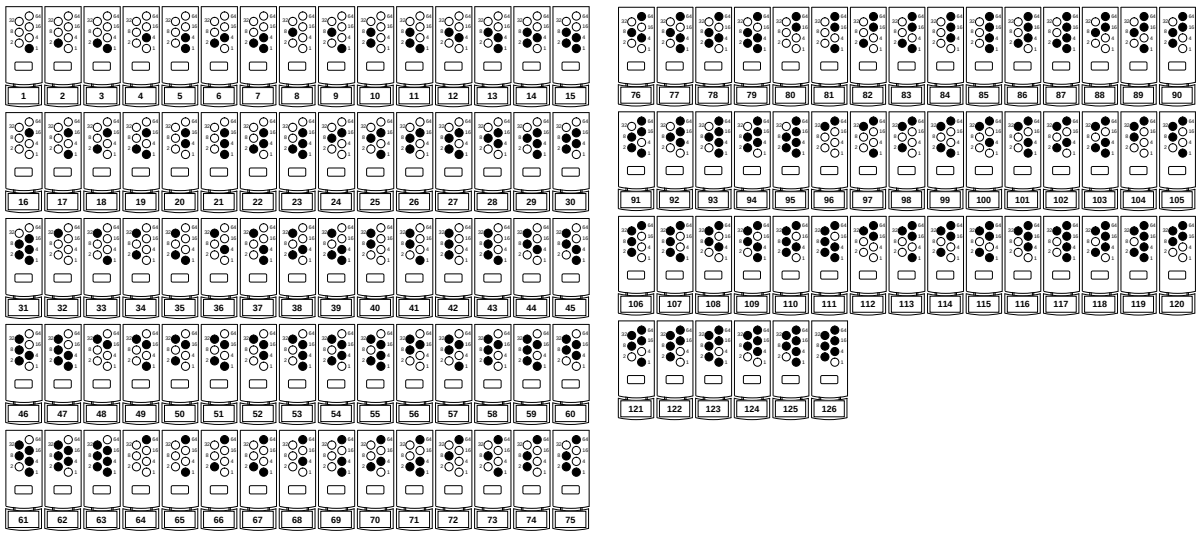


Figure 10 - XPerT Card Programming

Designed to adapt to changing environments and protect against unwanted false alarms, the response characteristics of each detector is set to comply with the stringent requirements of UL and NFPA 72.

Each detector is continuously monitored and tested for proper sensitivity and operation. If a problem is detected with either the device's sensitivity or its operation, a trouble or maintenance signal is reported back to the fire alarm control panel.

Detectors will compensate for any sensitivity drift of the initial programmed response/sensitivity value due to environmental contamination and/or dust buildup. Each detector maintains its initially set sensitivity at a constant level even when the chamber is severely contaminated. When compensation levels exceed normal values, a maintenance signal (dirty detector) signal is generated.

The intelligent detector is capable of being field programmed for one of five response/sensitivity modes (*see below*). Response modes correspond to unique response behaviors 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 in the fire alarm control panel software 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	3							3	3	3			3	3	3				3					3									3	3
Ionization								3	3	3			3	3	3			3	3															
Multi-Sensor	3							3	3				3	3			3	3	3	3		3	3	3	3							3			
Heat																3	3				3	3						3	3	3			3		3

1, 2, 3, 4, 5 = Response/Sensitivity Modes
3 = 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	135^0F	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 (^{0}F)	Sensitivity Characteristics	Spacing
1	135^0 Ordinary	Static/Rate-of-Rise	70 ft
2	150^0 Ordinary	Static/Rate-of-Rise	70 ft
3	150^0 Ordinary	Static	70 ft
4	200^0 Intermediate	Static/Rate-of-Rise	70 ft
5	200^0 Intermediate	Static	70 ft

If an intelligent device is in alarm the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center will perform multiple assessments of the alarming device to ensure that the alarm condition from the device is valid. The value of the assessment time can be programmed by the installer during installation. Programmable assessment time fields range from 0 to a maximum of 10 seconds (0 to 20/30 seconds for Multi-Sensor detectors) from the first report of an alarm condition to the final validated (assessed) alarm condition. Refer to Front Panel Programming Manual or PC-NeT Field Configuration Manual NX682-100 for further explanation.

Note: Programmed default values for assessment time:
Detectors: Default 5 seconds. Maximum 10 seconds.
Input Modules: Default 0 seconds. Maximum 10 seconds.

USE CAUTION WHEN SELECTING SAMPLING VALUE

When an intelligent device enters an alarm condition the analog value of the device can be viewed by the panel's graphical display. Analog values for alarm are set at a value of 55. A pre-alarm value of 45 is set as a default for all intelligent devices; this field is programmable and can be set at a lower or higher level. Refer to Front Panel Programming Manual or PC-NeT Field Configuration Manual for further explanation.

If an intelligent device falls below a minimum analog value the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card will enter a trouble/fault warning (i.e.: "Device Dirty) condition for that specific device. In addition, a device trouble condition (non device dirty) value is normally set at a value of 8 with a programmable range of 4-20.

In addition to all of the programmable capabilities of the intelligent devices, each device can also be setup for Special Sensitivity Mode (SSM) operation. In this mode of operation devices can be set to perform different functionality based on time-of-day/day-of-week (refer to Front Panel Programming Manual or PC-NeT Field Configuration Manual for further explanation). The NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card supports 10 independent, 7-day time clocks.

Another feature of the detector, in conjunction with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card, is its ability to sub-address detector base ancillary functions. Each detector is capable of incorporating, based on optional base utilization, a remote LED and/or relay. When these options are utilized, the user is capable of sub-addressing each of these options (remote LED and/or relay) to activate independently of the associated detector.

Detector Functions:
The fire alarm control panel supervises the connection to each intelligent detection device. The following statuses are monitored and reported as trouble conditions at the panel.

Maintenance Alert (Device Dirty):	Indicates that a detector has reached its limit of compensation in its chamber sensitivity due to environment contamination. It is now in a state where further contamination could mean the device is susceptible to false alarms.
Device Type Supervision:	If an incorrect intelligent device type is replaced in a detector base.
Device Added:	If the panel finds a device at an address where no device previously existed.

4.2.2.2.1.1.1 Detector Bases

4.2.2.2.1.1.1.1 Intelligent CO Detector and Sounder Base

The Intelligent CO Detector and Sounder Base is an analog/addressable combination carbon monoxide (CO) detector and sounder base for use on and NX-FACP base card Signaling Line Circuit (SLC).

As a combination unit, each Intelligent CO Detector and Sounder Base can support an additional NEO intelligent detector (smoke, heat, or multi-sensor). In addition, if the addition intelligent detector is not installed the Intelligent CO Detector and Sounder Base can accommodate a blank cover.

The CO sensor is an electrochemical sensor that is able to detect three levels of carbon monoxide and has a life of six years.

Program Mode	Carbon Monoxide Levels (PPM) (Applicable National Standard)	Alarm Response Time (Time Weighted Average)
3	70 parts per million (UL 2075 / 2034)	Within 4 hours
	150 parts per million (UL 2075 / 2034)	Within 50 minutes
	400 parts per million (UL 2075 / 2034)	Within 15 minutes

The CO sensor is fully supervised and provides a signal for field replacement, once it has reached its end of life cycle. The Intelligent CO Detector is individually addressed utilizing segments 1-7 of an integral DIP switch.

In addition to the NEO fire alarm control panel providing an automatic daily test of the Intelligent CO Detector, the CO detector can be manually tested locally, via an on-board test button, by spraying CO test gas through its outer edge opening, or by manually initiating a test command from the NEO fire alarm control panel.

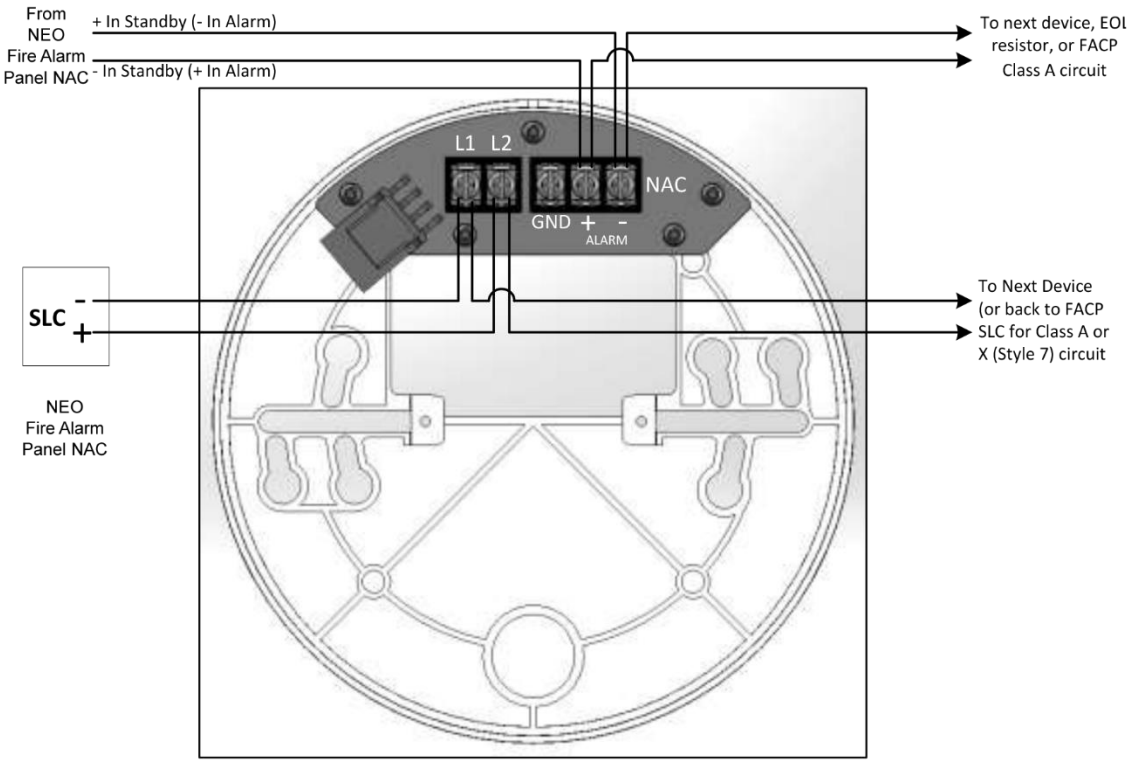
The built-in Sounder Base is capable of providing a temporal 3 (sub-addressed controlled via the optional intelligent detector), in the event of an alarm event, or temporal 4 (sub-addressed controlled via the CO detector). If both temporal signals are activated the temporal 3 alarm signal has the highest priority. The built-in Sounder Base requires a separate regulated 24 VDC supply whether from an NEO notification appliance circuit (NAC) or from a listed, supervised, power supply. Synchronization of multiple sounder bases is possible with the use of an optional MB-SDRT-M synchronization module.

Note: the Intelligent CO Detector and Sounder Base can be configured for "Standalone Detection Only" (SLC wiring only, no 24 VDC). In this mode of operation, the CO Detector and the additional optional intelligent detector will be monitored via the Signaling Line Circuit (SLC). However, as there is no 24 VDC wiring the Sounder Base temporal tones will be inoperable. The built-in Sounder Base <u>will not</u> function in "Standalone Detection Only" mode.

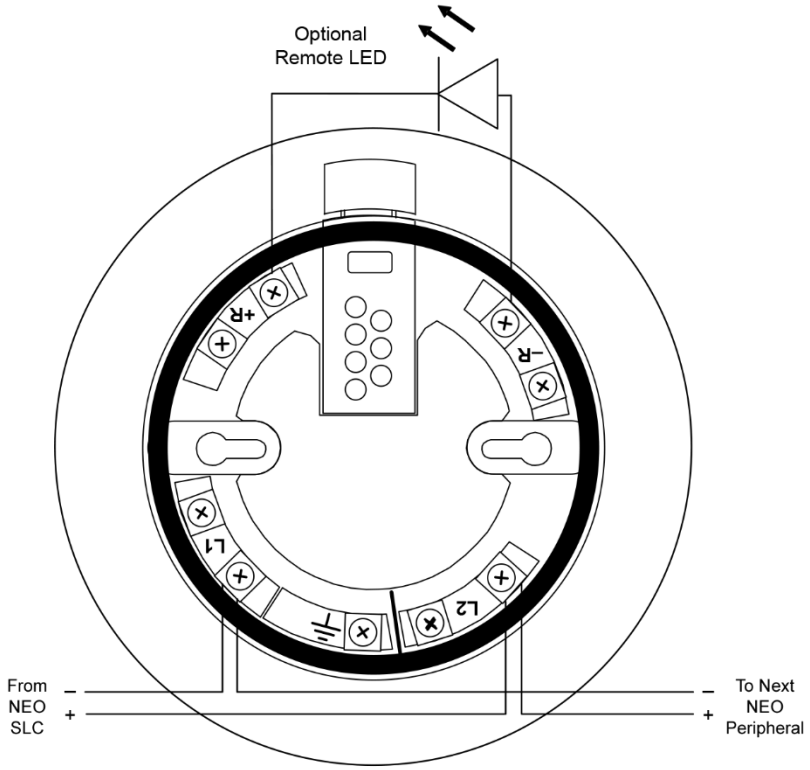
As previously stated the Intelligent CO Detector and Sounder Base can support an additional NEO intelligent detector, this detector is individually addressed via the Sounder Base by a patented address ("XPerT") card. The address is quickly and easily set by removing "pips" on the XPerT card according to a chart supplied with each Intelligent CO Detector and Sounder Base.

The Intelligent CO Detector and Sounder Base is designed as a 6" diameter base which can mounted to a standard 4" octagonal or 4" square electrical box.

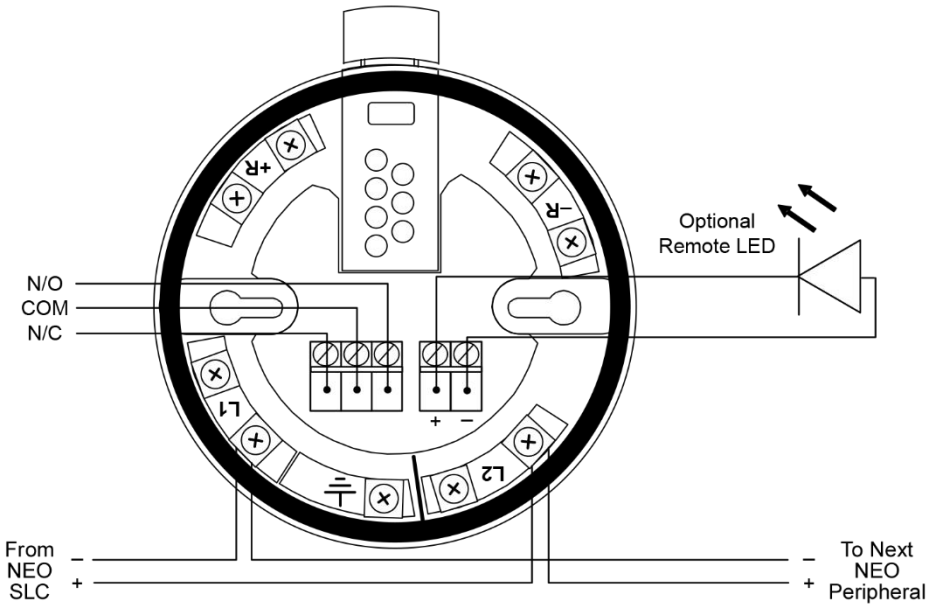
4.2.2.2.1.1.1.1.1 Intelligent CO Detector and Sounder Base Wiring



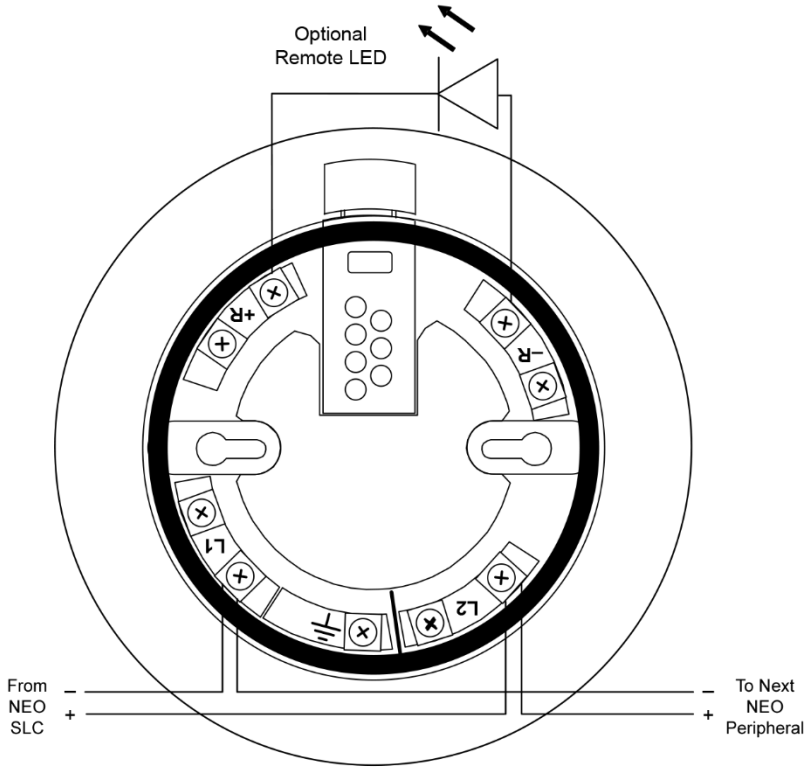
4.2.2.2.1.1.1.2 E-Z Fit Detector Base Wiring (6”)



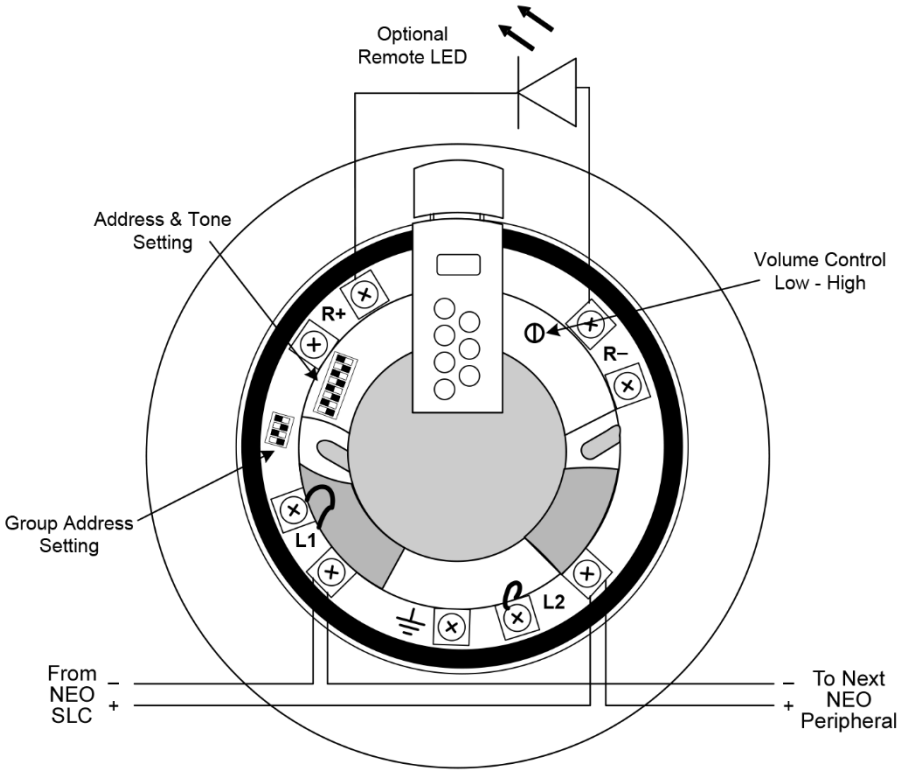
4.2.2.2.1.1.1.3 Relay Detector Base Wiring (4”)



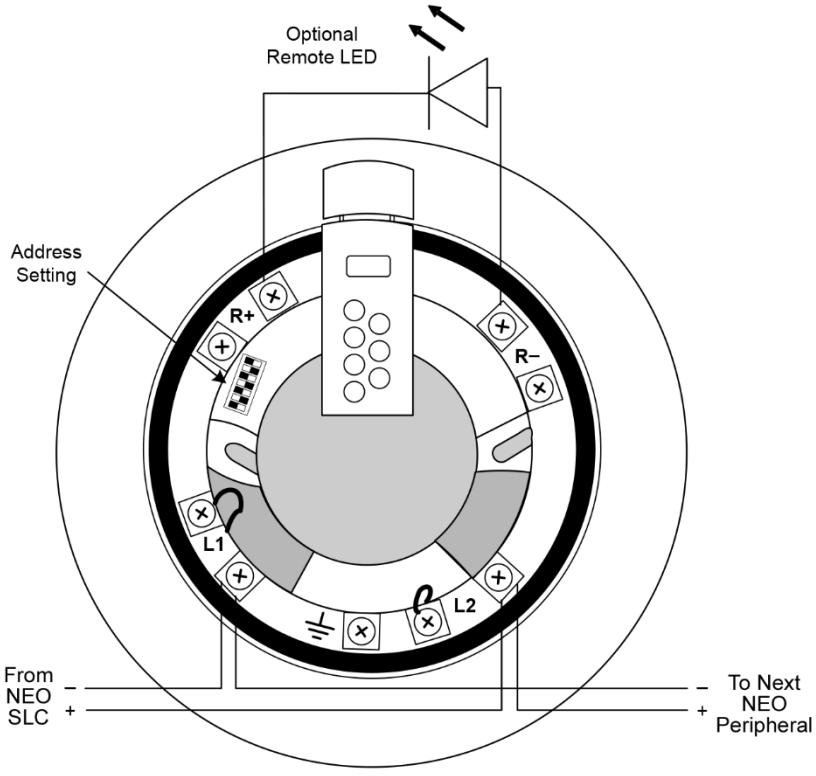
4.2.2.2.1.1.1.4 Isolator Detector Base Wiring (4”)



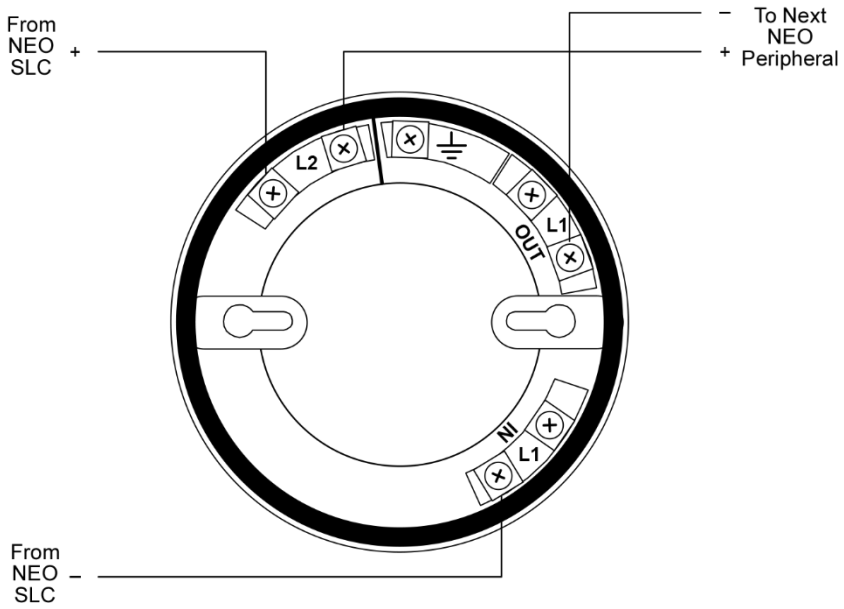
4.2.2.2.1.1.1.5 Loop Powered Sounder/Beacon Base Wiring (6”)



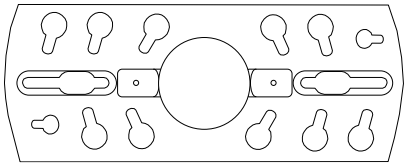
4.2.2.2.1.1.1.6 Enhanced Loop Powered Sounder/Beacon Base Wiring

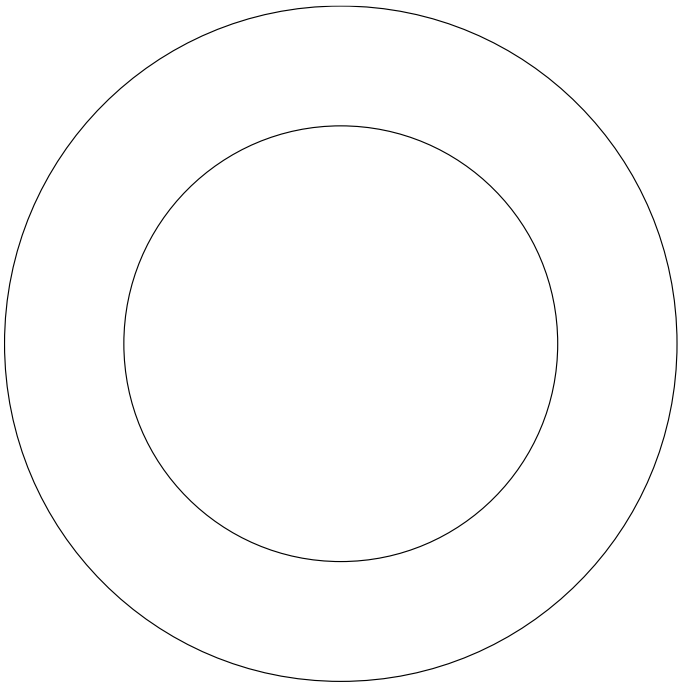


4.2.2.2.1.2 Isolator Base (4") for use with S-A4051 Isolator

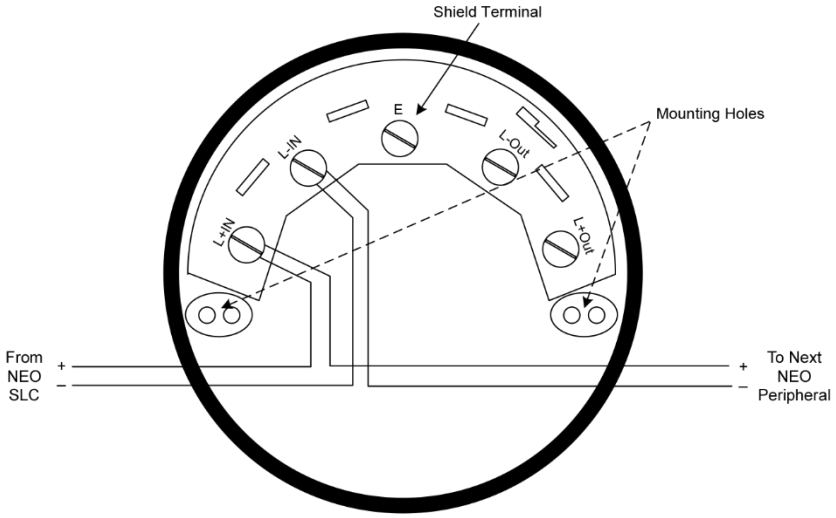


4.2.2.2.1.3 6" Mounting Base Adapter Kit – Mounting Plate & Trim Ring





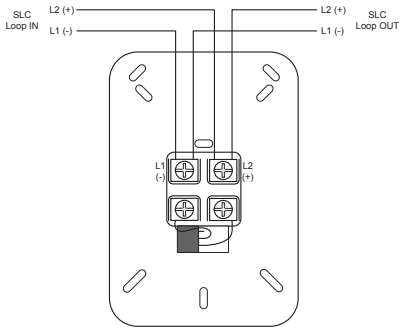
4.2.2.2.1.4 Open Area Sounders



4.2.2.2.1.5 Intelligent Manual Pull Stations

4.2.2.2.1.5.1 Dual Action Polycarbonate S-A4061

The Intelligent Dual Action Polycarbonate Pull Stations (S-A4061) are low profile, high quality addressable manual pull stations. Easily recognizable during a fire situation, the S-A4061 station is constructed of rugged polycarbonate for long life and reliability, with a red finish and raised white “FIRE” lettering. A red LED visible through the face of the station flashes during polling and turns on steady in alarm. Each station includes a key-lock for resetting (CAT B / CAT 30) which is common with the NEO fire alarm control panel. The S-A4061 stations are UL 38 Listed, meet the ADAAG controls and operating guidelines, and the ADA requirements for five pound maximum activation force.



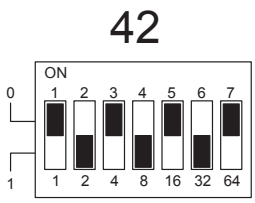
The S-A4061, Intelligent Dual Action Polycarbonate Pull Station, can be mounted semi-flush onto a standard single-gang electrical outlet box. If installations require surface mounting, an optional polycarbonate surface back box (S-A4062) is available.

4.2.2.2.1.6 Intelligent Modules

Intelligent Modules offer a wide range of input and output capabilities. The communications is a digital protocol that provides a high degree of immunity to transient noise and interference. The protocol also provides a mechanism for a device to place an alarm flag on the communications data stream, providing a fast response (priority - refer to specific module options) so that the alarm condition is registered within 2 seconds.

As with Intelligent Smoke Detectors, any Intelligent Module can be allocated to SLC addresses 1 – 126. The analog values returned by the devices are 4 (Trouble), 16 (Normal) and 64 (Alarm).

Each Intelligent Module; Inputs, Outputs and Pull Stations are individually addressed using a DIP switch. Opposite is an example of a programming DIP switch for address 42, below is a chart giving the settings for each address. In DIP switch packages containing eight (8) switches, the eighth switch is for classification of wiring type [Class A or Class B] (see figure 11).



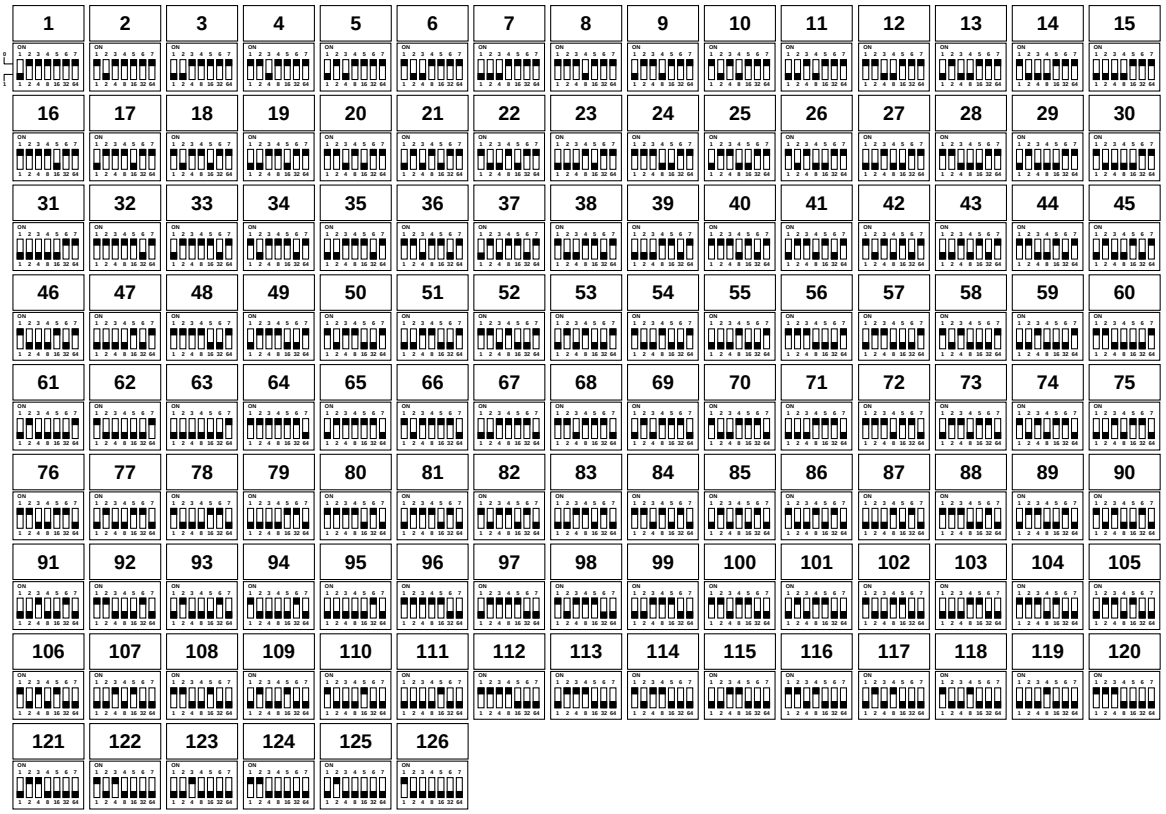


Figure 11 - DIP Switch Programming

4.2.2.2.1.6.1 Intelligent Monitor and Priority Monitor Modules

Available in various configurations, compact package (mini), 4” electrical box mount and with or without priority interrupt, the intelligent monitor modules offer unique fire alarm industry features that simplify installations and provide superior flexibility. Designed for installation on the SLC (signaling line circuit), each intelligent monitor module provides an addressable interface for a single contact device or group of contact devices connected via an initiating device circuit (IDC). With the flexibility of the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card, contact devices can be normally open (N.O.) or normally closed (N.C.) dry contacts. Contact devices range from heat detectors, linear heat detectors, 4-wire conventional smoke detectors, waterflow switches, tamper switches, manual pull stations, switch input points for control, etc.

Mini Monitor Module - S-A4041

The S-A4041 Mini Monitor Module can either fit inside the device being monitored, or can be placed in an electrical box in the vicinity of the device being monitored. The Mini Monitor Module's initiating device circuit (IDC) is capable of being wired Class B to the monitored contact device(s). An integral eight position programming DIP switch must be set for device addressing and priority interrupt feature. Each S-A4041 Mini Monitor Module incorporates a red status LED which flashes when the device is polled. In addition, an optional remote LED output is available for alarm status indication. Mini Monitor Modules can monitor any number of contact devices, however it is recommended not to mix alarm, supervisory, or security contacts on the same monitoring module circuit (see figure 12).

Note: The S-A4041 Mini Monitor Module is a DIN rail mount designed module, which allows multiples to be mounted via a DIN rail track within a common enclosure.

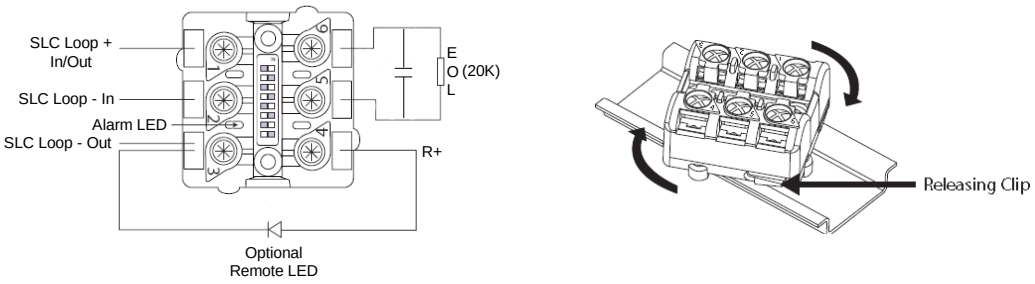


Figure 12 - S-A4041 Wiring & Optional Mounting

Mini Switch Monitor Module - S-A4048

Designed with flying leads for field wiring, the S-A4048 Mini Switch Monitor Module can either fit inside the device being monitored or can be placed in an electrical box in the vicinity of the device being monitored. Based on installation requirements, the Mini Switch Monitor Module's initiating device circuit (IDC) is capable of being wired Class A or B to the monitored contact device(s). An integral eight position programming DIP switch must be set for device addressing and wiring classification definition. Each S-A4048 Mini Switch Monitor Module incorporates a red status LED which flashes when the device is polled. Mini Switch Monitor Modules can monitor any number of contact devices, however it is recommended not to mix alarm, supervisory, or security contacts on the same monitoring module circuit (see figure 13).

Mini Priority Switch Monitor Module - S-A4047

The S-A4047 Mini Priority Switch Monitor Module is identical to the S-A4048 Mini Switch Monitor Module with the exception of a priority interrupt feature. The priority interrupt provides the fastest response possible to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. When the priority interrupt device is in an active state, the monitor's priority interrupt bypasses the normal SLC communications process, and immediately allows the device to communicate with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. The Mini Priority Switch Monitor Module is utilized to monitor highly critical contact devices such as manual pull stations (see figure 13).

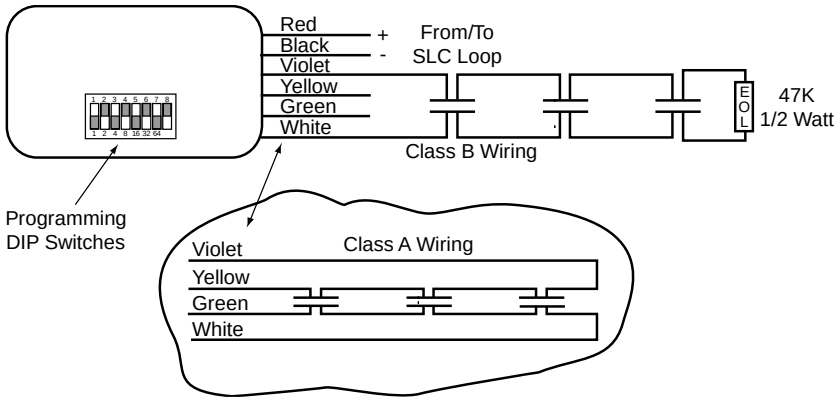


Figure 13 - S-A4048 and S-A4047 Wiring

Switch Monitor Module - S-A4043

The S-A4043 Switch Monitor Module is designed to mount to the front of a 4” square or 2- gang electrical box. Based on installation requirements, the Switch Monitor Module’s initiating device circuit (IDC) is capable of being wired Class A or B to the monitored contact device(s). An integral eight position programming DIP switch provides programming of device address and wiring classification definition. Each S-A4043 Switch Monitor Module incorporates a red status LED which flashes when the device is polled. Switch Monitors can monitor any number of contact devices, however it is recommended not to mix alarm, supervisory, or security contacts on the same monitoring module circuit (see figure 14).

Priority Switch Monitor Module - S-A4044

The S-A4044 Priority Switch Monitor Module is identical to the S-A4043, Switch Monitor Module, with the exception of a priority interrupt feature. The priority interrupt provides the fastest response possible to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. When the priority interrupt device is in an active state, the monitor’s priority interrupt bypasses the normal SLC communications process, and immediately allows the device to communicate with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. The Priority Switch Monitor Module is utilized to monitor highly critical contact devices such as manual pull stations (see Figure 14).

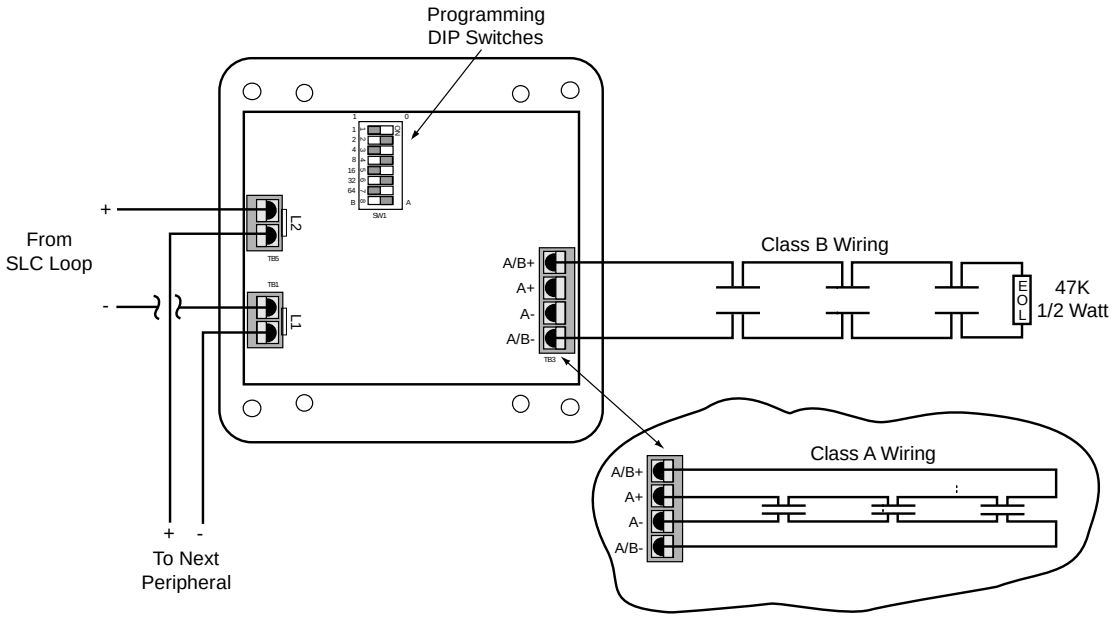


Figure 14 - S-A4043 and S-A4044 Wiring

Dual Switch Monitor Module - S-A4042

The S-A4042 Dual Switch Monitor Module is an addressable module for use with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center. The Dual Switch Monitor Module incorporates two (2) independent, individually programmable, initiating device circuits (IDC), providing cost-effective solutions in areas requiring multiple addresses within the same location. Each initiating device circuit is separately addressed and can be wired Class A or B. A typical application for the Dual Switch Monitor Module would be the individual monitoring of waterflow and tamper switches located at a sprinkler system riser.

Incorporated with each individual IDC circuit is a built-in priority interrupt feature which allows rapid response capabilities from highly critical contact devices (e.g., manual pull stations, etc.). Two (2) eight position programming DIP switches are provided on each Dual Switch Monitor Module for IDC circuit addressing and wiring classification definition. The S-A4042 mounts to the front of a standard 4" square or 2-gang electrical outlet box. Displayed on the front of each S-A4042 is two (2) red status LEDs which flash when the individual address is polled and illuminate steady when the IDC circuit is active (see figure 15).

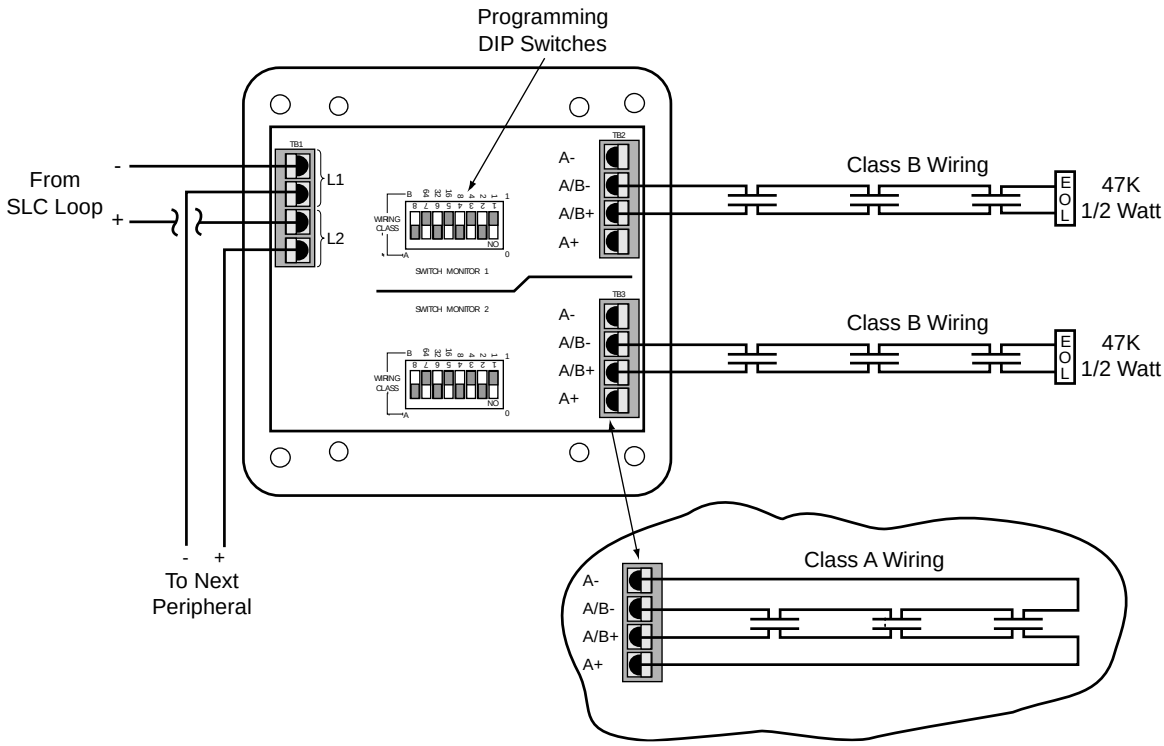


Figure 15 - S-A4042 Wiring

4.2.2.2.1.6.2 Intelligent Input/Output Modules

I/O Relay Output & Switch Monitor Module - S-A4045

The S-A4045 I/O Relay Output & Switch Monitor Module is an application specific addressable module for use with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. Each S-A4045 is SLC loop powered eliminating the need for additional field wiring and external power supplies. Designed for installation on the SLC (signaling line circuit) the I/O Relay Output & Switch Monitor Module provides a single initiating device circuit (IDC) input, an independently controlled Form-C relay contact output, and an unmonitored optically isolated voltage input. The I/O Relay Output & Switch Monitor Module utilizes Advances' unique sub-addressing for both the independently controlled relay and the optically isolated voltage input. By sub-addressing S-A4045's modules, system point capacities are expanded with installation, programming, and commissioning time minimized. The S-A4045 mounts to the front of a standard 4" square or 2-gang electrical outlet box. Displayed on the front of each S-A4045 is a single red status LED which flashes when the device is polled (see figure 16).

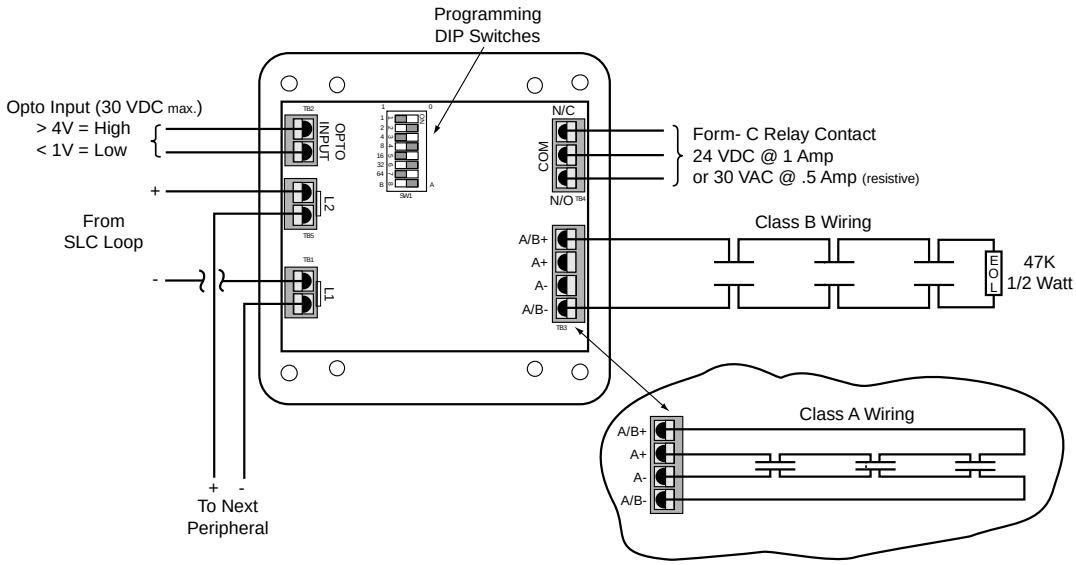


Figure 16 - S-A4045 Wiring

120V I/O Relay & Monitor Module - S-A4049

The S-A4049 120V I/O Relay & Monitor Module is an addressable 120 VAC relay switching module for application specific functions for the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. Each S-A4049 is SLC loop powered eliminating the need for additional field wiring and external power supplies. Designed for installation on the SLC (signaling line circuit) the 120V I/O Relay & Monitor Module provides a single initiating device circuit (IDC) input and an independently controlled 120 VAC Form-C relay contact output. The 120V I/O Relay & Monitor Module utilizes Advances' sub-addressing for the independently controlled relay contact. By sub-addressing S-A4049's modules, system point capacities are expanded with installation, programming, and commissioning time minimized. The S-A4049 mounts to the front of a standard 4" square or 2-gang electrical outlet box. Displayed on the front of each S-A4049 is a single red status LED which flashes when the device is polled (see figure 17).

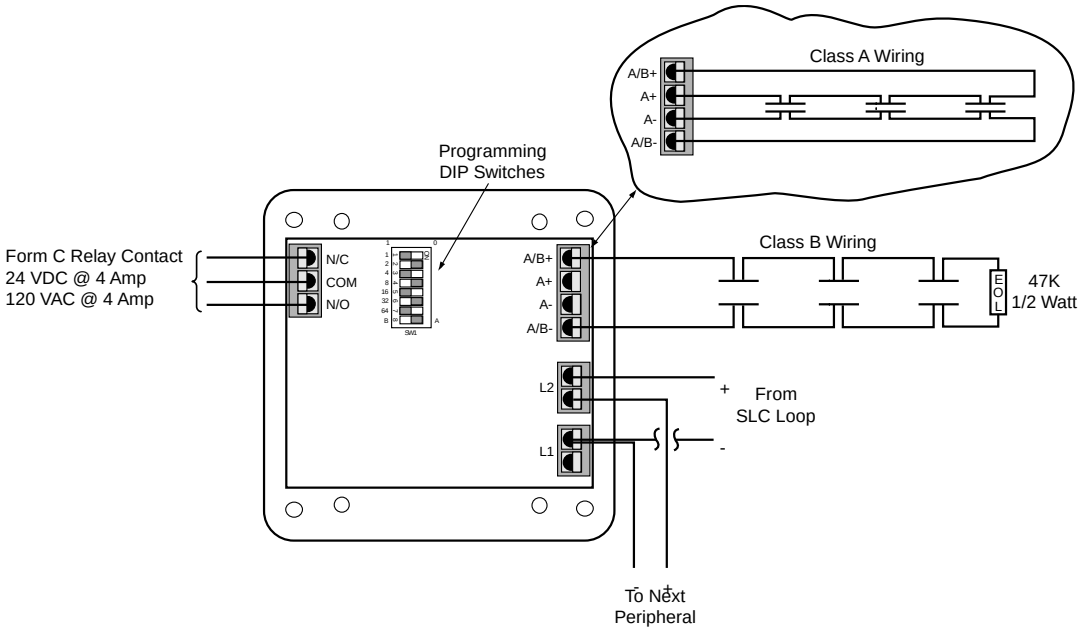


Figure 17 - S-A4049 Wiring

4.2.2.2.1.6.3 Intelligent Output Modules

Notification Appliance Circuit (NAC) Module - S-A4046

The S-A4046 Notification Appliance Circuit (NAC) Module is an addressable module for use with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. Each module incorporates an independent, individually programmable, notification appliance circuit (NAC), providing cost-effective solutions in areas requiring multiple notification appliance circuits. Each S-A4046 allows switching of an external power supply, such as a 24 VDC regulated power source or audio amplifier to a group of notification appliances.

The S-A4046 notification appliance circuit can be wired either Class A or B. Each module also supervises the wiring for opens, shorts and grounds and reports this status back to the intelligent fire alarm control panel. Typical input power to the S-A4046 would be from the main fire alarm control panel, a power supply booster or an amplifier.

To increase the already rapid response activation of the S-A4046, each module can be set to a group address, allowing all S-A4046's assigned to a common group address to be activated from a single command poll from the intelligent fire alarm control panel.

An eight position programming DIP switch is provided on each S-A4046 module for NAC Module addressing and wiring classification definition. In additional, a four position programming DIP switch is provided for group addressing (see figure 18 and 19).

The S-A4046 mounts to the front of a standard 4" square or 2-gang electrical outlet box. Displayed on the front of each S-A4046 is a single red status LED which flashes when the device is polled.

Compatible with the NEO Dynamix I/O Relationship Programming, the S-A4046 module can be individually assigned to activate from any input zone or address. In addition, the S-A4046 can be programmed to various output relationships, timing functions, gated functions, etc. to perform project specific control operations.

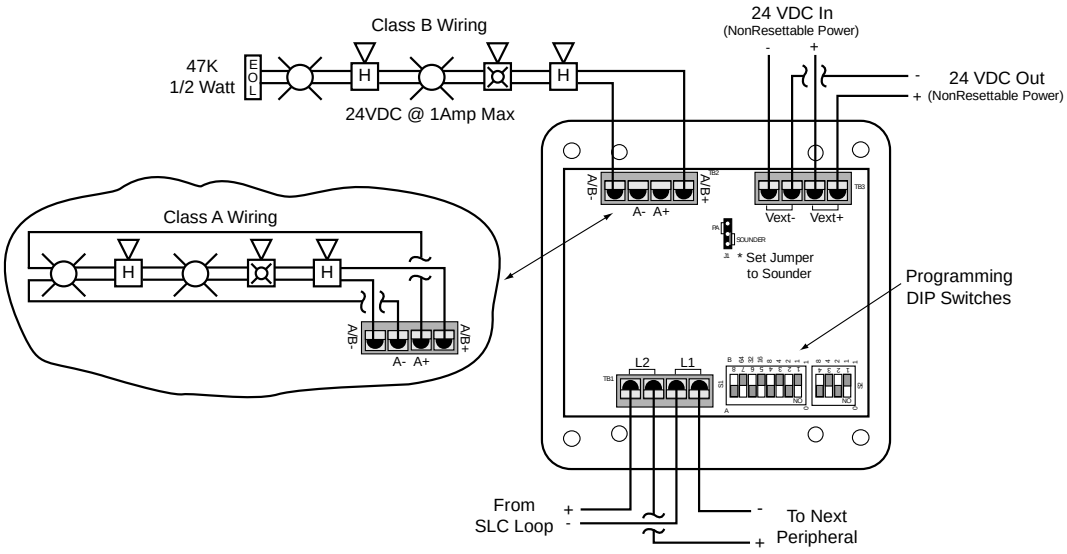


Figure 18 - S-A4046 Notification Appliance Circuit Wiring

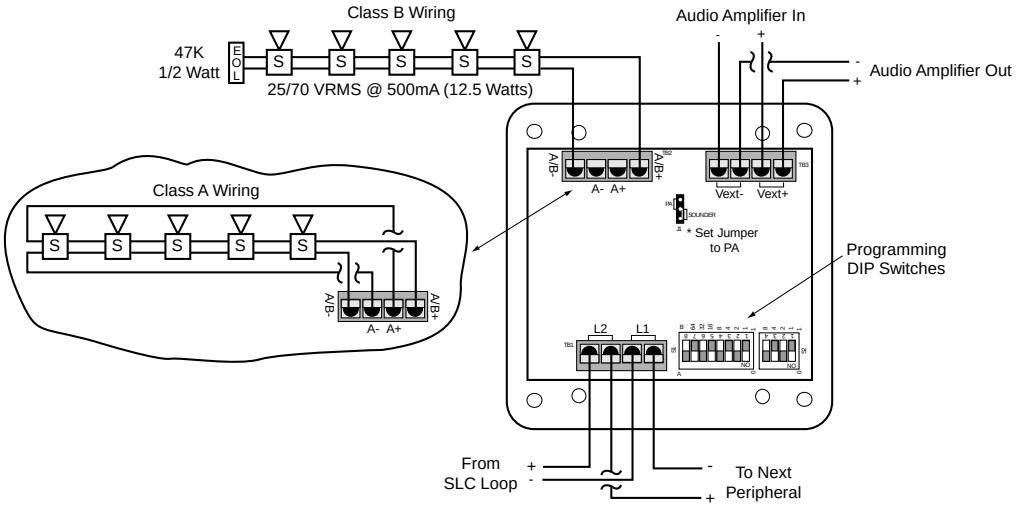


Figure 19 - S-A4046 Speaker Circuit Wiring

Relay Module - S-A4050

The S-A4050 Relay Module is an application specific addressable module for use with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. Each S-A4050 Relay Module is SLC loop powered eliminating the need for additional field wiring and external power supplies.

Designed for installation on the SLC (signaling line circuit), the Relay Module provides two isolated Form C relay contacts for controlling a variety of auxiliary control functions, such as elevators, HVAC, door holders, dampers, control equipment, etc. (see figure 20).

The Relay Module mounts to the front of a standard 4” square or 2-gang electrical outlet box and has a status LED which flashes when the device is polled.

Compatible with the NEO Dynamix I/O Relationship Programming, the Relay Module’s Form C outputs can be assigned to any input or output relationship, output group, timing function, gated function, etc. to enhance project specific control operations. Relay ratings of each Form C contact is 24 VDC @ 2 Amp (resistive) or 30 VAC @ .5 Amps (resistive).

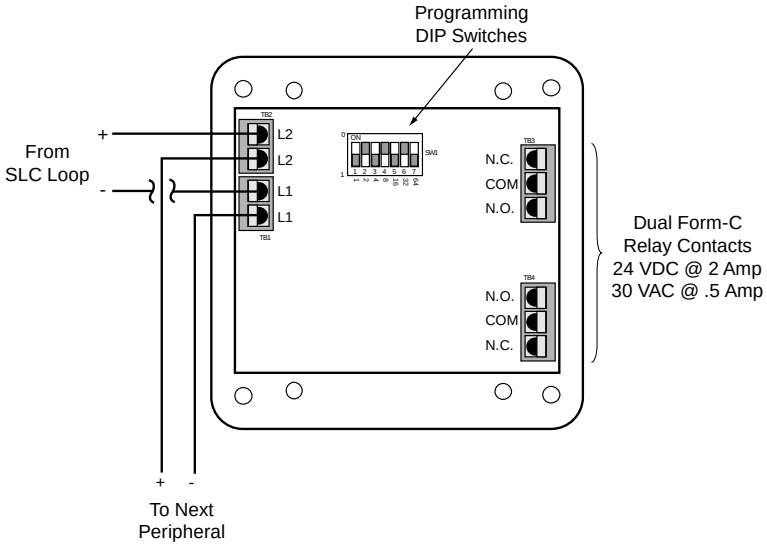


Figure 20 - S-A4050 Wiring

4.2.2.3 NX-FACP Notification Appliance Circuits

The NX-FACP base card provides two notification appliance circuits (NAC). In addition, two additional notification appliance circuits can be added to the NX-ACS-2L by adding the optional NX-EM-LPD or NX-EM-NAC plug-in card.

Note: The NX-ACS-1L one loop base card cannot support the NX-EM-LPD or NX-EM-NAC option modules.

Each notification appliance circuit is capable of supporting synchronized or non-synchronized strobes/signal patterns. Synchronization programming is done in the PC-NeT 6.48 or higher or via the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-ACS-DSP display keypad. In addition to the synchronization programming, silenceable or non-silenceable strobe programming is available.

Synchronization protocols include:
- Gentex®
- Potter/Amseco®
- Wheelock®
- System Sensor®

The circuit ratings for each notification appliance circuit are as follows:
REGULATED 24 VDC @ 2.0A[2]
SUPERVISED. POWER LIMITED.

Class A or B
Class B EOL (End-of-Line) Resistor 10KΩ

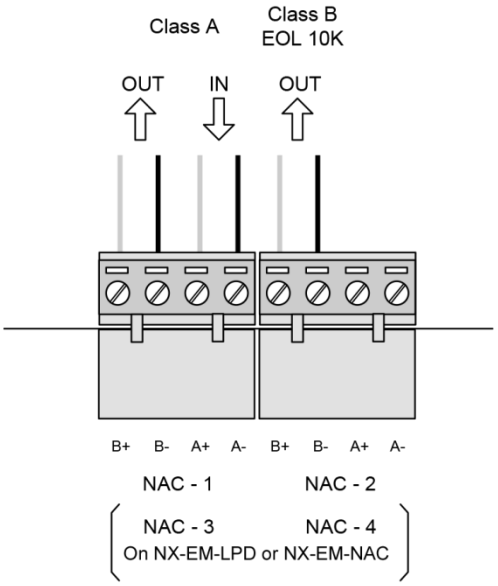
Minimum return voltage permitted is 16V.
Wire range – 22-12 AWG

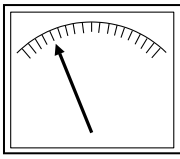
Maximum line impedance at 2.0A is 1.5Ω.

Maximum voltage drop across installation wiring is 3.0V at battery voltage of 20.4V.

Calculate the maximum line impedance and conductor size required for the actual load current applied.

Refer to NEO Wiring Guide Section 10.





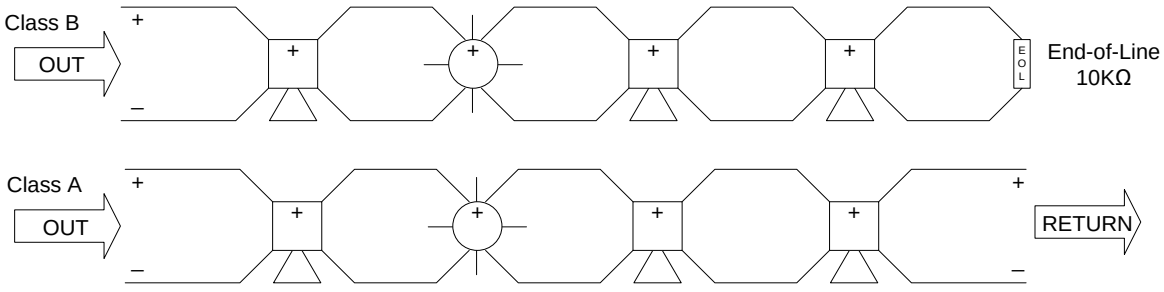
The following meter readings are available on the FACP display per NAC:
- Output Voltage
- Input (Return) Voltage
- Load Current

(Refer to Section 11.1.1)

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. The notification appliance circuit outputs can also be configured to accommodate silenceable synchronized strobes.

Note: Notification appliance circuits can be utilized as a door holder or other 24 VDC output by setting the notification appliance circuit to a "Not Alarm" Logic Statement. This programming allows the notification appliance circuit to be active (24 VDC) during a non-alarm and off during alarm.

[2] TOTAL OUTPUT LOAD must not exceed panel supply rating – maximum 4A.



CAUTION: Break wiring run to maintain supervision of connections.

Devices must be polarized.
Polarity is shown in the alarm (active) condition.

4.2.2.4 NX-FACP Relay Contacts

The NX-FACP provides three programmable Form C relay contacts.

The contact ratings for each relay are as follows:
30 VDC/VAC @ 1.0A, PF=1 (resistive)
POWER LIMITED – Connect to power limited circuits only.

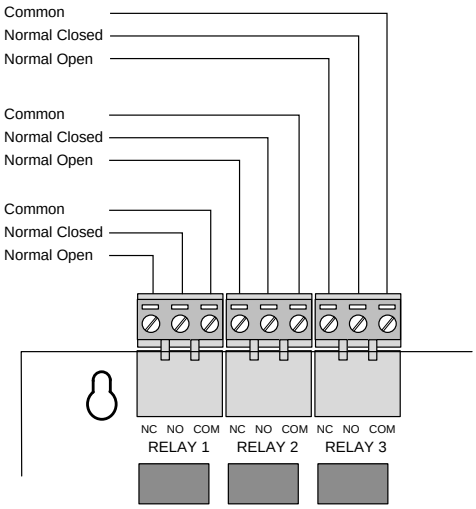
Default operation is indicated below however, each relay contact is field programmable.

RELAY 1: FIRE
RELAY 2: TROUBLE (fail-safe)
RELAY 3: SUPERVISORY

The trouble relay contact is defaulted to normally active (inverted) for fail-safe operation. The relay transfers on any trouble condition including loss of AC/DC power.

Wire range – 22-12 AWG

Note: Any relay of an NX-FACP system can be setup as a pulsed output and be synchronized across the entire network.



4.2.2.5 NX-FACP Peripheral Bus (PBUS) Network

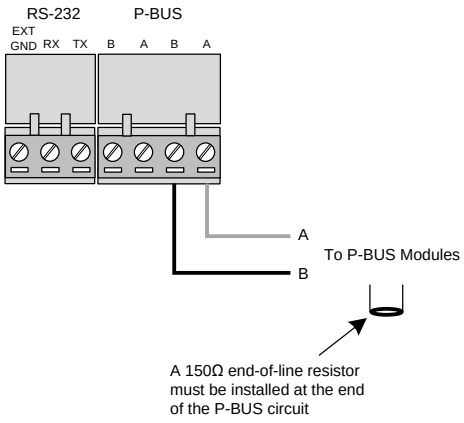
The NX-FACP provides a PBUS (peripheral bus [RS485]) network for the connection of devices such as NX-EM-RL4, NX-EM-ASW-16-16, NX-FA-LED16RY, NX-FA-LED32R NX-FA-LED32Y, NX-EM-IO48, NX-AMP-80 and NX-EM-CZM modules.

The PBUS ratings are as follows:
CCITT RS-485 (network) – Class B
EOL (End-of-Line) Filtering Resistor 150Ω
SUPERVISED. POWER LIMITED.

Maximum line impedance 50Ω

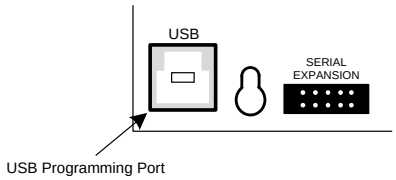
Wire range – 22-12 AWG

Refer to NEO Wiring Guide Section 10.



4.2.2.6 NX-FACP USB Port

The NX-FACP provides a USB port for PC-NeT upload/download programming of the system.



4.2.2.7 NX-FACP RS-232 Port

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

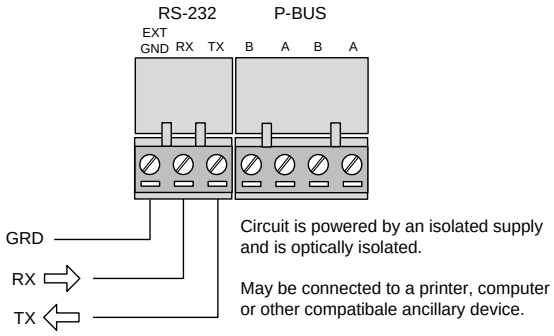
The RS-232 port ratings are as follows:
CCITT RS-232 – Style 4
SUPERVISED. POWER LIMITED.

Wire range – 22-12 AWG

Refer to NEO Wiring Guide Section 10.

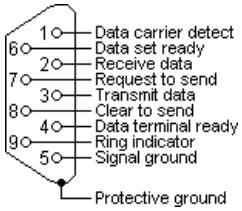
Baud Rate: 9600
Parity: None
Date Bits: 8
Stop Bits: 1

Note: If a D9068P digital dialer is utilized, this RS-232 output cannot be used, as it is dedicated to D9068P communications via the SHIELD NX-SEB serial interface.

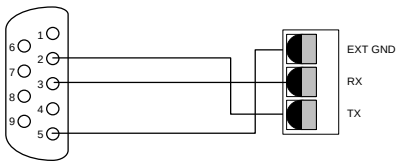


4.2.2.7.1 RS-232 Pin-Out

RS-232 Pin Assignments

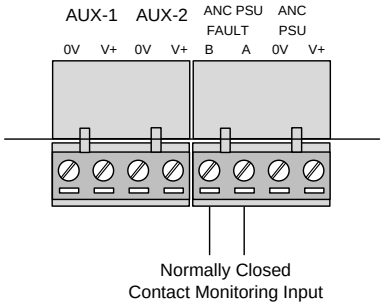


RS-232 to NX-FACP



4.2.2.8 NX-FACP Ancillary Contact Monitoring Input

The NX-FACP provides an ancillary contact monitoring input which allows the NX-FACP to monitor any normally closed contact for supervision. If the contact opens a trouble/fault is generated by the NX-FACP. This input is normally utilized for NX-EM-PSU and NX-TEL2-RISE trouble/fault monitoring however, it can also be utilized for any trouble/fault monitoring.



4.2.2.9 NX-FACP Ancillary NX-EM-PSU DC Power Input

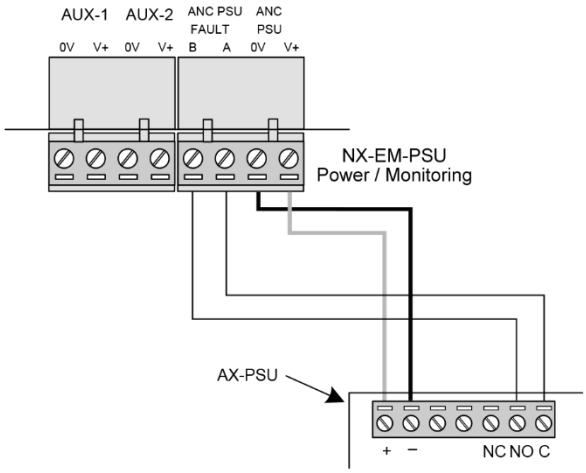
The NX-FACP provides for an ancillary NX-EM-PSU DC power input which allows an additional 5 Amp, 24 VDC power to be supplied to the NX-FACP base card. This additional power is specifically for notification appliance circuit power requirements when the NX-EM-LPD or NX-EM-NAC modules are utilized. When utilizing the NX-EM-PSU auxiliary power supply separate batteries are not required.

Note: The NX-ACS-1L one loop base card cannot support the NX-EM-PSU, NX-EM-LPD or NX-EM-NAC option modules.

Nominal 27.4 VDC, temperature compensated to track main panel DC supply.

By adding an optional NX-EM-PSU power supply additional power is available for the NAC-3 and NAC-4 circuits of the NX-EM-LPD or NX-EM-NAC module.

A supplied Molex cable assembly allows AC power connection from the NX-ACS-ACB to the NX-EM-PSU auxiliary power supply.



4.2.2.10 NX-FACP AUX Supply Outputs

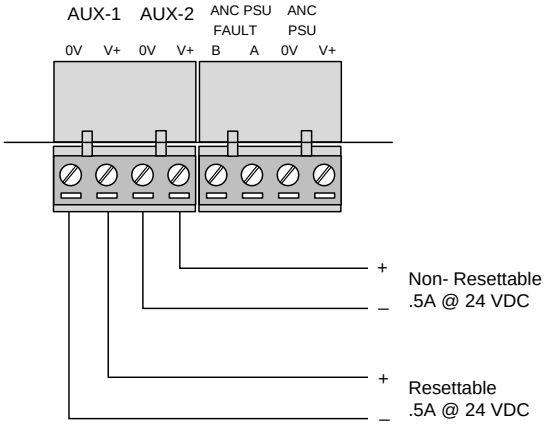
The NX-FACP provides two 24 VDC power outputs, one resettable and one non-resettable.

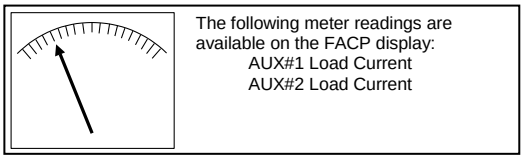
The power output ratings are as follows:
SPECIAL APPLICATION CIRCUITS
18.0 – 28.0 VDC @ 0.5A[3] (each)
SUPERVISED, POWER LIMITED.
Refer to NEO Wiring Guide Section 10.

AUX #1: 4-wire smoke detector power or other 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

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





(Refer to Section 11.1.1)

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

4.2.3 Replacing the NX-FACP Base Card

If replacing the NX-FACP base card, remove power (AC and battery) from the system. Remove all field wiring terminal blocks from the NX-FACP, and disconnect the Molex connector cable originating from the NX-ACS-ACB board. Disconnect the flat ribbon cable attached to the NX-ACS-DSP Alphanumeric Graphical Display and remove the three (3) screws [p] securing the NX-FACP to the back box. Carefully slide the NX-FACP up and off of the five top-hat (screw-less [*]) standoffs (see figure 21).

Carefully slide the new NX-FACP over the five top-hat (screw- less [*]) standoffs, and insert/tighten the previously removed three (3) screws [p]. Reconnect the removed Molex connector cable originating from the NX-ACS-ACB board, plug in the flat ribbon cable attached to NX-ACS-DSP display, and reinstall all removed field wiring terminal blocks. Reconnect AC and battery power.

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

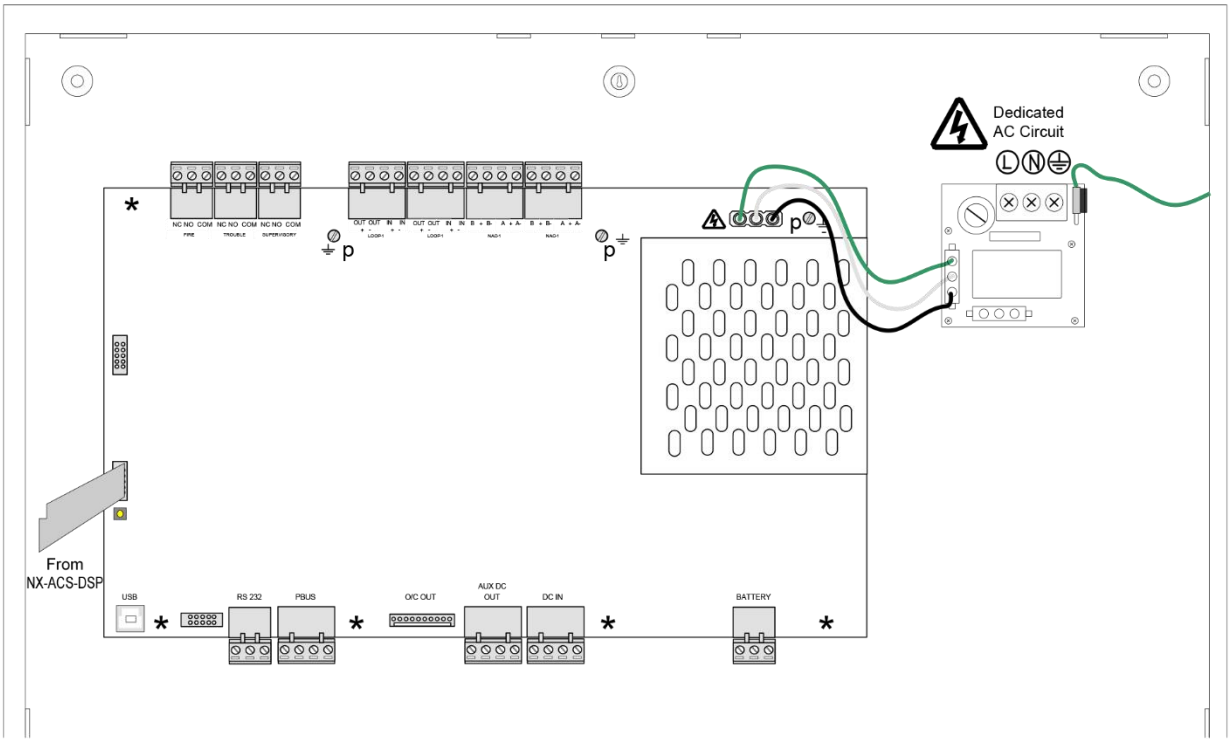


Figure 21 - NX-FACP Base Card

4.3 NX-ACS-DSP Alphanumeric Graphical Display

The NX-ACS-DSP alphanumeric graphical display is the colorized human interface for status and control of an NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card (see figure 22). In addition, the NX-ACS-DSP has three (3) buttons and six (6) LEDs that can be customized to meet specific installation requirements. Customized buttons and LEDs have easy slide-in labels to accommodate the defining of these programmable control and status points (see figure 23).

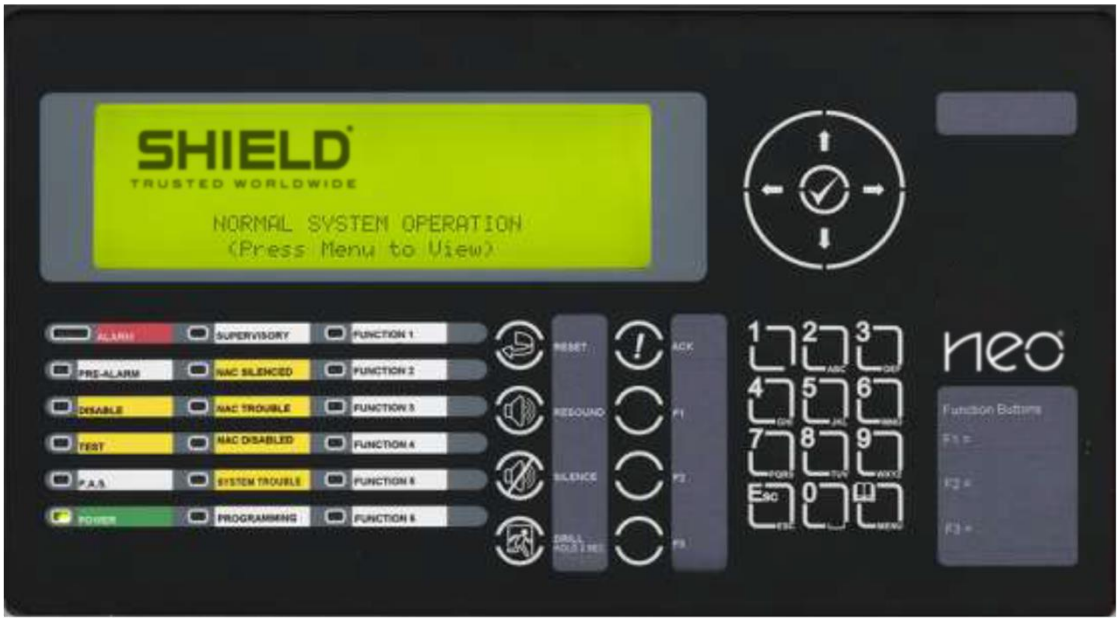


Figure 22 - NX-ACS-DSP Alphanumeric Graphic Display

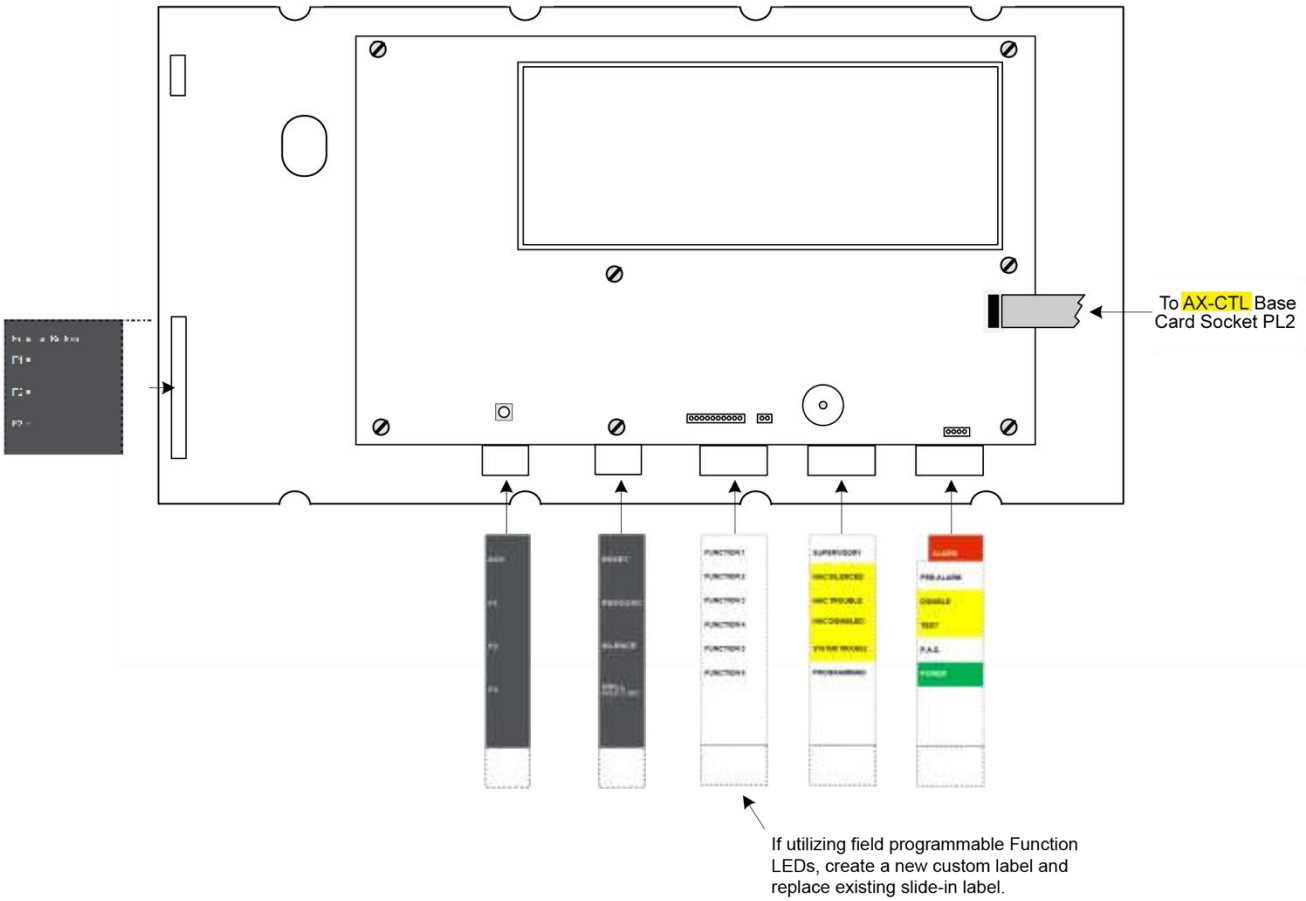


Figure 23 – Slide-in NX-ACS-DSP Labels

4.3.1 Installing the NX-ACS-DSP Alphanumeric Graphical Display

The NX-ACS-DSP alphanumeric graphical display is mounted in the upper left double aperture of the modular command center inner doors NX-CC01-BB-ID1, NX-CC01-BB-ID2, NX-CC02-BB-ID1 and NX-CC02-BB-ID2. In addition, it is pre-mounted in the NX-FACC-1 command center in the same location as NX-CC01-BB-ID1 inner door.

To install the NX-ACS-DSP alphanumeric graphical display remove the nuts and washers holding the two (2) upper washer strips (3-wide washer strip) in place (see figure 24). Remove the washer strip and install the NX-ACS-DSP in the double aperture opening and replace removed washer strips with the removed nuts and washers (see figure 24).

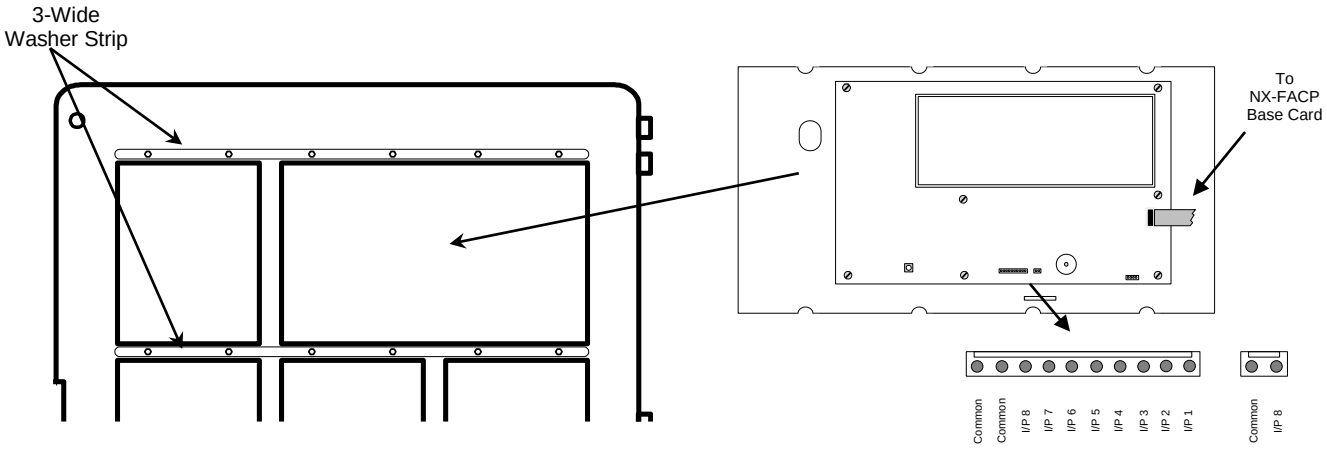


Figure 24 - NX-ACS-DSP Installation and Inputs

4.3.2 NX-ACS-DSP Alphanumeric Graphical Display Inputs

On the back of the NX-ACS-DSP alphanumeric graphical display is a 10-pin and 2-pin (duplicated common and input 8) header, providing eight (8) programmable switch inputs, which can be utilized for special application monitoring and control functions. Switch inputs can be programmed to monitor normally open or normal closed contacts depending upon installation need (see figure 24).

4.3.3 Replacing the NX-ACS-DSP Alphanumeric Graphical Display

If replacing the NX-ACS-DSP alphanumeric graphical display remove power (AC and battery) from the system.

Unplug the flat ribbon cable attached to the NX-FACP base card and remove the seven (7) screws holding the NX-ACS-DSP alphanumeric graphical display to its front metal faceplate (see figure 24).

Slide-in any customized labels and secure the new NX-ACS-DSP to the metal faceplate on the rear of the inner door using the seven (7) removed screws. Plug the flat ribbon cable attached to the NX-ACS-DSP alphanumeric graphical display into the designated connector on the NX-FACP base card and reconnect AC and battery power.

4.4 NX-AMP-80 Audio Amplifier Module

The NX-AMP-80 audio amplifier module provides the digital audio capabilities for the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command centers. The NX-AMP-80 contains two (2) electrically independent Class A or B, 40 Watt @ 25 Vrms amplifiers (Audio Notification Appliance Circuits - ANACs). Both NX-AMP-80 independent amplifiers are controlled together or amplifier two can be programmed as a backup for amplifier one. Each NX-AMP-80 audio amplifier module is capable of being configured as a PBUS (RS485) or hardwired amplifier.

CAUTION: The NX-AMP-80 amplifier is preassembled on a mounting plate, do not remove from the mounting plate as this is part of the assembly and is required for heat sinking of the NX-AMP-80 amplifier. If replacing, the new NX-AMP-80 amplifier will be supplied preassembled to a mounting plate.

4.4.1 PBUS (RS485) Amplifier

When configured as a PBUS (RS485) amplifier, up to sixteen (16) PBUS (RS485) amplifiers can be connected to an NX-FACP base card PBUS (peripheral bus). A PBUS (RS485) NX-AMP-80 amplifier can be programmed as a microphone bus amplifier, remote microphone bus amplifier (maximum four [4] remote microphones) or floor (area) amplifier (maximum two-hundred [200] floor [area] amplifiers however, multiple amplifiers can be allocated to the same floor [area]). All monitoring and control of the PBUS (RS485) amplifier, NX-AMP-80, is done via the NX-FACP base card PBUS communications.

4.4.1.1 Microphone Bus and Remote Microphone Bus NX-AMP-80 Amplifier

Microphone bus and remote microphone bus (four [4] maximum) amplifiers provide for broadcasting live voice communications to floor (area) amplifiers. Live voice paging can be done to all floor (area) amplifiers or individual floor (area) amplifiers. In addition, configuration allows for “Dynamic Paging”; page EVAC (alarm) areas, page alert areas or page inactive areas.

Note: In installations configured with remote microphones the microphone bus amplifier has the highest priority.

4.4.1.2 Floor (Area) NX-AMP-80 Amplifier

Floor (area) amplifiers can support up to sixteen (16) field programmable messages (refer to NEO NX-AMP Audio Message Programming Manual regarding message programming) which can be tailored to meet specific installation messaging demands; such as alarms, alerts, warnings, mass notification and other event messaging requirements. Messages can be automatically activated (with programmable prioritization) or manually activated based on installation needs. Identical messages played simultaneously throughout a facility via multiple NX-AMP-80 floor (area) amplifiers can be programmed for complete synchronization, avoiding any broadcasting message confusion. In addition, multiple synchronized messages can be broadcasted when installation demands require this functionality (i.e.: alarm message to fire floor, floor above and below, alert message to the remainder of the facility).

Note: The NX-FACC-1 PBUS (RS485) amplifier can be utilized in a single amplifier installation when it is programmed as a floor (area) amplifier. In this application all 16 messages and live voice communications are done on an “all call” basis (no selective messaging or paging, keying the attached microphone overrides messaging).

4.4.1.3 Installing PBUS (RS485) NX-AMP-80 Amplifiers

Each NX-AMP-80, microphone bus, remote microphone bus and floor (area) amplifier requires a separate 24 VDC power originating from a dedicated NX-EM-PSU6 power supply charger.

Note: If two (2) NX-AMP-80 amplifiers are being utilized and amplifier 2 of both NX-AMP-80 amplifiers is programmed as a backup amplifier for amplifier 1 of the NX-AMP-80 amplifiers, a single NX-EM-PSU6 power supply charge can be provided for both NX-AMP-80 amplifiers.

The microphone bus or remote microphone bus NX-AMP-80 amplifier is mounted below the NX-FACP base card on the left side of the NX-CC01-BB-BB and NX-CC02-BB-BB back box (see figure 25 and 26). In addition, a programmable microphone or remote microphone bus amplifier is pre-mounted in the NX-FACC-1 command center in the same location as the NX-CC01-BB-BB back box.

Note: Two (2) NX-AMP-80 amplifiers (one microphone bus or remote microphone bus amplifier and one floor [area] amplifier) may be mounted in the NX-CC02-BB-BB back box (see figure 26).

To install an NX-AMP-80 amplifier in an NX-CC01-BB-BB or NX-CC02-BB-BB back box, slide the NX-AMP-80 mounting plate tabs under the two (2) tabs located on the lower left side of the NX-CC01-BB-BB or NX-CC02-BB-BB

back box, below the NX-FACP base card (see figures 25 and 26). Secure the top end of the NX-AMP-80 mounting plate to the back box standoffs with the provided two (2) screws.

Note: Additional floor (area) NX-AMP-80 amplifiers can be installed in modular command center enclosures, DGPs (Data Gathering Panels) or other NEO enclosures (refer to specific product installation manuals). In addition, SHIELD NX-VB Distributed Audio Boosters panels can be configured as floor (area) amplifiers.

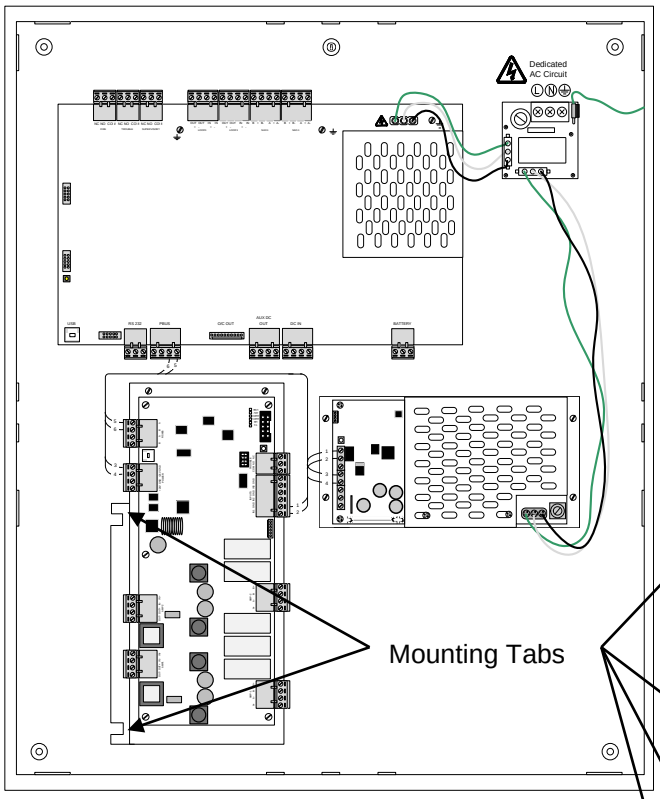


Figure 25 - NX-CC[x]-16 or NX-CC01-BB Back Box

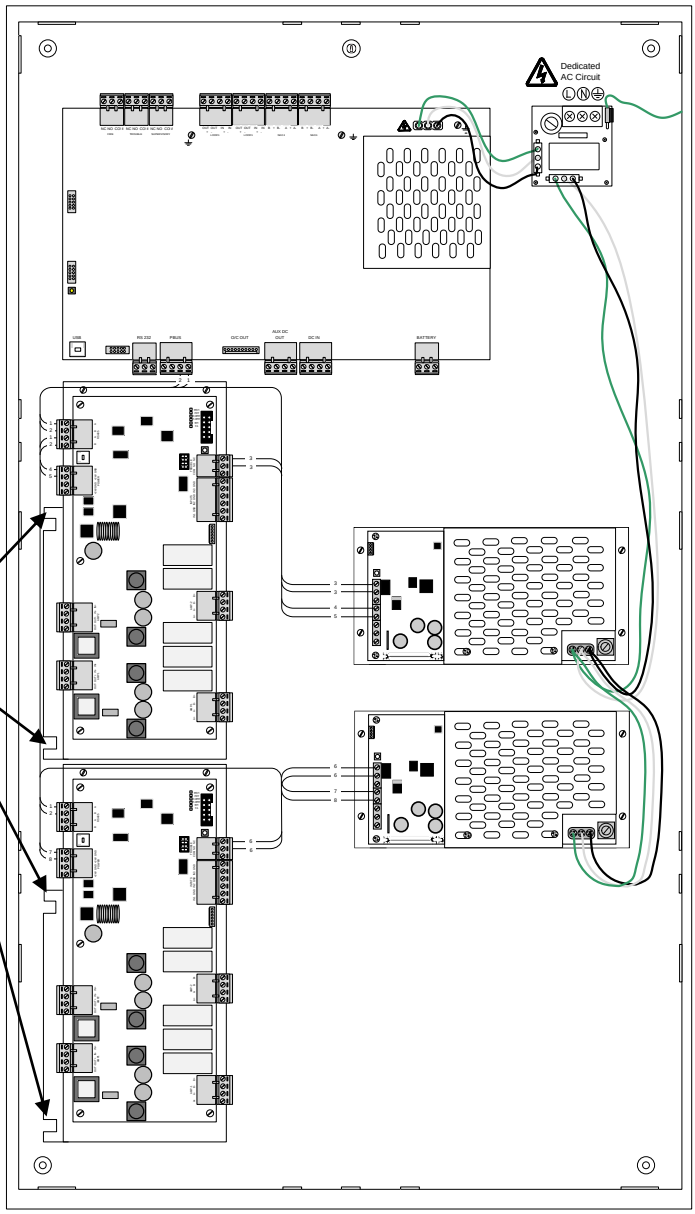


Figure 26 - NX-CC02-BB-BB Back Box w/two (2) NX-AMP-80s

4.4.1.4 Addressing PBUS (RS485) NX-AMP-80 Amplifiers

Each PBUS (RS485) NX-AMP-80 amplifier (microphone bus, remote microphone bus and floor [area] amplifier) must be addressed for communications over the NX-FACP base card PBUS (peripheral bus). Addresses range from 0 to 15 (a total of 16 PBUS [RS485] amplifiers can be monitored/controlled by an NX-FACP base card) [see figure 27].

Note: Backup amplifier programming is performed using NX-AMP 1.1.1 or higher, message programming tool.

Address	1	2	3	4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Figure 27 – Addressing NX-AMP-80 PBUS (RS485) Amplifiers

4.4.1.5 Wiring PBUS (RS485) NX-AMP-80 Amplifiers

As previously indicated, each NX-AMP-80 amplifier contains two (2) electrically independent Class A or B, 40 Watt @ 25 Vrms amplifiers (Audio Notification Appliance Circuits – ANACs) [see figures 28, 29 and 30].

4.4.1.5.1 PBUS (RS485) Wiring

Wire microphone bus, remote microphone bus and/or floor (area) PBUS (RS485) amplifiers to the NX-FACP base card, if the amplifier is the last module on the NX-FACP base card PBUS (RS485), install a 150Ω filtering resistor (see figures 28, 29 and 30).

Note: A 150Ω filtering resistor must be placed at the last module connected to the NX-FACP base card PBUS (RS485). Some PBUS modules have a programmable jumper for this resistor however the NX-AMP-80 amplifier does not.

4.4.1.5.2 24VDC and Power Supply Supervision Wiring

Wire 24VDC from the power terminal outputs (0V and +V0) of a dedicated amplifier NX-EM-PSU6 to the power input terminals (GND and +24V) of the associated NX-AMP-80 amplifier. In addition, wire the NX-EM-PSU6 trouble contact (terminals COM and NO) to the NX-AMP-80 amplifier input terminals IN1 and GND (see figures 28, 29 and 30).

4.4.1.5.3 Audio Input/Output and Amplifier Speaker Circuit Wiring

Though the microphone bus, remote microphone bus and floor (area) amplifiers are identical, the wiring of the audio inputs/outputs and the amplifier audio notification appliance circuits are slightly different.

4.4.1.5.3.1 Floor (Area) & Microphone Bus Amplifiers

As previously indicated, the microphone bus amplifier provides live voice communications to all floor (area) amplifiers. If the installation supports a microphone bus amplifier, wire one or both of the microphone bus amplifiers (audio notification appliance circuits) to the audio inputs of all the floor (area) amplifiers (see figures 28 and 29).

Wire the floor (area) amplifiers (audio notification appliance circuits) to the speakers located throughout the floor (area). In addition, addressable NAC modules can be utilized for distribution of additional speaker circuits however, activation of the addressable NAC module is controlled by the floor (area) amplifier activation (see figure 28).

4.4.1.5.3.2 Remote Microphone Bus Amplifiers

If the installation supports remote microphone bus amplifiers (maximum four [4]), wire the remote microphone bus amplifier (audio notification appliance circuit) from one remote microphone bus amplifier to the next, to the next, etc., wire the last remote microphone bus amplifier (audio notification appliance circuit) to the audio inputs of the microphone bus amplifier (see figure 30).

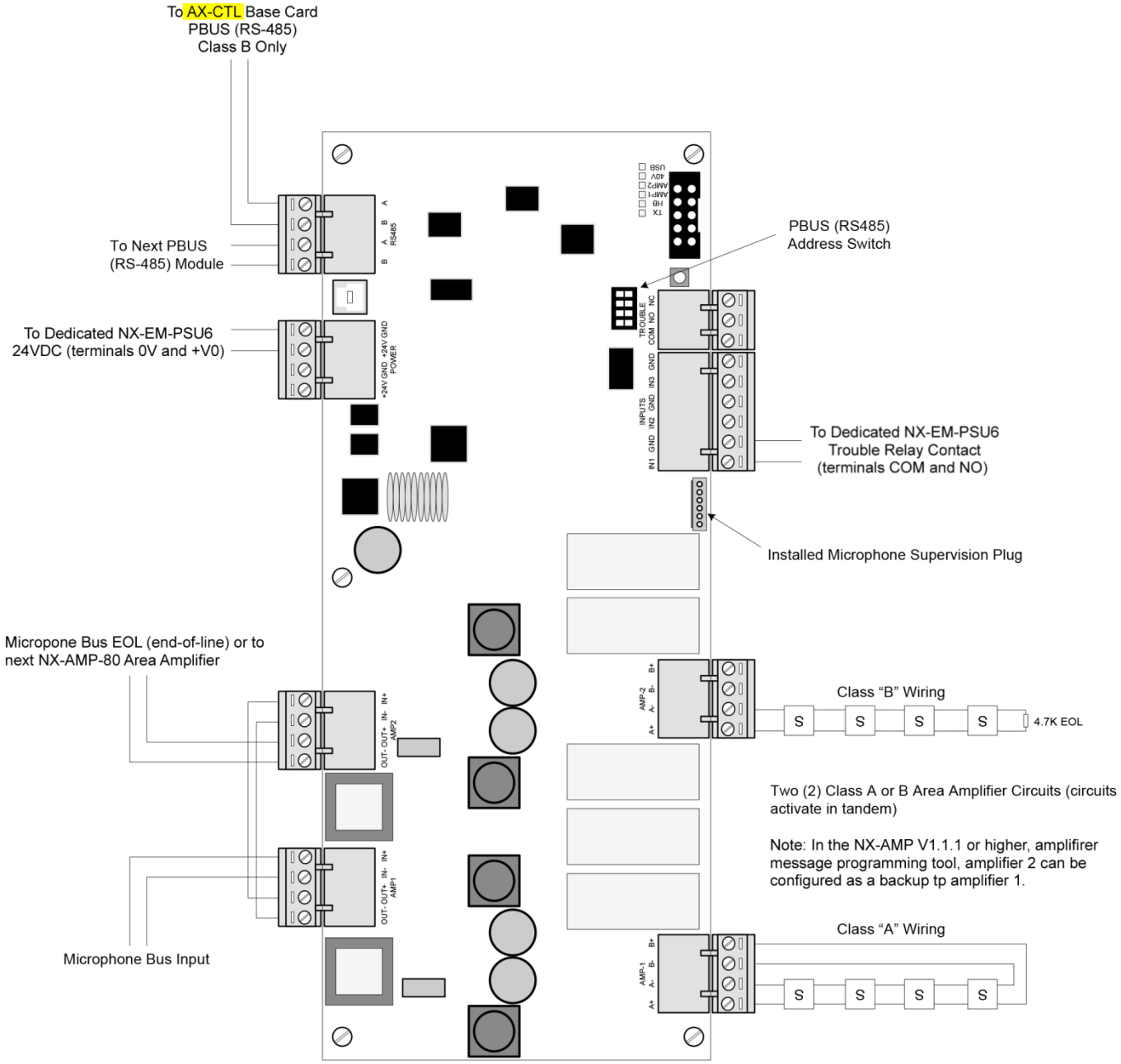


Figure 28 – NX-AMP-80 Floor (Area) Amplifier

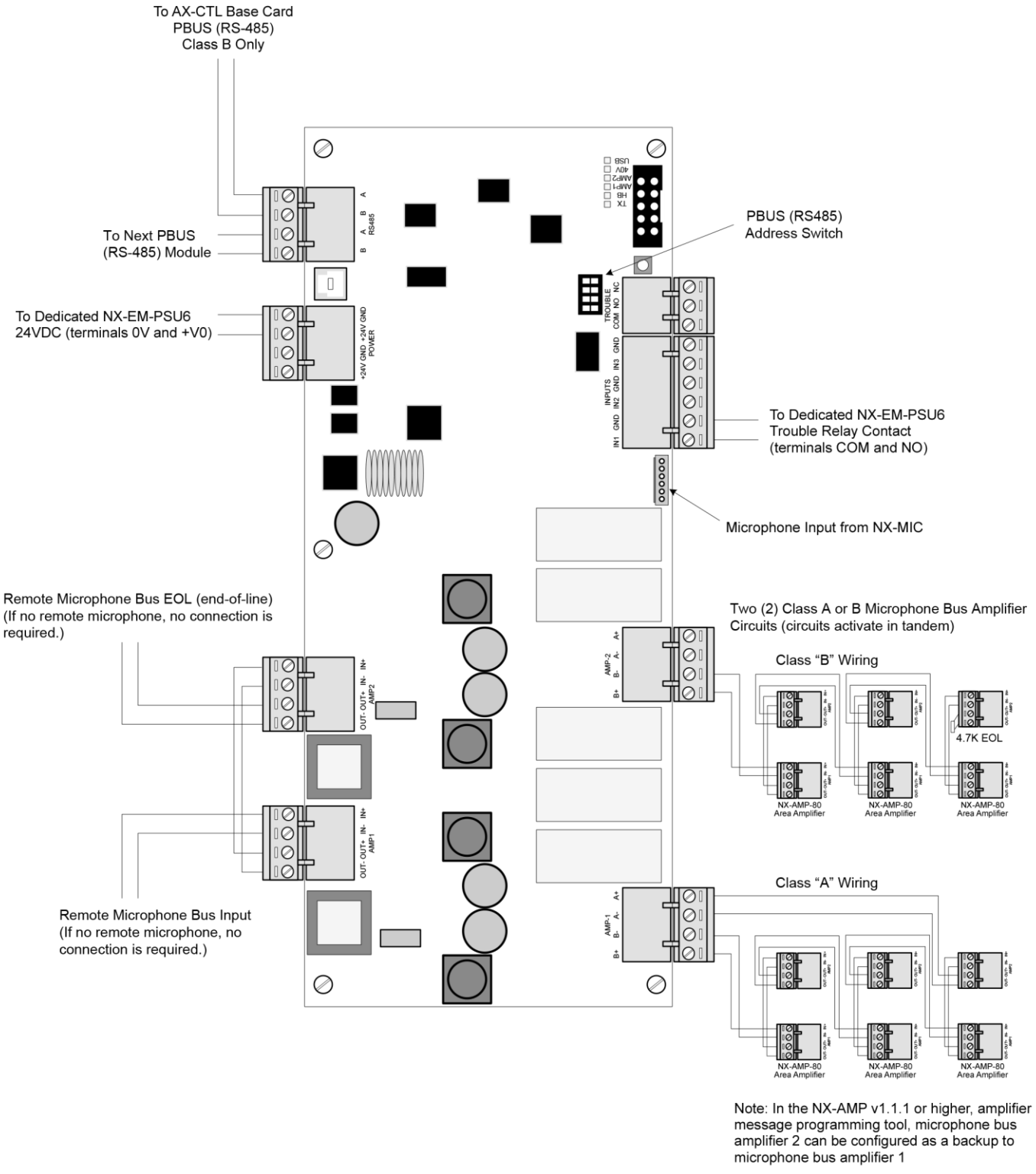


Figure 29 – NX-AMP-80 Microphone Bus Amplifier

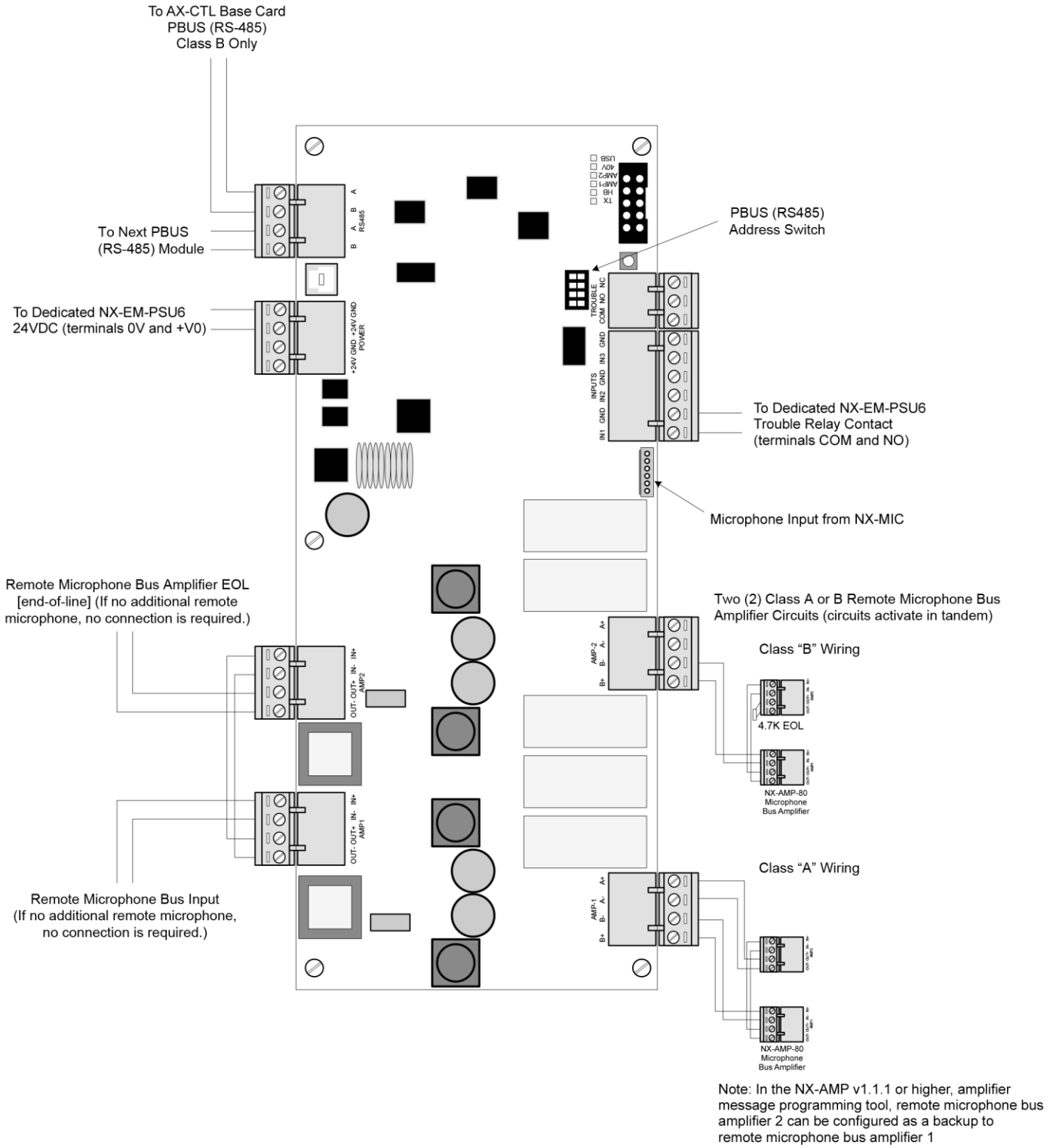


Figure 30 – NX-AMP-80 Remote Microphone Bus Amplifier

4.4.2 Hardwired Amplifier

As a hardwired (non PBUS) amplifier, the NX-AMP-80 can support two (2) field programmable messages. Each of the NX-AMP-80 amplifiers (two per NX-AMP-80) is activated whenever one of the NX-AMP-80 trigger inputs (trigger input 1, 2 or 3) is activated (see figure 31):

Trigger input 1 when activated not only turns on both amplifiers (audio notification appliance circuits) it also activates programmed message/tone #1, and plays this message over the audio notification appliance circuits. Trigger input 1 has a higher priority than trigger input 2. If both trigger inputs are active at the same time, programmed message/tone #1 will be broadcasted.

Trigger input 2 when activated plays message/tone #2 on both amplifiers (audio notification appliance circuits).

Trigger input 3 sets the NX-AMP-80 to “booster mode” which allows any external audio signal (25vrms) to be broadcasted out of one or both of the NX-AMP-80 amplifiers (based on wiring). This trigger input has the highest priority, if both trigger input 1 and 2 are active during a trigger input 3 activation amplifiers will broadcast the external audio input signal. In a hardwired NX-AMP-80 installation this is how live voice communications is broadcasted through distributed audio booster amplifiers (NX-VB). By activating trigger input 3 on the NX-AMP-80 of a distributed audio booster amplifier (NX-VB), microphone communications from an NEO Integrated Audio Intelligent Fire Alarm Control Panel can be rebroadcasted out of the NX-VB amplifier.

Note: Trigger input 3 of any none microphone connected hardwired amplifier must be activated for microphone audio input booster mode paging of the associated amplifier.

Designed into the NX-AMP-80 is a dedicated Form “C” trouble relay contact which transfers on any amplifier and/or audio notification appliance circuit trouble/failure. In a hardwired NX-AMP-80 amplifier installation, this trouble/fault relay contact must be monitored by the fire alarm control panel.

Note: In a hardwired NX-AMP-80 installation, the NX-AMP-80 trouble relay contact must be monitored by the fire alarm control panel.

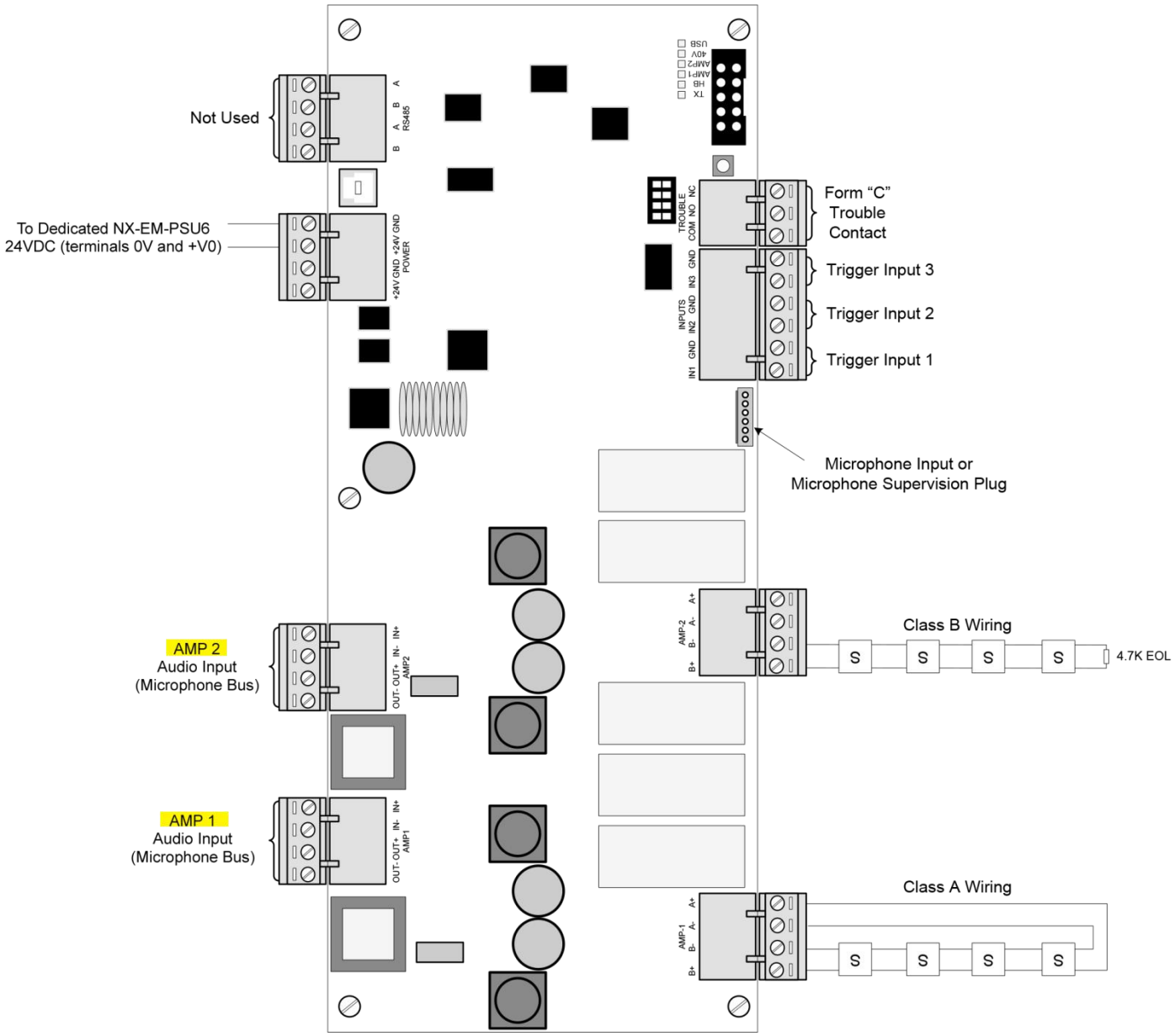


Figure 31 – Hardwired NX-AMP-80 Amplifier

4.4.3 Programming Amplifier 2 as a Backup Amplifier

As previously discussed, both amplifiers (AMP 1 and AMP 2) of the NX-AMP-80 amplifier are controlled together. However, based on installation or local code requirements, amplifier 2 (AMP 2) can be configured as a backup amplifier for amplifier 1 (AMP 1).

Configuring amplifier 2 as a backup amplifier is done in the NEO NX-AMP audio message programming tool, simply check the associated “Backup Mode Enable” box within the Properties (see figure 32).

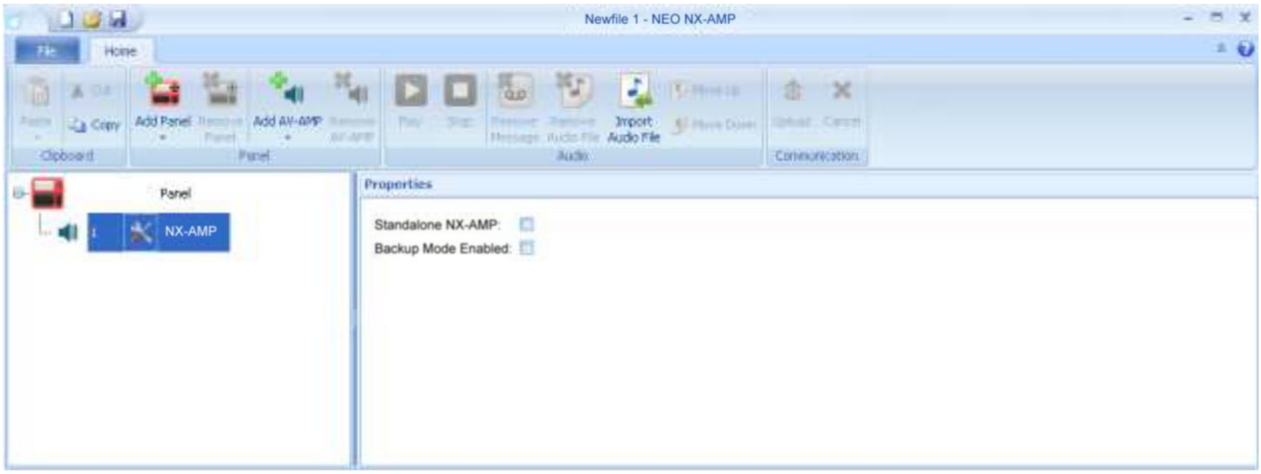


Figure 32 – NX-AMP-80 Amplifier Backup Programming

4.4.4 Replacing an NX-AMP-80 Amplifier

If replacing an NX-AMP-80 amplifier, remove power (AC and battery) from the system. When replacing the amplifier remove the amplifier and its attached mounting plate from the enclosure and replace with a new amplifier mounted to its own mounting plate (see figure 33).

Note: The NX-AMP-80 amplifier is preassembled to a mounting plate. The mounting plate is utilized for heat sinking the NX-AMP-80 and must be left assembled. The new NX-AMP-80 amplifier will be assembled with its own mounting plate.

Remove all field wiring terminal blocks from the NX-AMP-80 amplifier and remove the two (2) screws securing the amplifier mounting plate to the enclosure. Carefully slide the amplifier assembly from under the back box mounting tabs located on the left side of the amplifier mounting plate (see figure 33).

Carefully slide the new amplifier assembly into the back box mounting tabs and reinsert and tighten the previously removed two (2) screws. It is critical that these screws be tightly secured as they are required for proper earth ground connection. Reinstall all removed field wiring terminal blocks from the amplifier and reconnect AC and battery power to the system.

Failure to tighten screws will defeat the protection circuitry designed to protect the modules/cards from damage due to lightning and static electricity.

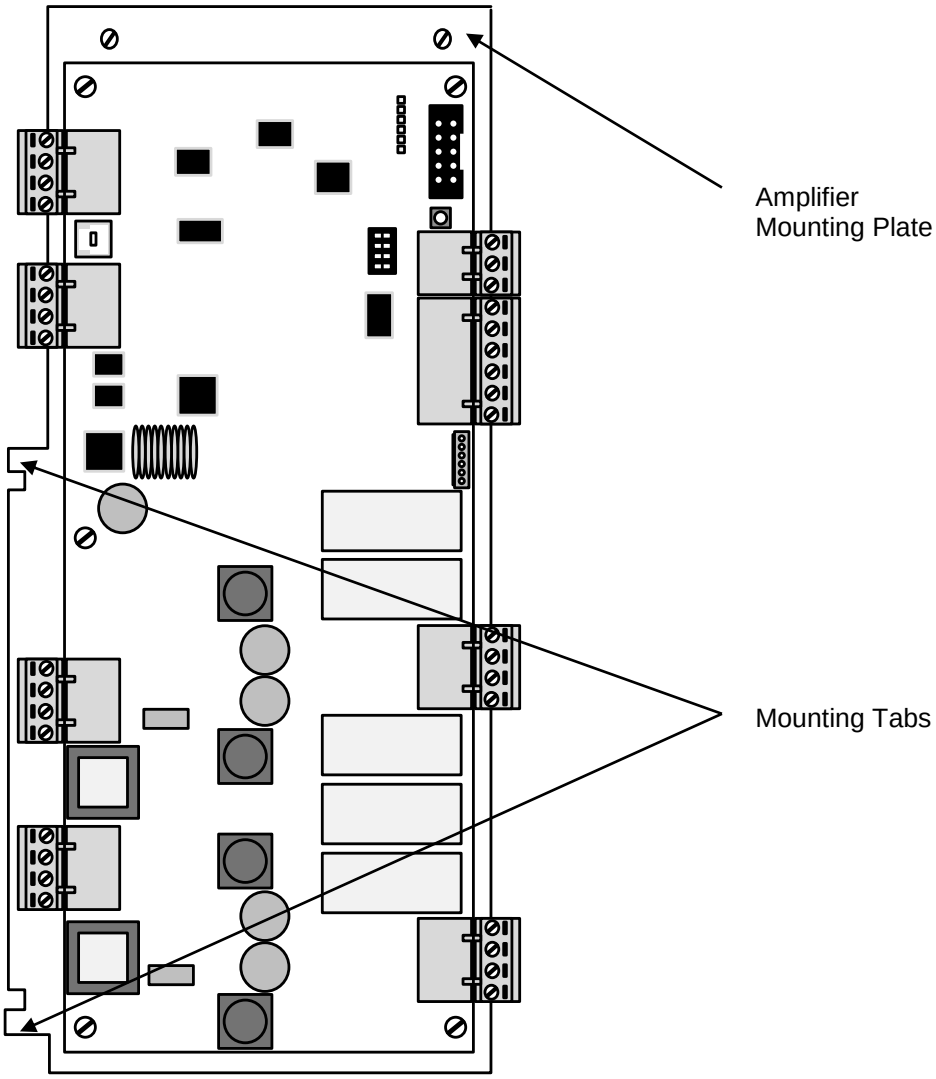


Figure 33 - NX-AMP-80 Amplifier Replacement

4.5 NX-ZS Audio Zone Splitter Module

Each NX-AMP-80 audio amplifier module is capable of accommodating an NX-ZS, audio zone splitter module.

The NX-ZS audio zone splitter module is designed to take one or both NX-AMP-80 amplifiers (audio notification appliance circuits) and split these into additional audio notification appliance circuits, each capable of delivering 20Watts per circuit. If splitting two (2) NX-AMP-80 amplifiers (audio notification appliance circuits), each amplifier is split into two (2) audio notification appliance circuits. If splitting one NX-AMP-80 amplifier (audio notification appliance circuit), the amplifier is split into four (4) audio notification appliance circuits.

Note: The NX-ZS audio zone splitter is designed specifically for direct connection to installation speakers, if a need arises for the use of an SHIELD, addressable sounder (NAC) module (S-A4046), the user must limit the number of sounder (NAC) modules to six (6) per audio notification appliance circuit. If more than six (6) sounder (NAC) modules (S-A4046) are utilized on a circuit, during alarm activation, the possibility exists for a short circuit condition which would shut down the circuit to avoid overloading. In addition to the six (6) addressable sounder (NAC) modules per audio notification appliance circuit requirement, the wiring from the NX-ZS audio notification appliance circuit must be inverted (NX-ZS B+ to Vext – on the sounder [NAC] module, NX-ZS B- to Vext + on the sounder [NAC] module) at the addressable sounder (NAC) modules.

4.5.1 NX-ZS Mounting

The NX-ZS audio zone splitter module is supplied with three (3) metal hexagon spacers and one (1) nylon spacer. Remove the three (3) lower screws securing the NX-AMP-80 module to its mounting plate and install the three (3) provided metal hexagon spacers. Install the provided nylon spacer into the fourth mounting hole on the NX-ZS module as indicated in figure 34.

Mount the NX-ZS audio zone splitter module above the NX-AMP-80 audio amplifier module to the three (3) previously installed metal hexagon spacers and secure with the previously removed screws (see figure 34).

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

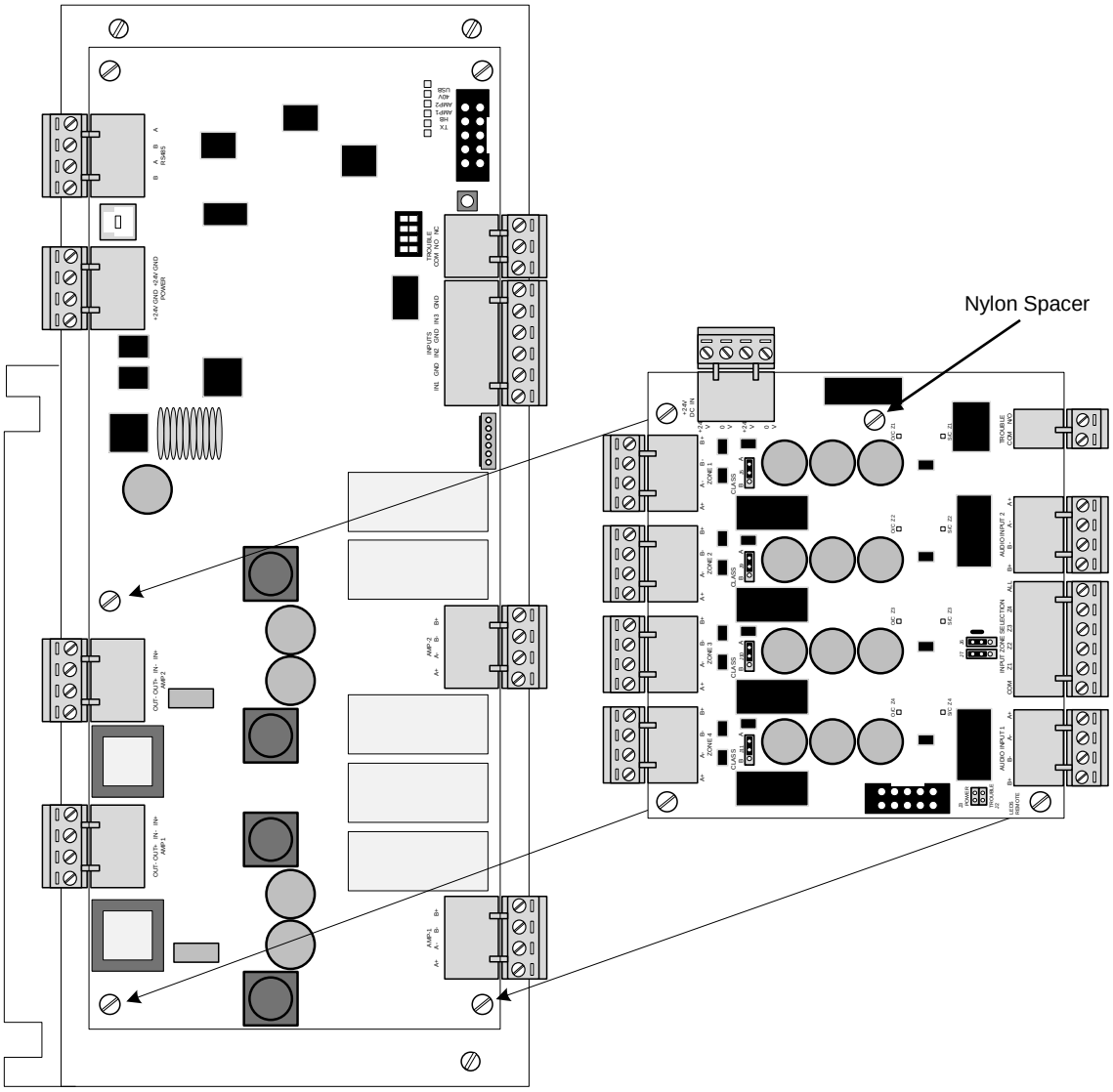


Figure 34 – NX-ZS to NX-AMP-80 Mounting

4.5.2 NX-ZS Wiring

Wire 24 VDC (from NX-AMP-80 power output terminals) to the power input terminals of the NX-ZS audio zone splitter module. Wire one or both NX-AMP-80 amplifiers (audio notification appliance circuits) to the Audio Input 1 and Audio Input 2 terminals of the NX-ZS module and set jumpers J6 and J7 to their appropriate position [1 audio input or 2] (see figure 35).

Note: The NX-ZS audio zone splitter module reports status open circuit, short circuit and grounds via the associated NX-AMP-80 amplifier (audio notification appliance circuit). In addition, a fail-safe trouble relay contact available which opens on any split audio notification appliance circuit trouble condition or on loss of 24 VDC input power, this trouble relay contact can be monitored for individual NX-ZS trouble indication (see figure 35).

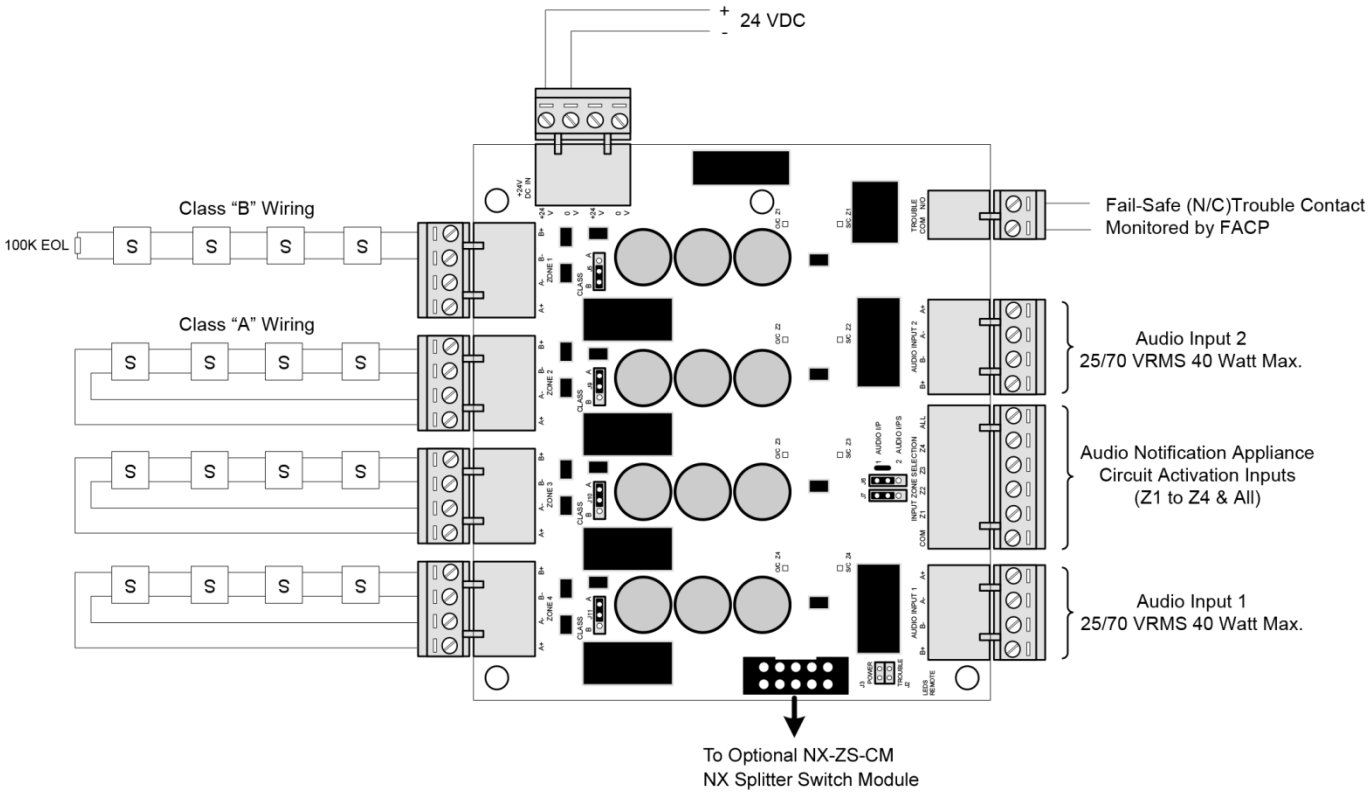


Figure 35 – Optional NX-ZS Audio Zone Splitter Module

Note: Speaker circuit activation is unsupervised; wiring must be within 20 feet of the activation relay contact. When the NX-ZS module is utilized with a PBUS (RS485) NX-AMP-80 amplifier, the "All" audio notification appliance circuit activation input is constantly activate, thereby allowing for audio control via PBUS (RS485) activation of the two (2) onboard NX-AMP-80 amplifiers. For additional information regarding the installation and operation of the NX-ZS audio zone splitter module, refer to NX-ZS Audio Zone Splitter Module Installation Instructions.

4.5.3 Replacing an NX-ZS Module

If replacing an NX-ZS audio zone splitter module, remove power (AC and battery) from the system. Remove all field wiring terminal blocks from the NX-ZS module and remove the three (3) screws securing the module to the NX-AMP-80 amplifier. Place the new NX-ZS module over the metal hexagon spacers and reinsert and tighten the previously removed three (3) screws. It is critical that these screws be tightly secured as they are required for proper earth ground connection. Reinstall all removed field wiring terminal blocks from the NX-ZS module and reconnect AC and battery power to the system (see figure 34).

Failure to tighten screws will defeat the protection circuitry designed to protect the modules/cards from damage due to lightning and static electricity.

4.6 NX-EM-PSU6 Power Supply Charger

The NX-EM-PSU6 Power Supply Charger is the power supply charger for the NX-AMP-80 amplifier. In addition, the NX-EM-PSU6 can be utilized as an additional power supply charger for other NEO installation power supply charger requirements (i.e. power for NX-EM-CZM Conventional Zone Module).

Note: If two (2) NX-AMP-80 amplifiers are being utilized and amplifier 2 of both NX-AMP-80 amplifiers is programmed as a backup amplifier for amplifier 1 of the NX-AMP-80 amplifiers, a single NX-EM-PSU6 power supply charge can be provided for both NX-AMP-80 amplifiers.

The NX-EM-PSU6 provides a maximum of 6.5 Amps for powering the NX-AMP-80 amplifier and charging batteries to meet installation backup requirements.

NX-EM-PSU6 ratings are as follows:

- 120-240 VAC (3A) 50/60Hz
- 98 VAC Brown-out
- 24 VDC, 6.5 Amp (Power Limited)
  - Peak for 15 minutes
  - 5 Amp continuous
- 2 Amp maximum charge capacity
  - 45 Ah batteries maximum
  - Deducted from overall available power

4.6.1 Installing the NX-EM-PSU6 Power Supply Charger

The NX-EM-PSU6 power supply charger mounts below the NX-FACP base card on the right side of the NX-CC01-BB-BB and NX-CC02-BB-BB back box (see figures 36 and 37). In addition, it is pre-mounted in the NX-FACC-1 command center in the same location as the NX-CC01-BB-BB backbox.

Note: Two (2) NX-EM-PSU6 power supply chargers with two (2) NX-AMP-80 amplifiers may be mounted in the NX-CC02-BB-BB back box (see figure 37).

To install the NX-EM-PSU6 power supply charger, place the module over the four (4) standoffs located on the right side of the back box below the NX-FACP base card and secure with the four (4) screws provided with the NX-EM-PSU6 module (see figure 36 and 37). It is critical that these screws be tightly secured as they are required for proper earth ground connection.

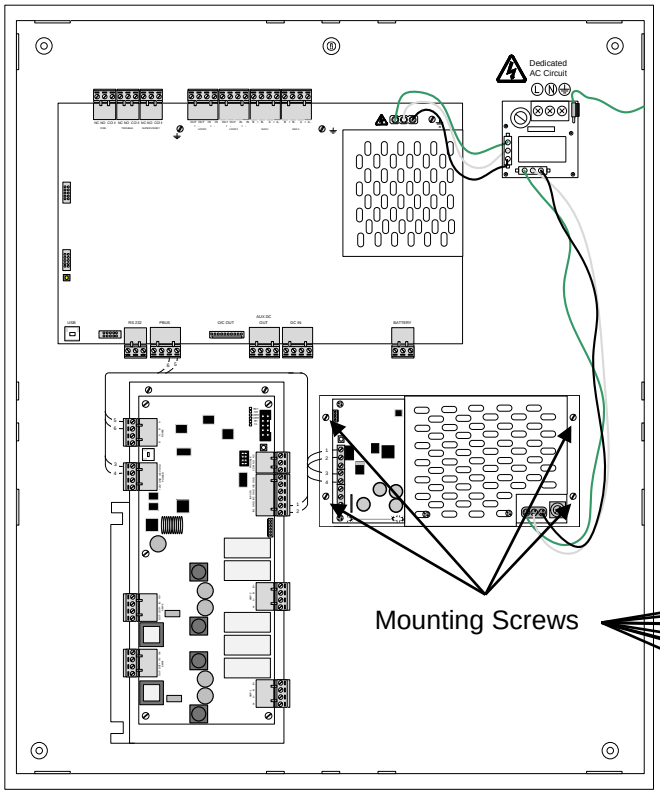


Figure 36 - NX-CC[x]-16 or NX-CC01-BB-BB Back Box

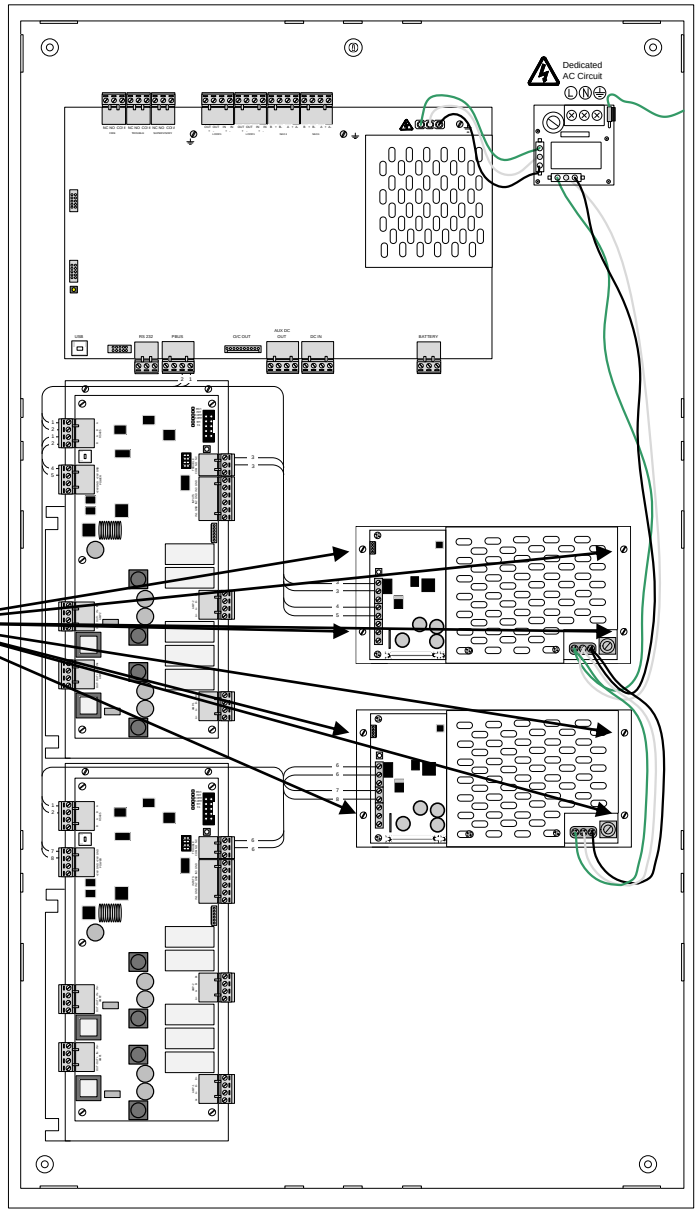


Figure 37 - NX-CC02-BB-BB Back Box w/two (2) NX-AMP-80s

4.6.2 NX-EM-PSU6 Power Supply Charger Wiring

4.6.2.1 AC Wiring to the NX-EM-PSU6

AC Branch Circuit Ratings:
120V (1.4A/2.8A) – 240V (0.7A/1.4A) 50/60Hz
Brown-out – 98V nominal

Fuse: 5A, 250VAC Ceramic, Time Delay
(size 5x20mm)
(Bussmann S505-5-R, Littelfuse 0215005.XP)

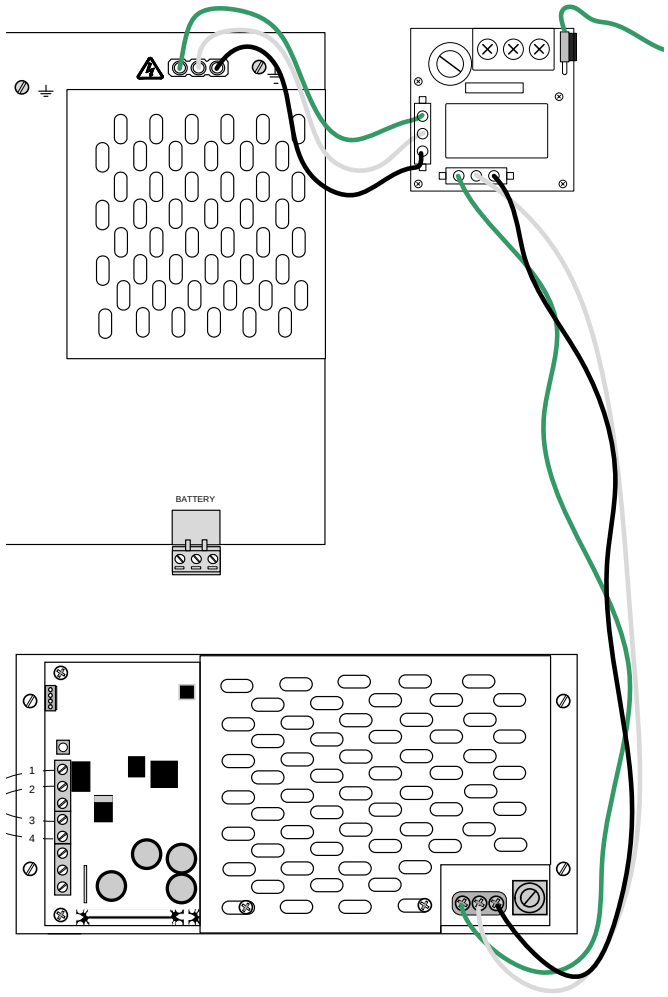
AC Wiring: #14 or #12 AWG, refer to NEC

Over-current protection for this circuit must comply with Article 760 of the National Electrical Code (NEC) and/or local codes. 15A Branch Circuit.

The panel must be connected to a solid earth ground. Use #14 AWG (2.00 mm^2) or larger wire with 600 volt insulation rating.

Plug the Molex end of the cable assembly provided with the NX-EM-PSU6 power supply charger into the right Molex plug on the NX-ACS-ACB, wire the three (3) wires from the cable assembly to the AC input screw terminals of the NX-EM-PSU6 observing proper input terminal designations (Load, Neutral and Ground).

Note: If the command center is going to include an NX-EM-PSU expansion power supply, remove the Molex connector from the supplied cable assembly and wire cable assembly wires from the AC terminal block of the NX-ACS-ACB to the NX-EM-PSU6 AC input terminals.



4.6.2.2 NX-EM-PSU6 Battery Connections

NX-EM-PSU6 Battery Charger

- Supervised charger 2.0A (Maximum 45Ah).
- Non-Power Limited.
- Charging voltage 27.4 VDC typical, temperature compensated.

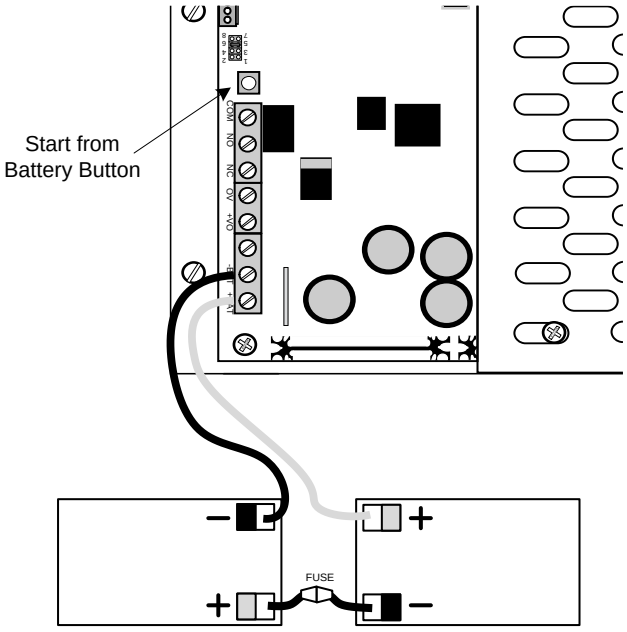
Start the power supply charger on AC power first then connect the batteries.

If AC power is not available the power supply charger can be started directly from the batteries. Connect a fully charged set of batteries and press the “START FROM BATTERY” push button.

The battery charger provides deep discharge protection. Battery power will be disconnected when voltage falls below 19V (nominal).

Note: If the batteries are disconnected the charger output is turned off.

Internal series resistance of the batteries is continuously checked. If the internal series resistance increases above 0.8Ω then the power supply charger will indicate a trouble condition.



Batteries require Mounting in separate enclosure

4.6.2.3 NX-EM-PSU6 24 VDC and Trouble/Fault Contact Wiring

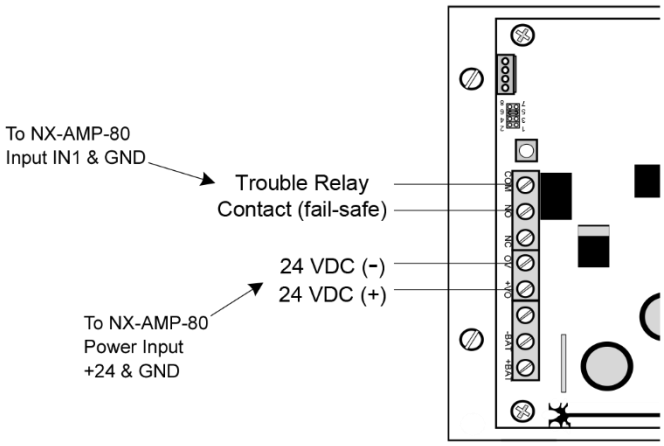
The NX-EM-PSU6 24 VDC power output terminals 0V and +V0 get connected to the power input terminals +24V and GND on the NX-AMP-80 amplifier.

Power Limited.

Designed into the NX-EM-PSU6 is a trouble Form “C” relay contact (fail-safe) which transfers on loss of power or any other power supply trouble condition. The COM and NO terminals of the trouble relay contact get wired to input terminals IN1 and GND of the NX-AMP-80 amplifier.

Unsupervised, Power Limited.

Note: When the NX-EM-PSU6 is utilized as an additional power supply charger in an NEO installation or when it is utilized with a hardwired amplifier (non PBUS [RS485]) the trouble relay contact must be monitored by the NEO fire alarm control panel.



4.6.3 Replacing the NX-EM-PSU6 Power Supply Charger

If replacing the NX-EM-PSU6 power supply charger, remove power (AC and battery) from the system. Remove the AC, battery, 24 VDC output and relay trouble contact wiring from the NX-EM-PSU6. Remove the four (4) screws securing the NX-EM-PSU6 to the back box and remove the NX-EM-PSU6 (see figure 38). Position the new NX-EM-PSU6 module onto the back box standoffs and secure with the four (4) removed screws. Replace the removed AC, battery, 24 VDC output and relay trouble contact wiring. Reconnect AC and battery power to the system.

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

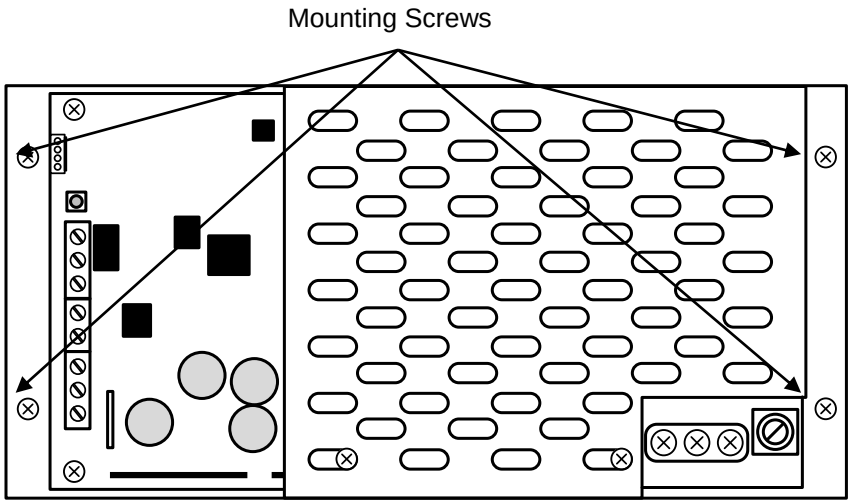


Figure 38 - NX-EM-PSU6 Power Supply Charger Replacement

4.7 NX-EM-LPD or NX-EM-NAC Module

The NX-EM-LPD and NX-EM-NAC modules are SLC (signaling line circuit) and NAC (notification appliance circuit) expansion modules for an NEO two loop fire alarm control panel. The NX-EM-LPD module provides two (2) SLC circuits and two (2) NAC circuits, while the NX-EM-NAC module provides two (2) NAC circuits only.

Note: The NX-EM-LPD or NX-EM-NAC can only be installed on an NX-ACS-2L two-loop base card. In addition, an NX-EM-PSU power supply may be required if NAC power requirements indicate a need for additional power.

4.7.1 Installing the NX-EM-LPD or NX-EM-NAC Module

Note: The NX-ACS-1L one-loop base card cannot support the NX-EM-LPD or NX-EM-NAC option modules.

The NX-EM-LPD and NX-EM-NAC modules are supplied with four (4) metal hexagon spacers [h] and four (4) screws [p]. Insert and tighten the four (4) metal hexagon spacers [h] to the NX-ACS-2L two-loop base card (see figure 39).

Position the module onto the metal hexagon spacers, while plugging the module into the two (2) 20-pin connectors on the NX-ACS-2L two-loop base card and secure with the four (4) supplied screws [p] (see figure 39). It is critical that these screws are tightly secured as the two top screws are required for the earth ground connection to the NX-EM-LPD or NX-EM-NAC module.

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

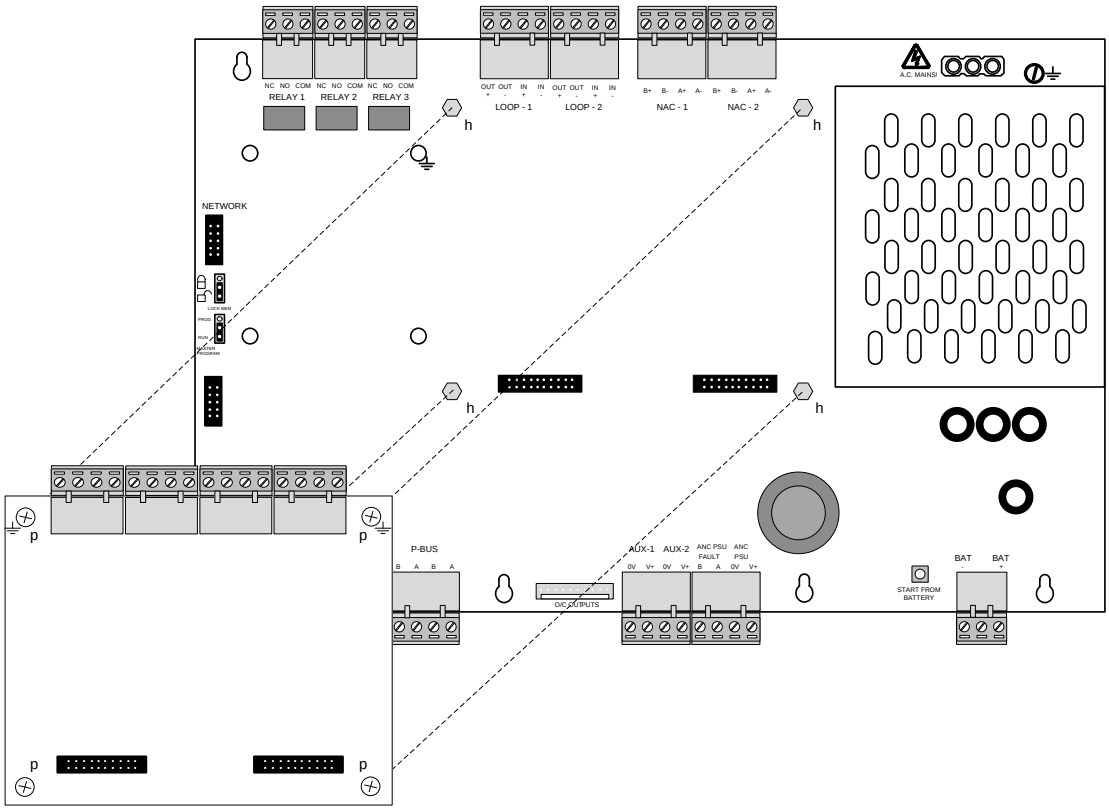


Figure 39 - NX-EM-LPD or NX-EM-NAC Module Mounting to NX-ACS-2L

4.7.2 NX-EM-LPD SLC Circuit Wiring

The NX-EM-LPD module provides two additional SLC circuits to the NX-FACP-2 PCB two-loop base card. The circuit ratings for each circuit are as follows:

24V DC, 0.5A[4]

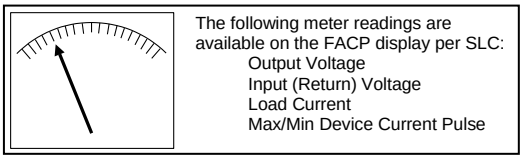
SUPERVISED, POWER LIMITED.

Class A, X (Style 7) or B

Minimum return voltage permitted is 17V.

Wire range – 22-12 AWG

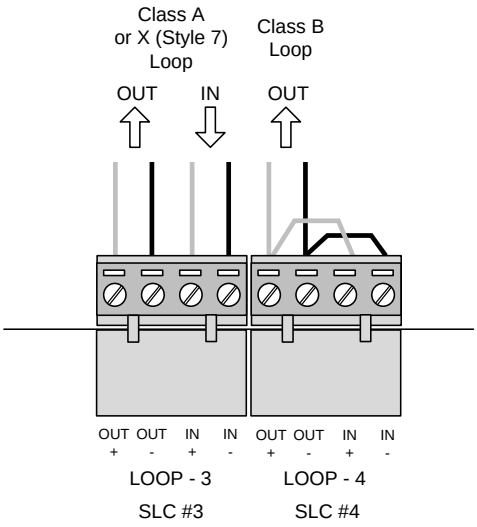
Refer to NEO Wiring Guide Section 10.



The following meter readings are available on the FACP display per SLC:

- Output Voltage
- Input (Return) Voltage
- Load Current
- Max/Min Device Current Pulse

(Refer to Section 11.1.1)



[4] TOTAL OUTPUT LOAD must not exceed panel supply rating – maximum 5A (10A if NX-EM-PSU installed).

4.7.3 NX-EM-LPD and NX-EM-NAC NAC Circuit Wiring

The NX-EM-LPD and NX-EM-NAC modules provide two additional NAC circuits to the NX-FACP-2 PCB two-loop base card. The circuit ratings for each circuit are as follows:

REGULATED 24V DC, 2.0A[5]

SUPERVISED, POWER LIMITED.

Class A or B
Class B EOL (End-of-Line) Resistor 10KΩ

Minimum return voltage permitted is 16V.

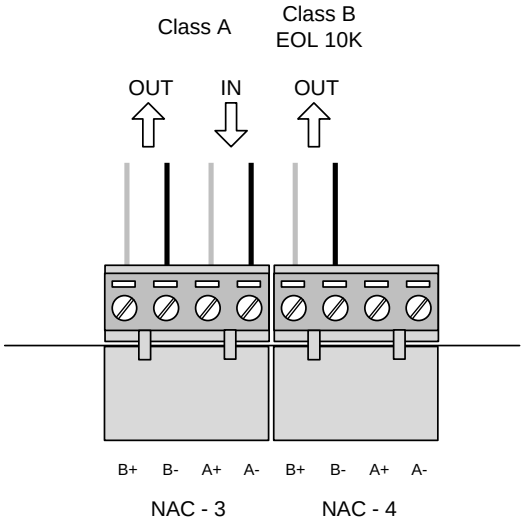
Wire range – 22-12 AWG

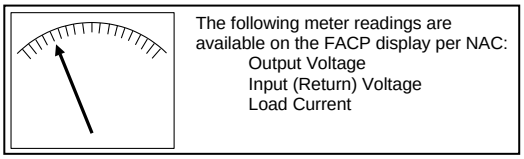
Maximum line impedance at 2.0A is 1.5Ω.

Maximum voltage drop across installation wiring is 3.0V at battery voltage of 20.4V.

Calculate the maximum line impedance and conductor size required for the actual load current applied.

Refer to NEO Wiring Guide Section 10.





(Refer to Section 11.1.1)

4.7.4 Replacing the NX-EM-LPD or NX-EM-NAC Module

Remove power (AC and battery) from the system and remove all field wiring terminal blocks from the NX-EM-LPD or NX-EM-NAC module. Remove the four (4) screws securing the module to the NX-ACS-2L two-loop base card and remove the module. Position the new module onto the metal hexagon spacers while plugging the module into the two (2) 20-pin connectors on the NX-ACS-2L two-loop base card and secure with the four (4) removed screws (see figure 37). It is critical that these screws are tightly secured as the two top screws are required for the earth ground connection to the NX-EM-LPD or NX-EM-NAC module. Reconnect AC and battery power to the system.

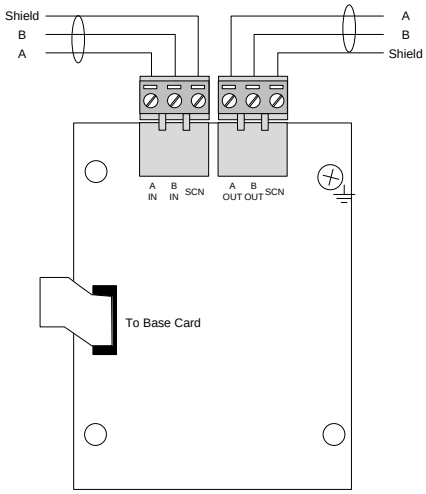
Failure to tighten screws will defeat the protection circuitry designed to protect the module from damage due to lightning and static electricity.

[5] TOTAL OUTPUT LOAD must not exceed panel supply rating – maximum 4A (8A if NX-EM-PSU installed).

4.8 NX-FANET4 and NX-FANET7 Module

The NX-FANET4 and NX-FANET7 modules are network modules (CCITT RS-485) utilized for connecting NEO fire alarm control panels to the SHIELD AD-NeT-PluS network. The SHIELD AD-NeT-PluS network can support NEO fire alarm control panels, remote annunciators with/without control, NX-FA-LAN (ipGateway) and other network nodes.

The NX-FANET4 module is utilized with a Class B network, while the NX-FANET7 is utilized with a Class X (Class A, Style 7) network.



NX-FANET4: Class B AD-NeT-PluS network:

- 32 Network Nodes (requires 150Ω filtering resistor at the beginning and at the end of the network)
- Maximum Cable Length 5000ft

NX-FANET7: Class X (Class A, Style 7) AD-NeT-PluS network:

- 200 Network Nodes
- Maximum Cable Length between Nodes 5000ft
- Maximum Overall Cable Length 66000ft

Cable wiring must be minimum twisted shielded pair 18AWG to 20AWG. Connect the shield to the designated terminal block positions only.

Refer to NEO Wiring Guide Section 10.

Note: Optional NX-FOC-MM Fiber Optic Converter Modules are available for converting NX-FANET4 or NX-FANET7 copper wiring to fiber optic.

4.8.1 Installing the NX-FANET4 or NX-FANET7 Module

Note: All NEO fire alarm control panels can support networking capabilities.

The NX-FANET4 and NX-FANET7 modules are supplied with one metal hexagon spacer/screw and three (3) nylon spacers (see figure 40).

Install the metal hexagon spacer [h] and three (3) supplied nylon spacers [n]. Plug the flat ribbon cable of the NX-FANET4/NX-FANET7 into the dedicated network connector on the NX-FACP base card. Position the module onto the three (3) nylon spacers and snap in place. Secure the module in place by screwing the supplied screw [p] into the metal hexagon spacer (see figure 40). It is critical that this screw is tightly secured as the screw is required for the earth ground connection to the NX-FANET4/NX-FANET7 module.

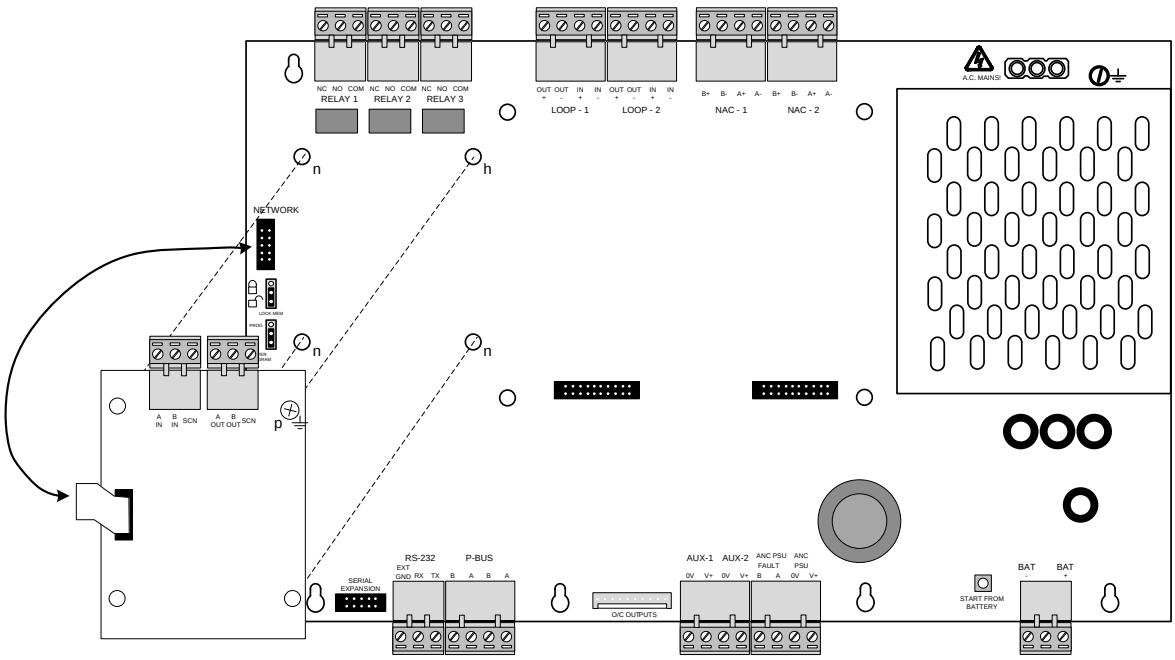
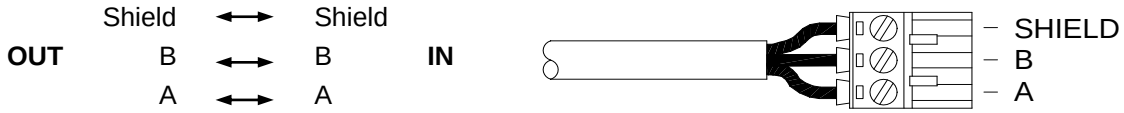


Figure 40 - NX-FANET4 or NX-FANET7 Installation

4.8.2 NX-FANET4 or NX-FANET7 Module Wiring

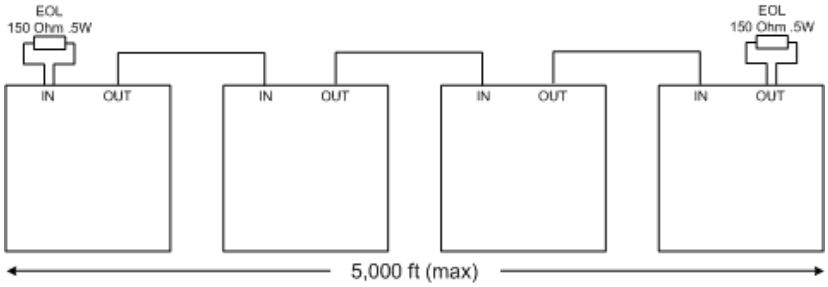
Each NX-FANET4/NX-FANET7 module has independent connectors for the outgoing and incoming network wiring. Utilizing twisted shielded cable, connect from the “OUT” terminal on the first panel, to the “IN” terminal on the next panel, as follows:



4.8.2.1 AD-NeT-PluS Class B Wiring

The “IN” terminals on the first node and the “OUT” terminals on the last node are not used. Connect an end of line filtering resistor (150Ω) between A and B on the unused terminal blocks.

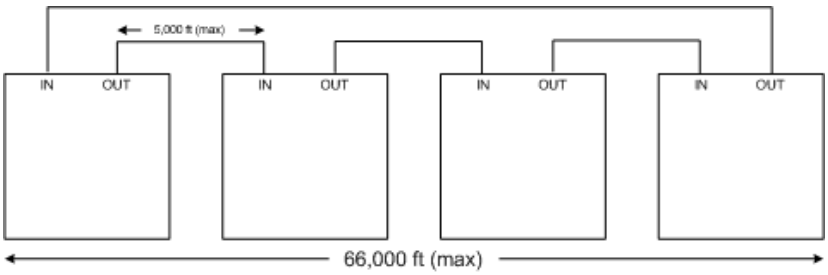
Maximum overall cable length is 5000ft (1500m) using recommended cables.



4.8.2.2 AD-NeT-PluS Class A Wiring

When utilized all network nodes must be installed with Class X (Class A, Style 7) type adaptor card.
Install a cable from the last node “OUT” terminals back to the first node “IN” terminals to form a loop “ring”.

Maximum cable length between nodes is 5000ft (1500m) using recommended cables.
Maximum overall cable length is 66000ft (20000m) using recommended cables.



4.8.3 Replacing the NX-FANET4 or NX-FANET7 Module

Remove power (AC and battery) from the system. Remove the screw [p] securing the module to the NX-FACP base card and snap the module free from the nylon spacers [n]. Unplug the flat ribbon cable connected to the network connector on the NX-FACP base card. Plug the flat ribbon cable of the new module into the dedicated network connector on the base card. Position the module onto the three (3) nylon spacers and snap in place. Secure the module in place by screwing the removed screw [p] into the metal hexagon spacer [h] (see figure 40). It is critical that this screw is tightly secured, as the screw is required for the earth ground connection to the NX-FANET4/NX-FANET7 module. Reconnect AC and battery power to the system.

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

4.9 Digital Alarm Communicator - Interfacing to a D9068P and D9068E (DACT)

There are two (2) ways to interface the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command centers NX-FACP base card to a Bosch D9068 Digital Alarm Communicator for Central Station connection. The first method is simply dry contact input point monitoring (D9068E) for alarm, trouble, supervisory and if required low battery. The second method is via serial communications with the NX-FACP base card (D9068P). The serial communications method (D9068P) allows for device reporting (Contact-ID by point), Network node and zone reporting (Contact-ID) and zone and device reporting (SIA-300). Refer to D9068P installation and operation manual for detailed DACT programming information.

When monitoring the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center via simple dry contacts, the D9068E DACT can be mounted either within the command center enclosure or within its own enclosure that the D9068 is shipped in.

When monitoring the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card via serial communications, the D9068P is mounted within the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center on the enclosure side wall (see figure 41).

4.9.1 D9068P Serial Communications DACT Interfacing

When the D9068P serial communications DACT is used with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card an SHIELD NX-SEB serial expansion board is required. The NX-SEB serial expansion board plugs into the NX-FACP base card serial expansion port and provides RS-232 communications and power to the D9068P. The NX-FACP base card serial expansion port shares the same processor access as the USB programming port and RS-232 printer output terminals. When utilizing the NX-SEB serial expansion board, the NX-FACP base card USB port and RS-232 printer output terminals are inoperable. The NX-SEB serial expansion board has a jumper that allows for the disconnection of communications with the D9068P so that the NX-FACP base card can be programmed or integrated with the SHIELD' service tool.

Note: When not programming the NX-FACP base card, the NX-SEB jumper must be set in the DACT "ON" position. When programming the NX-FACP via USB port or RS-232 printer output terminals the jumper must be placed in the DACT "OFF" position and upon completion of programming returned to the DACT "ON" position.

In order for the D9068P to function correctly via the NX-FACP base card serial expansion board, the NX-FACP base card must be configured for the correct D9068P DACT communications protocol (Contact-ID by Point, Contact-ID or SIA-300)

Note: All D9068P DACT programming (i.e. communications protocol, primary and secondary phone numbers, etc.) must be done with a DACT-PRG (Bosch – FMR-DACT-KEYPAD) programming LCD and keypad. To program the D9068P the DACT-PRG LCD keypad must be plugged into the NX-SEB serial expansion board (see figure 42).

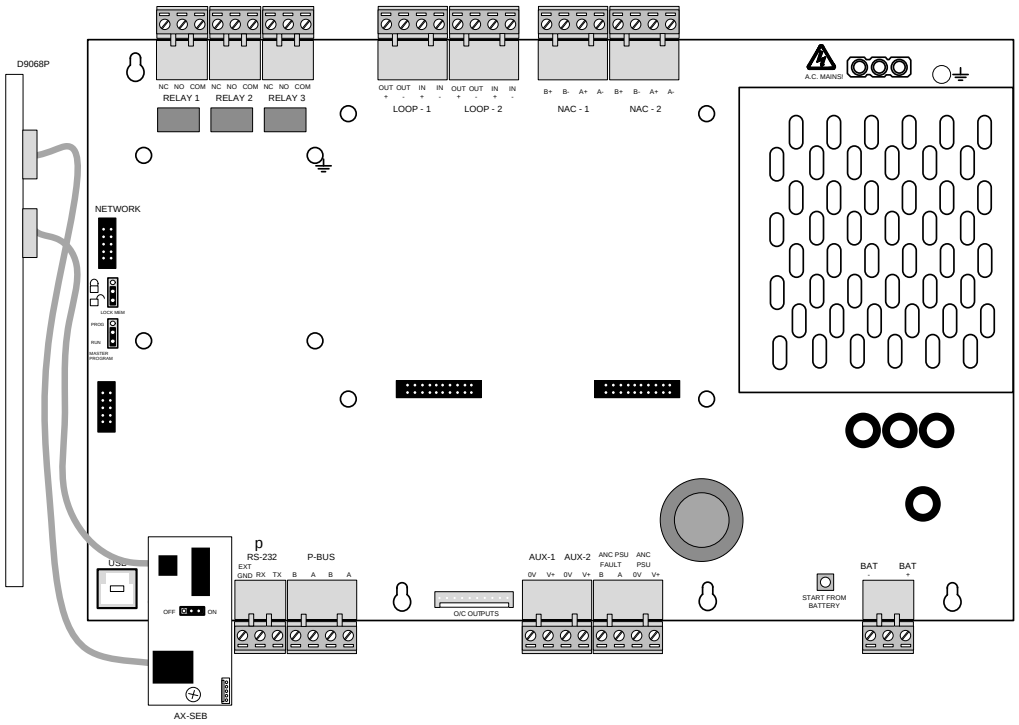


Figure 41 - D9068P Installation

4.9.1.1 Installing and Wiring the NX-SEB Serial Expansion Board

The NX-SEB serial expansion board plugs into the 10-pin serial expansion port located on the lower left corner of the NX-FACP base card. Install the round spacer supplied with the NX-SEB serial expansion board onto the threaded standoff of the back box, below the 10-pin serial expansion port located on the bottom left corner of the NX-FACP base card. Plug the serial expansion board into the serial expansion port of the NX-FACP base card and secure with the provided screw (see figure 42).

The NX-SEB comes with two flat ribbon cables (one 6-pin and one 5-pin) these cables are for connecting the NX-SEB to the D9068P DACT. Connect one end of the 6-pin flat ribbon cable to PL4 of the NX-SEB (located on the back side of the NX-SEB). Connect the 5-pin flat ribbon cable to PL2 of the NX-SEB (located on the back side of the NX-SEB) of the NX-SEB (see figure 42).

Plug the 6-pin flat ribbon cable previously installed on the NX-SEB (PL4) into the RS-232/power input connection located on the D9068P. Plug the 5-pin flat ribbon cable previously installed on the NX-SEB (PL2) into the DACT-PRG keypad input connection located on the D9068P (see figure 42).

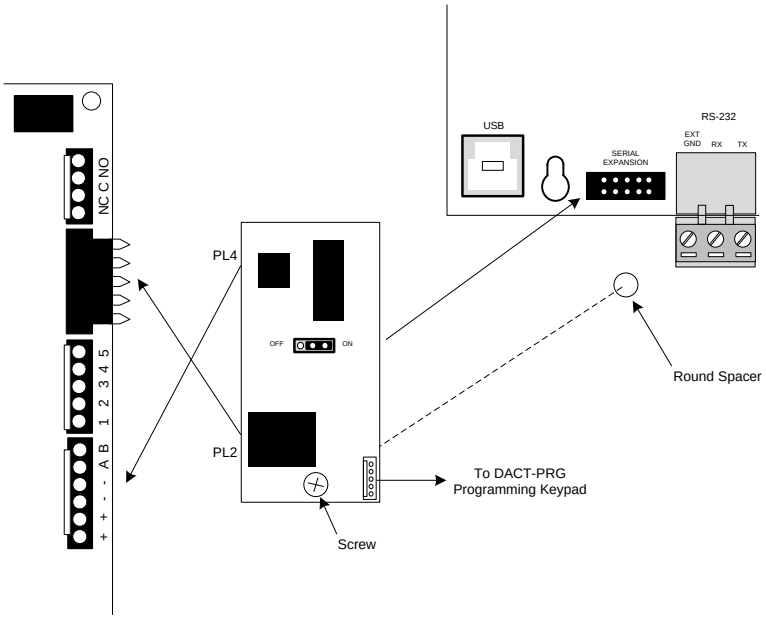


Figure 42 - NX-SEB Installation and Wiring

4.9.1.2 Mounting the D9068P

The D9068P gets mounted on the upper left sidewall of the enclosure back box.

Located on the upper left sidewall of the back box are three (3) PC-board push/snap-on standoffs [p] and one (1) screw standoff. Push the D9068P onto the three (3) push/snap-on standoffs [p] and install/tighten the provided screw (see figure 43).

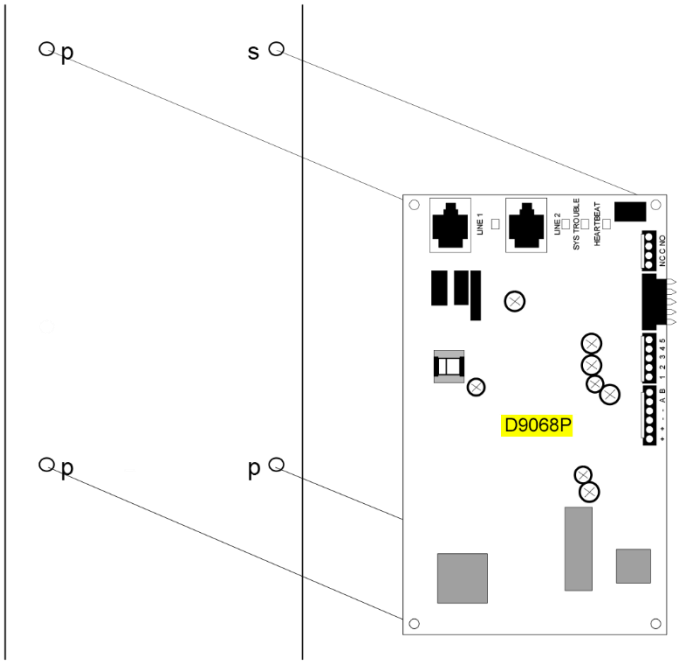
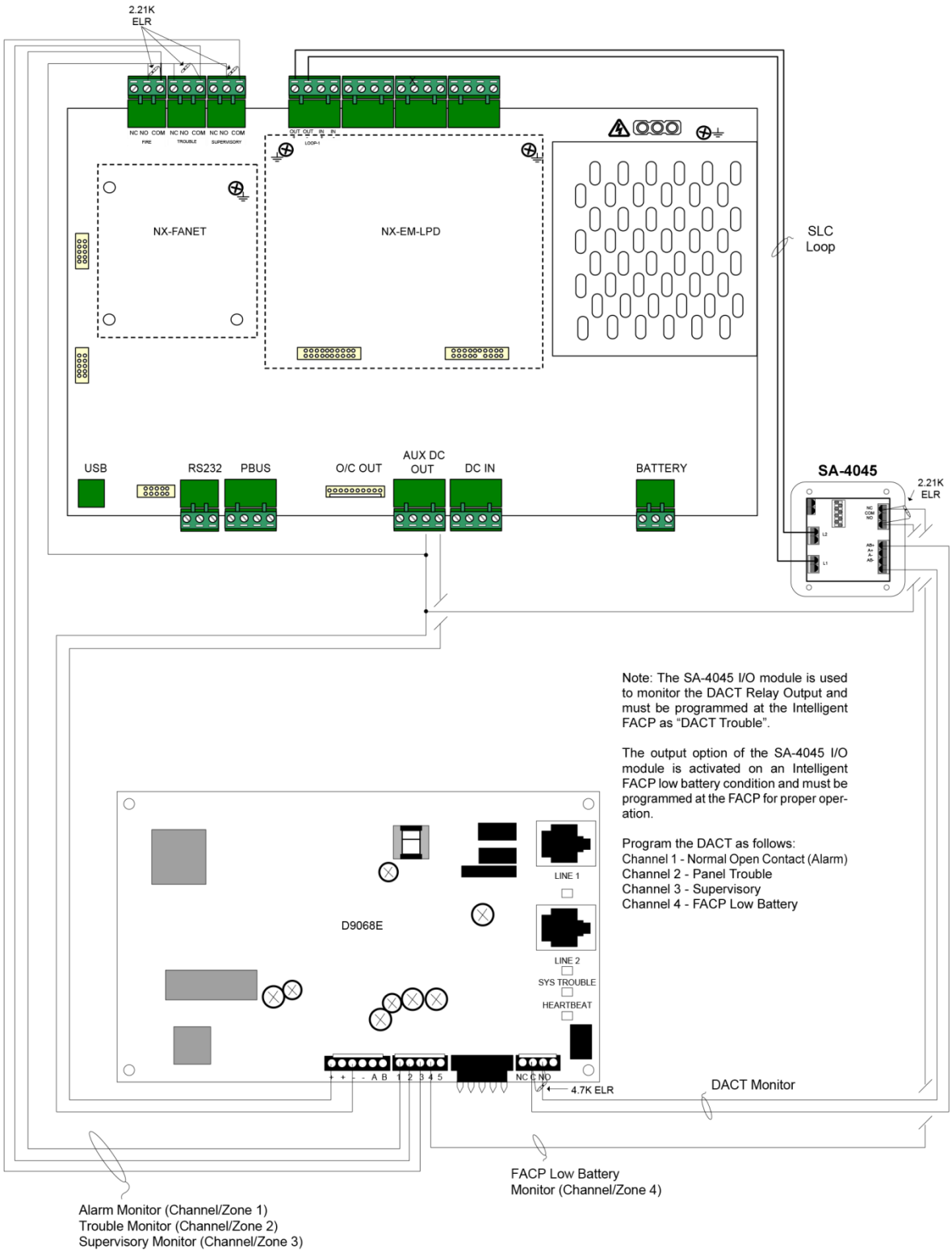


Figure 43 - D9068P Mounting

4.9.2 D9068E Relay Contact DACT Interfacing

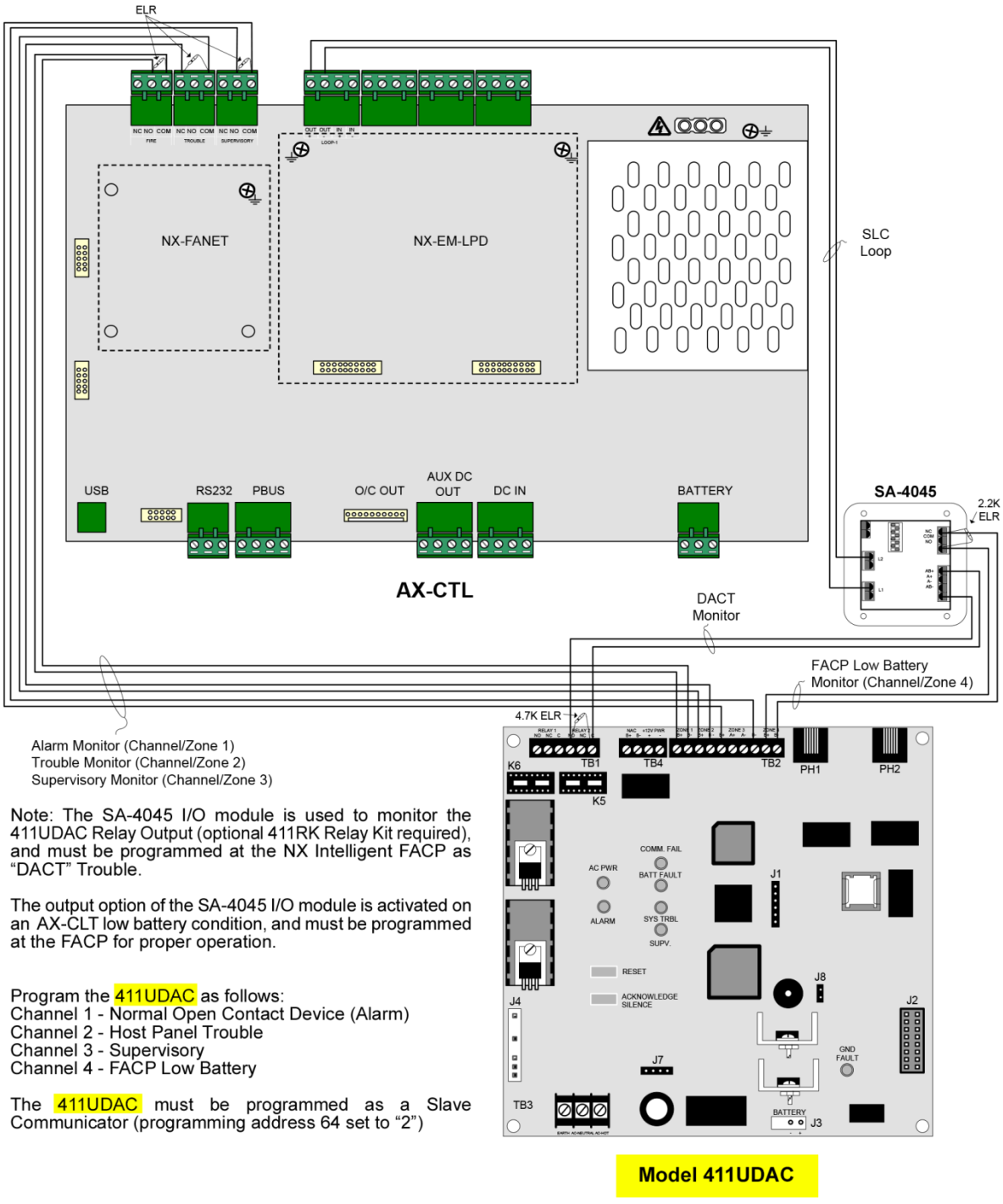
When monitoring the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card via simple dry contacts, a D9068E DACT is required. The D9068E comes in its own enclosure that can be mounted adjacent to the fire alarm control panel. In addition, the D9068E module can be removed from the enclosure and installed within the command center enclosure. Below is a wiring diagram for interfacing a D9068E relay contact DACT to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center.



4.10 Interfacing to a Standalone Digital Alarm Communicator

The following is an example of the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center interfaced to a FireLite Model 411UDAC for Central Station connection (see figure 45).

Note: Though the interface to a Model 411UDAC is shown, the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center can be interfaced to any LISTED standalone DACT.



Note: The SA-4045 I/O module is used to monitor the 411UDAC Relay Output (optional 411RK Relay Kit required), and must be programmed at the NX Intelligent FACP as "DACT" Trouble.

The output option of the SA-4045 I/O module is activated on an AX-CLT low battery condition, and must be programmed at the FACP for proper operation.

Program the 411UDAC as follows:
Channel 1 - Normal Open Contact Device (Alarm)
Channel 2 - Host Panel Trouble
Channel 3 - Supervisory
Channel 4 - FACP Low Battery

The 411UDAC must be programmed as a Slave Communicator (programming address 64 set to "2")

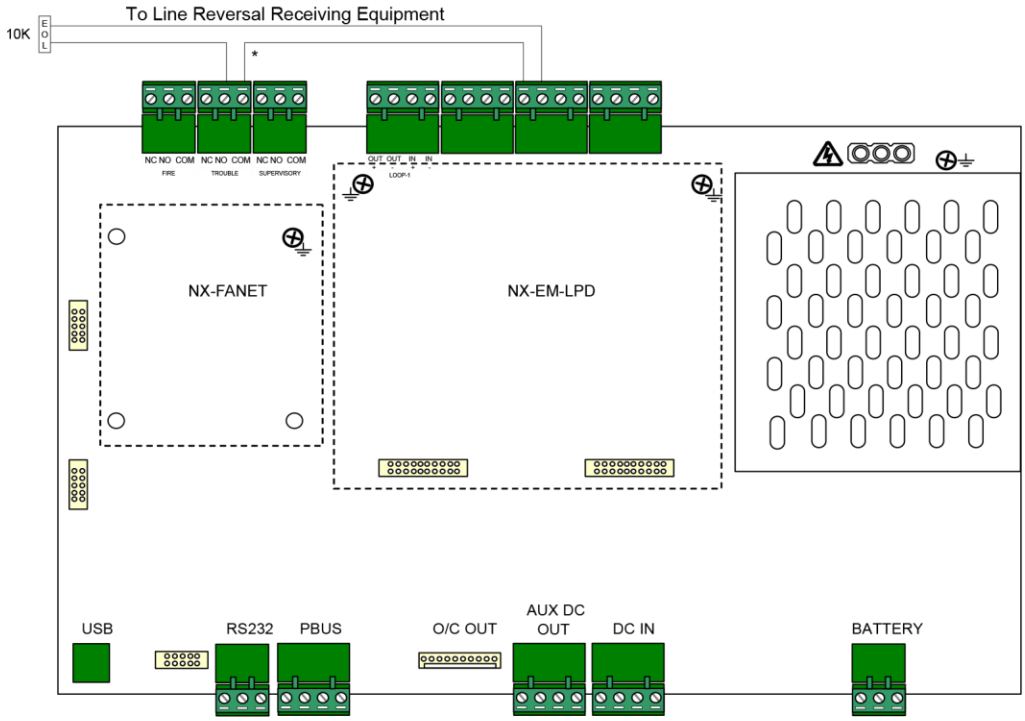
Figure 45 - Standalone DACT Interface

4.11 Auxiliary - Reverse Polarity Signaling

The following is a wiring diagram utilizing a NAC circuit or S-A4046 addressable NAC module for reverse polarity signaling to a remote location (see figure 46).

Note: A "Not" statement will need to be created for the trouble contact activation, so that an alarm condition has a higher priority than a trouble condition (consult factory).

Line Reversal Remote Signaling



* If trouble reporting is required , run A/B+ thru either the Base Card trouble relay or thru an addressable relay programmed as inverted, trouble activation.

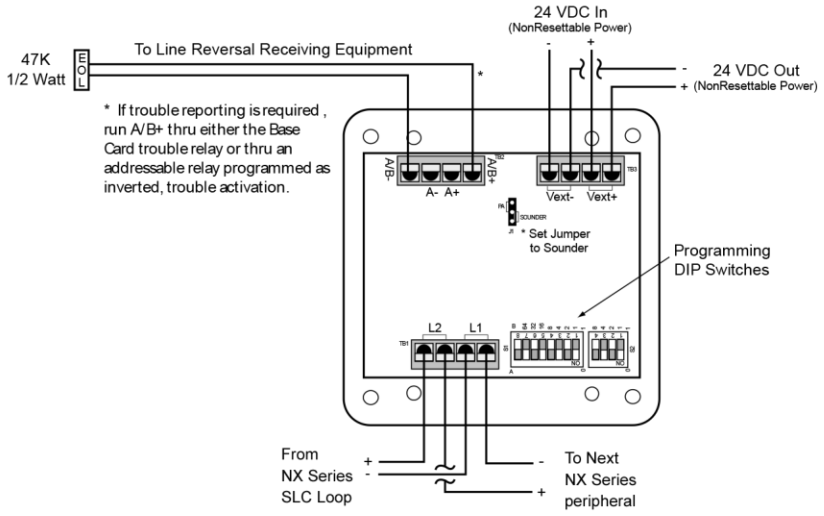


Figure 46 - Reverse Polarity Wiring

4.12 NX-EM-012 Panel Strip Printer

The NX-EM-012 is a panel mount strip printer for the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center. The printer can be configured for continuous or on demand event status printing.

4.12.1 Installing the NX-EM-012 Panel Strip Printer

The NX-EM-012 panel strip printer can be mounted in any available single aperture location on the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center inner doors, although it's normally installed in the single aperture location on the right side of the first row.

Note: If the NX-EM-012 panel strip printer is not installed in the single aperture location on the right side of the first row, confirm that aperture location that the NX-EM-012 is being installed in has proper clearance when the inner door is closed.

To install the NX-EM-012 panel strip printer, remove the nuts and washers holding the upper and lower washer strips (3-wide washer strip) to the inner door. Remove the washer strips and if installed the blank plate and install the NX-EM-012 between the aperture screws. Replace the removed washer strips and secure with the removed nuts and washers (see figure 47).

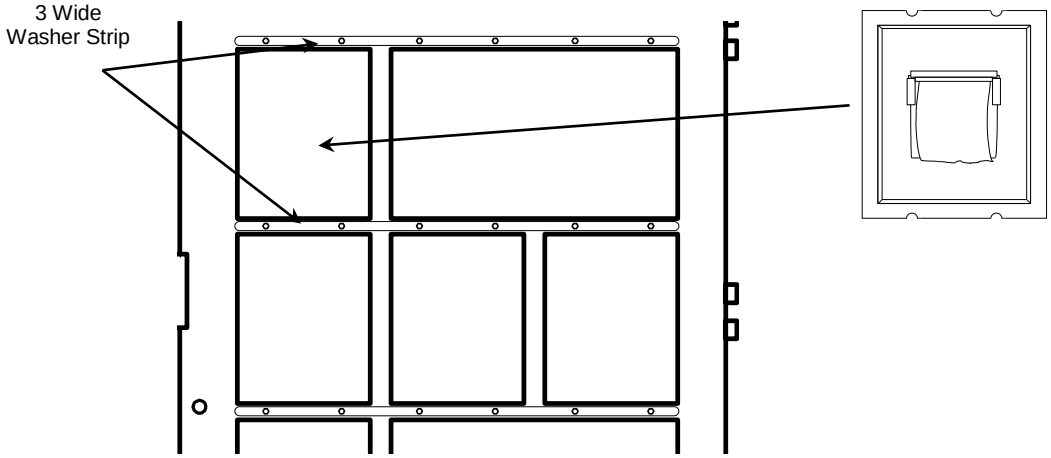


Figure 47 - NX-EM-012 Panel Strip Printer

4.12.2 NX-EM-012 Panel Strip Printer Wiring

Connect the 4-way ribbon cable from the NX-EM-012 panel strip printer to the 4-pin plug on the rear of the NX-ACS-DSP alphanumeric graphic display. In addition, plug the battery lead cable from the rechargeable battery into the NX-EM-012 printed circuit board plug (see figure 48).

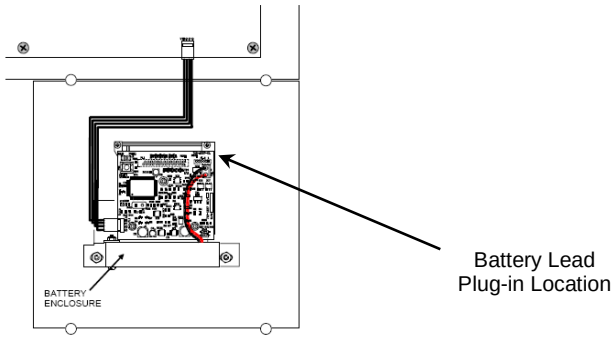


Figure 48 - NX-EM-012 Panel Strip Printer Wiring

Note: The NX-EM-012 panel strip printer is supplied with the batteries disconnected, prior to proper operation connect the leads from the battery to the NX-EM-012 printed circuit board plug (see figure 48). The integral rechargeable battery is dedicated to the printer power supply, if the NX-ACS-DSP connection has been removed for a long period of time (i.e. more than a month) the NX-EM-012 battery will need to be recharged before the printer will function correctly. If charging is required, allow at least 1 hour before performing a test print and 24 hours before normal printing.

For programming of the NX-EM-012 panel strip printer refer to Section 7.8.6.2 of this manual.

4.12.3 Replacing the NX-EM-012 Panel Strip Printer

Remove power (AC and DC) from the system. Remove the 4-way ribbon cable from the NX-EM-012 panel strip printer to the 4-pin plug on the rear of the NX-ACS-DSP and remove the printer battery leads connected to the NX-EM-012 printed circuit board (see figure 48). Remove the nuts and washers holding the upper and lower washer strips (3-wide washer strip) to the inner door and remove the washer strips (see figure 47). Remove the NX-EM-012 panel strip printer and replace with the new NX-EM-012 panel strip printer between the aperture screws. Replace the removed washer strips and secure with the removed nuts and washers. Replace the 4-way ribbon cable and the printer battery leads which are disconnected during NX-EM-012 shipment (see figure 48). Reconnect removed AC and DC power.

4.13 NX-MIC Microphone Assembly

The NX-MIC microphone assembly allows live voice communications to be broadcasted from the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command centers. In a PBUS (RS485) amplifier installation, the NX-MIC microphone assembly is normally connected to the microphone bus amplifier and if installed the remote microphone bus amplifier.

Note: In hardwired NX-AMP-80 amplifier installations and single PBUS (RS485) "all call" amplifier installations, the NX-MIC microphone assembly is installed on the NX-AMP-80 fire alarm panel enclosure.

4.13.1 NX-MIC Installation

The NX-MIC microphone assembly mounts in a single aperture location located on the right side of the bottom of the inner door on the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center inner doors (see figure 49).

To install the NX-MIC microphone assembly remove the nuts and washers holding the upper and lower washer strips (3-wide washer strip) to the inner door. Remove the washer strips and if installed the blank plate, and install the NX-MIC between the aperture screws (see figure 49). Replace the removed washer strips and secure with the removed nuts and washers.

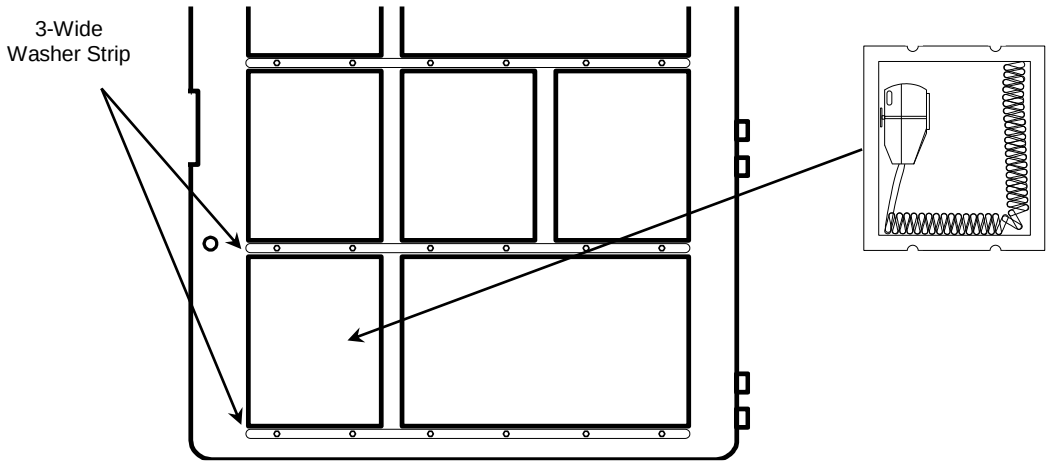


Figure 49 - NX-MIC, Microphone Assembly

4.13.2 NX-MIC Wiring

Plug the already terminated 6-way ribbon cable from the NX-MIC microphone assembly terminal block to the PL2 (mic) connector on the NX-AMP-80 amplifier (see figure 50).

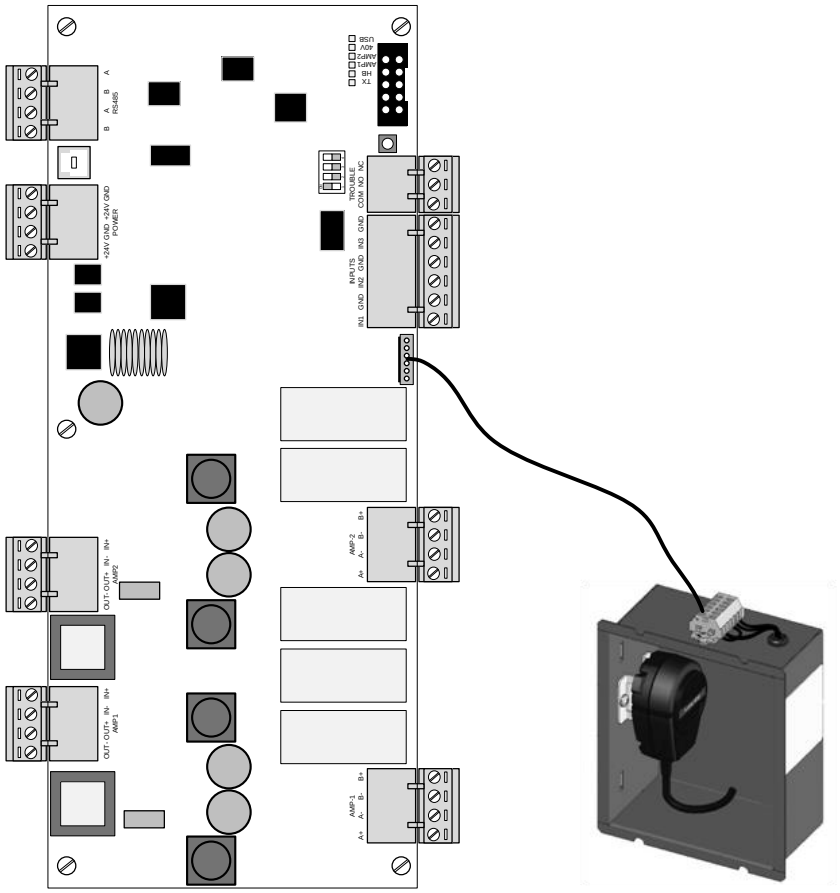


Figure 50 - NX-MIC Wiring

4.13.3 Replacing the NX-MIC Microphone Assembly

Remove power (AC and DC) from the system. Unplug the 6-way ribbon cable connected to the NX-AMP-80 amplifier. Remove the nuts and washers holding the upper and lower washer strips (3-wide washer strip) to the inner door and remove the washer strips. Remove the NX-MIC microphone assembly and replace with the new NX-MIC microphone assembly (see figure 49). Replace the removed washer strips and secure with the removed nuts and washers. Plug the already terminated 6-way ribbon cable from the NX-MIC microphone assembly terminal block to the PL2 (mic) connector on the NX-AMP-80 amplifier (see figure 50). Reconnect removed AC and DC power.

4.14 NX-TEL / NX-TEL-MCCS Command Center Firefighter Phones

NX-TEL is no longer available and has been replaced with NX-TEL2

The SHIELD command center NX-CC01-BB-ID2 (3x3 command center) or NX-CC02-BB-ID2 (3x5 command center) inner doors can support either an NX-TEL or NX-TEL-MCCS command center firefighter phone and enclosure mounted in the bottom left side double aperture (see figure 51).

The NX-TEL is a command center firefighter phone and enclosure which includes an NX-TEL-RISER single telephone riser module (see figure 52), while the NX-TEL-MCCS is a command center firefighter phone and enclosure which includes an NX-TEL-MCCS module for connection to the SHIELD NX-TEL-RISE6 6-way multiple telephone riser module (see figure 52).

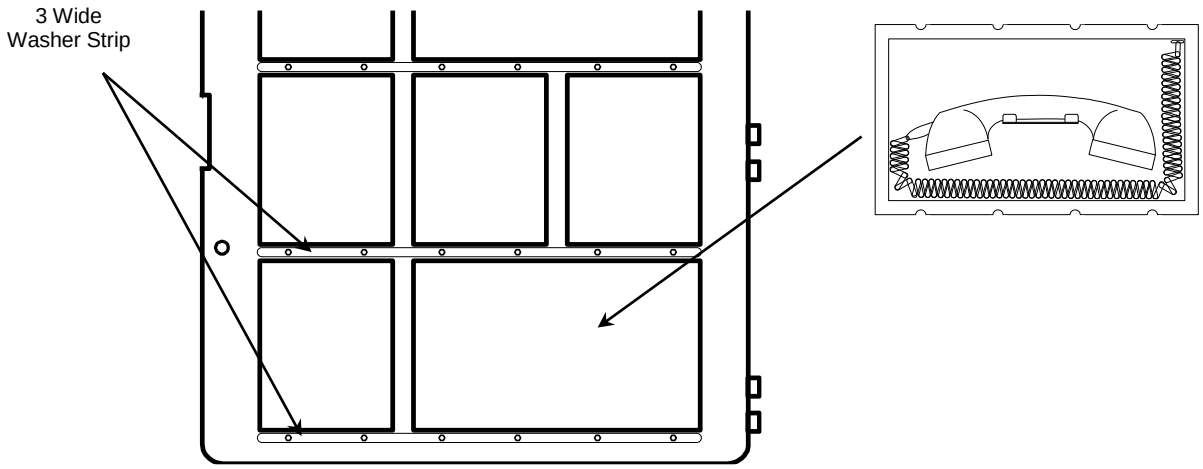


Figure 51 – NX-TEL or NX-TEL-MCCS Command Center Firefighter Phone Enclosure Installation

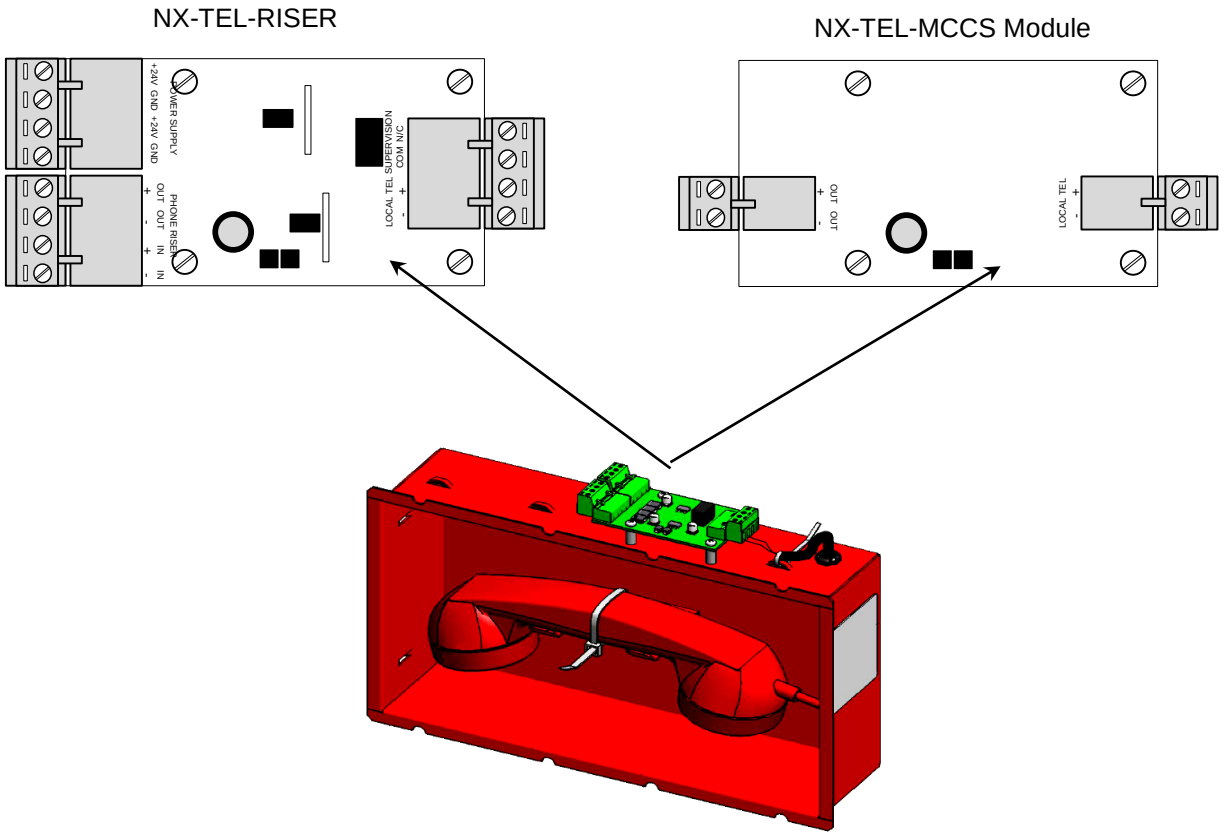


Figure 52 – NX-TEL or NX-TEL-MCCS Command Center Firefighter Phone and Enclosure

4.14.1 NX-TEL or NX-TEL-MCCS Installation

NX-TEL is no longer available and has been replaced with NX-TEL2

To install the NX-TEL or NX-TEL-MCCS command center firefighter phone enclosure, remove the nuts and washers holding the two (2) lower washer strips (3-wide washer strip) in place. Remove the washer strips and install the NX-TEL or NX-TEL-MCCS command center firefighter phone enclosure in the double aperture opening, replace removed washer strips and secure with the removed nuts and washers (see figure 51).

4.14.2 NX-TEL NX-TEL-RISER Wiring

NX-TEL is no longer available and has been replaced with NX-TEL2

The NX-TEL-RISER single telephone riser module is part of the NX-TEL command center firefighter phone assembly and is mounted to the top of the phone enclosure. The module provides a single telephone riser that can support up to thirty-five (35) NX-JACK, NX-TEL-SUP and/or NX-CTEL modules. The telephone riser is capable of accommodating a maximum of five (5) field firefighter phones (NX-JACK, NX-TEL-SUP and/or NX-CTEL modules) and the NX-TEL command center phone being active at the same time.

The NX-TEL-RISER requires 24 VDC @ 200mA (maximum circuit current draw) supplied from the NX-FACP power supply (AUX 2), NX-EM-PSU6 power supply charger (24 VDC output) or a listed power supply.

Wire the NX-TEL-RISER to the 24 VDC supply. Wire the normally closed trouble contact of the NX-TEL-RISER to a trouble monitor contact input of the NX-FACP base card, NX-ACS-DSP display card or addressable monitoring module. This trouble contact transfers on any riser module fault (see figure 53).

Note: Supervision/trouble monitoring of the telephone riser wiring is accomplished per telephone location through the S-A4045 I/O relay output & switch monitor module which is connected to NX-JACK, NX-TEL-SUP and/or NX-CTEL modules. For NX-JACK, NX-TEL-SUP and/or NX-CTEL module wiring and programming information refer to the SHIELD 682-031 Firefighter Phone System Manual.

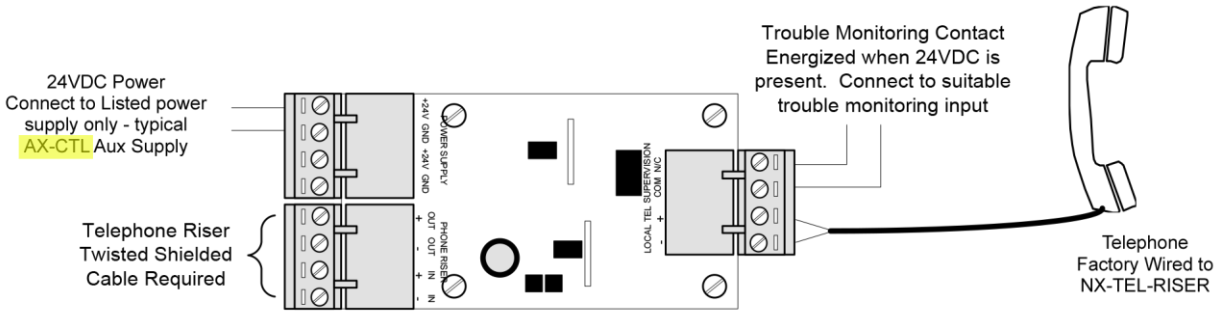


Figure 53 – NX-TEL-RISER Wiring

NX-TEL-RISER Single Telephone Riser Module Ratings:

- 24 VDC, 200mA (maximum current draw)
- Maximum 35 NX-JACK, NX-TEL-SUP and/or NX-CTEL modules
- All circuits are POWER LIMITED
- Wire gauge - all terminals 12-22AWG, Twisted Shielded Wiring Required
- Max circuit impedance 40Ω
- Refer to NEO Wiring Guide Section 10
- INDOOR, DRY

4.14.3 NX-TEL-MCCS Wiring

NX-TEL is no longer available and has been replaced with NX-TEL2

The NX-TEL-MCCS module is part of the NX-TEL-MCCS command center firefighter phone assembly and is mounted to the top of the phone enclosure. The NX-TEL-MCCS module provides command center firefighter phone connection

to the NX-TEL-RISER6 6-way multiple telephone riser module whether mounted within the command center or remotely located in the NX-TEL6-REM remote 6-way multiple telephone riser enclosure. The connection between the NX-TEL-MCCS module and the NX-TEL-RISER6 is supervised by the NX-TEL-RISER6 module.

Note: For NX-TEL-RISE6 wiring and programming information refer to the SHIELD 682-031 Firefighter Phone System Manual.

Utilizing twisted shielded cable wire the NX-TEL-MCCS module to the NX-TEL-RISER6 module (see figure 54).

Refer to NEO Wiring Guide Section 10.

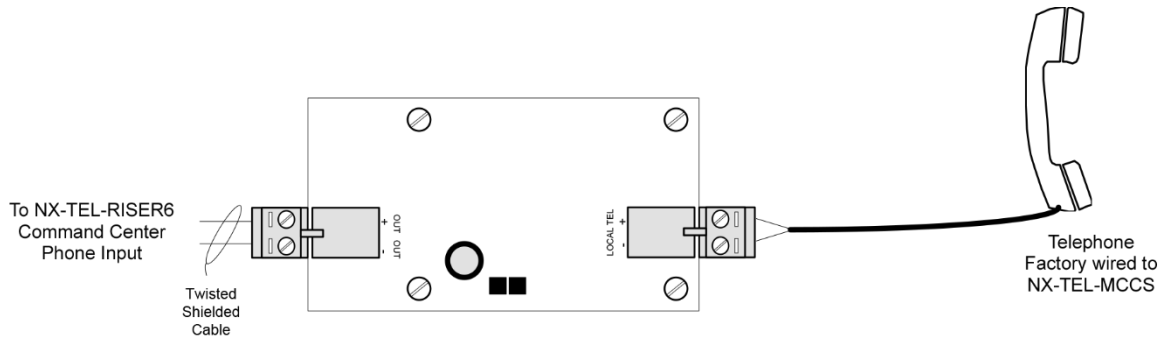


Figure 54 – NX-TEL-MCCS Wiring

4.14.4 Replacing NX-TEL-RISER or NX-TEL-MCCS Module

NX-TEL is no longer available and has been replaced with NX-TEL2

Remove power (AC and DC) from the system. Unplug the pluggable terminal blocks of the NX-TEL-RISER or NX-TEL-MCCS module. Remove the four (4) screws holding the NX-TEL-RISER or NX-TEL-MCCS module to its mounting location (see figure 52). Place the new NX-TEL-RISER or NX-TEL-MCCS module on to the standoffs and secure with the removed four (4) screws. Replace the removed pluggable terminal blocks to their proper locations and reconnect AC and DC power.

4.15 NX-TEL-MCCS (/P) Firefighter Phone System2 Command Center Phones

NX-TEL is no longer available and has been replaced with NX-TEL2

The SHIELD command center NX-CC01-BB-ID2 (3x3 command center) or NX-CC02-BB-ID2 (3x5 command center) inner doors can also support either an NX-TEL2-MCCS or NX-TEL-MCCS/P firefighter phone system2 command center firefighter phone and enclosure mounted in the bottom left side double aperture (see figure 55).

The NX-TEL-MCCS and NX-TEL2-MCCS/P include an interface module for connection to an SHIELD NX-TEL2-RISE firefighter phone system2 telephone riser module (see figure 56).

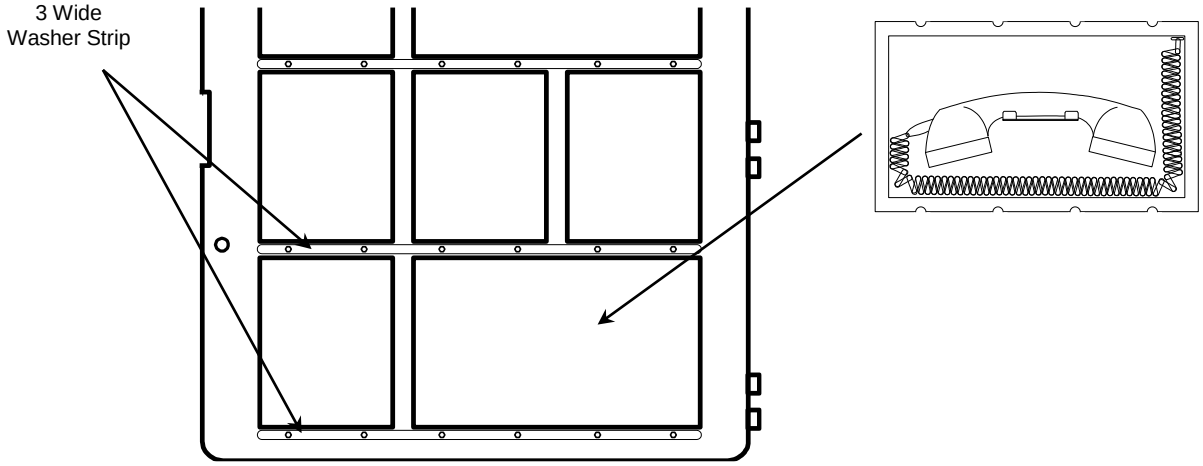


Figure 55– NX-TEL2-MCCS (/P) Firefighter Phone System2 Phone Enclosure Installation

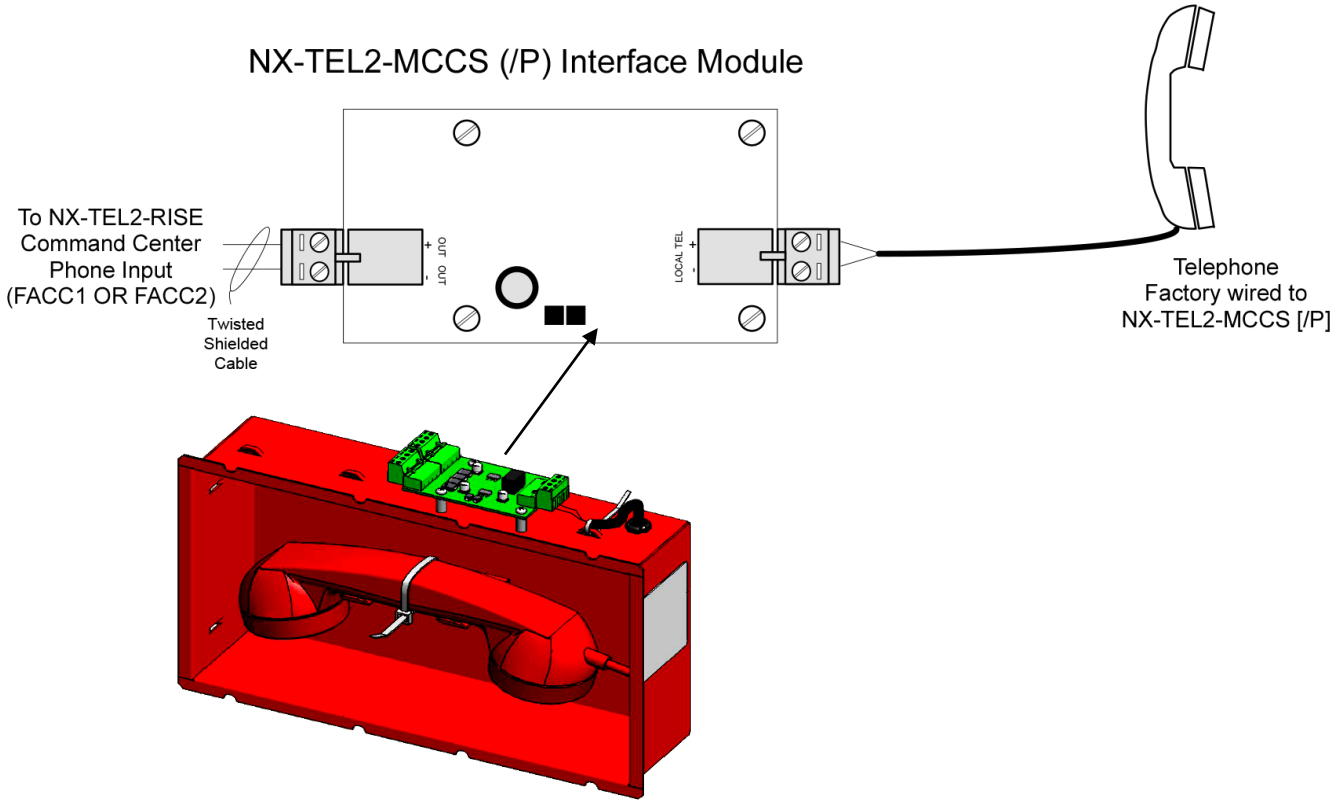


Figure 56 – NX-TEL2-MCCS (/P) Interface Module Wiring

4.15.1 NX-TEL2-MCCS (/P) Installation

To install the NX-TEL2-MCCS (/P) firefighter phone system2 command center phone enclosure, remove the nuts and washers holding the two (2) lower washer strips (3-wide washer strip) in place. Remove the washer strips and install the NX-TEL2-MCCS (/P) firefighter phone system2 command center firefighter phone enclosure in the double aperture opening, replace removed washer strips and secure with the removed nuts and washers (see figure 55).

4.15.2 NX-TEL2-MCCS (/P) Interface Module Wiring

The NX-TEL2-MCCS (/P) interface module is part of the NX-TEL-MCCS (/P) firefighter phone system2 command center phone enclosure and is mounted to the top of the phone enclosure. The NX-TEL-MCCS (/P) interface module provides firefighter phone system2 command center phone connection to the NX-TEL2-RISE firefighter phone system2 telephone riser module whether mounted within the command center or remotely located. The connection between the NX-TEL-MCCS (/P) phone and the NX-TEL2-RISE module is supervised by the NX-TEL2-RISE module.

Note: For NX-TEL2-RISE wiring and programming information refer to the SHIELD NX682-060 Firefighter Phone System2 Manual.

Utilizing twisted shielded cable wire the NX-TEL2-MCCS (/P) interface module to the NX-TEL2-RISE module (see figure 56).

Refer to NEO Wiring Guide Section 10.

4.15.3 Replacing the NX-TEL2-MCCS (/P) Interface Module

Remove power (AC and DC) from the system. Unplug the pluggable terminal blocks of the NX-TEL2-MCCS (/P) interface module. Remove the four (4) screws holding the NX-TEL2-MCCS interface module to its mounting location (see figure 56). Place the new NX-TEL2-MCCS interface module on to the standoffs and secure with the removed four (4) screws. Replace the removed pluggable terminal blocks to their proper locations and reconnect AC and DC power.

4.16 Switch LED Modules

Switch LED Modules are PBUS (RS485) field configurable switch input and LED status indicator modules for use with the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. There are five (5) types of Switch LED Modules (NX-EM-ASW-16-16, NX-EM-IO48, NX-FA-LED16RY, NX-FA-LED32R and NX-FA-LED32Y) available based on installation requirements. Any combination of sixteen (16) Switch LED Modules can be connected to a single NX-FACP base card peripheral bus (PBUS). One NX-EM-ASW-16 switch LED module is preinstalled in the first aperture location on the second row of the NX-CC01-BB-ID1 inner door of the NX-FACC-1 command center.

NX-EM-ASW-16	Switch LED Module, incorporating 16 switches and 48 LEDs
NX-EM-IO48	Switch LED Driver Module, incorporating 16 switch inputs and 48 LED Drive Outputs
NX-FA-LED16RY	LED Module, incorporating 16 red and 16 yellow LEDs
NX-FA-LED32R	LED Module, incorporating 32 red LEDs
NX-FA-LED32Y	LED Module, incorporating 32 yellow LEDs

Note: Any combination of sixteen (16) Switch LED Modules (NX-EM-ASW-16, NX-EM-IO48, NX-FA-LED16RY, NX-FA-LED32R and NX-FA-LED32Y) can be connected to an NX-FACP base card.

Switch LED Modules are extremely flexible and easy to configure/program. Switches can be programmed to bypass (disable/enable) points, zones, and/or groups. They can also be programmed to turn On/Off relay points, NAC circuits, city connections, or they can be configured to provide complete HOA (Hand-Off-Auto) control functionality. When utilized with the PBUS (RS485) NX-AMP-80 amplifier, switches can be configured for all call, selective zone/area paging, individual message selection, fire fighter telephone selection, etc. LEDs can be programmed for a number of different status indications by points, zones and/or groups within the system, including alarm, supervisory, trouble, switch active, relay active, etc. In addition, the LEDs can be programmed for primary and secondary status events, along with flash rates based on last known status/event (i.e.: off, on steady, 1/2 or 1 second flash). Easy slide-in label pockets are provided on all Switch LED modules, with the exception of the NX-EM-IO48, allowing switches and LEDs to have customized labeling based on installation usage.

For programming and configuration of Switch LED Modules refer to Switch LED Modules Installation Instructions.

4.16.1 Switch LED Module Installation

Switch LED Modules can mount in any available single aperture location on an NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center inner door. As previously indicated, the NX-FACC[x] command center, has an NX-EM-ASW-16 Switch LED Module preinstalled in the first aperture location on the second row of the NX-CC01-BB-ID1 inner door.

Note: There are other remote enclosure options available for mounting Switch LED Modules, refer to Switch LED Modules Installation Instructions.

To install a Switch LED Module determine which row you're installing the module on and remove the nuts and washers holding the upper and lower washer strips (3-wide washer strip) to the inner door. Remove the washer strips and if installed the blank plate, and install the Switch LED Module between the aperture screws (see figure 57). If installing multiple Switch LED Modules on the same row, place them also in their required installation location between the aperture screws and replace the removed washer strips and secure with the removed nuts and washers.

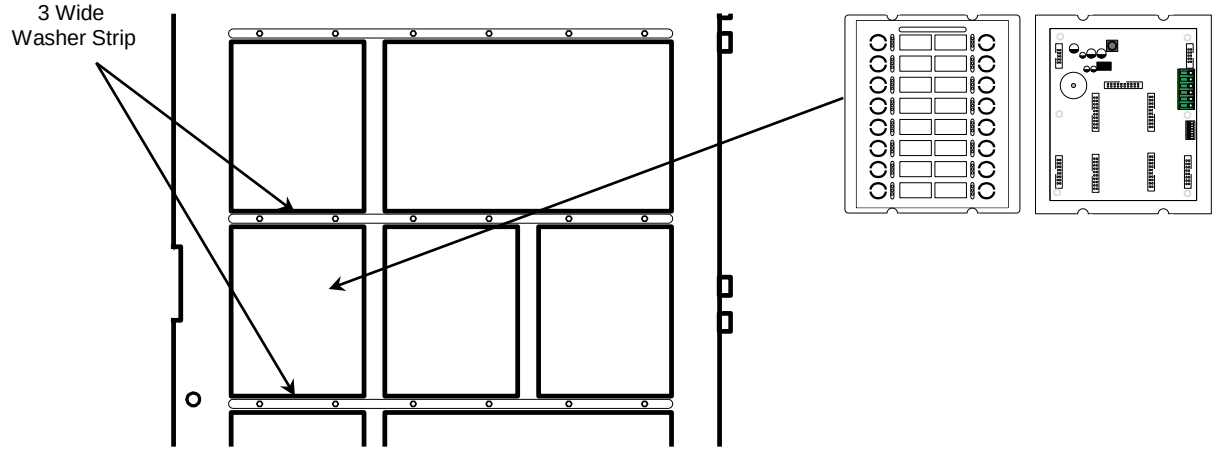
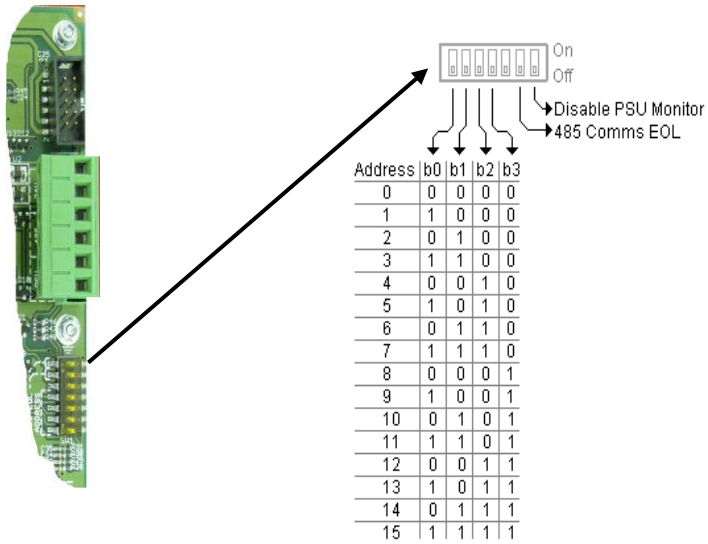


Figure 57 – Switch LED Module Installation

4.16.2 Addressing Switch LED Modules

Each Switch LED Module must be connected to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card P-BUS (RS485). As the Switch LED Modules reside on the NX-FACP PBUS (RS485), each module must be configured with a unique address (see figure 58). The address setting corresponds to PBUS programming criteria utilized within the SHIELD PC-NeT field configuration program.

As previously stated, up to sixteen (16) Switch LED Modules (any combination) can be connected to a single NX-FACP base card peripheral bus (PBUS).



Address	b0	b1	b2	b3
0	0	0	0	0
1	1	0	0	0
2	0	1	0	0
3	1	1	0	0
4	0	0	1	0
5	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1
10	0	1	0	1
11	1	1	0	1
12	0	0	1	1
13	1	0	1	1
14	0	1	1	1
15	1	1	1	1

Figure 58 – Switch LED Module Addressing

4.16.3 Switch LED Module Wiring

As previously indicated, each Switch LED Module requires connection to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card P-BUS (RS485). In addition, each Switch LED Module requires 24VDC filtered and regulated power.

4.16.3.1 24VDC Wiring

24 VDC power for Switch LED Modules can come from any fire alarm listed 24 VDC filtered and regulated power supply (NX-FACP AUX [non resettable] power, NX-EM-PSU6, NX-PSN or other fire alarm listed power supply). Wire 24 VDC filter regulated power to terminals + and – of the Switch LED Module (see figure 59).

Refer to NEO Wiring Guide Section 10.

Note: The Switch LED Module is capable of monitoring a remote listed 24 VDC filtered regulated power supply for trouble conditions. Wire the trouble N/O contact (fail-safe [closed unless trouble]) to PSU monitoring terminals of the Switch LED Module (see figure 59) and confirm DIP switch 7 "Disable PSU Monitoring" of the Switch LED Module is set to the "OFF" position (see figure 58).

4.16.3.2 PBUS (RS485) Wiring

Connect the PBUS (RS485) terminals A and B of the NX-FACP base card to the 485 (PBUS) A and B input terminals of the Switch LED Module (see figure 59). If this is the last module connected to the NX-FACP PBUS (RS485), set DIP switch 6 "485 Comms EOL" on the Switch LED Module to the "ON" position (see figure 58).

Refer to NEO Wiring Guide Section 10.

Note: When utilizing multiple Switch LED Module's within the same enclosure, 24 VDC power and the PBUS (485) wiring can be daisy chained from the first Switch LED Module to the next module, then from that module to the following module, etc. (see figure 60).

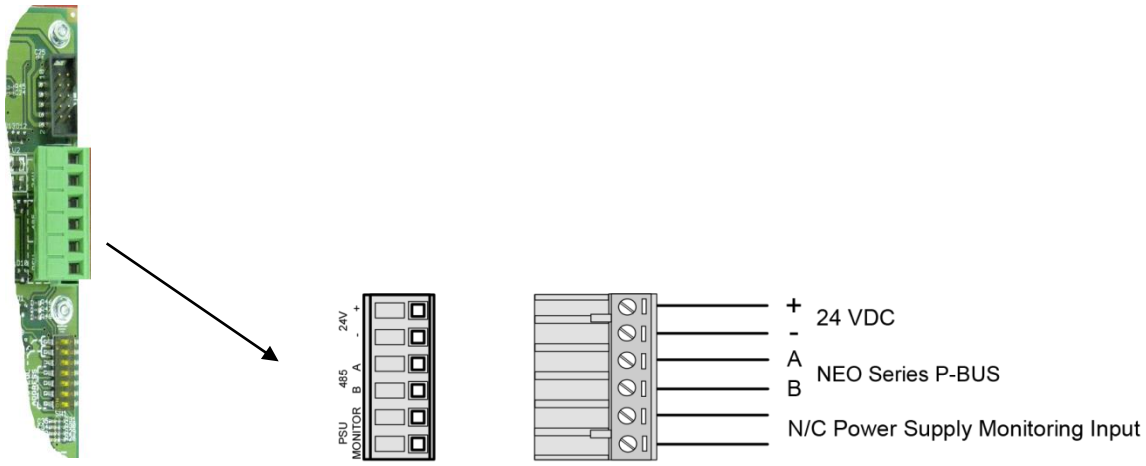


Figure 59 – Switch LED Module Wiring

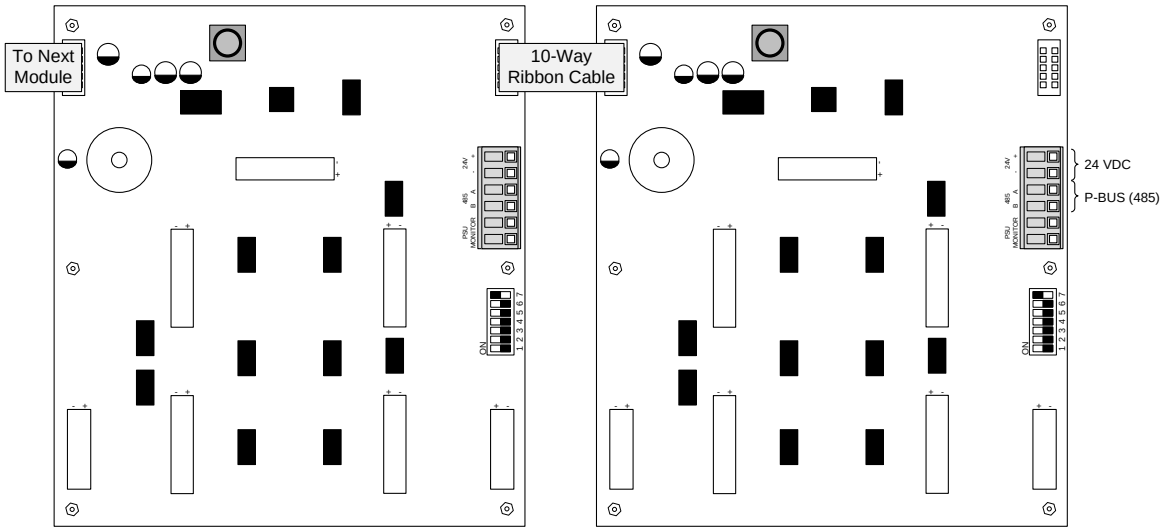


Figure 60 – Switch LED Module Daisy Chain Wiring

4.16.4 Replacing the Switch LED Module

Remove AC and DC power. Unplug the terminal block and/or 10-way IDC ribbon cables attached to the Switch LED Module. Remove the nuts and washers holding the upper and lower washer strips (3-wide washer strip) to the inner door and remove the washer strips (see figure 57). Remove the Switch LED Module and replace with the new Switch LED Module between the aperture screws. Replace the removed washer strips and secure with the removed nuts and washers. Replace the unplugged terminal block and/or 10-way IDC ribbon cables. Reconnect removed AC and DC power.

4.17 NX-CTY Module

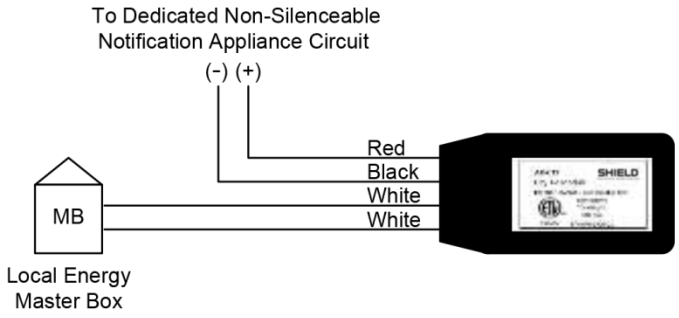
The NX-CTY is a module that provides the connection of an NEO fire alarm control panel to a Local Energy Masterbox.

4.17.1 Adding and Replacing the NX-CTY Module

The NX-CTY module connects to any dedicated notification appliance circuit (NX-FACP, NX-EM-LPD, NX-EM-NAC circuit or SLC addressable NAC module).

Note: The NX-CTY module and an addressable S-A4046 NAC module can be installed together in a standard electrical box.

Wire the Red (+) and Black (-) wire leads of the NX-CTY module to a dedicated Class B notification appliance circuit. Wire the two (2) White wire leads to the trip coil of the Local Energy Master Box.



If replacing an NX-CTY module, simply disconnect the field wiring from the NX-CTY wire leads and reconnect the field wiring to the new NX-CTY module wire leads.

Note: The NAC circuit end-of-line (EOL) is not utilized when using the NX-CTY module, retain the unused EOL for possible future troubleshooting.

4.18 NX-EM-PSU Expansion Power Supply

The NX-EM-PSU is an expansion power supply for an NX-FACP-4 base card. The NX-EM-PSU provides an additional 4 Amps of power for NAC-3 and NAC-4 of an NX-EM-LPD or NX-EM-NAC module.

Note: The NX-FACP one loop base card cannot support the NX-EM-PSU expansion power supply.

4.18.1 Adding an NX-EM-PSU Expansion Power Supply

To install the NX-EM-PSU expansion power supply charger, place the module over the four (4) standoffs located on the right side of the back box below the NX-FACP base card and secure with the four (4) screws provided with the NX-EM-PSU module (see figure 61). It is critical that these screws be tightly secured as they are required for proper earth ground connection.

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

Note: If mounting the NX-EM-PSU within an NX-FACC-1 command center, relocate the NX-EM-PSU6 power supply charge below the NX-EM-PSU expansion power supply.

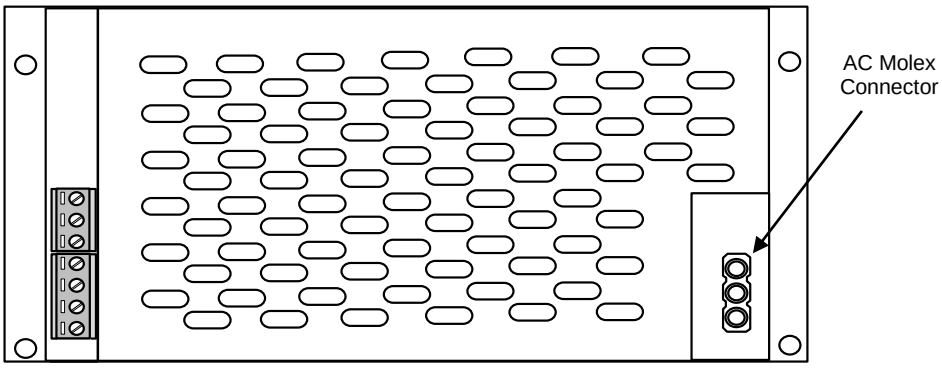


Figure 61 – NX-EM-PSU Expansion Power Supply Installation

4.18.2 NX-EM-PSU Wiring

4.18.2.1 AC Wiring

Connect one end of the double-ended Molex connector, provided with the NX-EM-PSU, into the NX-ACS-ACB board and connect the other end of the double-ended Molex connector into the NX-EM-PSU (see figure 61). Use the tie-wraps supplied with the NX-EM-PSU to secure the AC cable to the back box of the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center.

4.18.2.2 NX-FACP Interface Wiring

Note: The NX-FACP one loop base card cannot support the NX-EM-PSU expansion power supply.

A pre-wired cable harness (w/connected 4-pin terminal block) is supplied with the NX-EM-PSU expansion power supply for interfacing to the NX-FACP base card. This cable harness provides the 24 VDC power output and the trouble contact of the NX-EM-PSU to be connected to the NX-FACP base card PSU fault and PSU power inputs (see figure 62).

Remove the 4-pin terminal block located on the NX-FACP base card and install the pre-wired terminal block with wire leads, provided with the NX-EM-PSU, in its location (see figure 62). Wire the NX-FACP ANC PSU Fault B and A terminal wire leads to the NX-EM-PSU trouble relay contact terminals C and NO. Wire the NX-FACP PSU 0V and V+ terminal wire leads to the PSU power output terminals – and + (V0 to -, V+ to +).

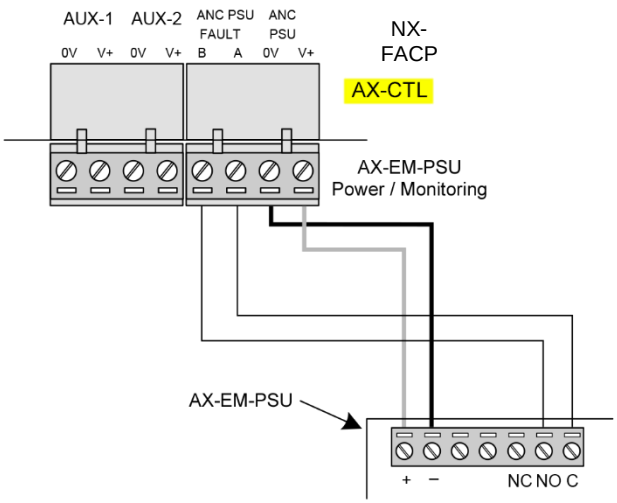
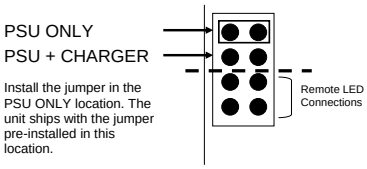


Figure 62 – NX-EM-PSU Expansion Power Supply Wiring

Note: The NX-EM-PSU expansion power supply incorporates a jumper that must be in the "PSU ONLY" position (as shipped). If this "PSU Only" jumper is removed or placed in the "PSU + Charger" position, the NX-EM-PSU trouble contacts will transfer indicating a trouble condition to the connected NX-FACP base card.



4.18.3 Replacing an NX-EM-PSU Expansion Power Supply

If replacing the NX-EM-PSU expansion power supply, remove power (AC and DC) from the system. Remove the AC Molex connector, 24 VDC power output wiring and relay trouble contact wiring from the NX-EM-PSU. Remove the four (4) screws securing the NX-EM-PSU to the back box and remove the NX-EM-PSU (see figure 61). Position the new NX-EM-PSU module onto the back box standoffs and secure with the four (4) removed screws. Replace the removed AC Molex connector, 24 VDC power output wiring and relay trouble contact wiring. Reconnect AC and DC power to the system.

4.19 NX-EM-RL8 Eight Relay Output Module

The NX-EM-RL8 eight relay output module is an internal relay module that connects directly to the NX-FACP base card via a supplied flat ribbon cable (the cable is polarized to ensure correct connection).

Note: An NX-EM-RL8 module cannot be added to an NX-FACC-1 command center as the NX-AMP-80 amplifier is installed in its installation location.

4.19.1 NX-EM-RL8 Installation

Mount the NX-EM-RL8 eight relay output module to the standoffs located below the NX-FACP base card on the left side of the NX-CC01-BB-BB and NX-CC02-BB-BB command center back box, using the four (4) screws supplied with the NX-EM-RL8 module (see figure 61).

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

Connect the NX-EM-RL8 to the NX-FACP base card with the supplied polarized flat ribbon cable (see figure 63).

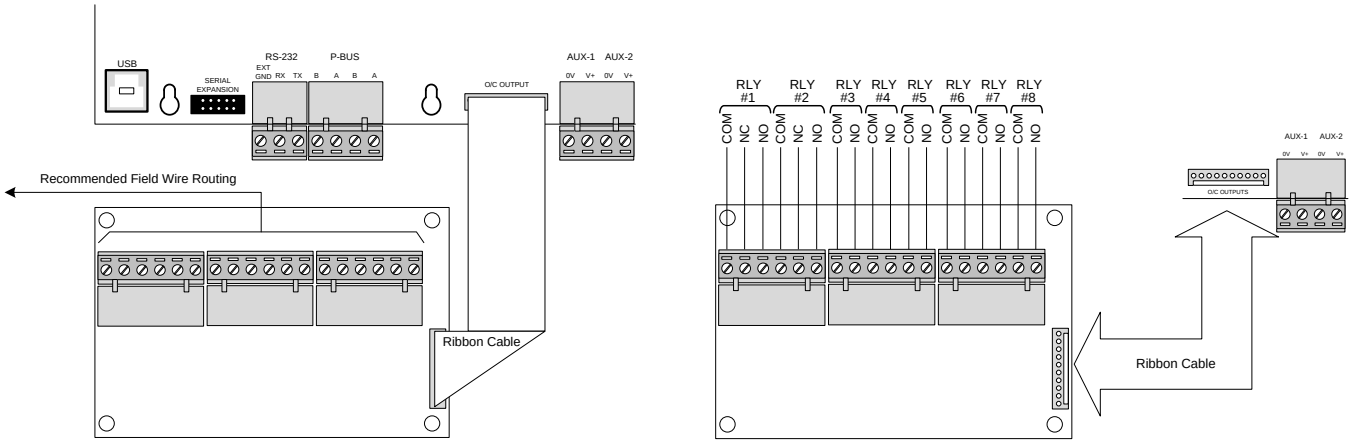


Figure 63 – NX-EM-RL8 Installation and Wiring

4.19.2 NX-EM-RL8 Output Wiring

Relays one and two (RLY #1 and RLY #2) of the NX-EM-RL8 are Form “C” (common, normally open, normally closed) relay contacts. Relays three through eight (RLY #3 thru RLY #8) are Form “A” (normally open) contacts that can be programmed inverted to create a Form “B” (normally closed) relay contact (see figure 63).

All eight relays of the NX-EM-RL8 are field programmable (default setting is to activate on common alarm).

Relay Rating: 30V DC/AC @ 1.0A, PF=1 (resistive)

POWER LIMITED – Connect to power limited circuits only.

Wire range – 22-12 AWG

4.19.3 Relacing an NX-EM-RL8

If replacing an NX-EM-RL8 eight relay output module, remove AC and DC power from the system. Remove the three (3) pluggable terminal blocks and the flat ribbon cable originating from the O/C Output of the NX-FACP base card. Remove the four (4) screws holding the module to the back box. Position the new NX-EM-RL8 module onto the back box standoffs and secure with the four (4) removed screws. Reconnect the three (3) removed pluggable terminal blocks and the flat ribbon cable originating from the O/C Output of the NX-FACP base card (see figure 63). Reconnect removed AC and DC power.

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

4.20 NX-EM-RL4 Four Point Relay Output Module

The NX-EM-RL4 four point relay output module is an optional PBUS (RS485) module for use the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. The NX-EM-RL4 provides four (4) fully field programmable Form “C” relay contacts for project specific control functions. The NX-EM-RL4 is listed to switch DC or AC voltage and up to sixteen (16) NX-EM-RL4 modules can be connected to a single NX-FACP base card providing a maximum of 64 relay outputs.

Note: An NX-EM-RL4 four point relay output module cannot be added to an NX-FACC-1 command center enclosure as the NX-AMP-80 amplifier is installed in its installation location. However, as the NX-EM-RL4 four point relay output module is a PBUS (RS485) module, it can be mounted in various other NEO enclosures, refer to 682-026 NX-EM-RL4 Installation Instructions.

4.20.1 NX-EM-RL4 Installation

Mount the NX-EM-RL4 four point relay output module to the standoffs located below the NX-FACP base card on the left side of the NX-CC01-BB-BB and NX-CC02-BB-BB command center back box using the four (4) screws supplied with the NX-EM-RL4 module (see figure 64).

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

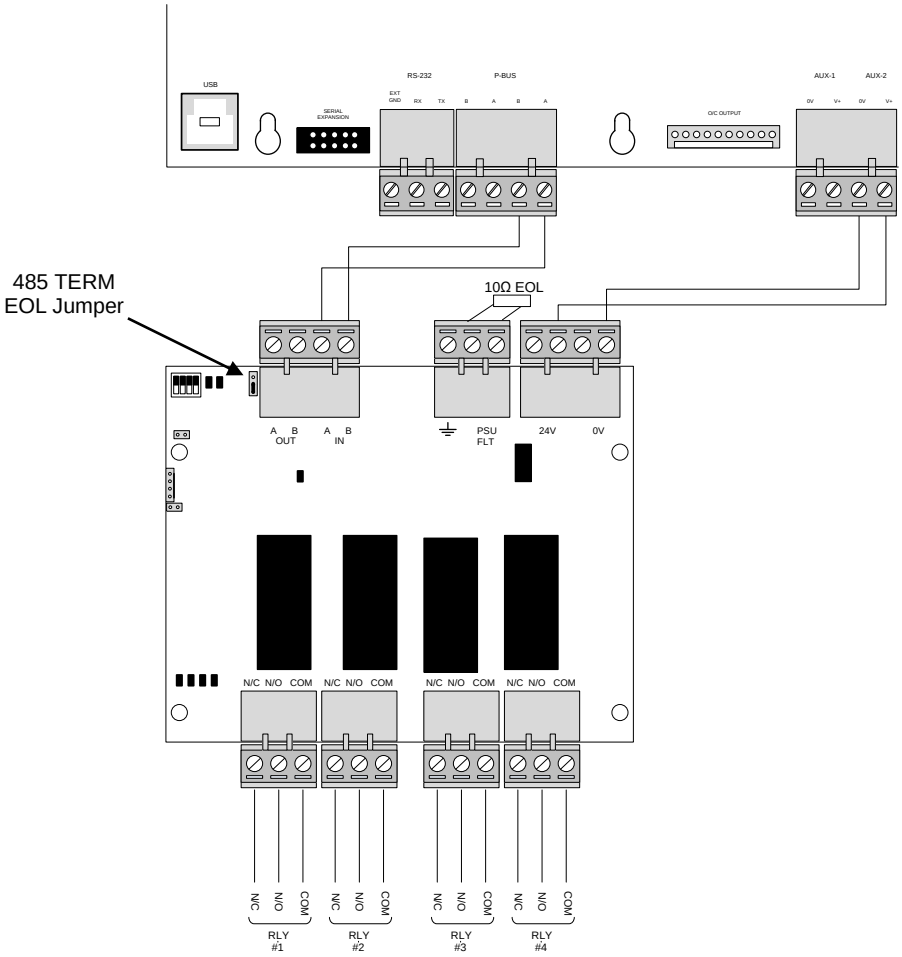
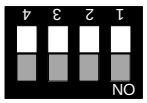


Figure 64 – NX-EM-RL4 Installation and Wiring

4.20.2 NX-EM-RL4 Addressing

As previously indicated, each NX-EM-RL4 four point relay output module must be connected to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card P-BUS (RS485) and must be configured with a unique address (see figure 65). The address setting corresponds to PBUS programming criteria utilized within the SHIELD PC-NeT field configuration program.

As previously stated, up to sixteen (16) NX-EM-RL4 modules can be connected to a single NX-FACP base card peripheral bus (PBUS).



Address	1	2	3	4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Figure 65 – NX-EM-RL4 Addressing

4.20.3 NX-EM-RL4 Wiring

The NX-EM-RL4 four point relay output module requires connection to the NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card P-BUS (RS485). In addition, the NX-EM-RL4 module requires 24VDC filtered and regulated power.

4.20.3.1 24VDC Wiring

24 VDC power for the NX-EM-RL4 four point relay output module can come from any fire alarm listed 24 VDC filtered and regulated power supply (NX-FACP AUX [non resettable] power, NX-EM-PSU6, NX-PSN or other fire alarm listed power supply). Wire 24 VDC filter regulated power to terminals 24V and 0V of the NX-EM-RL4 module (see figure 64).

Refer to NEO Wiring Guide Section 10.

Note: The NX-EM-RL4 module is capable of monitoring a remote listed 24 VDC filtered regulated power supply for trouble conditions. Wire PSU FLT and ground terminals of the NX-EM-RL4 module to the trouble N/C contacts (fail-safe [open unless trouble]) of the listed power supply, terminate connections with the supplied 10Ω end-of-line resistor. If not monitoring a remote listed power supply, place the supplied 10Ω end-of-line resistor across terminals PSU FLT and ground of the NX-EM-RL4 module (see figure 64).

4.20.3.2 PBUS (RS485) Wiring

Connect the PBUS (RS485) terminals A and B of the NX-FACP base card to input terminals A and B of the NX-EM-RL4 four point relay output module (see figure 64). If this is the last module connected to the NX-FACP PBUS (RS485),

set the “485 TERM” (end-of-line filter resistor) jumper, located adjacent to the PBUS (485) terminals, to the “ON” position (see figure 64).

Refer to NEO Wiring Guide Section 10.

4.20.3.3 Output Wiring

Four Form “C” relay contacts, relay outputs are field programmable (default setting is set to activate on common alarm).

30V DC/120 AC @ 5.0A, PF=1 (resistive)

NON-POWER LIMITED

Wire range – 22-12 AWG

4.20.4 Replacing an NX-EM-RL4

If replacing remove AC and DC power from the system. Remove the wiring terminal blocks and remove the four (4) screws holding the module to the back box. Position the new module onto the back box standoffs and secure with the four (4) removed screws. Reconnect the removed pluggable terminal blocks and reconnected AC and DC power.

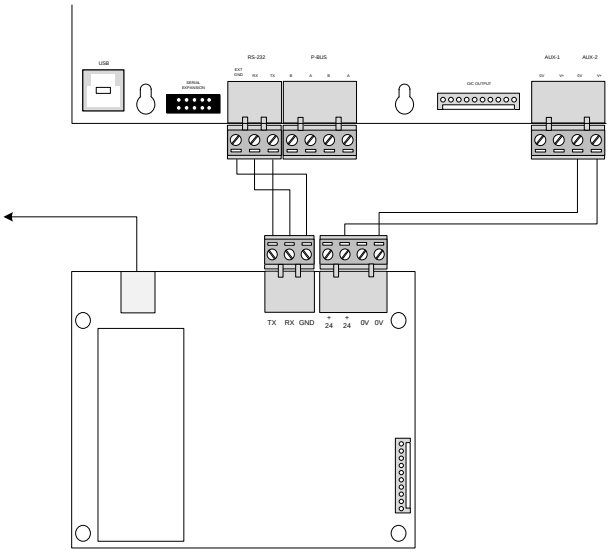
Failure to tighten the screws will defeat the protection circuitry designed to protect the module from damage due to lightning and static electricity.

4.21 NX-EM-MDM 24 VDC Modem Module

The NX-EM-MDM modem module provides remote telephone dial-in access to an NX-FACC-1 command center or NX-CC01-BB/NX-CC02-BB modular command center NX-FACP base card. This access allows qualified/trained SHIELD’ technicians’ remote access, through the SHIELD NEO terminal dial-up program, to monitor, maintain and perform service of a single NEO panel.

Note: An NX-EM-MDM 24 VDC modem module cannot be added to an NX-FACC-1 command center enclosure as the NX-AMP-80 amplifier is installed in its installation location. However, the NX-EM-MDM can be mounted adjacent to the NX-FACC-1 command center enclosure in an NEO enclosure, refer to NX682-024 NX-EM-MDM Modem Card Installation Instructions.

If adding an NX-EM-MDM modem module, mount the NX-EM-MDM module to the standoffs in the position shown to the right and secure using the four (4) supplied screws.



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

Note: If a D9068P digital dialer is utilized, an NX-EM-MDM modem module cannot be used as the RS-232 port is dedicated to D9068P communications via the SHIELD NX-SEB serial interface.

Connect the NX-EM-MDM to 24 VDC AUX DC out of the NX-FACP base card or to a fire alarm listed power supply. Connect the NX-EM-MDM TX, RX and GND to the NX-FACP base card RS232 terminals, TX of RS232 to RX of the NX-EM-MDM, RX of RS232 to TX of NX-EM-MDM and GND of RS232 to GND of the NX-EM-MDM.

If replacing an NX-EM-MDM module remove AC and DC power from the system. Remove the wiring terminal blocks and remove the four (4) screws holding the module to the back box. Position the new module onto the back box standoffs and secure with the four (4) removed screws. Replaced removed pluggable terminal blocks and reconnect removed AC and DC power.

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

4.22 NX-EM-CZM Conventional Zone Module

The NX-EM-CZM is an SHIELD conventional zone module that can be monitored and controlled by an NEO Integrated Audio Intelligent Fire Alarm Control Panel (see figure 66). The NX-EM-CZM, Conventional Zone Module, provides monitoring for up to eight (8) Class B conventional zones, with programmable end-of-line, or four (4) Class A conventional zones. In addition, each NX-EM-CZM module has three (3) field programmable Form C relay contacts defaulted to activate on common alarm. Up to sixteen (16) NX-EM-CZM modules can be supported by a single NEO Integrated Audio Intelligent Fire Alarm Control Panel. By supporting sixteen (16) NX-EM-CZM modules, an NEO Integrated Audio Intelligent Fire Alarm Control Panel can accommodate up to 128 Class B (64 Class A) conventional zones and 48 (Form C) field programmable relay contact outputs.

The NX-EM-CZM module mounts within an NX-FA-009 (see figure 67).

Refer to NX-EM-CZM Installation Manual for detailed information regarding installation.

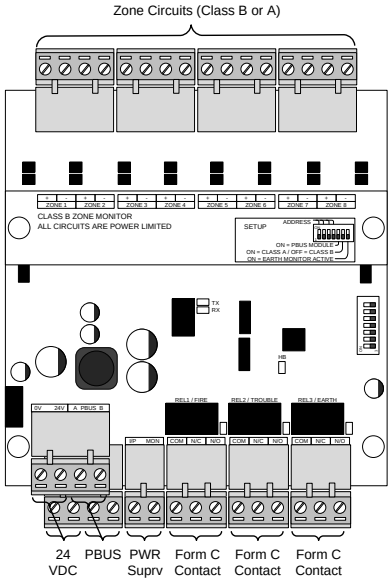


Figure 66 - NX-EM-CZM Module

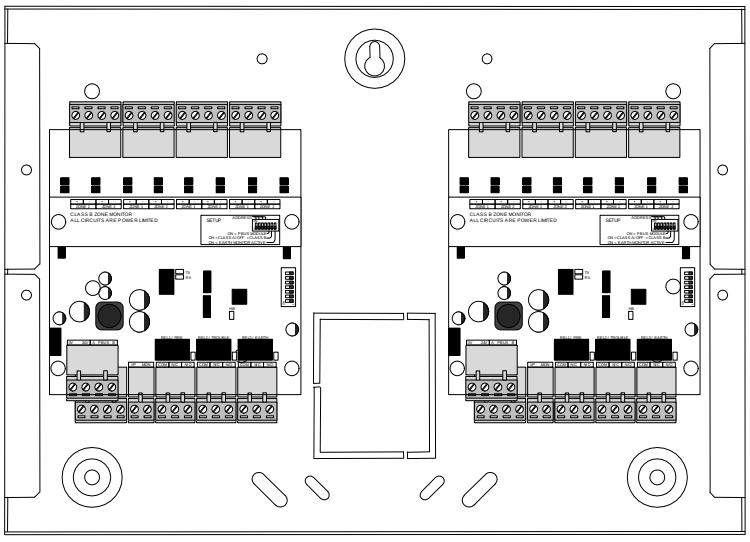


Figure 67 – NX-EM-CZM NX-FA-009 Enclosure Mounting

Note: Two (2) NX-EM-CZM modules can be mounted in an NX-FA-009 enclosure.

4.23 NX-CTY Module

The NX-CTY is a module providing connection of the NEO Integrated Audio Intelligent Fire Alarm Control Panel to a Local Energy Master box.

5 Recommended Cable Routing

Power limited and non-power limited circuit wiring must remain separate in the cabinet. 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 cabinet through different knockouts and/or conduits (see figure 68 and 69). Refer to NEO Wiring Guide Section 10.

Below is the recommended cable routing for the NX-FACC-1 command center (figure 68) and NX-CC01-BB/NX-CC02-BB modular command center (figure 69) to meet the above mentioned power limited wiring requirements:

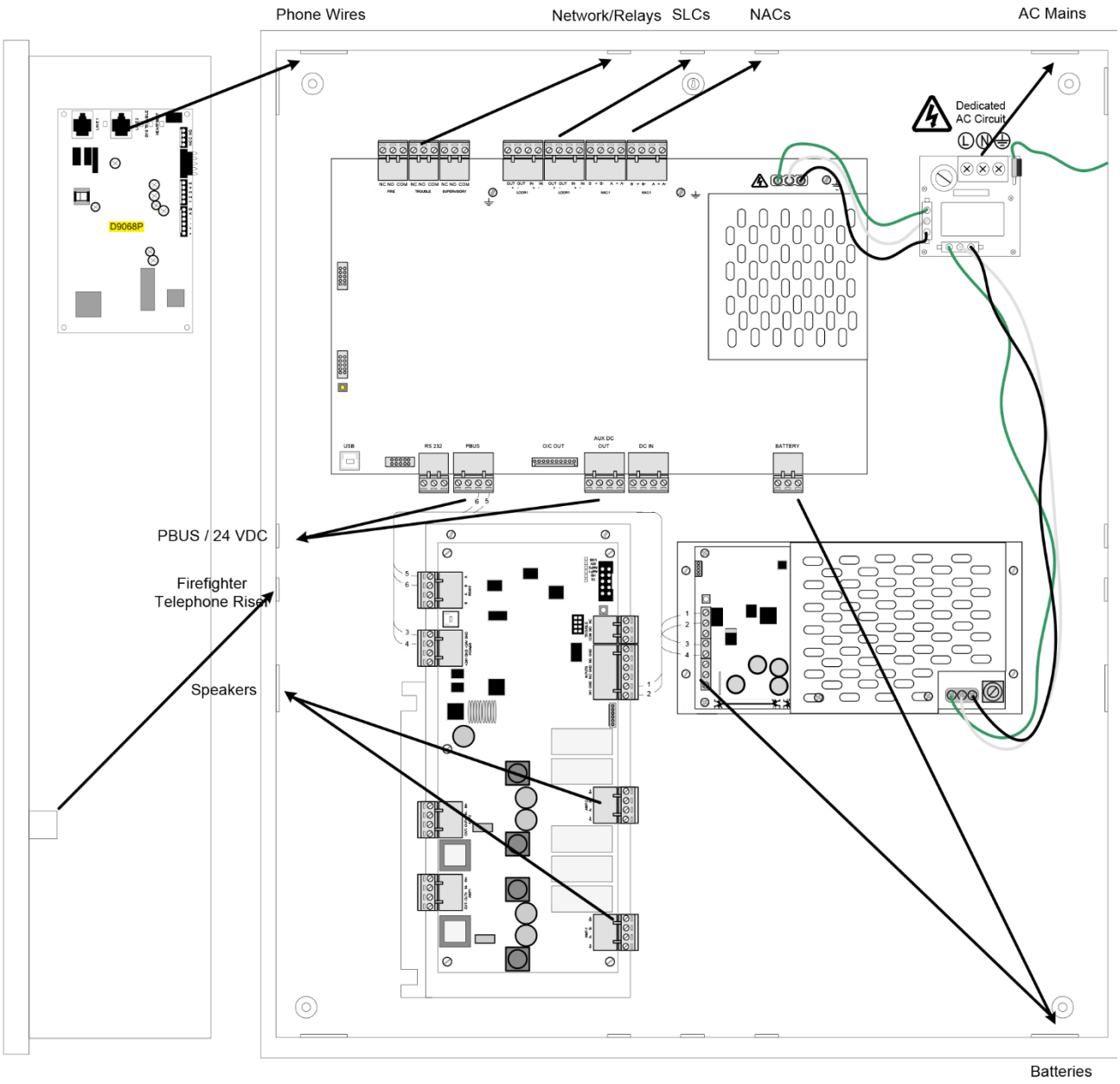


Figure 68 - NX-CC[x]-16 Command Center and NX-CC01 Modular Command Center

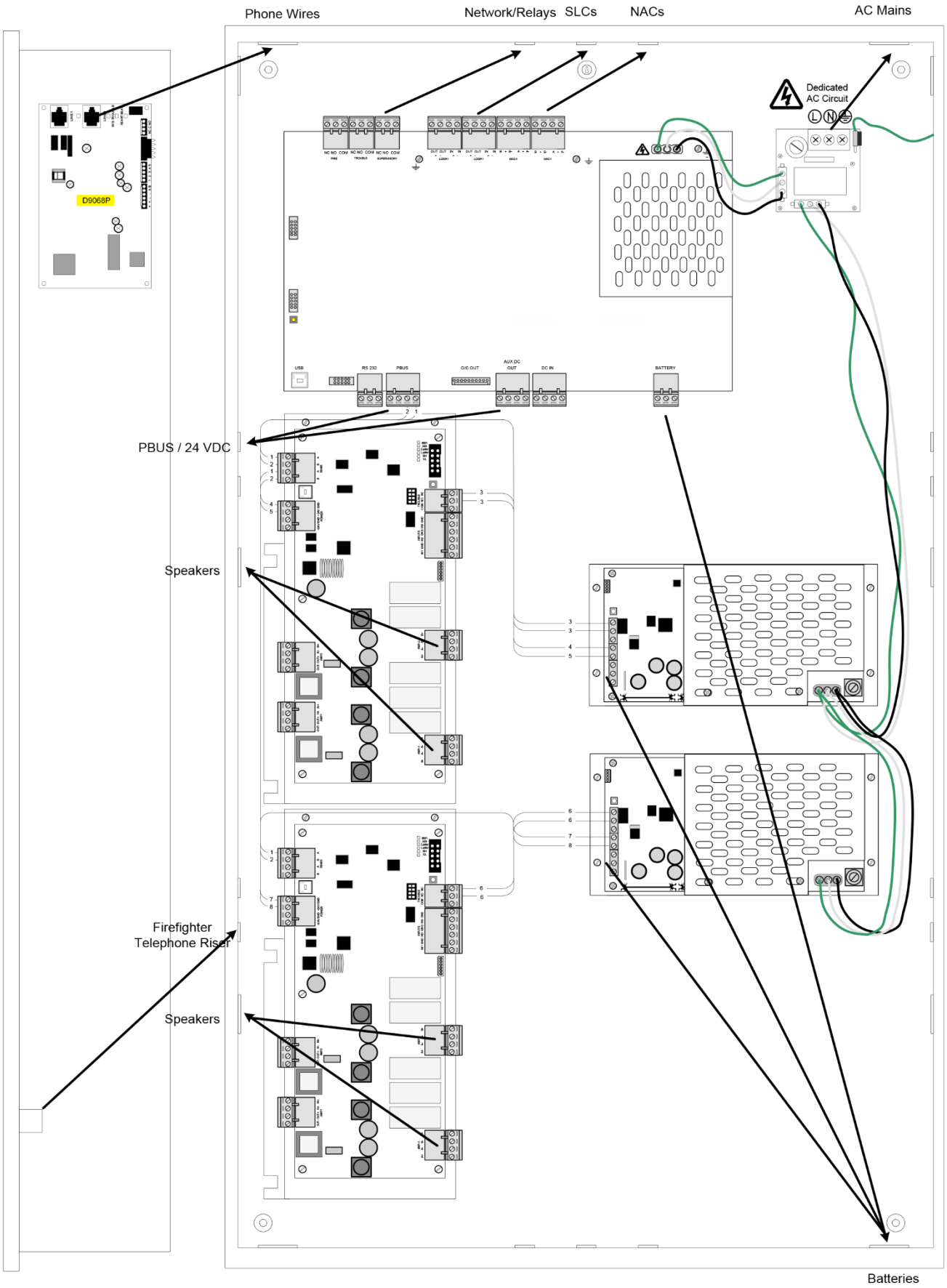


Figure 69 - NX-CC02-BB Modular Command Center Wire Routing

6 Loading Calculations

6.1 Panel Loading

The NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center can require two or more sets of batteries; one set for the fire alarm (NX-FACP base card) portion of the system and one (NX-FACC-1 or NX-CC01-BB command center) or two sets (NX-CC02-BB command center) for the audio amplifier power supply charger (NX-EM-PSU6) portion of the system.

The total NX-FACP base card load must not exceed the rating of the NX-FACP power supply. The NX-FACP power supply can deliver 5A total load maximum (battery charging is disabled during alarm).

When the optional NX-EM-PSU expansion power supply is used to supplement the NX-FACP base card power supply (NX-FACP-2 two loop and 4 loop only), an additional 4A of load current is available for NAC #3 and NAC #4 usage.

Note: The NX-FACP one loop base card cannot support the optional NX-EM-PSU expansion power supply module.

The NX-FACP base card loading includes the NX-FACP (195mA for a one or two SLC loop system and 260mA for a four SLC loop system), any power required for additional option modules and all external power required for the SLC, NAC and AUX circuits.

Note: The NX-ACS-DSP alphanumeric graphic display backlight is turned off during AC power failure (after 60 seconds). It turns on in alarm or if a panel button is pressed. Programmable continuous on LCD display during power failure is available however battery backup requirements will be increased.

6.2 NX-FACP One Loop Battery Calculation

	Quiescent Load			Alarm Load		
Equipment	**I (A)**	**x**	**Total**	**I (A)**	**x**	**Total**
NX-FACP (One Loop)	0.110	1.0	= 0.110	0.195	1.0	= 0.195
Sensor / SLC Current[6] SLC #1		1.1[7]	=		1.1	=
NX-FANET4 Network Card	0.020	1.0	=	0.020	1.0	=
NX-FANET7 Network Card	0.062	1.0	=	0.062	1.0	=
NX-FAN-C (D) – Style 4 or 7	0.078	1 to (x)[8]	=	0.140	1 to (x)	=
D9068P	0.109	1.0	=	0.125	1.0	=
NX-EM-012 Strip Printer	0.020	1.0	=	0.025	1.0	=
Switch LED Module	0.011	1 to 16[9, 10]	=	0.060[9,10]	1 to 16	=
NX-EM-RL4	0.020	1 to 16[11]	=	0.100[11]	1 to 16	=
NX-EM-MDM (100mA Active)	0.020	1.0	=	0.020	1.0	=
NX-CTY (no substantial current draw)	0.000	1.0	=	0.000	1.0	=
NX-FA-LAN ipGateway (Style 4)	0.070	1.0	=	0.070	1.0	=
NX-FA-LAN ipGateway (Style 7)	0.110	1.0	=	0.110	1.0	=
AUX #1 Supply Output[12]		1.0	=		1.0	=
AUX #1 Supply Output[12]		1.0	=		1.0	=
NAC Output 1[13]					1.0	=
NAC Output 2[13]					1.0	=
Total	**ΣQuiescent Load**		=	**ΣAlarm Load (AL)**		=
	x 24 hr or 60 hr		Ah	**x 0.0833[14] hr**		Ah
	Total Quiescent Current		Ah	**Total Alarm Current**		Ah
	Total Load (Quiescent + Alarm)					Ah
	Total Load x 1.2 (battery de-rating factor)					**Ah**

[6] 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 PC-NeT field configuration programming tool).
[7] The calculated loop loading must be multiplied by a factor of 1.1 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 back-up.
[8] The NX-FAN-D is an NEO networked remote annunciator, number of annunciators is based on network nodes available.
[9] 16 Switch LED Modules can be installed on an NX-FACP system.
[10] Current draws shown for Switch LED Module are for all LEDs active, typical draw is 11mA all LEDs off, 50 mA all LEDs on.
[11] 16 NX-EM-RL4 modules can be installed on an NX-FACP system current draw shown is for all relays active in alarm.
[12] 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.
[13] Maximum 2.0A load per NAC.
[14] 5 minutes in alarm, change to .166 for 10 minutes in alarm.

6.3 NX-FACP Two Loop Battery Calculation

		Quiescent Load			Alarm Load		
Equipment		**I (A)**	**x**	**Total**	**I (A)**	**x**	**Total**
NX-FACP (Two Loop)		0.110	1.0	= 0.110	0.195	1.0	= 0.195
Sensor / SLC Current[15]	SLC #1		1.1[16]	=		1.1	=
	SLC #2		1.1[16]	=		1.1	=
NX-FANET4 Network Card		0.020	1.0	=	0.020	1.0	=
NX-FANET7 Network Card		0.062	1.0	=	0.062	1.0	=
NX-FAN-C (D) – Style 4 or 7		0.078	1 to (x)[17]	=	0.140	1 to (x)	=
D9068P		0.109	1.0	=	0.125	1.0	=
NX-EM-012 Strip Printer		0.020	1.0	=	0.025	1.0	=
Switch LED Module		0.011	1 to 16[18,19]	=	0.060[17,19]	1 to 16	=
NX-EM-RL4		0.020	1 to 16[20]	=	0.100[20]	1 to 16	=
NX-EM-MDM (100mA Active)		0.020	1.0	=	0.020	1.0	=
NX-CTY (no substantial current draw)		0.000	1.0	=	0.000	1.0	=
NX-FA-LAN ipGateway (Style 4)		0.070	1.0	=	0.070	1.0	=
NX-FA-LAN ipGateway (Style 7)		0.110	1.0	=	0.110	1.0	=
AUX #1 Supply Output[21]			1.0	=		1.0	=
AUX #2 Supply Output[21]			1.0	=		1.0	=
NAC Output 1[22]						1.0	=
NAC Output 2[22]						1.0	=
Total		**ΣQuiescent Load**		=	**ΣAlarm Load (AL)**		=
		x 24 hr or 60 hr		Ah	**x 0.0833[23] hr**		Ah
		Total Quiescent Current		Ah	**Total Alarm Current**		Ah
		Total Load (Quiescent + Alarm)					Ah
		Total Load x 1.2 (battery de-rating factor)					**Ah**

[15] 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 PC-NeT field configuration programming tool).
[16] The calculated loop loading must be multiplied by a factor of 1.1 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 back-up.
[17] The NX-FAN-D is an NEO networked remote annunciator, number of annunciators is based on network nodes available.
[18] 16 Switch LED Modules can be installed on an NX-FACP system.
[19] Current draws shown for Switch LED Module are for all LEDs active, typical draw is 11mA all LEDs off, 50 mA all LEDs on.
[20] 16 NX-EM-RL4 modules can be installed on an NX-FACP system current draw shown is for all relays active in alarm.
[21] 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.
[22] Maximum 2.0A load per NAC.
[23] 5 minutes in alarm, change to .166 for 10 minutes in alarm.

6.4 NX-FACP Four Loop Battery Calculation

		Quiescent Load			Alarm Load		
Equipment		**I (A)**	**x**	**Total**	**I (A)**	**x**	**Total**
NX-FACP (Four Loop)		0.175	1.0	= 0.175	0.260	1.0	= 0.260
Sensor / SLC Current[24]	SLC #1		1.1[25]	=		1.1	=
	SLC #2		1.1[25]	=		1.1	=
	SLC #3		1.1[25]	=		1.1	=
	SLC #4		1.1[25]	=		1.1	=
NX-FANET4 Network Card		0.020	1.0	=	0.020	1.0	=
NX-FANET7 Network Card		0.062	1.0	=	0.062	1.0	=
NX-FAN-C (D) – Style 4 or 7		0.078	1 to (x)[26]	=	0.140	1 to (x)	=
D9068P		0.109	1.0	=	0.125	1.0	=
NX-EM-012 Strip Printer		0.020	1.0	=	0.025	1.0	=
Switch LED Module		0.011	1 to 16[27,28]	=	0.060[27,28]	1 to 16	=
NX-EM-RL4		0.020	1 to 16[29]	=	0.100[29]	1 to 16	=
NX-EM-MDM (100mA Active)		0.020	1.0	=	0.020	1.0	=
NX-CTY (no substantial current draw)		0.000	1.0	=	0.000	1.0	=
NX-FA-LAN ipGateway (Style 4)		0.070	1.0	=	0.070	1.0	=
NX-FA-LAN ipGateway (Style 7)		0.110	1.0	=	0.110	1.0	=
AUX #1 Supply Output[30]			1.0	=		1.0	=
AUX #2 Supply Output[30]			1.0	=		1.0	=
NAC Output 1[31]						1.0	=
NAC Output 2[31]						1.0	=
NAC Output 3[31]						1.0	=
NAC Output 4[31]						1.0	=
Total		**ΣQuiescent Load**		=	**ΣAlarm Load**		=
		x 24 hr or 60 hr		Ah	**x 0.0833[32] hr**		
		Total Quiescent Current		Ah	**Total Alarm Current**		Ah
		Total Load (Quiescent + Alarm)					Ah
		Total Load x 1.20 (battery de-rating factor)					**Ah**

[24] 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 a fire alarm condition. (This number can be changed via the PC-NeT field configuration programming tool).
[25] The calculated loop loading must be multiplied by a factor of 1.1 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 back-up.
[26] The NX-FAN-D is an NEO networked remote annunciator, number of annunciators is based on network nodes available.
[27] 16 Switch LED Modules can be installed on an NX-FACP system.
[28] Current draws shown for Switch LED Module are for all LEDs active, typical draw is 11mA all LEDs off, 50 mA all LEDs on.
[29] 16 NX-EM-RL4 modules can be installed on an NX-FACP system current draw shown is for all relays active in alarm.
[30] 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.
[31] Maximum 2.0A load per NAC.
[32] 5 minutes in alarm, change to .166 for 10 minutes in alarm.

6.5 NX-AMP-80 and NX-TEL Battery Calculations

	Quiescent Load			Alarm Load		
Equipment	**I (A)**	**x**	**Total**	**I (A)**	**x**	**Total**
NX-AMP-80	0.035	1.0	= 0.035	0.220	1.0	= 0.220
NX-TEL	0.024	1.0	=	0.024	1.0	=
NX-TEL-RISE6	1.250	1.0	=	1.250	1.0	=
NX-JACK/NX-TEL-SUP/NX-CTEL	0.008	1.0	=	0.013	1.0	=
Amplifier 1[33]					1.0	=
Amplifier 2[33]					1.0	=
Total	**ΣQuiescent Load**		=	**ΣAlarm Load**		=
	x 24 hr or 60 hr		Ah	**x 0.0833[34] hr**		
	Total Quiescent Current		Ah	**Total Alarm Current**		Ah
	Total Load (Quiescent + Alarm)					Ah
	Total Load x 1.20 (battery de-rating factor)					**Ah**

Converting Watts to Amps:

Utilizing Ohm's Law (Amps = Watts / Volts), convert amplifier wattage to amperes.

i.e.: maximum load per amplifier 40 Watts

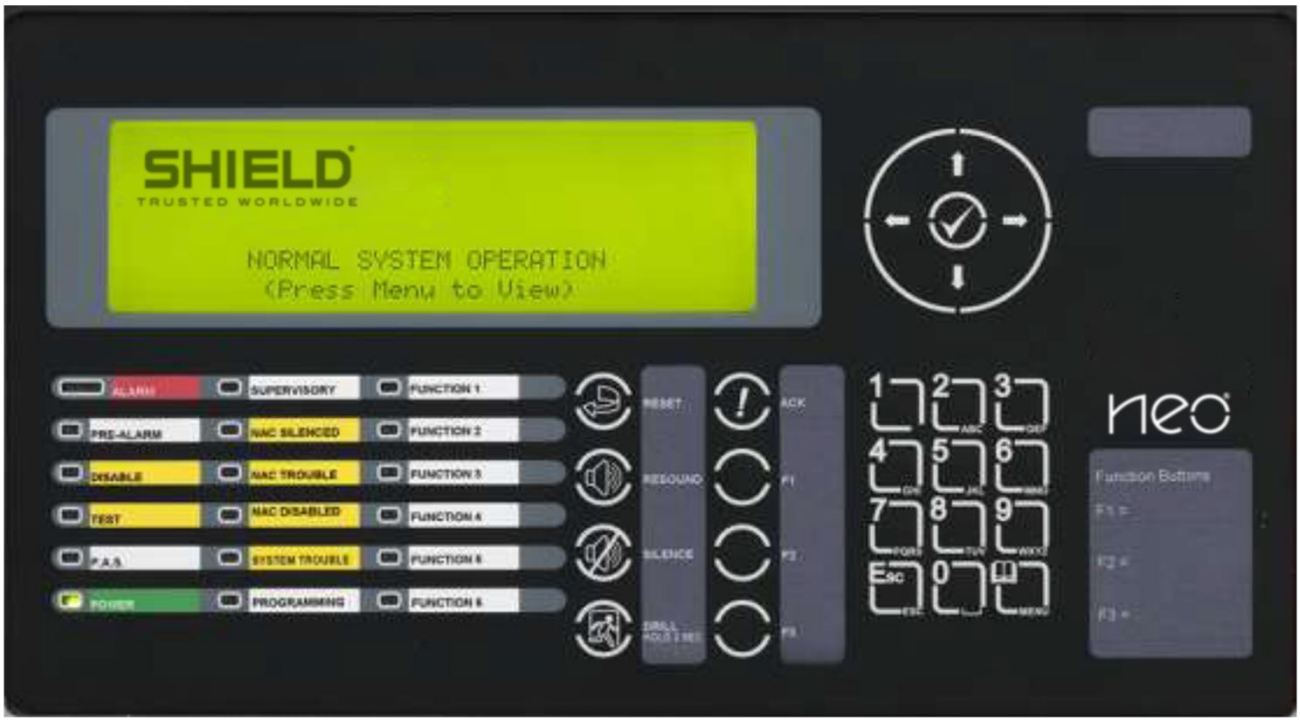
Amps = 40w / 24vdc

Amps = 1.66666666 (1.7)

[33] Add total speaker circuit load of each amplifier, 40 watts maximum per amplifier (I=Watts/Volts, 19V).
[34] 5 minutes in alarm, change to .166 for 10 minutes in alarm.

7 Operation

7.1 User Controls and Indications



7.1.1 Control Keys

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.

ACKNOWLEDGE
Press to acknowledge an alarm, supervisory and/or trouble condition. LED indications on the panel change from flashing to steady and zone/device display removes the word “New”.
Note: All current conditions are simultaneously acknowledged “Global Acknowledgement”.

RESOUND ALARMS
Press to reactivate any silenced notification appliances connected to system NAC circuits or any output module of an SLC circuit programmed as “Silenceable”.

SILENCE ALARMS
Press to silence active notification appliances connected to system NAC circuits or any output module of an SLC circuit 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.

FUNCTION KEYS F1, F2, F3
Programmable control buttons.

7.1.2 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 utilized to view detailed information regarding events.

7.1.3 Number Keys

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.

7.1.4 LED Indications

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 a POSITIVE ALARM SEQUENCE feature is utilized. Alarm outputs activated from P.A.S. configured devices will be delayed. The delay can be extended for a further period by pressing the ACK button. NFPA maximum delay time periods are Stage 1 time = 15 seconds, Stage 2 time = 180 seconds (programmable).
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, System trouble contact will also be activated. Turns off when the panel is returned to normal operation.
FUNCTION 1	Red	Configurable LED. Default is not used.
FUNCTION 2-5	Yellow	Configurable LEDs. Default is not used.

7.2 LCD Indications

The LCD provides detailed information on the operational status of the panel. The normal standby state is shown above.

Information is shown on the display in the following priority order:

- Fire Alarms[1]
- MNS (Mass Notification) [1]
- Pre-Alarms[1]
- Supervisory Events[2]
- Trouble Events[3]
- Other Events including Disable, Test and Warning Conditions[4]

NFPA 72

Priority order is in accordance with Clause 6.8.4.7
[1] Signals associated with life safety
[2] Signals associated with property protection
[3] Trouble signals associated with life safety and/or property protection
[4] All other signals

During an alarm condition, pre-alarms, warnings, troubles, and other non-alarm events are suppressed, with the exception of MNS (Mass Notification) and Supervisory, from the graphical LCD display. These events can be viewed at anytime by accessing the navigation keys and the display's menu/view functions.

7.2.1 Fire Alarm Condition

To minimize confusion and only provide pertinent information during emergency situations, the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command centers when in alarm only display alarm and if applicable mass notification and supervisory events. The display also provides 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 anytime by accessing the panel menu and selecting the view button.

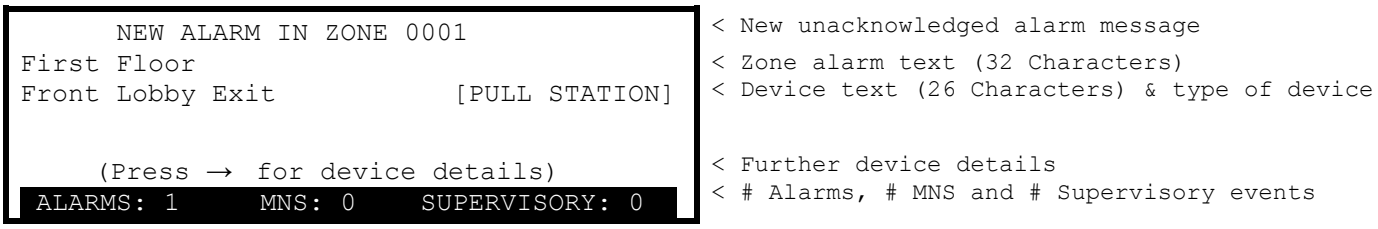
There are a number of different display messages that are displayed on the NX-ACS-DSP alphanumeric graphic display during an alarm, depending upon whether the event is acknowledged or unacknowledged and whether mass notification and/or supervisory events are present.

7.2.1.1 Unacknowledged and Acknowledged Alarms with and without MNS or Supervisory Events

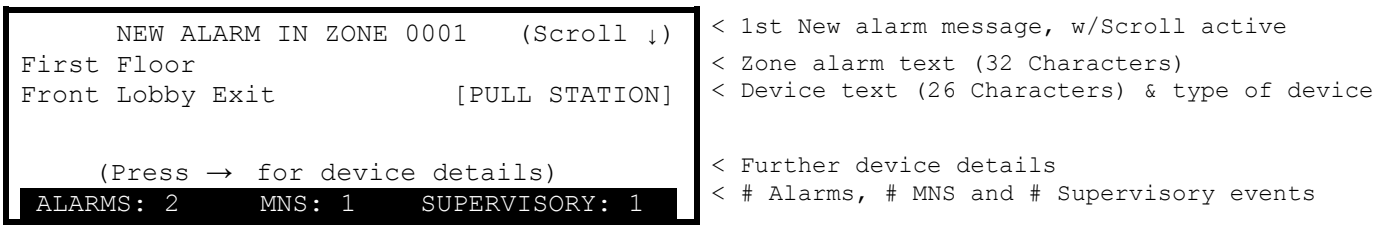
When the system registers an alarm event, the alarm LED will flash, the internal buzzer will sound (continuously), and the display will indicate "NEW ALARM IN ZONE xxxx" (unacknowledged event). In addition, the zone in alarm message (32 characters), the device in alarm message (26 characters) and the 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, mass notification 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, mass notification and supervisory events. If multiple alarm, mass notification 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:



Example of unacknowledged multiple alarms, MNS and supervisory events:



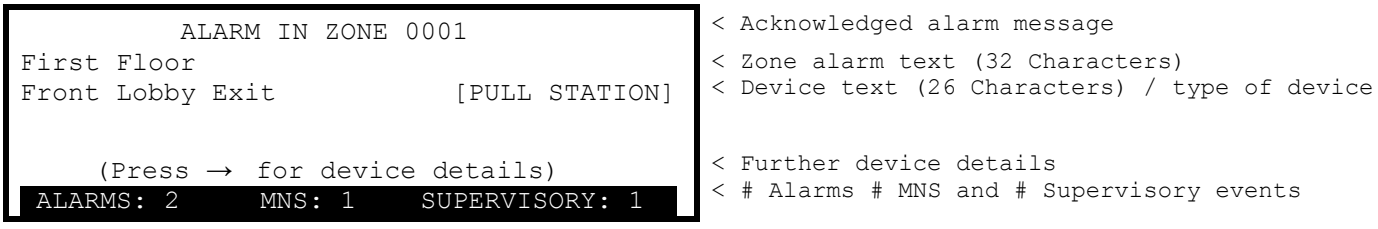
Pressing the "ACK" button will acknowledge the alarm condition(s). This changes the red Alarm LED to steady, the internal buzzer silences, and the display will show "ALARM IN ZONE xxxx" (acknowledged event) with zone/device messages for the specific device in alarm.

Note: The NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center acknowledges on a "Global" basis; all active events are acknowledged with the single activation of the acknowledge button.

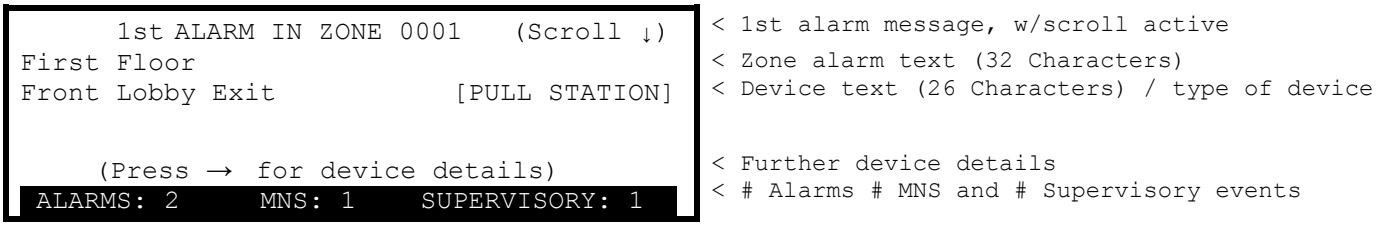
After acknowledgement the display will indicate the first alarm, and a tally of any additional alarms, mass notification and supervisory events. To view additional alarm, mass notification and supervisory events the user must scroll (Scroll ↓) through the display. Displayed events are based on system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

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

Example of acknowledged single alarm event:



Example of acknowledged multiple alarm, MNS and supervisory events:



If a new alarm, mass notification or supervisory event occurs after previously acknowledged alarm, mass notification and/or supervisory events, the alarm, if programmed MNS, or supervisory LED will flash, the internal buzzer will sound (continuously for alarm, or pulsed for mass notification and supervisory), and the alarm, mass notification 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 utilizing the scroll (Scroll ↓) button.

Note: If a supervisory event occurs without an alarm or mass notification event refer to Section 7.2.2 Non-Alarm Conditions.

7.2.1.2 Alarm Condition - Silence, Resound and Reset

Pressing the “SILENCE” button will silence the notification appliance circuits programmed as silenceable (default setting all NAC circuits, including NAC outputs located on SLC circuits).

Pressing the “RESOUND” button after the activation of the “SILENCE” button will reactivate the previously silenced notification appliance circuits.

Pressing the “RESET” button will clear the alarm condition or any active programmed latching mass notification supervisory or trouble condition thereby restoring the panel to normal operation.

7.2.2 Non-Alarm, Non-MNS Conditions

7.2.2.1 Unacknowledged and Acknowledged Non-Alarm, Non-MNS Events

When the system registers a non-alarm or non-MNS 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, Supervisory, Disables and Troubles), prior to the event being acknowledged.

NFPA 72

Priority order is in accordance with Clause 6.8.4.7
[1] Signals associated with life safety
[2] Signals associated with property protection
[3] Trouble signals associated with life safety and/or property protection
[4] All other signals

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) / type of device

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

Example of an unacknowledged warning event (system drill):

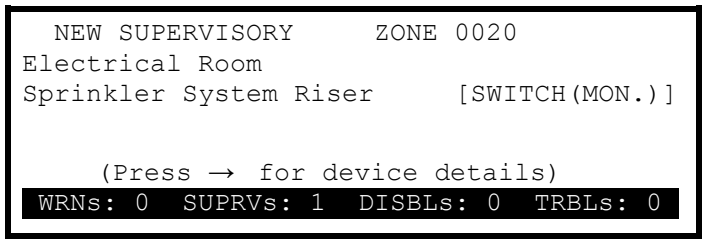
```
      NEW WARNING     ZONE 0701
Fire Alarm Control Panel
Drill Switch                [SWITCH      ]


     (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) / type of device

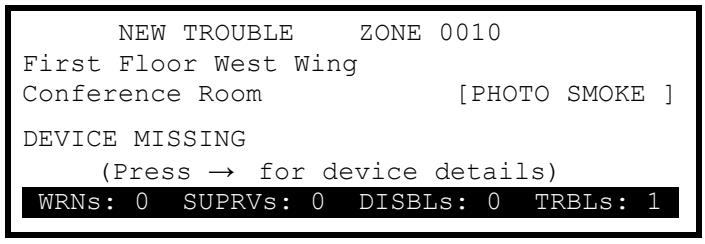
< Further device details
< # Warnings, Supervisory, Disables and Troubles

Example of an unacknowledged supervisory event, when no alarms or mass notification events are present (refer to Fire Alarm Condition, for displaying supervisory events with alarms or mass notification events present on the system):



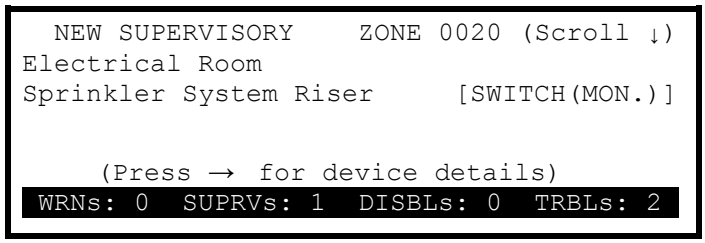
< New supervisory message (unacknowledged)
< Zone supervisory text (32 Characters)
< Device text (26 Characters) / type of device
< Further device details
< # Warnings, Supervisory, Disables and Troubles

Example of an unacknowledged trouble event:



< New trouble message (unacknowledged)
< Zone trouble text (32 Characters)
< Device text (26 Characters) / type of device
< Type of Trouble
< Further device details
< # Warnings, Supervisory, Disables and Troubles

Example of multiple unacknowledged events:



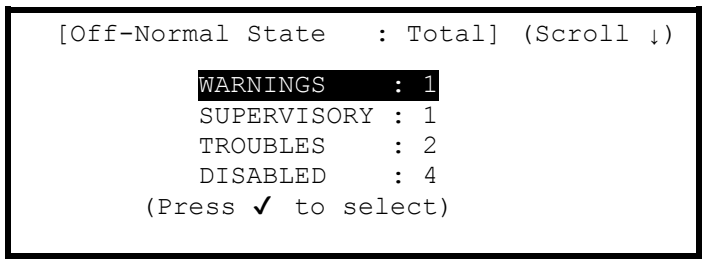
< New supervisory message, w/scroll active
< Zone supervisory text (32 Characters)
< Device text (26 Characters) / type of device
< Further device details
< # Warnings, Supervisory, Disables and Troubles

During unacknowledged, non-alarm and non-MNS 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 system.

Note: The NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center 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):

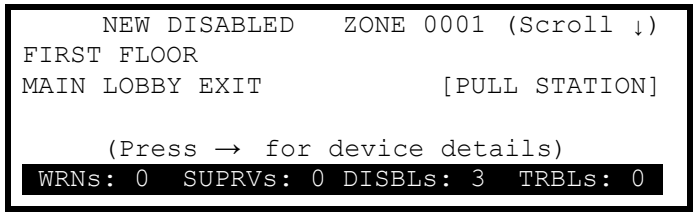


< Off-Normal line, w/scroll
(Scroll shown only with multiple events)
< Off-Normal type and event total
Only active off-normal events are displayed
(i.e.: Pre-Alarms not displayed)
< More info pertaining to highlighted event

7.2.2.2 Disabled Condition

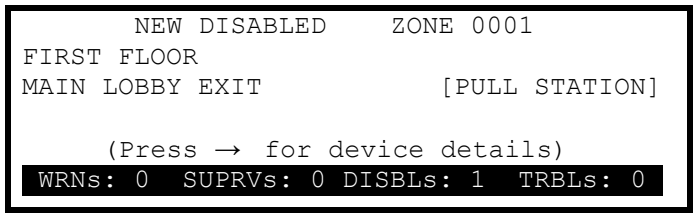
If any zones, input devices or output devices have been disabled, the DISABLE LED and if programmed via the PC-NeT the TROUBLE LED will illuminate. In addition, the NAC DISABLE LED will illuminate if one or more notification appliance circuits or NAC SLC devices have been disabled. The display will indicate “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 utilizing the navigation down arrow button.

Unacknowledged Zone Disablement with Multiple Devices:



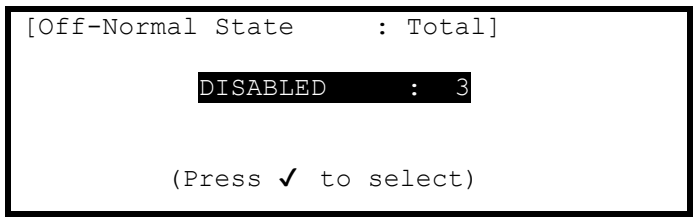
< New unacknowledged Disabled message
< Disabled zone text(32 Characters)
< Disabled device text (26 Characters) / type of device
< Further device details
< # Warnings, Supervisory, Disables and Troubles

Unacknowledged Device Disablement:



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

Acknowledged Disablements:



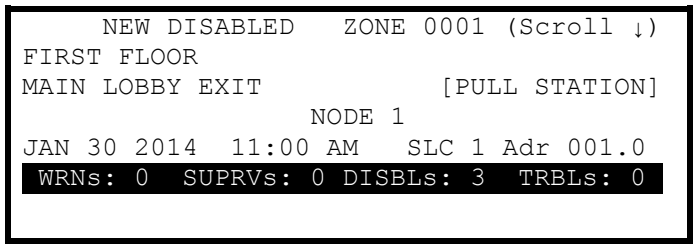
< Off-Normal line

< 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 system.

To obtain detailed information about the disabled device, press the right arrow (➔) button on the keypad navigation

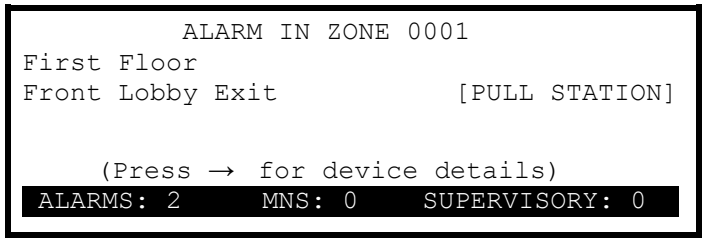


< New unacknowledged Disabled message
< Disabled zone text(32 Characters)
< Disabled device text (26 Characters) / type of device
< Node # of device location
< Disabled device details
< # Warnings, Supervisory, Disables and Troubles

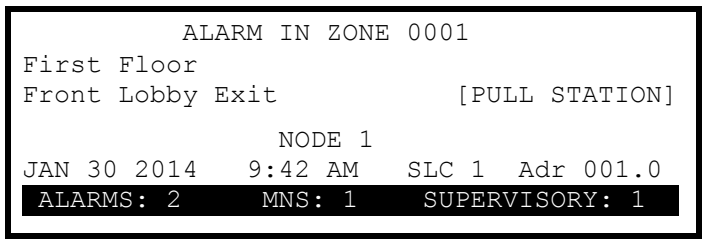
7.3 Obtaining Detailed Device Information During Events

When any event message display indicates (Press → for device details), pressing the right arrow (➔) 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:



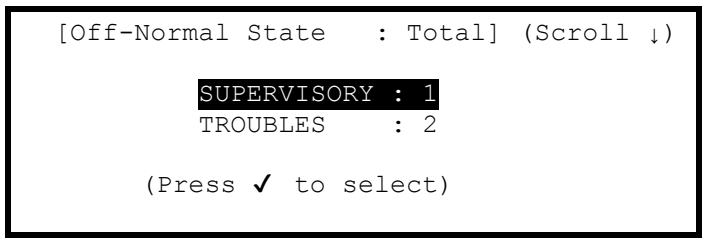
Example of a device details display:



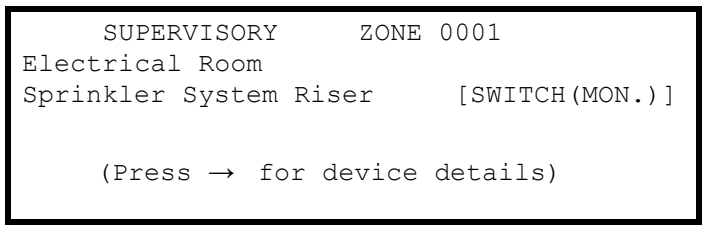
The above device details display indicates that Node 1, SLC loop 1, device address 001.0 alarmed on Jan. 30, 2014 at 9:42 AM. After approximately 15 seconds this display will revert back to the original alarm display.

When the "Off-Normal State: Total" display indicates (Press ✓ to select), pressing the check mark (✓) 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 check mark (✓) button, on the keypad navigation keys.

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

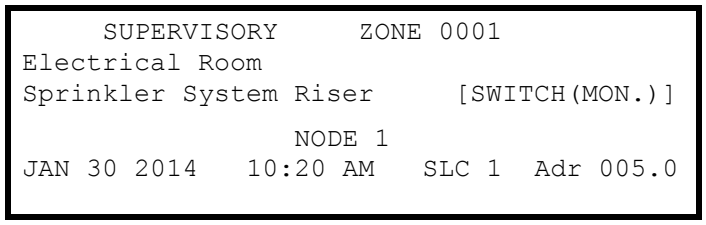


Example of detailed information pertaining to a specific off-normal event:



If the display indicates (Press → for device details), pressing the right arrow (➔) 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:

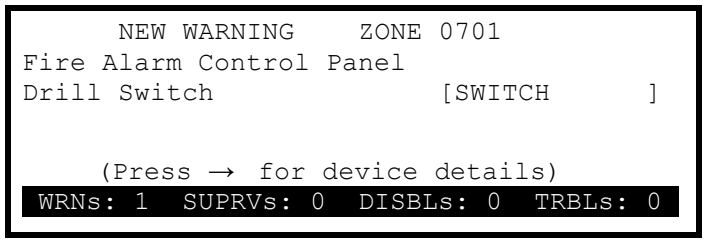


< Supervisory message
< Zone supervisory text (32 Characters)
< Device text (26 Characters) / type of device
< Node # of device location
< Supervisory device details

7.4 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) and the zone/device messages programmed by the installer for the drill button event (0701 is the zone allocated to the NX-FACP base card). 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) prior to the event being acknowledged. In most cases, no other events will be present on the system so the bottom highlighted display will only indicate one warning.

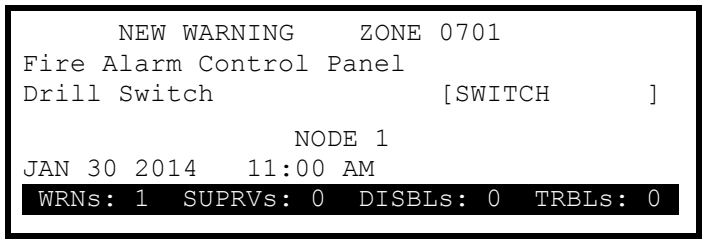
Example of unacknowledged fire drill (warning) event:



< New warning message (unacknowledged)
< Zone text (32 Characters)
< Device text (26 Characters) / type of device
< Further device details
< # Warnings, Supervisory, Disables and Troubles

By pressing the right arrow (➔) button on the keypad navigation keys, the user can view further detailed information about the drill activation.

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

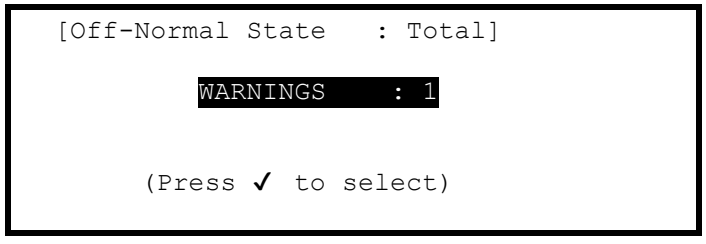


< New warning message (unacknowledged)
< Zone text (32 Characters)
< Device text (26 Characters) / type of device
< Node # of drill location
< drill details
< # Warnings, Supervisory, Disables and Troubles

Note: If drill function was activated from an addressable device at a remote location rather than from the drill button on the front of the fire alarm control panel, the SLC loop number and device address would be displayed in the drill details area.

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: Total". Off-normal state totals are listed in order of system priority; Pre-Alarms, Warnings, Supervisory, Troubles and Disabled.

Example of acknowledged fire drill (warning) event:



< Off-Normal line
< Off-Normal type and event total
Only active off-normal events are displayed
< More info pertaining to highlighted event

Pressing the check mark (✓) button, on the keypad navigation keys will allow the user to view further detailed information about the Warnings event.

Example of device detailed information pertaining to the Warning event:

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


     (Press →  for device details)
```

< Warning message
< Zone text (32 Characters)
< Device text (26 Characters) / type of device
< Further device details

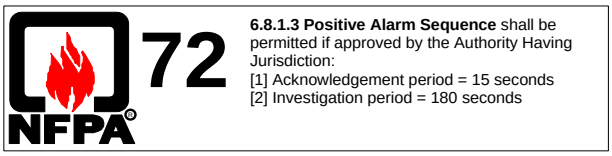
Example of further device details display:

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

                  NODE 1
JAN 30 2014   11:00 AM
```

< Warning message
< Zone text (32 Characters)
< Device text (26 Characters) / type of device
< Node # of drill location
< Event details

7.5 Positive Alarm Sequence



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.

Note: The Positive Alarm Sequence feature must be enabled using the User Menu options. It can also be disabled (bypassed) by using the User Menu options.

Positive Alarm Sequence (P.A.S) is a “False Alarm Management” programmable feature of all NEO fire control panels. When the NEO system 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 period (Acknowledgement Period) for P.A.S. alarm acknowledgement. The bottom of the display will be highlighted indicating a tally of all alarms, MNS and supervisory events presently active on the system.

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

```
      NEW ALARM IN ZONE 0001
First Floor
Conference Room 100        [PHOTO SMOKE ]


   OUTPUT DELAY  14 s     (ACK to extend)
 ALARMS: 2      MNS: 0     SUPERVISORY: 0
```

< New unacknowledged P.A.S alarm message
< Zone P.A.S. alarm text(32 Characters)
< Device text (26 Characters) / type of device
< Output delay Stage 1 - time to “ACK”
< # Alarms # MNS and # Supervisory events

If the alarm is not acknowledged before the output delay Stage 1 – time period expires; the system 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 period will acknowledge the P.A.S. alarm, reset the output delay to a Stage 2 - time period (Investigation Period), 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:

```
          ALARM IN ZONE 0001
First Floor
Conference Room 100        [PHOTO SMOKE ]


    OUTPUT DELAY  140s
 ALARMS: 2      MNS: 0     SUPERVISORY: 0
```

< Acknowledged P.A.S. alarm message

< Zone P.A.S. alarm text(32 Characters)
< Device text (26 Characters) / type of device

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

The cause of the alarm can now be investigated. If the alarm is a false alarm and there is no longer smoke in the detector chamber, pressing the “RESET” button on the panel will clear the alarm condition. This must be done before the investigation time period expires or the panel will enter a full alarm condition and will activate all notification appliance circuits, relays, and other outputs programmed by the installer.

Note: If an additional alarm occurs on the system during a P.A.S. alarm cycle, the P.A.S. output delay time periods will 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 anytime during the P.A.S. output delay time periods will terminate the P.A.S. process and activate all programmed outputs.

During an alarm (including P.A.S event), mass notification and/or supervisory condition all other events are suppressed from the display. Suppressed events during this situation can be interrogated through the display’s menu functions.

7.6 Alarm Verification

NFPA 72

6.8.5.4.1 Alarm Verification
[1] Applies to smoke detectors only. Configuration must be password protected.
[2] It must not delay the actuation of alarms more than 60 seconds.
[3] Alarms from other devices must actuate alarms without delay.

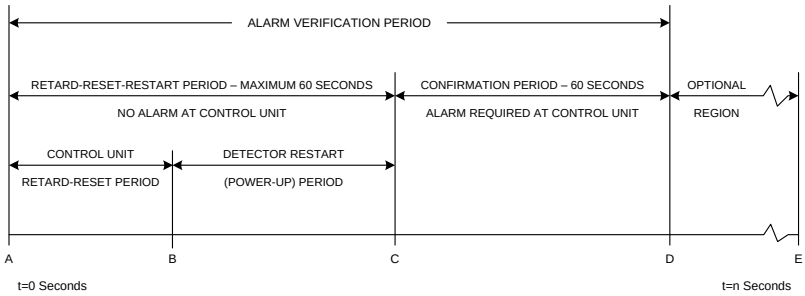
Alarm Verification provides a mechanism to delay an alarm from a smoke detector due to transitory events. It should not, however, be used as a substitute for proper detector location / application or regular system maintenance.

Alarm Verification is a “False Alarm Management” programmable feature of all NEO fire control panels. The alarm verification feature operates on a system or device basis (determined by programming) and is applicable to smoke detectors only. Manual pull stations are not verifiable.

If the smoke concentration level of a detector is at or above the alarm threshold at the end of the retard-reset-restart period the panel will enter a full alarm condition.

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

ALARM VERIFICATION TIMING DIAGRAM

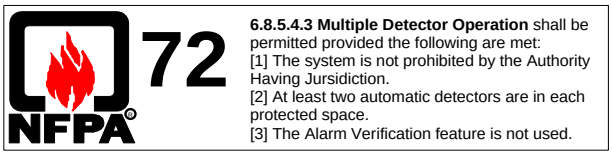


UL 864

Maximum retard-reset-restart period is 30 seconds.

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

7.7 Multiple Detector Operation



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.

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

7.8 USER Menu Functions

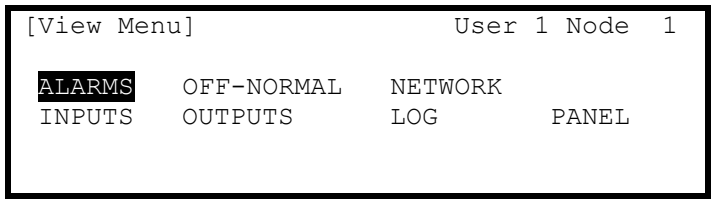
The following table gives a list of the USER Menu Functions, the sub-functions available within each main function and a brief description for each function.

Main Menu Option	Sub Menus	Comments
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, Supervisory, Trouble, Disabled, Pre-Alarm, Warning, Problems and MNS-Alarm)
	Network	View Network diagnostics
	Inputs	View the current state of Inputs (by zone/point).
	Outputs	View the current operational condition of all Output circuits (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 [35]	Disable a complete zone or an individual input device.
	Outputs [35]	Disable NAC outputs or other output devices.
	Groups[35]	Group Disable – Disable a programmed group of inputs / outputs
	Controls [36]	Cancel Level 2 panel access.
	User ID[35]	Return Level 2 access to the default User 1
ENABLE	Zone / Inputs[35]	Enable a complete zone or an individual input device.
	Outputs[35]	Enable NAC outputs or other output devices.
	Groups[35]	Group Enable – Re-enable a group of inputs / outputs
	Remote[35]	Grant remote access for terminal mode or ipGateway
TEST	Zones[35]	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	Test Outputs in the system
	Audio[35]	Test Audio area amplifier (s) with massage type (1 – 16 messages within amplifier [s])
P.A.S	Enabled	Enable P.A.S. operation
	Disabled	Disable P.A.S. operation
TOOLS	Program	Enter the Level 3 Commissioning and Panel Programming Functions (factory default Level 3 programming code 7654)
	Print	Setup printer and print inputs, outputs, troubles, disabled, log
	Change Time	Change time and date of the system
STATUS	---	Return to the Normal Operating Display immediately

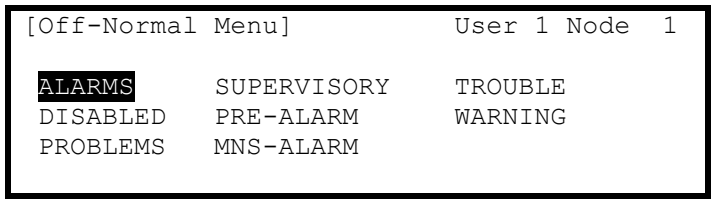
[35] This option can be configured per User ID. User 1 does not have permission to change these options.
[36] Not required if a key switch is fitted to change access levels.

7.8.1 View Menu

MAIN MENU



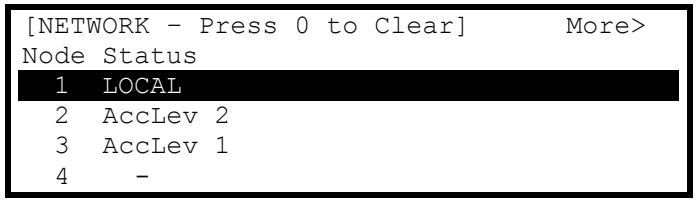
OFF-NORMAL SUB-MENU



Note: Alarm, MNS-Alarm and other Off-Normal conditions (Supervisory, Trouble, Pre-Alarm, Disabled and Warning), with the exception of Problems, are all normally shown without having to select the view menu. If however, you wish to manually view any of these, they can be selected from this menu as required. Problems are specifically associated with device dirty (detectors) when utilizing the SHIELD' enhanced calibration capabilities, these pre-dirty detector conditions can be view via the off-normal area, in addition to being transmitted via email from an optional NX-FA-LAN (ipGateway).

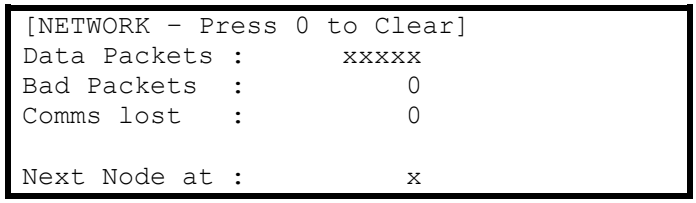
7.8.1.1 View - Network

This Option 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 panels on the network can be checked from any display. Access level determines what user functions can be performed from the specific display. Below is an example of View-Network:



Additional network diagnostics (i.e.: node answer-backs, packet evaluation, etc.) are available by selecting the "More>" option.

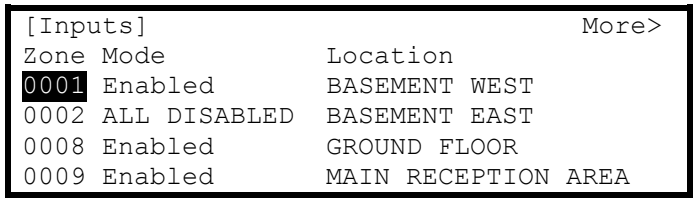
View-Network:



Pressing "0" allows the stored network status information to be cleared.

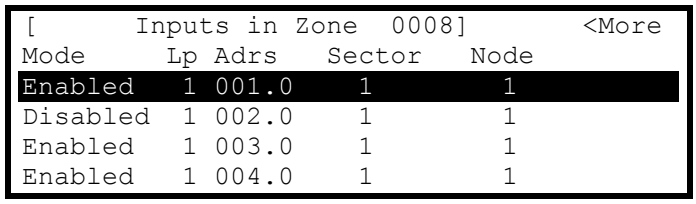
7.8.1.2 View Inputs

This function 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 of the zones containing input devices, with the first zone highlighted. For example:



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 ➔ button pressed 6 times:



The display shows the current disabled condition (mode) for each input, as either enabled or disabled. In addition, the SLC loop (Lp), address (Adrs), sector and node number.

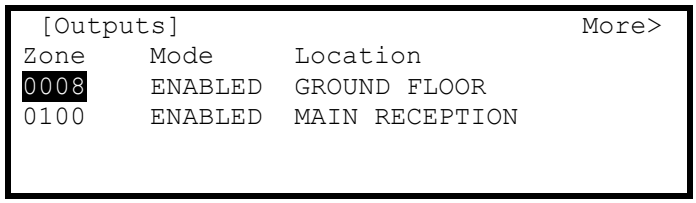
Press the ↑↓ buttons to scroll through the inputs.

Pressing the ➔ button will show further information on device location, type, analog/digital values, etc.

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

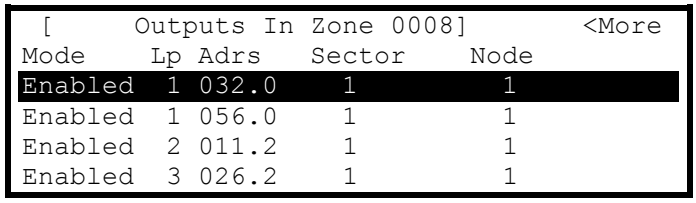
7.8.1.3 View Outputs

This function shows the current operational condition for all outputs (including outputs of other network nodes).



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 ➔ button pressed 6 times:



Note: 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).

7.8.1.4 View Log

After selecting to view the log option, the display presents a pop-up window to allow selection between; view all of the event history, view only the alarms events that have occurred, or view the alarm counter.

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

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

7.8.1.4.1 Event Log

The display will always show the most recent event to have occurred, i.e.

```
[View Alarm Events]              Entry 0076   < View Mode "All or Alarm" and Number of Event
Time/Date   Node Lp:Addr     Zone
10:54:23      1   1:001.0    0001            < Time, Node #, Device Address and Zone
03/14/14  ALARM                              < Date, Event
BASEMENT                             64      < Zone Text Description and Analog Value
ROOM 10                          PHOTO SMOKE < Device Text Description and Device Type
```

In the above example, the latest alarm occurred (Event No. 76) at 10:54 am on March 14, 2014. 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.

Press the ↑↓ buttons to scroll through the events logged in the system. Press the ↑ button to show more recent events and press the ↓ button to show earlier events.

To view the details for a specific Log Entry Number, it is possible to select the record by typing in the required number using the number keys.

Press the ✓ button to confirm. The display will then display the required record.

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

7.8.1.4.2 Alarm Counter

The panel records the number of times that an alarm condition has occurred at the panel since installation or last event log erase.

```
ALARM COUNTER

     0000000033
```

In the above example, the panel has entered an alarm condition 33 times since it was installed or since last log erase.

The panel increments the count by one each time it changes from the normal condition to indicate an alarm condition. While in the alarm condition, and until the panel is reset, further alarm events do not increment the counter.

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

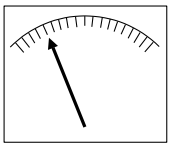
7.8.1.5 View Panel

The View Panel Option provides viewing of panel information regarding Local-Hardware, Software and Network-Hardware.

```
[Panel Information]          User 2 Node 1

   LOCAL-HARDWARE       SOFTWARE
   NETWORK-HARDWARE
```

7.8.1.5.1 Local-Hardware Viewing



The View Hardware provides diagnostic meter readout of the operational condition and readings for the internal panel electronic circuits. When the option is selected, the display shows a list of the circuits. For example:

(Refer to Section 11.1.1)

```
[Panel Circuits]
ITEM DESCRIPTION    VALUE   STATE
01.0 NAC-1 A         5.6V   Normal
01.1 NAC-2 A         5.6V   Normal
01.2 NAC-3 A         5.6V   Normal
01.3 NAC-4 A         5.6V   Normal
```

Press the ↑↓ buttons to scroll through the panel internal circuits. Press the “Esc” button to return to the main view menu.

7.8.1.5.2 Software Viewing

The View Software provides software revisions viewing for the following circuits:

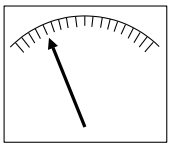
```
[Software]                    User 2 Node 1

  PANEL          DISPLAY       LOOP CARDS
  NETWORK        PSU           PERIPHERAL
```

7.8.1.5.3 Network-Hardware Viewing

The View Network-Hardware provides information and diagnostic meter readouts for each additional networked panel. When the option is selected, the display shows a list of viewable network nodes:

```
[Hardware]                            More>
Zone    Location
0701    FACP Electrical Closet
0702    Remote FACP 2nd Floor
```



By pressing the more ➔ button operational information and diagnostic meter readouts for each available network panel electronic circuits can be viewed:

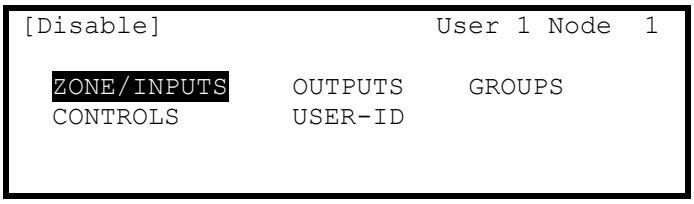
(Refer to Section 11.1.1)

```
[Hardware in Zone 0701]               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 panel internal circuits. Press the “Esc” button to return to the network-hardware viewing menu.

7.8.2 Disable Menu

When selecting the Disable Menu, the display shows five possible options. For example:



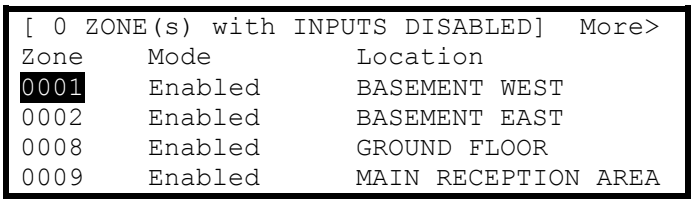
Press the ←→ buttons to highlight the required menu option and then press the ✓ button to select it.

7.8.2.1 Disable - Zones and Inputs

This option provides the means to disable an entire zone, all inputs, selected inputs, only automatic detectors, only manual devices or all other devices.

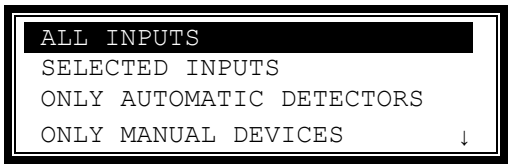
If the current User ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent disablements.

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



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

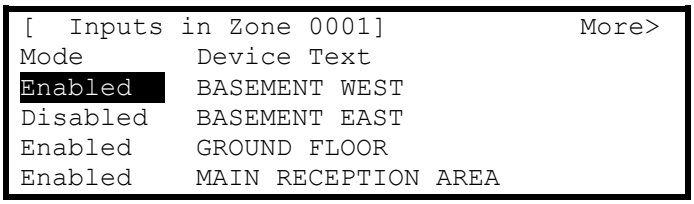
To disable the entire zone move over to the Mode column and highlight the existing mode. Press the ✓ button and a pop-up window appears showing the three possible options:



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”.

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:



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. Pressing the ✓ button when the input is already disabled will enable the input.

Press the “Esc” button to return.

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 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 chosen, the pop-up window disappears and all none alarm, none mass notification, none supervisory points (including firefighter phones) within the zone will be disabled and the Zone Mode status will change from “Enabled” to “PART DISABLED”.

7.8.2.2 Disable - Outputs

The Disable Outputs Option allows for the isolation of some or all of the 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.

Note: “Strobes” can be added to the disable outputs pop-up window via the PC-NeT field configuration programming tool, under “Disable Outputs Menu Options”.

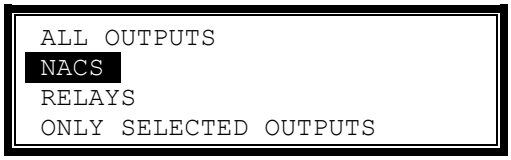
7.8.2.2.1 All Outputs

On access to the “Disable – Outputs” menu the “ALL OUTPUTS” will be highlighted and then pressing the ✓ button will disable all outputs. The display automatically reverts to the Main Disable Menu and the ‘NAC Disabled’ LED will illuminate, indicating NACs disabled.

Note: On networked systems this only disables the outputs connected to this panel. In addition, it will disable all NAC type outputs.

7.8.2.2.2 NAC Outputs

Press the ↑↓ buttons to scroll through and highlight the “NACS” option and then press the ✓ button to disable them. The display automatically reverts to the Main Disable Menu and the ‘NAC Disabled’ LED will illuminate, indicating NACs disabled.



Note: On networked systems this only disables NACs connected to this panel.

7.8.2.2.3 Relay Outputs

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 Disable Menu.

```
ALL OUTPUTS
NACS
RELAYS
ONLY SELECTED OUTPUTS
```

Note: On networked systems this only disables relays connected to this panel.

7.8.2.2.4 Only Selected Outputs

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

```
ALL NACS
NACS
RELAYS
ONLY SELECTED OUTPUTS
```

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

```
[ 2 ZONE(s)with OUTPUTS DISABLED]  More>
Zone     Mode      Location
0008     ENABLED   GROUND FLOOR
0100     ENABLED   MAIN RECEPTION
```

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:

```
[ Outputs In Zone 0008]          More>
Mode      Device Text
Enabled   I/O Relay Output
Enabled   HVAC RELAY
Enabled   NAC MODULE
Enabled   RELAY MODULE
```

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

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 and vice-versa.

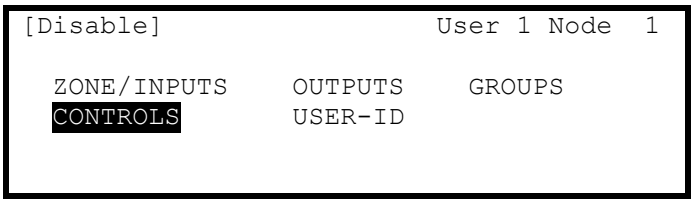
Press the “Esc” button to return to the Zone list and to the Main Disable Menu.

7.8.2.3 Disable - Controls

Disabling Controls will cancel any Level 2 or above access User Level and return the panel to a Level 1 access level. Access Level 1 requires an access password for any control button (i.e.: ACK, RESET, etc.) or keypad entry usage.

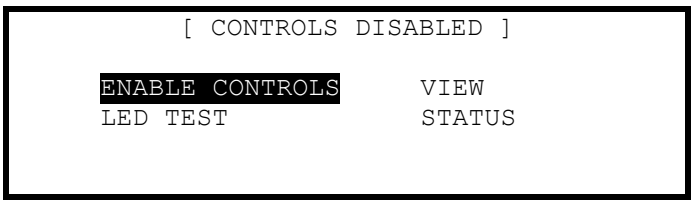
Note: If the panel has an optional access Level key switch installed, the installer needs to program for disabled controls so the key switch will be the only means for access to control button and keypad usage.

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.

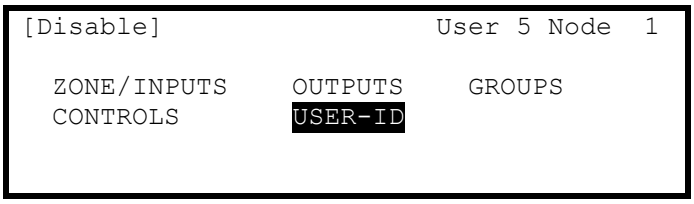
Once a valid access password has been entered, the control button functions and menu functions are disabled and the level 1 menu display will be shown:



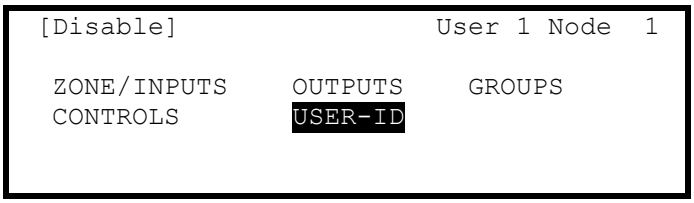
The display will automatically revert to the normal operating display after 15 seconds.

7.8.2.4 Disable – User ID

If User-ID access is programmed by the PC-NeT field configuration program, this operation will cancel the current User ID access and return to the Default User Level 1 access. User Level 1 can perform all actions except those defined as programmable (refer to the menu table).



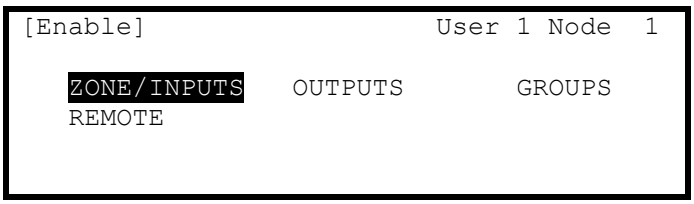
Press the ←→ buttons to highlight the User-ID option and then press the ✓ button to select it.



NOTE: If configured to operate with a timeout and if there has been no user activity (button pressed) after the programmable time period (default "No Timeout"), the panel will automatically cancel a User ID level access and return the panel to User 1 ID access level. This is to ensure that access to restricted options, are automatically cancelled.

7.8.3 Enable Menu

When selecting the Enable Menu Option, the display shows the available Enable Functions.



Press the ←→ buttons to highlight the required menu option and then press the ✓ button to select it.

7.8.3.1 Enable - Zones and 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
```

7.8.3.2 Enable - Outputs

When this option is selected a pop-up 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.

```
ALL OUTPUTS
NACS
RELAYS
ONLY SELECTED OUTPUTS
```

7.8.4 Test Menu

```
[Test Menu]                User 1 Node  1

    ZONES   DISPLAY   BUZZER   PRINTER
    OUTPUTS
```

Note: If a printer is connected to the system all tests will be sent to the printer.

Press the ←→ buttons to highlight the required menu option and then press the ✓ button to select it.

7.8.4.1 Test Zones

The Test Zones function provides a means to implement a one-person walk test in order to test specific pull stations, detectors or any other input or output device in one or more zones.

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 Test 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 approximately 10-seconds when an input device is activated. For example:

```
WITHOUT NACS
WITH NACS
```

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

Note: All NAC circuits are defaulted to activate during a walk test with NACs, however the PC-NeT field configuration programming 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:

```
[   0 Zone(s) in Test ]
Zone    Test State    Location
0001        -         BASEMENT WEST
0002        -         BASEMENT EAST
0100        -         MAIN RECEPTION
```

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

```
[   1 Zone(s) in Test ]
Zone    Test State   Location
0001    IN TEST      BASEMENT WEST
0002       -         BASEMENT EAST
0008       -         GROUND FLOOR
0009       -         MAIN RECEPTION AREA
```

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

```
[   2 Zone(s)  in Test ]
Zone    Test State   Location
0001    IN TEST FIRE BASEMENT WEST
0002       -         BASEMENT EAST
0008       -         GROUND FLOOR
0009    IN TEST      MAIN RECEPTION AREA
```

When the pull station is reset or when the smoke clears from the detector chamber, the panel 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 ask 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 menu, press the “Esc” button. If there are any zones still in a test condition a pop-up window with the following options will appear:

```
DEVICE STILL ACTIVATED!
FINISHED TEST
KEEP ZONES IN TEST
```

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

Alternatively, it is possible to leave the Zone Test menu with one or more zones still in test mode by selecting the “KEEP ZONES IN TEST” option. This will enable the inspection or 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, a pop-up window with the following option will appear:

```
FINISHED TEST
```

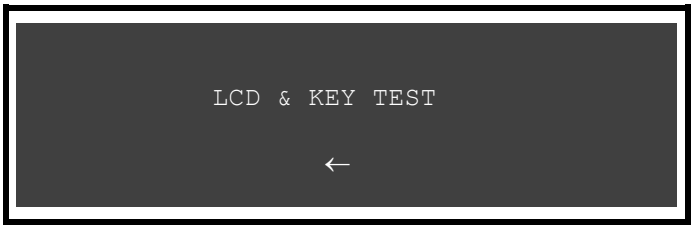
Press the✓ button to exit the Test area.

7.8.4.2 Test Display

The Test Display option checks the operation of all the LEDs and the graphical display of the NX-ACS-DSP. All of the LEDs are turned on and the entire display is shown in reverse (inverted). In addition to testing the NX-ACS-DSP, the Test Display also tests the LEDs of all of the Switch LED Modules connected to the associated NX-FACP base card.

Note: Test Display also tests the LEDs of all of the Switch LED Modules connected to the associated NX-FACP base card.

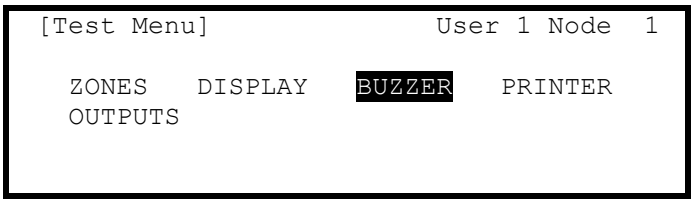
During this test, it is possible to test the operation of the ←, ↑, ↓, →, ✓ and **0-9** buttons. When a button is pressed it is indicated on the display. For example:



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

7.8.4.3 Test Buzzer

When the Test Buzzer option is selected, the internal buzzer will pulse for approximately five seconds.



7.8.4.4 Test Printer

To Test the printer, highlight the Test Print 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 NX-ACS-DSP graphical display.

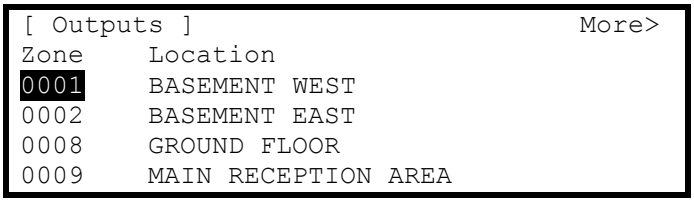
Note: The printer test function will only work if a printer is programmed on the system. If no printer is programmed, the display will indicate “NO PRINTER SELECTED!”

When the test print is completed, the display automatically reverts to the Test Options Menu.

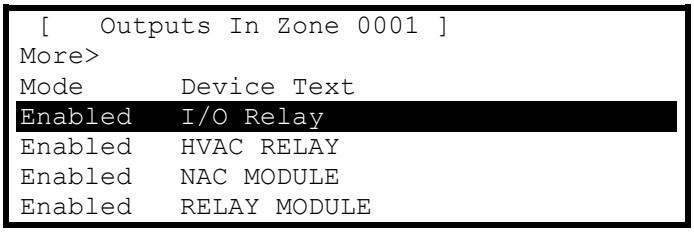
Press the “Esc” button at any time to cancel the test print.

7.8.4.5 Test Outputs

To Test outputs, highlight the Test Output option and press the ✓ button to confirm.



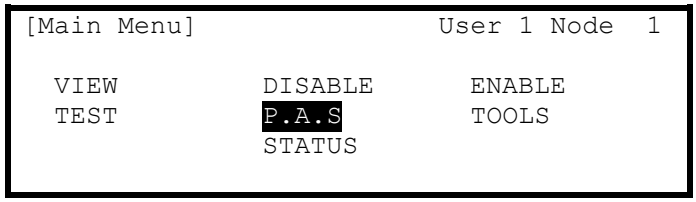
Press the ↑↓ buttons to scroll through and highlight the required zone and then press the → button to scroll to the specific Output to be tested. For example:



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.

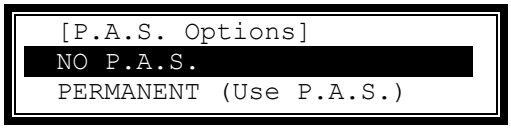
7.8.5 P.A.S. (Positive Alarm Sequence) Menu

To enable or disable the P.A.S. operation access P.A.S. area.



If the P.A.S. delays are configured in the panel, the display shows the following pop-up window when the P.A.S. area is selected.

Note: P.A.S delay functionality can only be configured using the PC-NeT field configuration programming tool. If the P.A.S. delays are not configured, the display briefly shows "NOT CONFIGURED" before returning to the Main Menu options.



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.

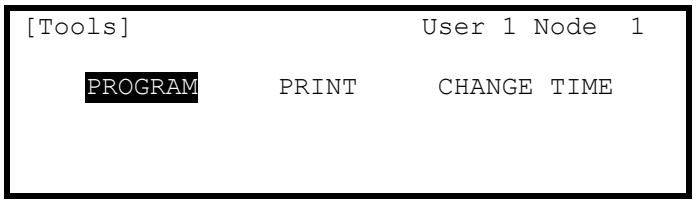
Select "PERMANENT" to enable the operation of the Positive Alarm Sequence Investigation Feature.

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 is off.

Press "Esc" to cancel and make no change to the current operational setting.

7.8.6 Tools Menu

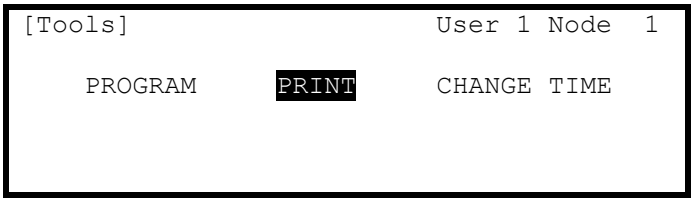
When selecting the Tools Menu, the display shows three possible options. For example:



7.8.6.1 Program Menu

Note: To access the programming area a proper service level password is required. Refer to NX682-002 Front Panel Programming Manual for information and details on front panel programming capabilities.

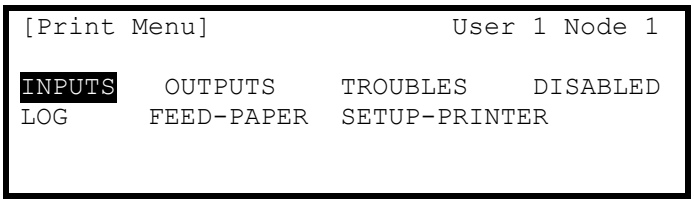
7.8.6.2 Print Menu



Note: The data stream sent to the printer is in a serial format. If an external printer is used ensure that the communications settings in the printer are set as follows:

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

The following are printer capabilities within the Printer Menu:



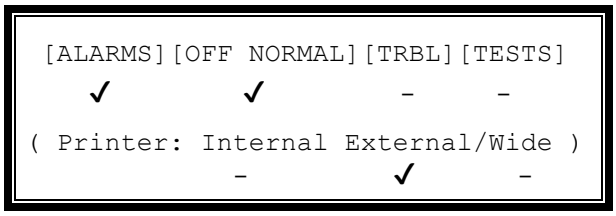
Note: Before any printing can be done the printer must be Setup.

7.8.6.2.1 Set-up Printer

To enable or set-up the operating characteristics of the printer, highlight the Set-up 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:



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 ←,↑,↓,→ 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.

Note: On network systems only trouble events registered on the panel controlling the printer are printed. Trouble events from other nodes are not printed.

7.8.6.2.2 Print 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 this panel. For networked systems it is possible to select any zones used in the system. Use the arrow (🡅🡇) buttons to highlight the first and last zone number and use the number keys to change the zone number required.

Press the ➔ key to start printing.

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

```


   WORKING ...

(Press Esc to Stop)
```

After all information has been printed, the display will automatically revert to the Print Menu. Press the “Esc” key 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.

7.8.6.2.3 Print 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 this panel. For networked systems it is possible to select any zones used in the system. Use the arrow (🡅🡇) buttons to highlight the first and last zone number and use the number keys to change the zone number required.

Press the ➔ key 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.

7.8.6.2.4 Print 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 analyze 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 ➔ key 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.

Note: If there are no trouble conditions present then selecting this menu option will have no effect.

7.8.6.2.5 Print Disables

To print information on any disabled device or zone, 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 analyze 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 ➔ key 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).

Note: If there are no disabled conditions present then selecting this menu option will have no effect.

7.8.6.2.6 Print Log

To print information from the History Log, highlight the Print 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 Options Menu.

Press the “Esc” button at any time to cancel the log print.

Note: The pop-up window also allows selection of the Alarm Counter. The alarm count is displayed on the NX-ACS-DSP display only, it is not printed.

7.8.6.2.7 Print 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.

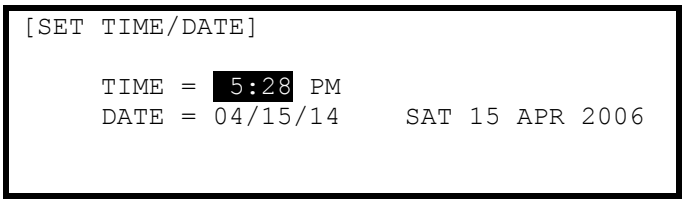
7.8.6.3 Change Time

This area allows the changing of the system time clock.

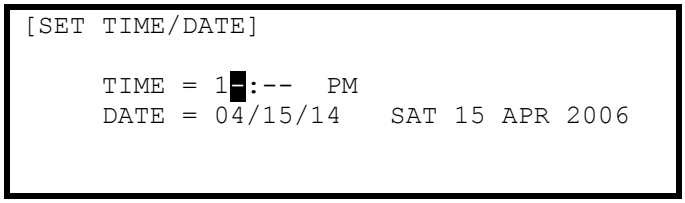
If the current User ID (access level password) does not have the required authority, the display prompts for entry of an authorized password to guard against inadvertent changes.

Note: Time change is in 12 hr [US – Standard] format with AM & PM or 24 hr [military] format depending upon PC-NeT field configuration programming tool setup. Default is 12 hr [US – Standard].

Example of time change:



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 example:



If this panel is connected to a network all network node panels will adjust to the new time value.

8 Multiple NEO Command Centers

As all NEO fire alarm control panels can support the SHIELD network (200 nodes Class X[A] (Style 7) or 32 nodes Class B), installations can have many different command center locations utilizing NX-FACC-1 command centers, NX-CC01-BB/NX-CC02-BB modular command centers and/or other NEO fire alarm control panels. When two (2) or more command center locations are installed on the peer-to-peer network, various control/operation functions become field programmable, such as; peer-to-peer command control, audio prioritized command control and full prioritized command control.

Note: Though an NEO installation can support many command control locations, if utilizing the SHIELD PBUS (RS485) microphone, remote microphone and floor (area) amplifiers, the installation can only support five (5) microphone locations (one main microphone and 4 remote microphones). In addition, only two (2) of the command center locations can support the SHIELD' command center firefighter telephone.

8.1 Peer-to-Peer Command Center Control

As default, when multiple NEO command center locations are installed, control operation transfers from one command center location to another based on the location of the last control operation. Each command center location provides real-time "true status" of all installation command center location selections. Per NFPA 72, each command center location can have an LED programmed to indicate "Command Center In-Control" status. In addition, other command center locations can have an LED programmed to indicate "Command Center Not In-Control".

Should a conflict occur via button selection, the last button selected at a command center location, will control the operation. If there is a conflict with PBUS (RS485) microphone usage, the "main" (microphone bus) command center will take precedence. Remote microphone priority is based on remote microphone bus wiring.

8.2 Audio Prioritized Command Center Control

This multiple NEO command center programming function is strictly associated with PBUS (RS485) amplifier installations "Audio Prioritization". With this "Audio Prioritization", command center locations control/operation of audio, firefighter phone and/or other switch/LED module control functions are dictated on a first-come-first-serve basis. The command center location that takes initial control of the audio, firefighter phone and/or other switch/LED module controls becomes the "Command Center In-Control". A programmable "Command Center In-Control" status LED (per

NFPA 72) will illuminate indicating “Command Center In-Control”, while other command center locations could be programmed with a “Command Center Not In-Control” LED status indication.

Note: When utilizing Audio Prioritized Command Centers, NX-ACS-DSP controls (i.e. acknowledge, reset, signal silence, etc.) are still functional at any of the command center locations. Audio prioritized command center control, only blocks additional command center locations use of audio, firefighter phone and/or other switch/LED module controls.

8.2.1 Requesting Command Center Control

In order to obtain audio, firefighter phone and/or other switch/LED module control from a command center location already “In-Control”, programmable “Request Control”, “Grant Control” and “Deny Control” buttons/status LEDs must be allocated and programmed at each command center location. Any command center location “Not In-Control” can “Request Control” by pressing the “Request Control” button on its associated command center. The command center “In-Control” will receive this request via the “Request Control” status LED located adjacent to the “Request Control” button. If the “Grant Control” button at the command center location “In-Control” is pressed, control will be transfer to the command center “Requesting Control” (first-come-first serve if multiple command center locations are “Requesting Control” at the same time). If the “Deny Control” button at the command center location “In-Control” is pressed, the “Deny Control” LED at the command center location “Requesting Control” will flash, indicating control has been denied. If, for some reason, neither the “Grant Control” nor “Deny Control” button is pressed at the command center “In-Control” location, during a request for control of the system, a programmable transfer control timer (0 to 60 seconds) will start, thereby relinquishing control to the “Request Control” command center location upon transfer control time expiration.

8.3 Full Prioritized Command Center Control

In this multiple NEO command center installation, control operation is dictated on a first-come-first-serve basis. The command center location that takes initial control of the system has complete control, any additional command center locations will have no control button capabilities, including; acknowledge, reset, signal silence, etc. A programmable “In-Control” status LED (per NFPA 72) will illuminate indicating command center “In-Control”, while other command center location could be programmed with a “Not In-Control” LED status indication.

8.3.1 Requesting Command Center Control

In order to obtain control of the system from a command center location already “In-Control”, programmable “Request Control”, “Grant Control” and “Deny Control” buttons/status LEDs must be allocated and programmed for all command center locations. Any command center location “Not In-Control” can “Request Control” by pressing the “Request Control” button on its associated command center. The command center “In-Control” will receive this request via the “Request Control” status LED located adjacent to the “Request Control” button. If the “Grant Control” button at the command center location “In-Control” is pressed, control will be transfer to the command center “Requesting Control” (first-come-first serve if multiple command center locations are “Requesting Control” at the same time). If the “Deny Control” button at the command center location “In-Control” is pressed, the “Deny Control” LED at the command center location “Requesting Control” will flash, indicating control has been denied. If, for some reason, neither the “Grant Control” nor “Deny Control” button is pressed at the command center “In-Control” location, during a request for control of the system, a programmable transfer control timer (0 to 60 seconds) will start, thereby relinquishing full system control to the “Request Control” command center location upon transfer control time expiration.

9 Mass Notification Capabilities

Note: This manual references MNS (Mass Notification System) features and operations which are programmable and usable. The user should understand that this product was designed to be compliant with the UL2572 Mass Notification Standard, however, its listing is pending. Please consult factory for updated UL2572 Mass Notification Standard listing status.

The NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center in conjunction with the PBUS (RS485) amplifier are capable of supporting numerous emergency notification messages (alarms, alerts, warnings, mass notification and other emergency event messages) based on installation requirements.

Messages can be automatically or manually activated and based on an emergency response plan, prioritized by type of event. Identical synchronized messages can be played simultaneously throughout a facility via multiple PBUS (RS485) amplifiers, avoiding any broadcasting message confusion. Multiple synchronized messages can also be broadcasted simultaneously when installation demands require such functionality.

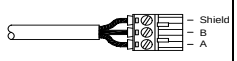
In addition to multichannel synchronized audio capabilities, each NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center can be programmed to prioritize control and operation functions. This prioritization of control and operation functions allows the installation, based on a stakeholders risk analysis, to prioritize mass notification and fire alarm emergency events.

10 NEO 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.

Note: If shielded cable is utilized, 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 back boxes).

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).

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 (see note #1)	12,500 feet (see note #1)	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's recommended that the other wires are either twisted or twisted shielded. The NEO panels contain loop power technology. The SLC circuits are capable of driving high current loads in alarm, which affects the load characteristics including V/I drops along the wire length. Therefore, it is important to utilize SHIELD loop calculator in determining wire gauge and length.
		Twisted Shielded Pair	12,500 feet (see note 1)	12 -18 AWG	Shield must only be connected to earth ground at one location - at the fire panel.
		Untwisted, Unshielded Pair	1,000 feet (see note 1)		It's 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 NX-FACP base card	Twisted Unshielded or Twisted Shielded	5000 feet	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 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 (see note 2)	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 X (A) (5000 ft between Nodes)	18-20 AWG	Fiber Optic – 16,404 ft between nodes max. Jacket material must be rated for application. Note that network node to node communications are optically isolated and each node has an independent ground fault detection circuit. To insure 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 Telephone communications1 to 6 channels for firefighter phones	Twisted Shielded Pair	4000 feet (see note 3)	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 dependant)	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.

Note #1: SLC (Signaling Line Circuit)

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 taken into account to ensure the devices are receiving an adequate supply voltage (see table below):

Maximum Circuit Impedance	72Ω
Insulation Resistance (Core-Core and Core-Screen)	2M Ω
NB: 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

Note #2: Notification Appliance Circuit

The voltage drop on notification appliance circuit should be calculated to ensure that the minimum voltage at the end of the circuit exceeds the minimum required by each notification appliances at the minimum alarm circuit output voltage.

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

Minimum Alarm Voltage = $V_{OUT(MIN)} – (I_{ALARM} \times R_{CABLE})$

Minimum Output Voltage ($V_{OUT(MIN)}$) is $V_{BAT(MIN)} – 0.5V = 20.5V$

Alarm Current (I_{ALARM}) is the sum of the loads presented by the notification appliances in alarm

Cable Resistance (R_{CABLE}) is the sum of the cable resistance in both wires x cable length.

Typical wire size resistance (R_{CABLE}):
- 18 AWG solid: Approximately 6.5ohms/1000ft.
- 16 AWG solid: Approximately 4.1ohms/1000ft.
- 14 AWG solid: Approximately 2.6ohms/1000ft.
- 12 AWG solid: Approximately 1.8ohms/1000ft.

Loop Resistance (2 Wires)
- 13ohms /1000ft.
- 8.2ohms /1000ft.
- 5.2ohms /1000ft.
- 3.6ohms /1000ft.

Note #3: Telephone Riser

Maximum Riser Circuit Cable Resistance = Max Riser Volt Drop / Total Firefighter Jack/Phone Current.

Max Riser Volt Drop = 5V

Total Firefighter Jack/Phone Current (A) = (number of phones x 0.0063) + 0.08

Examples:

Number of Firefighter Jacks/Phones	Max Cable Resistance (ohms)
5	44
10	34
15	28
20	24
25	21
30	18
35	16

11 Maintenance & Troubleshooting

The system 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 NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center includes ground fault monitoring and detection. To test the ground fault circuitry, place a 100K resistor in series with a wire from the positive or negative (positive or negative ground fault) terminal of the auxiliary power supply output to ground.

The SHIELD intelligent detectors employ a drift compensation and automatic sensitivity adjustment feature. The panel will indicate a trouble condition when the drift compensation reaches a point where alarm sensitivity cannot be maintained.

The NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center provides integral electronic meters to check the operation of the batteries, charger, and input and output circuits. The charging voltage and charging current can be read from the panel display. The batteries are also automatically subjected to a load equivalent to full load during normal operation. If the internal resistance of either battery rises beyond approximately 0.8 ohm, then the panel will report a battery trouble condition.

11.1 Troubleshooting

Designed with the technician in mind, each module of the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center is easy to install and service. All inputs and outputs of the NX-FACP base card are addressable and provide precise information of status condition. The power supplies offer status LEDs, temperature compensated charging, and the ability to operate directly from the batteries when AC supply is not yet available at the installation site. A user-friendly built-in intelligent multi-meter allows technicians to interrogate any input/output and diagnose potential time consuming trouble issues.

In addition to all of the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center capabilities, the SHIELD Remote Diagnostic Virtual Panel Simulator offers technicians the ability to access the NX-FACC-1 command center and NX-CC01-BB/NX-CC02-BB modular command center (w/integral modems) remotely. The Remote Diagnostic Virtual Panel emulates the onsite NX-ACS-DSP alphanumeric graphic display in real time from an offsite location.

11.1.1 NX-FACP Base Card I/O Addresses and Built-in Intelligent Multi-Meter

The following is a list of NX-FACP base card addresses for troubleshooting various input and output circuits:

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 (V)	(~27V = Normal)	(State of Charger Voltage)
04.1	Charger (I)	(Current)*	(State of Charger Current)
	* Dependent upon whether batteries are being charged, 0mA if no charge needed		
04.2	Charger (C)	(~25 ^{0}C = Normal)	(State of Charger Temp. in ^{0}C)
05.0	Ground Volts	(~13V = 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)
	* Normal Low (L – open contact), Active High (H – closed contact) State only changes on circuitry failure		
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 voltage or current readings, dry contact
State normally equals RESET it only changes on circuitry failure

13.0	Control Panel	-*	(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)

11.2 Replacement of Components

In general, all of the component parts used in the construction of the panel have been selected for long life and reliability. However, certain components may require to be changed on a regular service basis. The details of these are as follows:

11.2.1 Batteries

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

11.2.1.1 Standby Batteries

Expected Life: - 3-5 years at an ambient temperature of 20°C

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 (10°C) rise above ambient. Refer to battery manufacturer for further information.

Manufacturer / Part Numbers: -

YUASA		POWERSONIC	
4AH	NP4-12	5AH	PS-1250-F1
7AH	NP7-12	7AH	PS-1270
12AH	NP12-12	12AH	PS-12100-F1
17AH	NP18-12	18AH	PS-12180-NB
24AH	NP24-12B	26AH	PS-12260-NB
38AH	NP24-38	38AH	PS-12400-NB

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 quite 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.

11.2.2 Liquid Crystal Display

Expected Life: - > 10 years

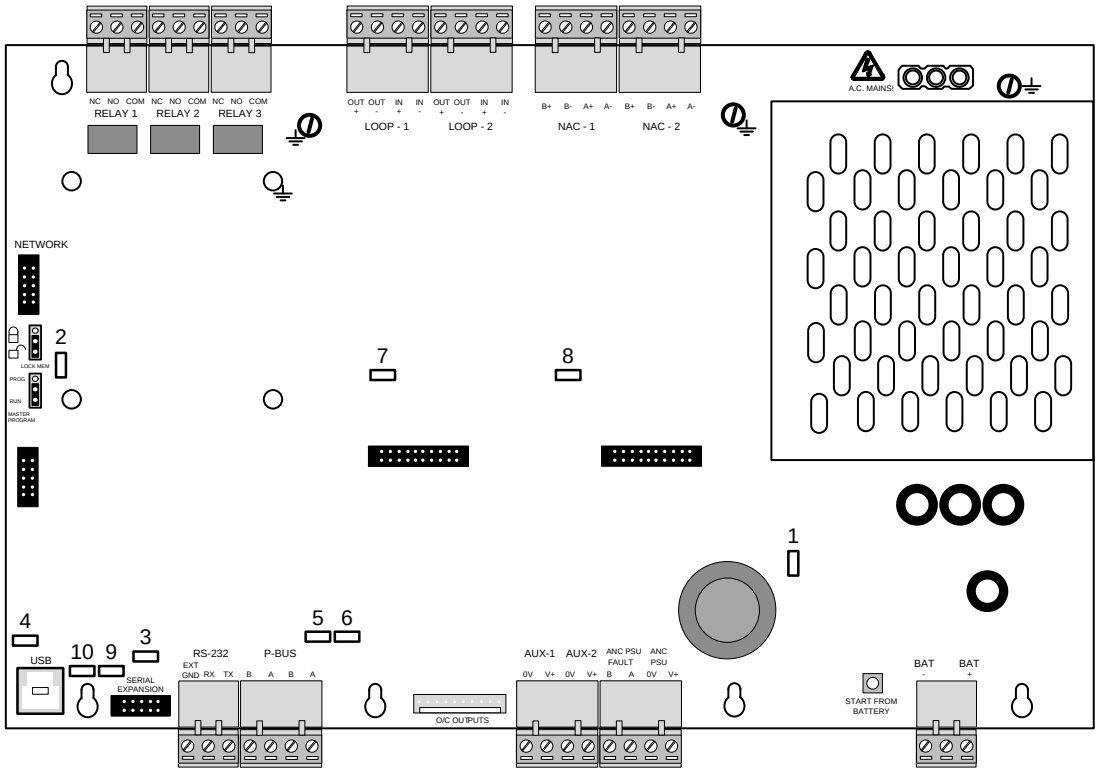
Replacement Schedule: - When the display becomes difficult to read due to gradual fading over time.

Manufacturer / Part Number: - Consult SHIELD

11.3 LED Status

On-board status LEDs are available for troubleshooting purposes on many of the SHIELD modules.

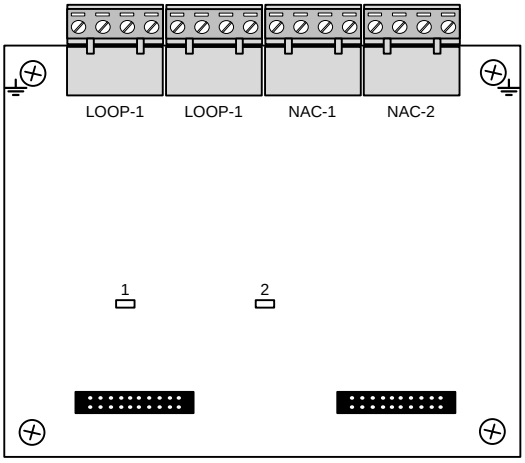
11.3.1 NX-FACP Base Card



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
8	Heartbeat LED – SLC #2	Flashes when communicating on the SLC
9	Serial Communications – Transmit[23]	Flashes when data transmitted
10	Serial Communications – Receive[23]	Flashes when data received

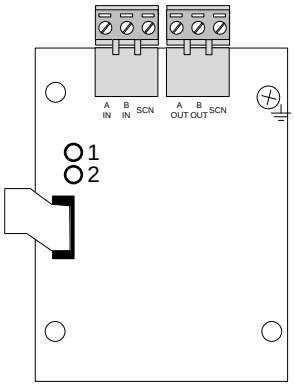
[23] Applies to USB, RS232 and Serial Expansion Circuits.

11.3.2 NX-EM-LPD and NX-EM-NAC Module



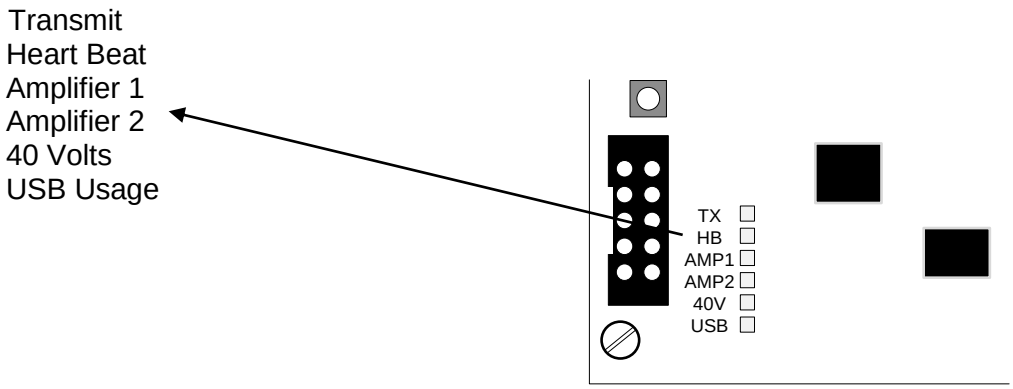
LED	Function	Description
1	Heartbeat LED – SLC #3	Flashes when communicating on the SLC
2	Heartbeat LED – SLC #4	Flashes when communicating on the SLC

11.3.3 NX-FANET4/NX-FANET7 Network Module



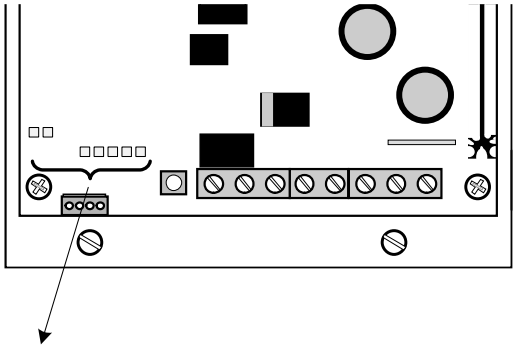
LED	Function	Description
1	Heartbeat LED	Normal: Flashes at 1Hz
2	Network Comms – Receive	Flashes when data received from network
3	Network Comms – Transmit	Flashes when data transmitted to network

11.3.4 NX-AMP-80 Audio Amplifier



11.3.5 NX-EM-PSU6 Power Supply Charger

There are seven (7) onboard LEDs associated with the NX-EM-PSU6. Refer to the opposite diagram for LED descriptions and purpose.



Earth Fault
Heart Beat

Battery Connect
Battery Low
Battery O-C
Charger Fault
PSU Fault

12 Appendices

12.1 Additional Intelligent Detector Information

Not Applicable

12.1.1 View Drift

Not Applicable

12.1.1.1 Intelligent Detector Drift Compensation

Not Applicable

12.1.2 Rapid Compensation

Not Applicable

12.1.3 View EEPROM

Not Applicable

12.2 Loop Isolators

It is recommended that there are a maximum of 20 intelligent detectors and/or addressable devices between loop isolators.

Note: Some devices (particularly modules) are specified as representing the equivalent of two or more device loads.

For further information, refer to the device data sheet.

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