NITTAN

SPERA

Analog Addressable Fire Alarm System

Installation and Operation Manual

Table of Contents

Table of Contents

Introduction

About the NFU-7000 Network Fire Alarm System

Nittan's NFU-7000 Series Network Fire Alarm Panels offer modular components for a network system providing a wide variety of applications. Designed for peer to peer network communications, using industrial standard ARCNET protocol, the NFU-7000 allows for a maximum of 63 nodes (where a node can be a control center or a floor panel) providing reliability and flexibility.

The NFU-7000 is based on a long time proven and reliable fire alarm system platform. Each base panel consists of two SLCs (Signaling Line Circuits) via the NK-LDC-3 Driver Card, 4 Class A/B (Style Z/Y) Indicating Circuits (NACs) rated at 1.7 amperes each and a large 16 x 40 graphic LCD display.

The NFU-7000 configuration allows the NFU-7000 Series of fire alarm control panels to be connected to a Nittan network which provides additional input circuits, visual zones, programmable notification appliance circuits and relays.

Overall Features

- Large system capacity and modular design.
- Provides peer-to-peer network communications.
- Supports up to 63 nodes (including lobby panel).
- Supports copper and/or fiber optic network cable.
- NK-LDC-3 Two Loop Driver Card provides 2 addressable loops (SLCs).
- Each SLC is capable of supporting 254 Digital or Analog Sensors and Addressable Modules which can be wired as Class A (Style 6 or 7) or Class B (Style 4).
- 12 Ampere Power Supply.
- Four Class A/B (Style Z/Y) NACs rated at 1.7 Amperes each, which can be configured as Audible or Visual (silenceable or non-silenceable circuits). Audibles may be steady, Temporal Code, California Code, or March Time.
- Indicating circuits (NACs) may be configured to provide additional auxiliary power or resettable auxiliary power. NAC expansion using the NFU-PS-10A Intelligent NAC Expander Power Supply.
- Fault isolators are present on all in-panel SLCs.
- Configurable Signal Silence Inhibit, Auto Signal Silence, One-Man Walk Test.
- Outputs for 4 Wire resettable Power Supply, Auxiliary Power Supply, and an interface to the RTI-1 Remote Trouble Indicator.
- RS-485 interface for remote annunciators. Remote annunciators do not occupy a node on the network. Up to seven annunciators can be connected per node.
- Three Level Password Protection with field settable definition which enables the installer to determine what functions are accessible for each level of password.
- Four queues for Alarm, Supervisory, Trouble, and Monitor, with LED indicators and selector keys.
- Auxiliary Form-C relay contacts for Common Alarm, Common Supervisory, and Common Trouble.
- RS-232 Port for remote system printer.
- Two Event History Logs; one for Alarm related events and one for all events.
- Large 16 line by 40 character alphanumeric, back-lit graphic LCD display with user-friendly menu system.
- Common Controls and Indicators for Signal Silence, System Reset, Visual Indicator Test, Fire Drill, AC Power On, CPU Fault, and Ground Fault.
- Two Spare configurable switches and LED Indicators.
- Provides drift compensation for photoelectric smoke detectors.
- Selection for UL requirements for Smoke Sensor sensitivity.
- Extensive transient protection.
- Surface or flush mountable enclosures with removable doors for easy installation and service.
- Removable terminal blocks for easy wiring and service.

Additional Features

There are 2 main fire alarm panel displays, 2 annunciators and a graphic monitor program:

Model NK-DISP-1640 16 x 40 graphic display.

Model NK-DISP-420 4 x 20 LCD display.

The NK-AN-LCDG is 16 x 40 graphic remote annunciator and the NK-AN-LCD is an 4 x 20 LCD remote annunciator.

The NFU-GM graphic monitor software is available for extensive monitoring annunciation.

Document Conventions

Circuits and Zones

The term **circuits** refers to an actual electrical interface, initiating (detection), indicating (signal), or relay.

The term **zone** is a logical concept for a fire alarm protected area, and will consist of at least one circuit.

Often the terms **zone** and **circuit** are used interchangeably, but in this manual the term circuit is used.

On the NFU-7000, circuits can be hardwired inputs and outputs or addressable inputs and outputs. Both hardwired inputs and outputs, and addressable inputs and outputs may be grouped together to form logical zones.

Wiring Styles

Initiating circuits are configured by default as Class B (Style B). They may be configured as Class A (Style D) as described in *System Configuration*. This operation uses odd and even pairs of two-wire Class B (Style B) circuits to make one four-wire Class A (Style D) circuit, thus cutting in half the number of available initiating circuits.

Indicating circuits (NACs) may be individually wired as Class A (Style Z) or Class B (Style Y) without affecting the number of circuits available.
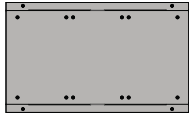
Addressable Loops may be configured system wide as Class B (Style 4) or Class A (Style 6). With the addition of isolators, a Class A (Style 6) will become a Class A (Style 7).

Typical NFU-7000 Network Fire Alarm Wiring

NFU-AN-GL

RS-485

Node 3
NFU-7000

Node 2
NFU-7000

Class A wiring

Twisted Pair Wiring

Node 1
NFU-7000

NFU-AN-GL

RS-485

Node 5
NFU-7000

Node 4
NFU-7000-L

RS-485

NFU-AN-GL
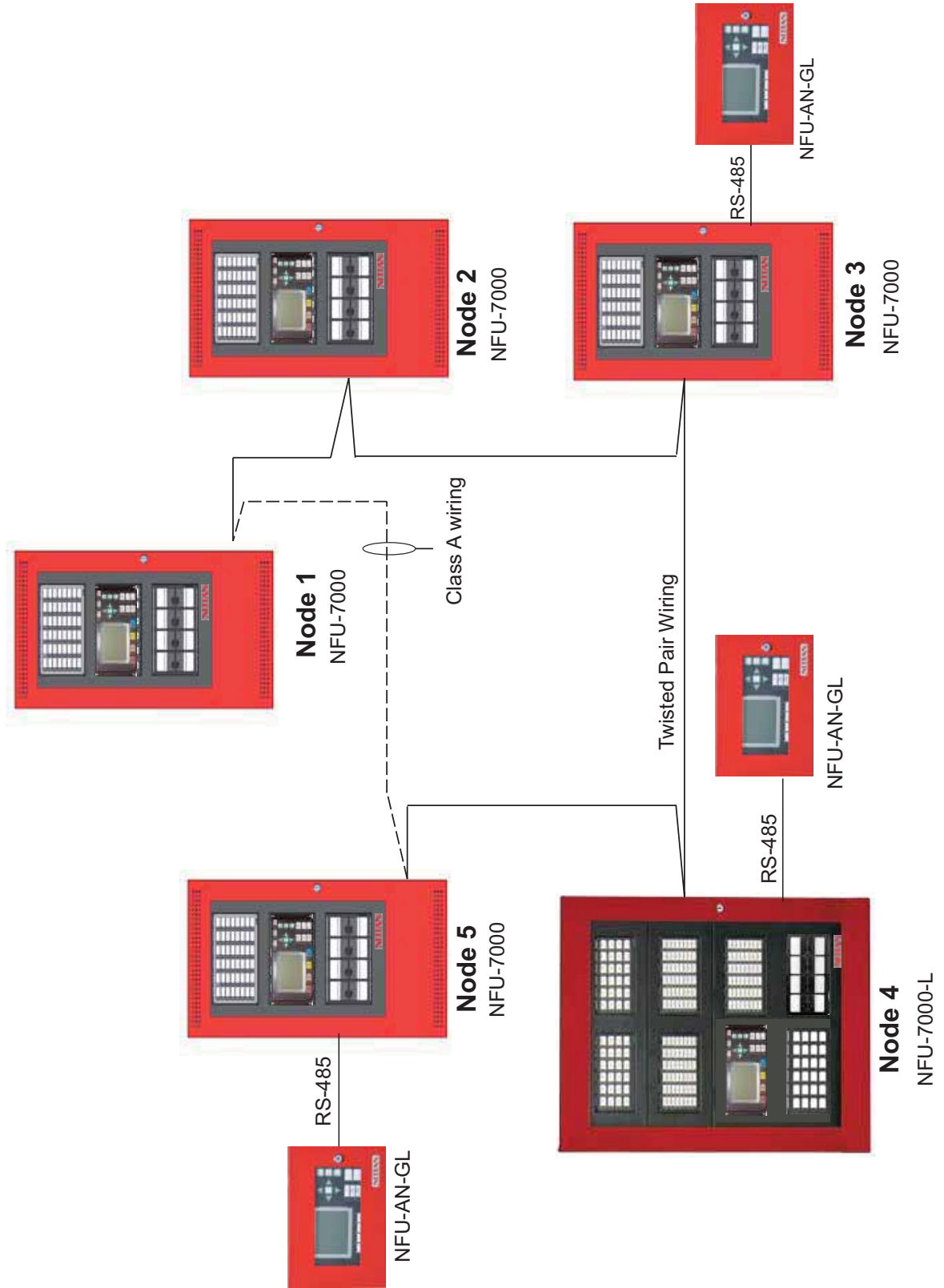
System Components

Panel Types

	Model	Description
	NFU-7000	This panel comes complete with one Dual Loop Driver Card (254 Analog Sensors and Addressable Modules per loop), 4 Class A/B (Style Z/Y) NACs (1.7 Amp each), a NK-DISP-1640 16 x 40 Graphic LCD display, and a 12 ampere power supply which charges 17-65 AH batteries. The NK-7000FAC main fire alarm board supports the NK-FNC Network Controller Module over the main board plus additional space in the backbox for Driver Cards.
	NFU-7000-L	This larger panel comes complete with one Dual Loop Driver Card (254 Analog Sensors and Addressable Modules per loop), 4 Class A/B (Style Z/Y) NACs (1.7 Amp each), a NK-DISP-1640 16 x 40 Graphic LCD display, and a 12 ampere power supply which charges 17-65 AH batteries. The NK-7000FAC main fire alarm board supports the NK-FNC Network Controller Module over the main board plus additional space in the backbox for Driver Cards.
	NK-7000LEXC12	Expander Chassis provides space for 12 adder modules. This chassis mounts into the NFU-7000-L enclosure.
	NK-7000LEXC06	Expander Chassis provides space for 6 adder modules. This chassis mounts into the NFU-7000-L enclosure.

Network Controller Modules
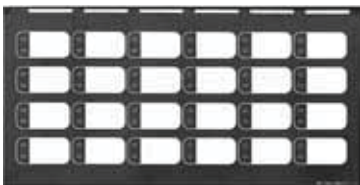
	Model	Description
	NK-FNC	Provides network capability for the NFU-7000 Fire Alarm panel. One module is required per one network node panel. The NK-FNC Fire Network Controller module is mounted in position 2 over the NFU-7000 main board.
	NK-FOM-SP	**Fiber Optics Module** (Optional) Connects to the NK-FNC Fire Alarm Network Controller Module and allows fiber optics cabling.

Adder Modules

	Model	Description
	NK-LDC-3	Dual Loop Driver Card
	NK-DM-8A	Eight Detection Circuit Module
	NK-SGM-4A	Four NAC Circuit Module
	NK-RM-8A	Eight Relay Circuit Module

System Components

	NK-AD-300	Digital Communicator/Dialer Module

Display Modules

	Model	Description
	NK-DISP-1640	Graphic display which can be mounted in enclosures NFU-7000 and the NFU-7000-L.
	NK-DISP-420	4 x 20 LCD display which can be mounted in enclosures NFU-7000 and the NFU-7000-L.
	NK-FDX-8	Fan Damper Module provides 8 relay switches for fan damper control.
	NK-IPS-24	Programmable Input Switches Module provides 24 programmable switches.
	NK-AN-32TZDS	Model NK-AN-32TZDS Main Chassis Remote Annunciator with 32 Bi-coloured LEDs and 32 trouble LEDs.
	NK-TZDS-48A	Model NK-TZDS-48A Adder Annunciator Chassis with 48 Bi-coloured LEDs and 48 trouble LEDs.

NAC Expander Power Supply
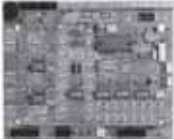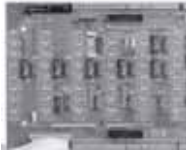
	Model	Description
	NFU-PS-10A	NAC Expander Power Supply. Refer to LT-899NIT manual for more detailed instructions.

Enclosures

	Model	Description
	NFU-7000 black backbox with red door. NK-7000BB: Backbox NK-7000DR: Red Door	Enclosure 28"H x 17"W x 5.75"D 71cm x 43cm x 14.6cm
	NFU-7000-L black backbox with red door. NK-7000LBB: Large Backbox NK-7000LDR: Large Red Door	Enclosure 37"H x 31"W x 8"D 95cm x 79.5cm x 20cm
	NK-AN-BB1R, NK-AN-BB2R and NK-AN-BB3R	Backboxes for annunciators: NK-AN-BB1R holds one annunciator NK-AN-BB2R holds two annunciators NK-AN-BB3R holds three annunciators

Remote Annunciators

	Model	Description
	NFU-AN-GL	Remote Shared Graphical Display Annunciator with backbox. Please refer to LT-6033NIT manual for further information.
	NK-AN-LCDG	Remote Shared Graphical Display Annunciator.
	NK-AN-LCD	Remote Shared Display Annunciator. Please refer to LT-895NIT NK-AN-LCD manual for further information.
	NK-MG-32	Master Graphic Driver Annunciator Board
	NK-AG-48	Adder Graphic Driver Board
	RTI-1	Remote Trouble Indicator (single LED and trouble buzzer).

Panel and Annunciator Kits

Model	Description
NFU-7000	Fire Alarm Panel includes the NK-7000FAC main board, the NK-LDC-3 Loop Driver Card, the NK-DISP-1640 graphic display, the NFU-7000 black backbox and red door.
NFU-7000-L	Fire Alarm Panel includes the NK-7000FAC main board, the NK-LDC-3 Loop Driver Card, the NK-DISP-1640 graphic display, a NK-7000LEXC12 and NK-7000LEXC6 expander chassis, the NFU-7000-L black backbox and red door.
NFU-AN-GL	Remote Annunciator includes NK-AN-LCDG Remote Graphics Annunciator with backbox enclosure NK-AN-BB1R

Mechanical Installation and Dimensions

Install the NK-7000BB backbox and door as shown in Figure 1 and Figure 2 for the NK-7000LBB backbox and door.

Figure 1: NK-7000BB Flush and Surface Enclosure Installation and Dimensions

NK-7000BB BACKBOX AND NK-7000DR DOOR

30.5cm

60 cm

BACKBOX FRONT VIEW

14.6 cm

10.8

3.8 cm

LEFT SIDE VIEW

36.8 cm

66 cm

BACKBOX

43 cm

71 cm

DOOR

KNOCKOUT LOCATIONS

4.5 cm

5 cm

15 cm

24 cm

RIGHT SIDE VIEW

4.5 cm   5 cm   5 cm   4.5 cm

4.5 cm

TOP VIEW
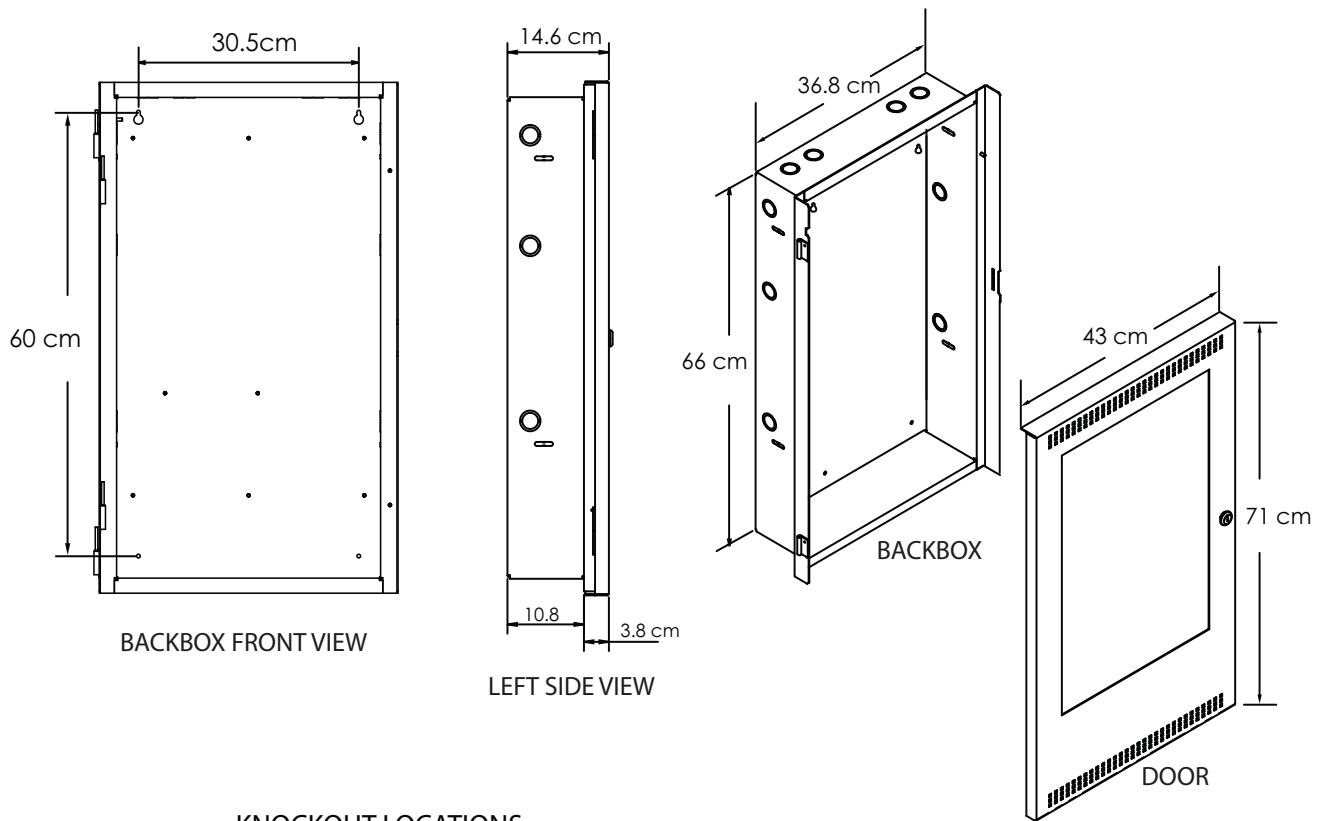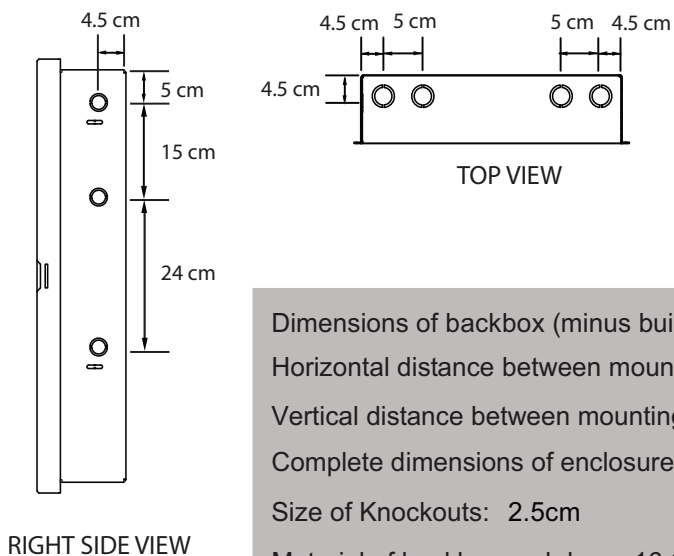
Dimensions of backbox (minus built-in trim ring)	66cm H x 36.8cm W x 10.8cm D
Horizontal distance between mounting screws	30.5 cm
Vertical distance between mounting screws	60 cm
Complete dimensions of enclosure with door	71cm H x 43cm W x 14.6cm D
Size of Knockouts: 2.5cm	
Material of backbox and door: 16 GA (1.59 mm) thick cold rolled steel	
Finish of backbox and door: Painted	

Mechanical Installation and Dimensions

Figure 2: NK-7000LBB Enclosure Installation Instructions and Dimensions

Material: Cold rolled steel
16GA (1.59 mm) thick for backbox
14GA (1.98 mm) thick for door
Finish: Painted except for hinges

NK-7000LBB Backbox

76cm
62cm
95 cm
MOUNTING HOLE
78
92 cm
79.5 cm
18 cm
5cm SINGLE KNOCKOUT
3 & 2.25 cm KNOCKOUT

Backbox

17.8 cm
WALL
WALL
SURFACE (SIDE VIEW)
FLUSH (SIDE VIEW)

Backbox with NK-7000LDR

20 cm
WALL
DOOR
BACKBOX
SURFACE (SIDE VIEW)

2 cm
BACKBOX
DOOR
WALL
FLUSH (SIDE VIEW)

NK-7000LDR Door

④
GUIDE BOTTOM HOLE TO TORX SCREW ON BOTTOM HINGE
DOOR

DOOR STOP
FLAT/TORX MACHINE SCREW
DOOR LOCK BRACKET
BOTTOM HINGE
BACKBOX

ℹ️ **Note:** Leave bottom of box conduit free for batteries. Mount the power supply in the same manner as shown in Figure 3.

Chassis Installation

1. Group the incoming wires through the top of the enclosure to prepare it for wiring the modules. Do not run the wires in-between the modules since it could cause a short circuit.
2. Use a wire tie to group wires for easy identification and neatness.
3. Be sure to connect a solid earth ground (from building system ground / to a cold water pipe) to the chassis earth ground mounting lug, and to connect the earth ground wire lugs from the main chassis to the ground screw on the backbox.
4. Mount chassis NK-7000FAC into backbox NK-7000LBB using the supplied hexnuts as shown in Figure 3 below.

Figure 3: Chassis Installation into NK-7000LBB
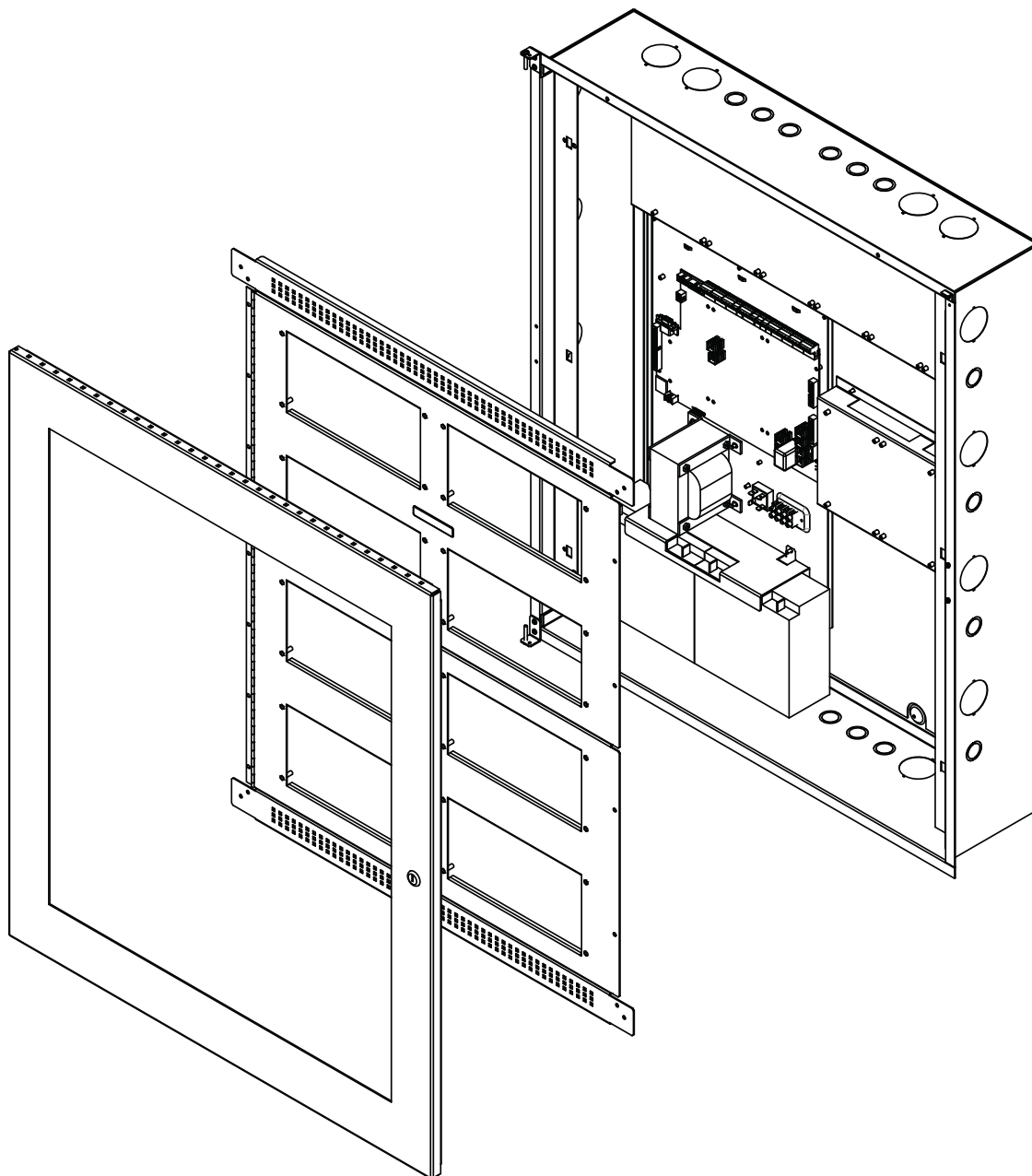
Note: Leave bottom of box conduit free for batteries.

The NK-7000FAC Main Chassis come pre-assembled with a main panel, display components and boards. Install the adder modules of different types as shown in the diagrams on the following pages.

> ⓘ **Notes:** For many adder modules to enable communication from the main module to all of the adder modules, it is necessary to add a continuity jumper on the last adder module in a chain (see the appropriate module settings section to verify the location of the continuity jumper on a particular circuit adder module). Only the last circuit adder module should have a jumper plug on its continuity jumper; all others must be left without a jumper plug.

Figure 4: Module Mounting Locations View #1

MAIN CHASSIS
MODEL NK-7000FAC

NK-AD-300
DIALER MODULE
(SEE NOTE 1)

NK-FNC
FIRE NETWORK
CONTROLLER
MODULE
(SEE NOTE 2)

NK-LDC-3
DUAL LOOP
DRIVER CARD
(PRE-ASSEMBLED)

M/F HEX SPACER

SCREW
PROVIDED
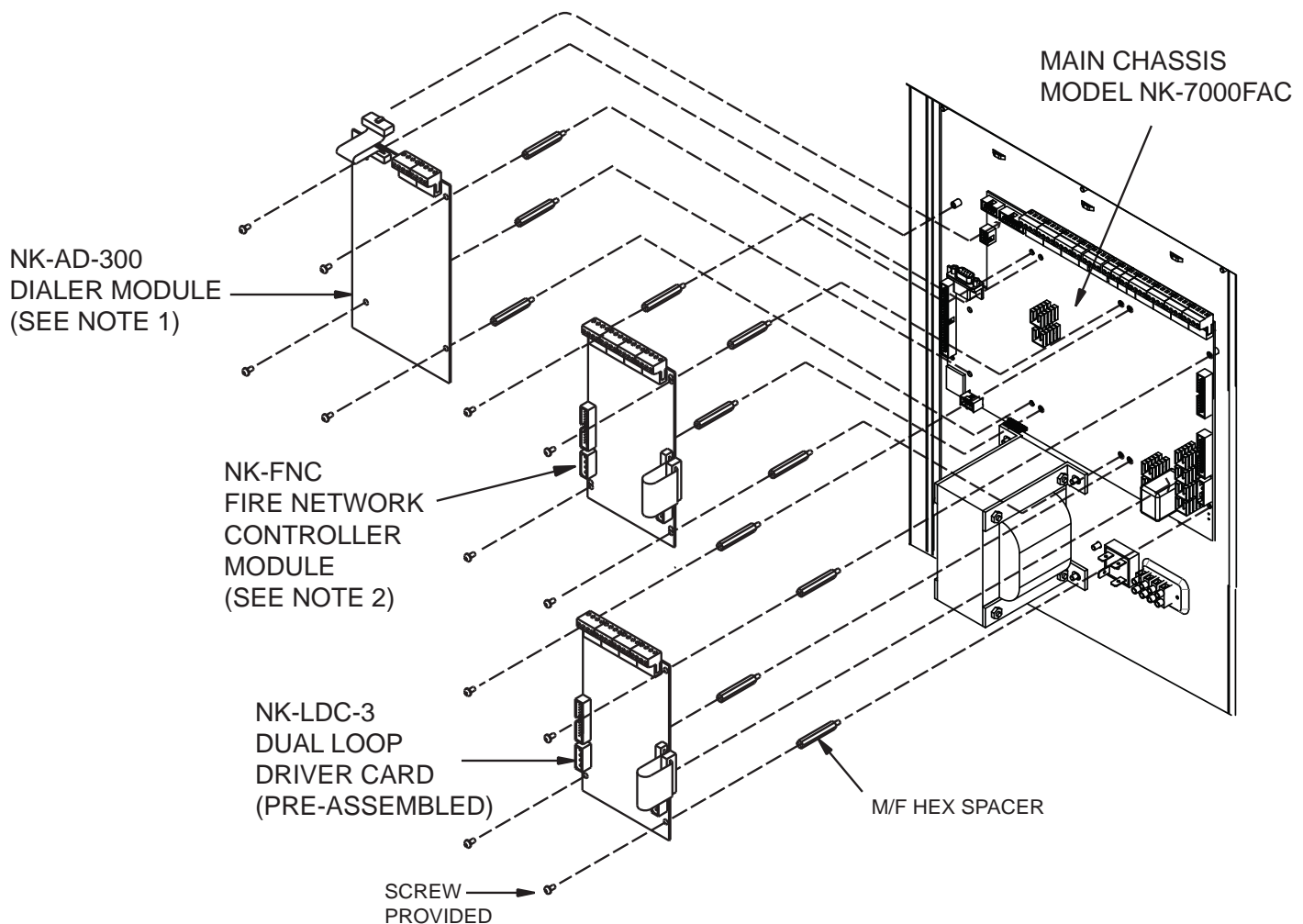
> ⓘ **Notes:**
> 1. Position reserved for NK-AD-300.
> 2. Position recommended for NK-FNC.
> 3. Other circuit adder modules may include:
>
>   • NK-FNC
>   • NK-DM-8A Detection Circuit Adder Module
>   • NK-SGM-4A NAC Circuit Adder Module
>   • NK-RM-8A Relay Circuit Adder Module
>   • NK-LDC-3 Loop Adder Module

Figure 5: Module Mounting Locations View #2

MAIN CHASSIS
NK-7000FAC

Provision for
NK-AD-300

NK-FNC in position 2
and other Adder Module
in position 1

2

1

MD-575 Long Ribbon Cable
MD-579 Short Power Cable
MD-580 Long Power Cable

MD-579

NK-FNC Fire Network Controller Module

This module is required in the main lobby and one per node. It mounts over the main fire alarm board, preferably in position 2. Use the four 2" (5.1cm) spacers and four screws to secure the NK-FNC to the main fire alarm board.

Display and Adder Modules Mounting Locations

NK-7000FAC Main Fire Alarm board in a NK-7000BB Enclosure

This package includes the NK-7000BB backbox, the NK-7000DR red door, the inner chassis and the NK-7000FAC Main Fire Alarm Control board and backplate, the NK-DISP-1640 LCD Display, and the NK-LDC-3 Dual Loop Driver Card.

Exterior View
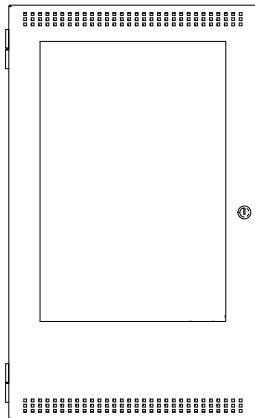
Interior View

Slot 1 is pre-assembled with NK-LDC-3. Slot 3 is reserved for NK-AD-300. If not required, this slot can be used to mount any of the adder modules.

The recommended mounting position is 2 for the NK-FNC. The NK-FOM-SP board, if used, is mounted over the NK-FNC board.

NK-7000FAC Main Board
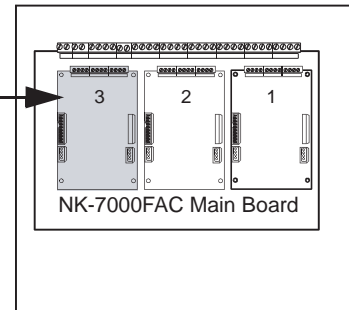
NK-7000FAC Main Fire Alarm board in a NK-7000LBB Enclosure

This package includes the NK-7000LBB backbox, the NK-7000LDR red door, the inner chassis and the NK-7000FAC Main Fire Alarm Control board and backplate, the NK-DISP-1640 LCD Display, the NK-LDC-3 Dual Loop Driver Card and the NK-7000LEXC12 and the NK-7000LEXC06 expander chassis.

Exterior View

Interior View

NFU-7000 Main Board

Slot 1 is pre-assembled with NK-LDC-3.

Slot 3 is reserved for NK-AD-300. If not required, this slot can be used to mount any of the adder modules. The recommended mounting position is 2 for the NK-FNC. The NK-FOM-SP board, if used, is mounted over the NK-FNC board.
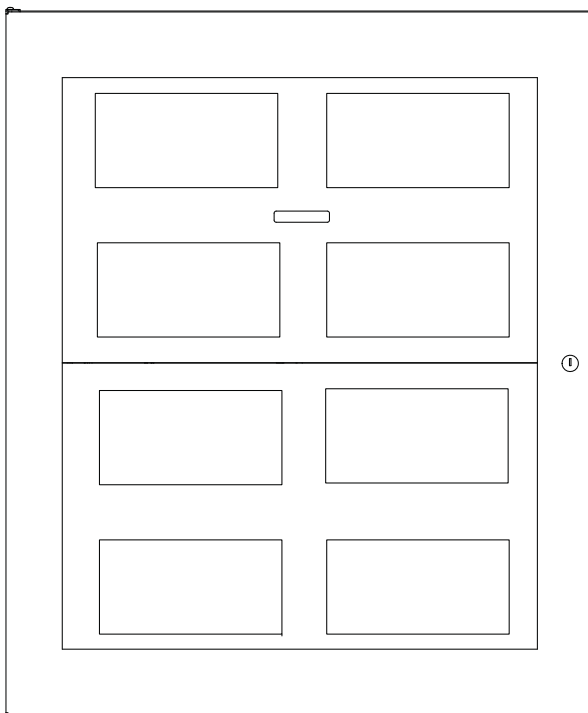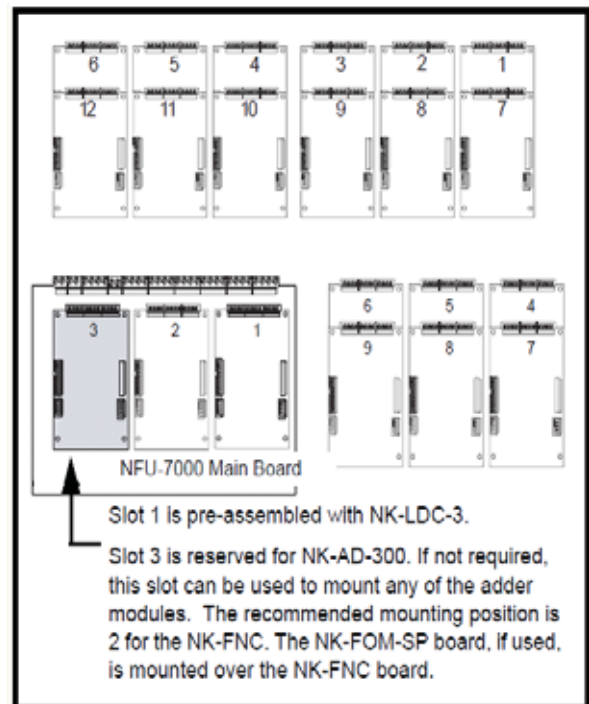
NETWORK CONTROLLER MODULES

The NK-FNC Fire Network Controller module is mounted in position 2 over the NFU-7000 main board.
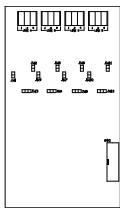
NK-FNC
Fire Network Controller Module
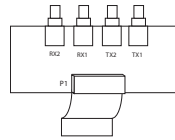
NK-FOM-SP
Fiber Optics Module
Mounts over the NK-FNC Fire Network Controller Module

ADDER MODULES

Each adder module occupies one module slot and mounts inside the following panels:

- NFU-7000
- NFU-7000-L
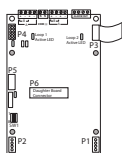
NK-LDC-3
Dual Loop Adder Module.
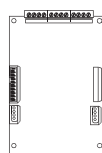
NK-DM-8A
Eight Initiating Circuit Module
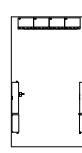
NK-SGM-4A
Four NAC circuit Module
DO NOT mount any board over this NAC board

NK-RM-8A
Eight Relay Circuit Module

NK-AD-300
DIgital Alarm Communicator Module

DISPLAY MODULES

These modules can be mounted in the NK-7000BB and NK-7000LBB inner chassis, and the NK-AN-BB1R, NK-AN-BB2R, NK-AN-BB3R enclosures (requires an NK-AN-LCD/LCDG as a driver). A "Frame" is a measure of display capacity used in the programming of the system.

NK-DISP-1640
Graphic Display Control(3 Frames)

NK-AN-32TZDS
Programmable Zone LED Annunciator Module (3 Frames)
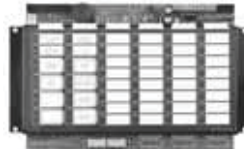
NK-IPS-24
Programmable Input Switches Module (2 Frames)

NK-DISP-420
Narrow Display Control(3 Frames)

NK-TZDS-48A
Programmable Zone/Trouble LED Annunciator Module (3 Frames)

NK-FDX-8/8K
Fan Damper Module (1 Frame)

15

Main Fire Alarm Module (MD-871A "N" Version Main Chassis)

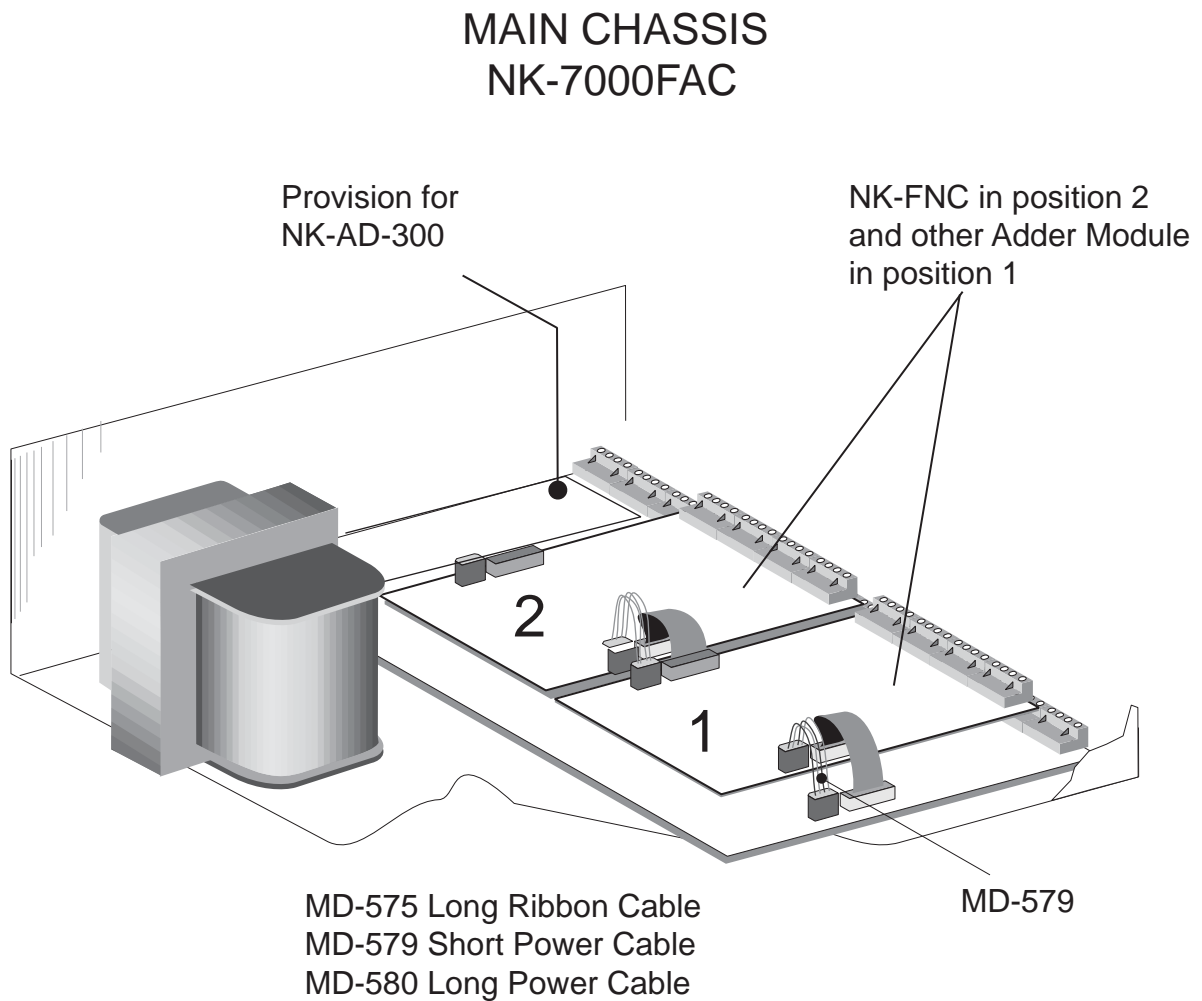|	
JW1	Jumper is removed if a NK-AD-300 is installed.
JW2,JW4	Jumpers are Factory Set and should not be changed.
JW5	Normally un-installed, add jumper to silence on-board buzzer.
JW6	Normally installed, remove jumper to enable external power supply supervision.
P1,2	Factory connection to Bridge Rectifier.
P3	Black RS-485 Connector connects to the Adder Loop NK-LDC-3.
P4	Connector for NK-AD-300.
P5	Connector for next 8 Conventional Hardwire Circuit Adder Modules (Expansion 1).
P6	Connector for first 8 Conventional Hardwire Circuit Adder Modules (Expansion 0).
P7	Ethernet jack.
P8	Power Connector for Adder Modules.
P9	RS-232C for Printer.
P10,11	Connection to 24 VDC Battery. Observe Polarity.
P14	Connector for Display Module.
P15, P18, J1	Connectors for Factory Use.
P16	NOT USED
P19	Connector for NK-FNC Fire Network Controller Module.
SW2	DIP Switch for Node address. Refer to table in Appendix C for Node Address Setting. Available addresses are 1 to 63. DIP Switch SW2-1 is the least significant digit.
NAC PWR	**24V FWR** input terminals for additional power for signal adder modules.
F1	20 Amp slow blow non-replaceable fuse.

Note: To enable communication from the Main Module to all of the Adder Modules, it is necessary to add a Continuity Jumper on the last Adder Module in a chain (see the appropriate Module Settings section to verify the location of the Continuity Jumper on a particular Circuit Adder Module). Only the last circuit adder module should have a jumper plug on its continuity jumper; all others must be left without a jumper plug.

TO CONFIGURE THE FIRE ALARM PANEL USE THE RS-485 CONNECTOR P4 OF THE LAST ADDER LOOP CONTROLLER MODULE INSTALLED OR IF NOT PRESENT, P3 ON THE NK-7000FAC MAIN FIRE ALARM MODULE.

Figure 6: Main Fire Alarm Module (MD-871A "N" Version Main Chassis)
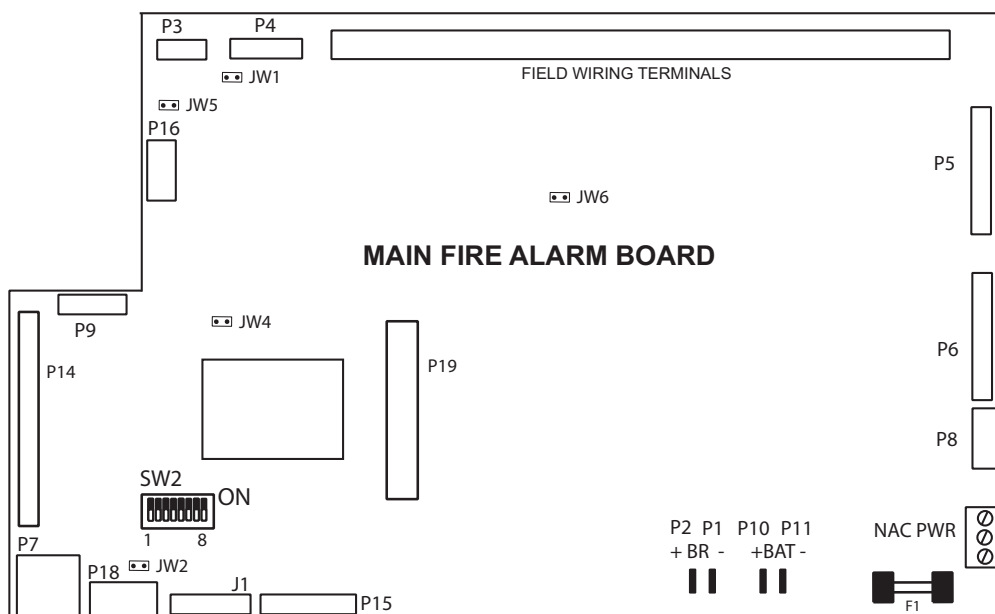
NK-DISP-1640 Graphical Main Display Module

The NK-DISP-1640 is part of the NFU-7000 and NFU-7000-L Fire Alarm Panels. It is mounted onto the inner chassis of backboxes NK-7000BB and NK-7000LBB.

Figure 7: NK-DISP-1640 Graphical Main Display Module
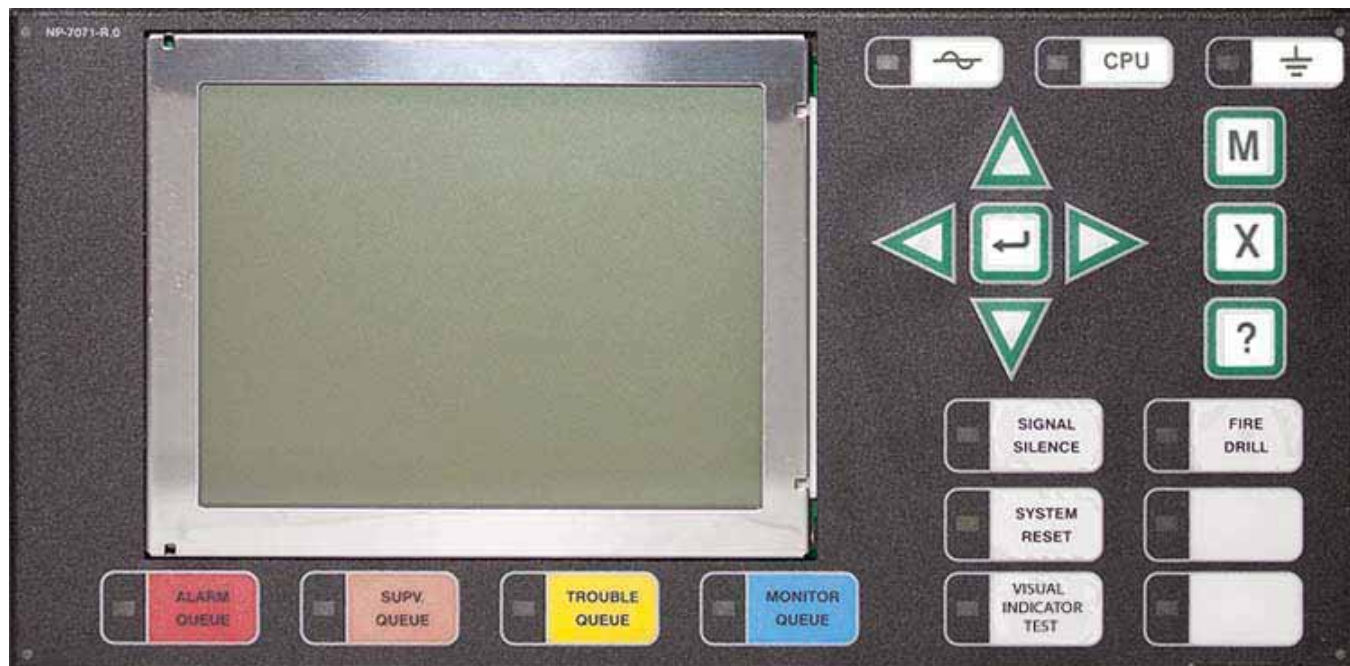
P1: The cable connected to P1 on the back of the NK-DISP-1640 is connected to **P14** of the NK-7000FAC main fire alarm board (see Figure 6).

P2: This connector on the back of the NK-DISP-1640 is connected to **P1** of the next display module if used.

> **Note:** The main display module comes with slide-in paper labels including both English and French slide-ins, and laser printer-compatible blanks for zone labelling.

17

NK-DISP-420 Main Display Module

The NK-DISP-420 is another available display which can be installed onto the inner chassis of backboxes NK-7000BB and NK-7000LBB.

Figure 8: NK-DISP-420 Main Display Module (Part of Main Chassis c/w Main Fire Alarm Module)

P1: The cable connected to P1 on the back of the NK-DISP-420 is connected to **P14** of the NFU-7000FAC main fire alarm board (see Figure 6).

P2: This connector on the back of the NK-DISP-420 is connected to **P1** of the next display module if used.

> **Note:** The main display module comes with slide-in paper labels including both English and French slide-ins, and laser printer-compatible blanks for zone labelling.

NK-FNC Fire Network Controller Module

An NK-FNC Fire Network Controller module is required in each fire alarm node in the system. The NK-FNC also provides a connection for an optional NK-FOM-SP Fiber Optics Module.

Figure 9: NK-FNC Fire Network Controller Module
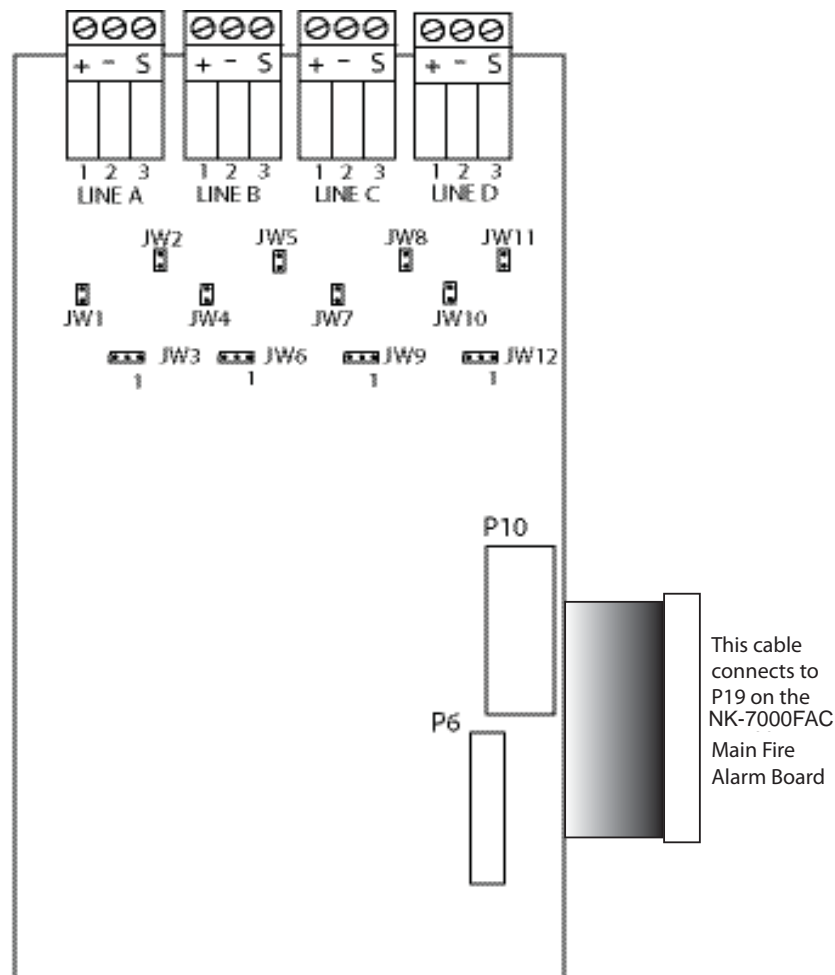
Table 1: NK-FNC Module List of Connectors and Jumpers and Functions

CONNECTOR OR JUMPERS	Function
P6	**P6** is for Factory Use Only.
P10	**P10** connects to **P1** of the NK-FOM-SP Fiber Optic Network Adder Module if used.
JW1, JW2, JW4, JW7, JW8, JW11	Jumpers for **JW1**, **JW4**, **JW7**, and **JW10** equal Line Termination (always short). Jumpers for **JW2** and **JW8** equal Ground Fault (always short).
JW5 and JW11	Leave both un-installed. Do not connect JW5 or JW11 (open)
JW3, JW6, JW9, JW12	Jumpers for **JW3**, **JW6**, **JW9**, **JW12** shall be present between pins 1 and 2 (far right) and remain as is.

> ℹ️ **Note:** Network connection is through twisted cable from Line A, B, C and D. Refer to Figure 26 and 27 for specific wiring and cable information.

Figure 10: NK-FOM-SP Fiber Optic Network Module
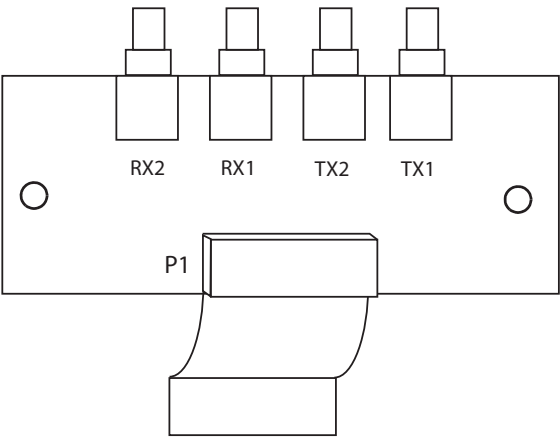
One of these modules is required at each panel where fiber optics will be used between them. The NK-FOM-SP will be mounted over the NK-FNC Network board (over the field wiring terminals) with two #6 Phillips screws and two Hex spacers.

Table 2: NK-FOM-SP Fiber Optic Network Module Cable Connection

Connector	Function
P1	**P1** cable attaches to **P10** of the NK-FNC Fire Network Controller Module.

NK-TZDS-48A 48 LED Annunciator Adder Module

Figure 11: 48 LED Annunciator Adder Module (NK-TZDS-48A)
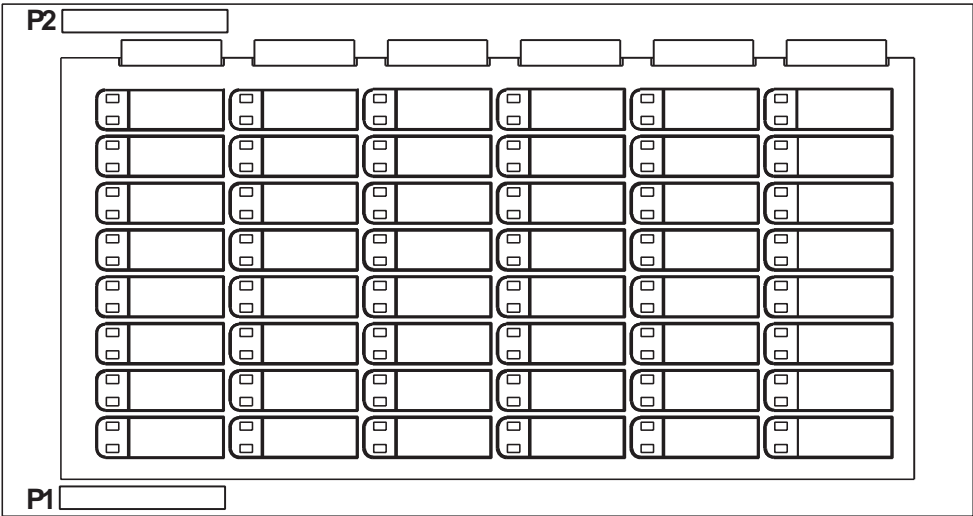
Table 3: NK-TZDS-48A LED Annunciator Adder Module Cable Function

Connector	Function
P1	**P1** Cable connects to P2 of previous display module.
P2	**P2** Cable connects to P1 of next display module

Note: The zone display module comes with laser printer-compatible slide-in paper labels for zone labelling.

Figure 12: NK-IPS-24 Programmable Input Switches Module
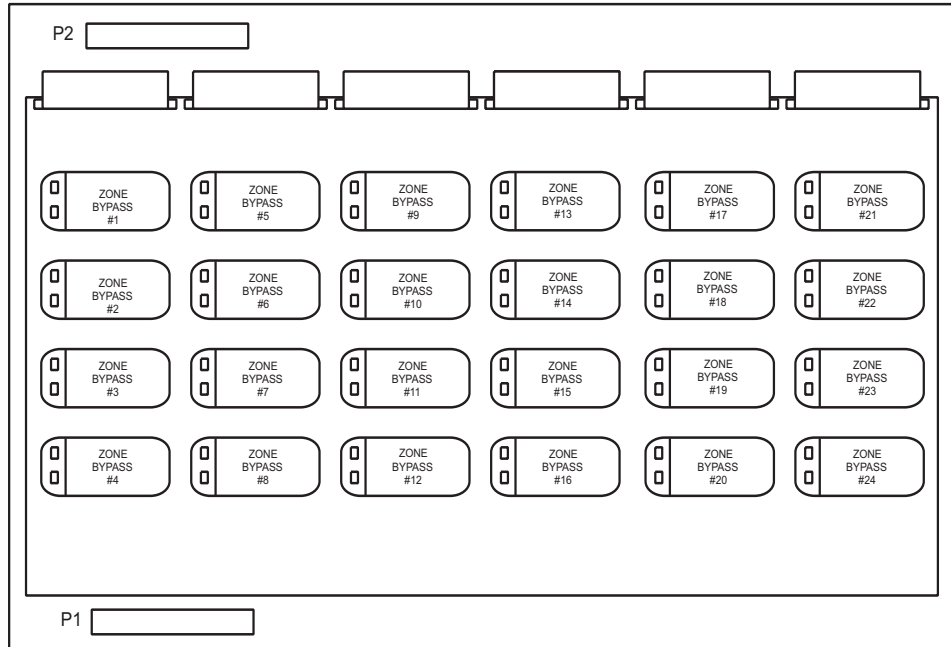
Table 4: NK-IPS-24 Programmable Input Switches Module Cable Function

Connector	Function
P1	**P1** Cable connects to P2 of previous display module.
P2	**P2** Cable connects to P1 of next display module

Note: The NK-IPS-24 module comes with laser printer-compatible slide-in paper labels for zone labelling.

Figure 13: Fan Damper Control Display Module (NK-FDX-8/-8K)

There are two models of the Fan Damper Control Display modules available. The NK-FDX-8 provides switch control and LED indication of 8 fan damper zones. The NK-FDX-8K provides switch control of 7 fan damper zones with the eighth zone activated by keyswitch. LED indication is provided for all 8 fan damper zones on the NK-FDX-8K. Both the NK-FDX-8 and the NK-FDX-8K are used in conjunction with an NFU-7000 Fire Alarm Control Panel.
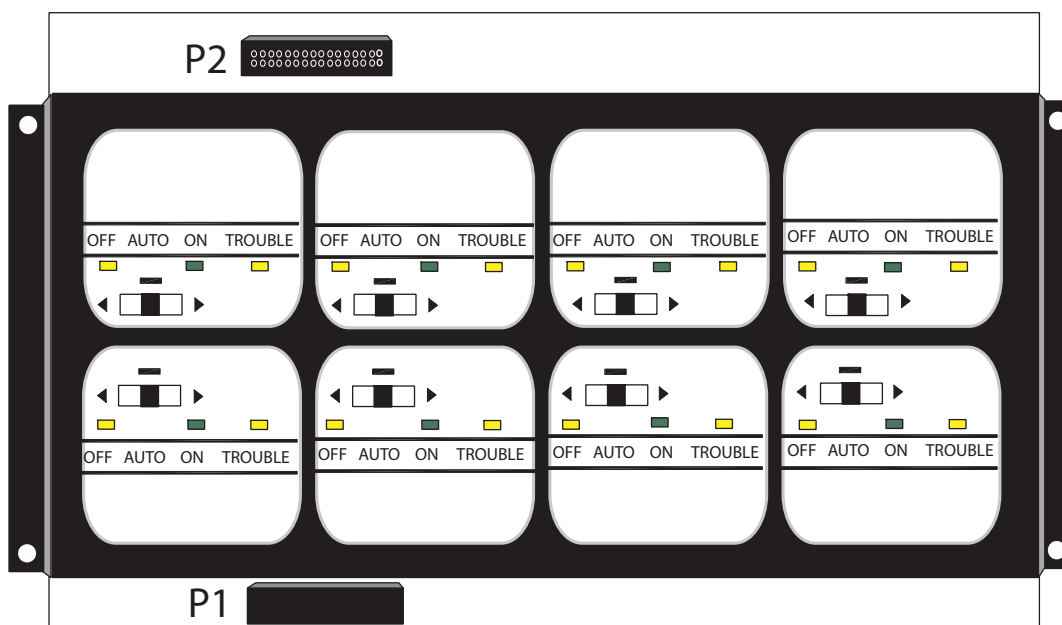
Fan Damper Operation

The NK-FDX-8 Fan Damper Control Display module has eight configurable output circuits, each with a three position switch. The NK-FDX-8K operates in the same manner as the NK-FDX-8 except zone 8 is controlled by a remote keyswitch. Each switch has an ON and OFF position, plus an AUTO position. If the switch is placed in the AUTO position, the output will activate as programmed or configured. The output can be manually turned ON or OFF by placing the switch in the ON or OFF position, respectively.

Basically each switch can be configured to operate multiple fans or dampers. For each switch, there are 3 operations provided; outputs to turn ON, same outputs to turn OFF and inputs to bypass.

An example of the most common use of the NK-FDX-8 or NK-FDX-8K Fan Damper Control Display module is to operate exhaust fans and confirm fan operation (via monitor modules). See NK-FDX-8 Block Diagram on the next page for a block diagram of fan and monitor set up.

Example

As shown in the figure to the right, Parking Garage #1 has 3 exhaust fans. The three position switch is configured to operate (to turn ON) fans 1, 2 and 3 in stairwell #1. The switch is set in the AUTO position. Upon activation (via alarm or some other programmed trigger) with the switch in AUTO, the 3 fans (1,2, and 3) in stairwell #1 are turned ON automatically. Monitor modules in the Parking Garage #1 detect that all 3 fans are operating, therefore the ON LED will illuminate steadily. If one of the fans did not turn ON (due to malfunction), both the ON and OFF LEDs will flash at the slow trouble rate. The TRBL (trouble) LED will illuminate steady amber based on feedback from the monitor module that one or more of the fans is not working.

ON LED shows steady for all outputs operating and confirmed.

OFF LED shows steady for all outputs NOT operating and confirmed.

TRBL LED shows steady for one or more outputs NOT operating and confirmed.
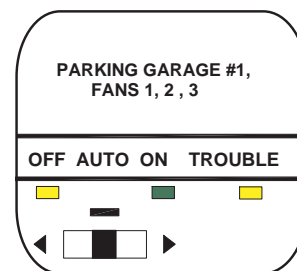
> **Note:** A bypass function always has priority, so that if a circuit is bypassed by moving the switch manually or by loop bypass (NFU-7000 Fire Alarm Panel), no other action will operate this switch other than again moving the switch manually or by un-bypassing the loop.

Figure 14: NK-FDX-8 Block Diagram of Fan and Monitor Set-up
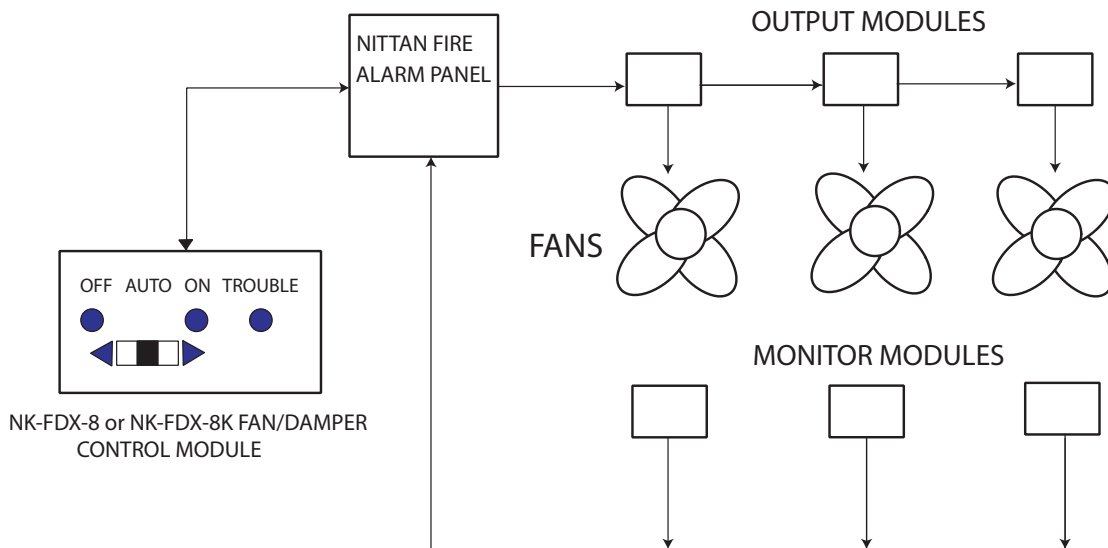
Before mounting the NK-FDX-8K module, if a keyswitch is to be connected, wire the keyswitch to terminals at TS1 as shown in Figure 15 below. Mount the NK-FDX-8 and NK-FDX-8K Fan Damper Control Display modules in any position on the front part of the NFU-7000 chassis and backbox.

Figure 15: NK-FDX-8K Fan Damper Control Display Module
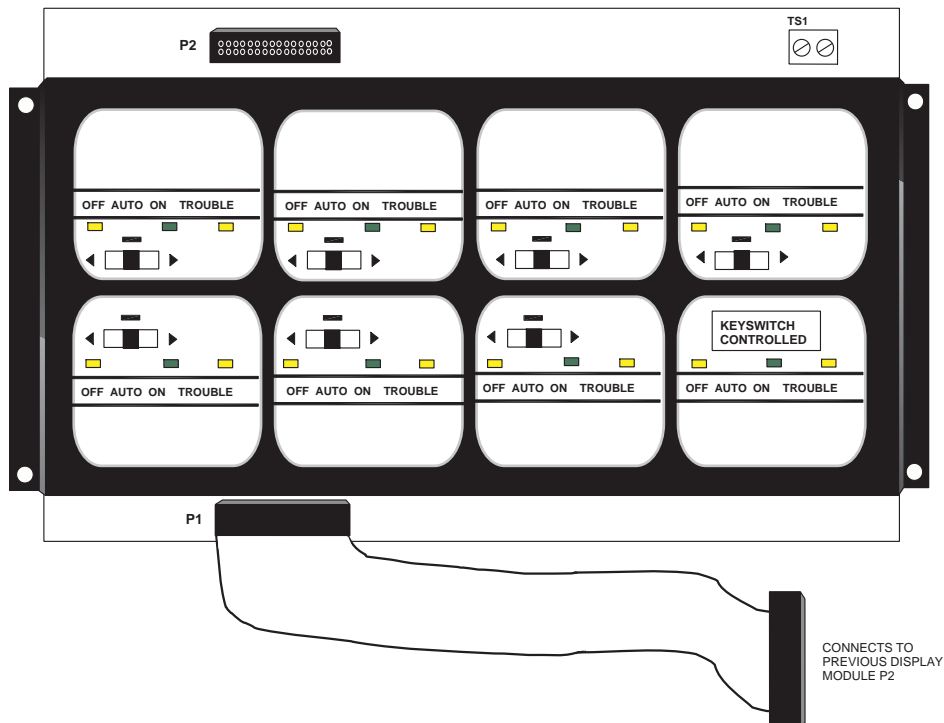
> **Note:** There are also terminals located behind TS1 on the other side of the board for the convenience of wiring the keyswitch. The last fan damper zone in the bottom right position of the NK-FDX-8K is controlled by the keyswitch.

UUKL with NK-FDX-8 and NK-FDX-8K

The models NK-FDX-8 and NK-FDX-8K can be effectively use to provide an automatic and manual control system for smoke. Refer to document number LT-966NIT for extensive instructions regarding UUKL applications.

Conventional Hardwire Circuit Adder Module

Figure 16: Detection Adder Module (NK-DM-8A)
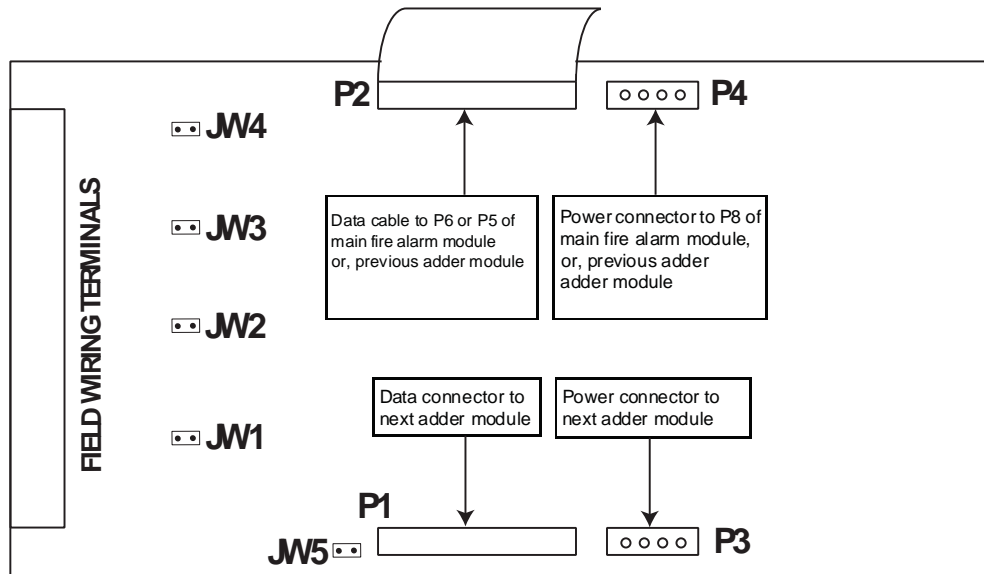
JW1: Install jumper for Class A (Style D) operation of initiating circuits 1 and 2.

JW2: Install jumper for Class A (Style D) operation of initiating circuits 3 and 4.

JW3: Install jumper for Class A (Style D) operation of initiating circuits 5 and 6.

JW4: Install jumper for Class A (Style D) operation of initiating circuits 7 and 8.

JW5: Remove continuity jumper if there are any more adder modules installed.

Note: For Class A (Style D) operation the NFU-7000 must be configured as Class A via the configuration program.

Figure 17: 4 Notification Appliance Circuit Module (NK-SGM-4A)

GREEN SIGNAL LEDs
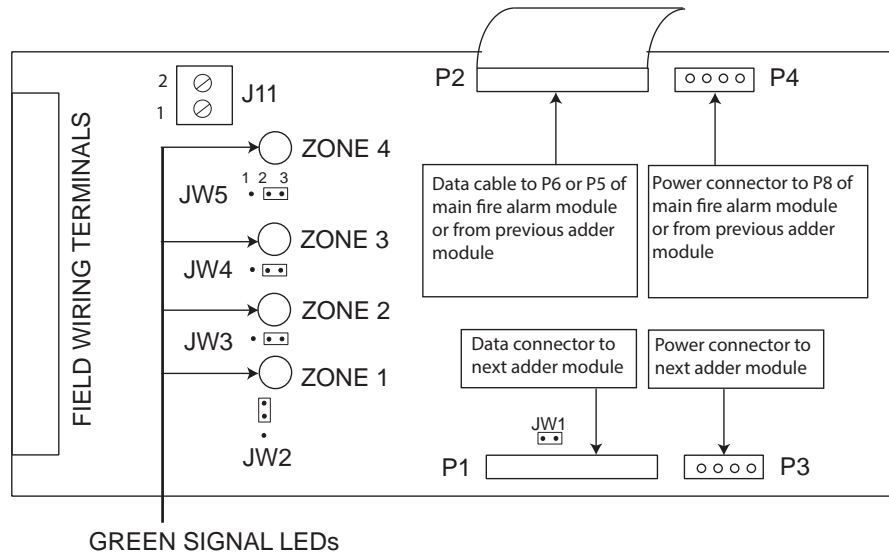
Basic Mode

Jumpers on the NK-SGM-4A NAC Circuit Module and their functions:

JW1: Remove continuity jumper if this is not the last adder module installed.

JW2, JW3, JW4, and JW5: Leave these jumpers open, on positions 2 and 3.

J11 Terminals: Not connected.

Components

There are four green LEDs on the board, one for each signal zone. The LED will illuminate or flash following the signal rate sent to its zone. It will be OFF when the system is normal and they will illuminate when a signal zone is activated. The LED does not reflect what is happening on the signal zone, just that it is receiving data to activate that signal zone.

> **Note:** Jumpers JW2, JW3, JW4 and JW5 are positioned on pins 2 and 3 (right two pins with board orientation as shown above) from factory.

Operation

The basic mode provides four NAC circuits. In this case, leave jumpers JW2, JW3, JW4 and JW5 as they come on pins 2 and 3, and do not make any connection to terminal block J11.

Module Settings

Figure 18: 8 Relay Circuit Module (NK-RM-8A)
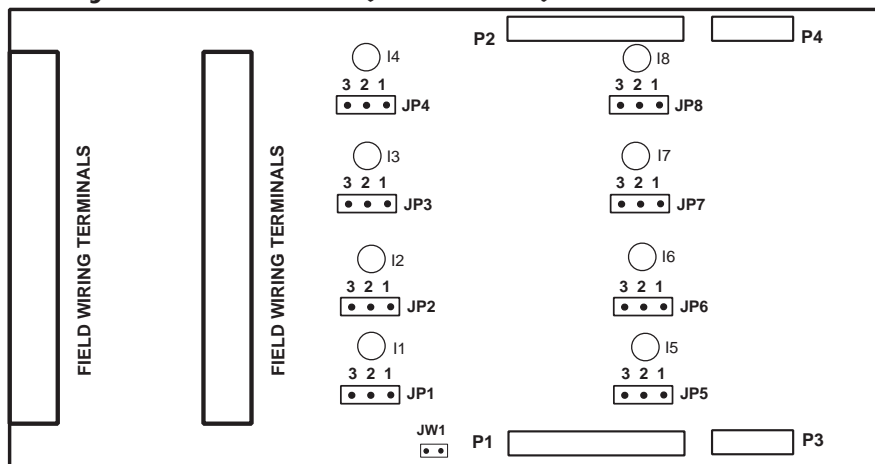
P2: Data cable to P6 or P5 of main fire alarm module, or to previous adder module.

P1: Data connector for next adder module.

P4: Power connector to P8 of main fire alarm module, or to previous adder module.

P3: Power connector for next adder module.

JW1: Remove continuity jumper if there are any more adder modules installed. If this is the last module installed, leave JW1 on.

JP1-JP8: Move jumpers from pins 1 and 2 to 2 and 3 to connect relay commons between two or more relays.

NK-AD-300 MAIN BOARD:

There are two jumpers on the NK-AD-300 which are used for operation/configuration purposes. Jumper JW1 is used to reset the default passcode. Jumper JW2 is required for configuring (which can be done using the NFU-7000 Configurator Software) the NK-AD-300. Refer to Figure 19 below for location of jumpers, cable connections, pushbutton and LEDs. Table 6 following, provides a description of the user items on the NK-AD-300.

Figure 19: NK-AD-300 Board Layout
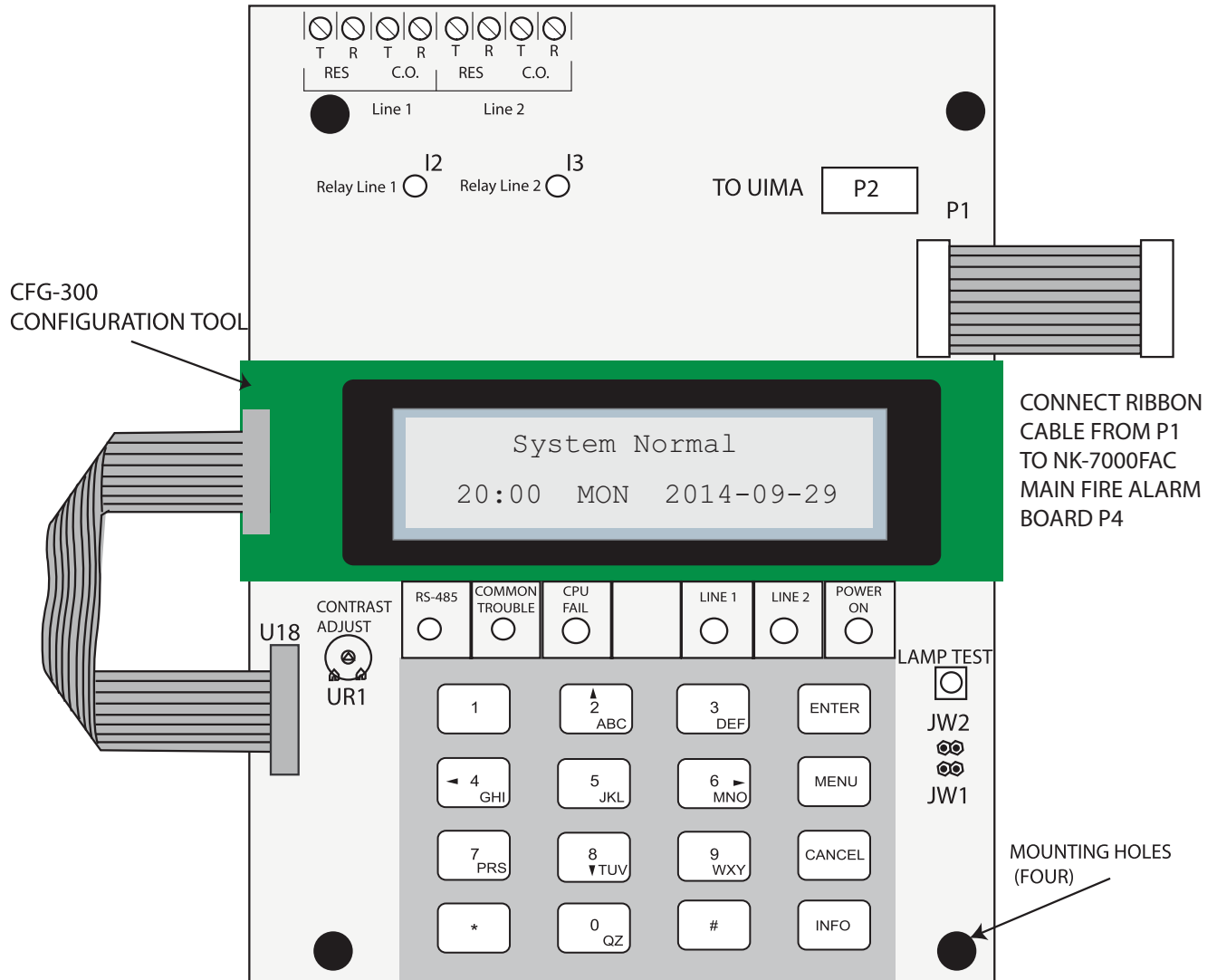
Table 5: NK-AD-300 Cable Connectors and Miscellaneous

Cable Connector	Function
P1	Ribbon Cable for connecting to P4 of NFU-7000 main fire alarm module.
P2	RS-232C/RS-485 Connection for computer configuration.
U18	Connector for CFG-300 Configuration Tool
Lamp Test button	Press and hold this button to test all the NK-AD-300 LEDs
UR1 Potentiometer	This potentiometer is for adjustment of the CFG-300 LCD contrast.

The following table lists all the LEDs located on the NK-AD-300 board and states the function of each LED.

Table 6: NK-AD-300 List of LEDs and their Functions.

LEDs	LED Function
Relay Line 1	Located below Line 1 terminal block. When Line 1 relay is energized, this green LED will illuminate.
Relay Line 2	Located below Line 2 terminal block. When Line 2 relay is energized, this green LED will illuminate.
RS-485	Status LED for communication, will flash when RS-485 communication is active.
Common Trouble	Steady amber for any troubles on the Fire Alarm panel or NK-AD-300.
CPU Fail	Steady amber for any on board CPU trouble.
Telephone Line 1	Telephone status indicator LED; Red when the line is in use, Amber when there is a line trouble.
Telephone Line 2	Telephone status indicator LED; Red when the line is in use, Amber when there is a line trouble.
Power ON	Green LED is ON steady when power is supplied to the board.

The following table lists the user jumpers available on the NK-AD-300 and their functions.

Table 7: NK-AD-300 List of Jumpers for Operation and Configuration

Jumper Number	Jumper Function
JW1	Normally open. Place jumper here and power down the NK-AD-300 by disconnecting P1 or power down the fire alarm panel (AC and Batteries), then power back to revert to default passcode. After reset, remove the jumper. Leave normally open.
JW2	Normally open to BLOCK remote configuration via modem, PC with a UIMA converter module or using the LCD and keypad at the NK-AD-300. Place jumper here to ALLOW any type of configuration. Remove jumper once configuration is complete.

See the *NK-AD-300 Installation and Operation Manual LT-888NIT* for more information.

NK-LDC-3 Dual Loop Driver Card

The NK-LDC-3 Dual Loop Driver Card provides two addressable loops. The Dual Loop Driver Card may be mounted over the NK-7000FAC main fire alarm board of the NFU-7000 Fire Alarm Panel or on any chassis that supports Driver Cards. Refer to the Display and Adder Modules section for mounting applications. This module is mounted using four #6 screws and (if necessary) four 1 1/2" (3.8 cm) spacers.

Power	The power is supplied to the board via cable from the main fire alarm board or from the previous loop controller module into the P1 POWER IN connector. Connect the P2 POWER OUT connector to the next loop controller module or other adder module. One power cable is supplied with this module.
RS-485:	The RS-485 cable comes attached at P5 and is either connected to P3 of the main fire alarm module or connected from the previous loop controller module. If the next loop controller module is used, connect the RS-485 out at P4 to the next loop controller module; if it is not used, leave without connection.
	During the system configuration work, use P4 connector of the last NK-LDC-3.
DIP Switches:	Use the DIP switches to set the binary address of the board. SW1-1 is the lowest significant digit and ON is active. For example, an address of two would be created by turning SW1-1 OFF, SW1-2 ON and DIP switches SW1-3 to SW1-8 OFF. Refer to Appendix C for DIP switch settings.
Loop 1:	This is the addressable loop for all initiating devices. Wire the loop as shown in Figures 23, 24 and 25.
Loop 2:	This is the addressable loop for all initiating devices. Wire the loop as shown in Figures 23, 24 and 25.
Jumpers:	A jumper is provided at JW2 for normal operation. To reset the board, leave the jumper at JW2 and momentarily short the pins at position JW1.
RS-232 Debug Interface:	This connection if for factory use only.
JTAG Port:	This connection is for factory use only.

Figure 20: NK-LDC-3 Dual Loop Driver Card

DIP SWITCHES ARE FOR THIS
BOARD'S ADDRESS.   SW1-1
IS THE LEAST SIGNIFICANT
DIGIT (BINARY). ACTIVE
POSITION IS ON.

ADDRESS
DIP SWITCH

LOOP 1

LOOP 2

SW1

1   8

Green flashing
RS-485 heartbeat
LED

GND FAULT

Loop 1 Active LED
Loop 2 Active LED

RS-485
OUT

P4

JW2- normally shorted, a
jumper is here to enable
watchdog timer.

RS-485
CABLE IN

P5

JW1- normally open,
pins are momentarily
shorted to reset
hardware.

POWER CABLE
(OUT)

P2

P1

POWER CABLE
(IN)

COM (-)
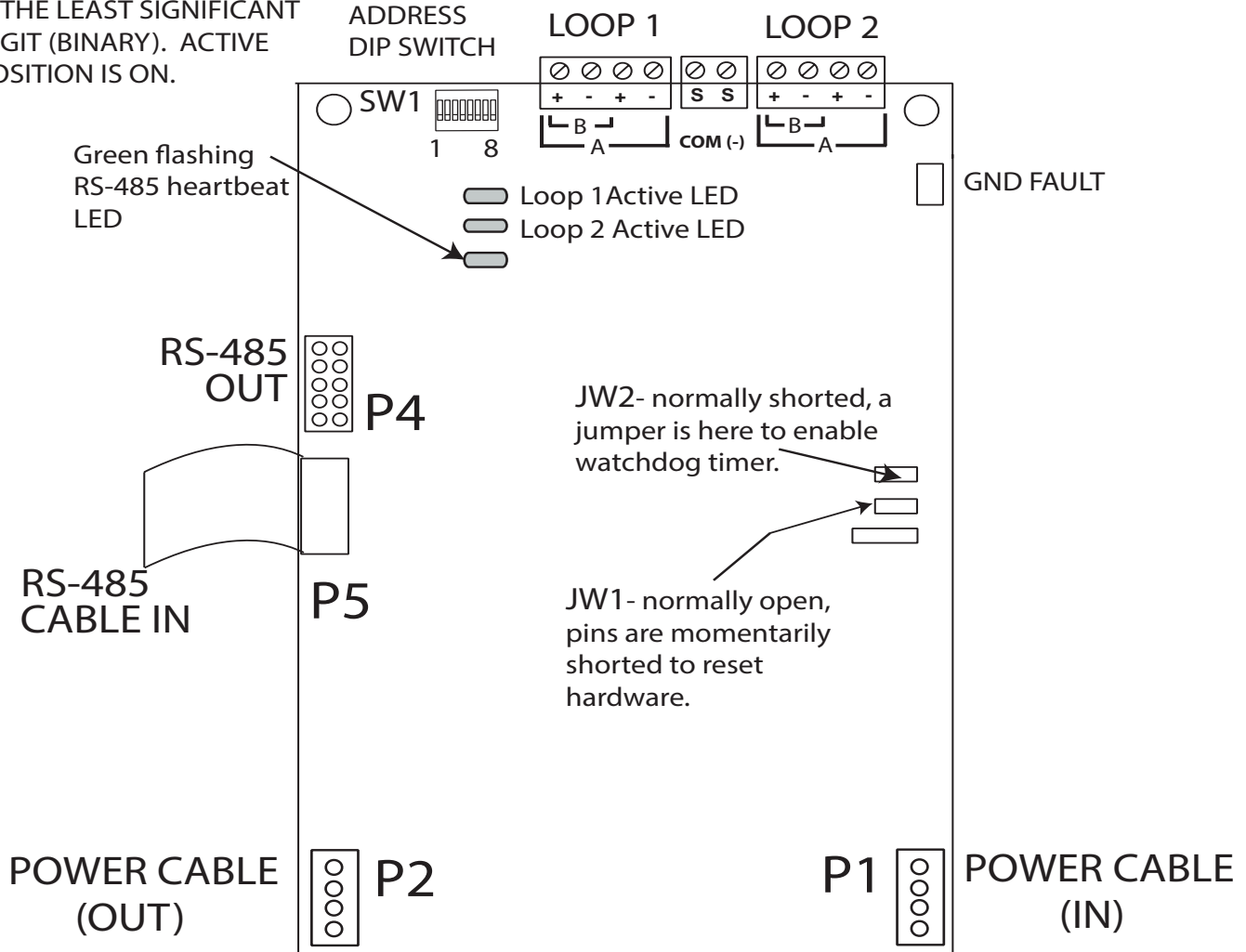
Wiring The Addressable Loops

There are two addressable loops present on this board that are wired in the same manner as shown in the wiring diagrams beginning with Figure 23. Although these drawings show only Loop 1; Loop 2 is wired in the same way as Loop 1 is.

Notes for NK-LDC-3

- All circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.
- Loop wiring: maximum loop resistance is 50 ohms total. These lines power-limited and fully supervised.

Field Wiring

Main Fire Alarm Module Terminal Connections

Wire devices to terminals as shown in below. Refer to Appendix A for specifications and to LT-1023NIT for compatible devices.

ATTENTION: Do not exceed power supply ratings:

Main Fire Alarm board NK-7000FAC total current for NACs is 10A max.

Notes:

The terminal blocks are removable for ease of wiring.

All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.

Figure 21: Main Fire Alarm Board Field Terminal Connections

NK-7000FAC Main Fire Alarm Controller board

P3

P4

Shield one end of the RS-485 LOOP ONLY

RS-485 INTERFACE TO ANNUNCIATORS

(POWER LIMITED)

RS485
+
-
S

USE TWISTED SHIELDED PAIR 22 AWG UP TO 2000 FT. 20 AWG UP TO 4000 FT.

S

TROUBLE
COM
NO
NC

COMMON TROUBLE CONTACTS 24 VDC, 1 AMP RESISTIVE LOAD

ALARM
COM
NO
NC

AUXILIARY COMMON ALARM CONTACTS 24 VDC, 1 AMP RESISTIVE LOAD

MUST BE CONNECTED TO A LISTED POWER LIMITED SOURCE OF SUPPLY

SUPV.
COM
NO
NC

AUXILIARY COMMON SUPERVISORY CONTACTS 24 VDC, 1 AMP RESISTIVE LOAD

SIG GND or COM(-)

NOT USED

Figure 22: Main Fire Alarm Control board Field Terminal Connections (continued)

Notes:

- All circuits are power limited (unless marked otherwise) and must use type FPL, FPLR, or FPLP power limited cable.
- NACs are fully supervised and rated for 24 VDC special application, 1.7A max. They must be wired as shown in the *Wiring Tables and Information* section.

Figure 23: Dual Loop Driver Card Terminal Connections - Class B

NK-LDC-3 DUAL
LOOP DRIVER CARD

TWISTED PAIR WIRE

PAIR WIRE

ANALOG
LOOP 1

ANALOG
LOOP 2

Conventional Heat Sensors
and Manual Pull Stations

PAIR WIRE

2 Pair

UL Listed
Power Supply 24V DC

TWISTED SHIELDED PAIR WIRE IS NOT
RECOMMENDED. IF USED THE
SHIELD SHOULD BE TERMINATED AT
THE TERMINALS MARKED SHIELD

LEGEND

Addressable Smoke Sensor
with Standard Analog Base

Addressable Thermal Sensor
with Standard Analog Base

Conventional Smoke
Sensor

Combination
Horn/Strobe

Addressable
Monitor Module

Addressable Supvr.
Output Module

End-Of-Line-Resistor

Notes:
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Loop wiring: maximum loop resistance is 50 ohms total. These lines are power-limited and fully supervised.

Figure 24: Dual Loop Driver Card Terminal Connections - Style 7

NK-LDC-3 DUAL LOOP DRIVER CARD

ANALOG LOOP 1

ANALOG LOOP 2

TWISTED PAIR WIRE

TWISTED PAIR WIRE

ADDRESSABLE SMOKE DETECTOR WITH ISOLATOR BASE

TWISTED PAIR WIRE

TWISTED PAIR WIRE

Conventional Heat Sensors and Manual Pull Stations

ADDRESSABLE THERMAL SENSOR WITH ISOLATOR BASE
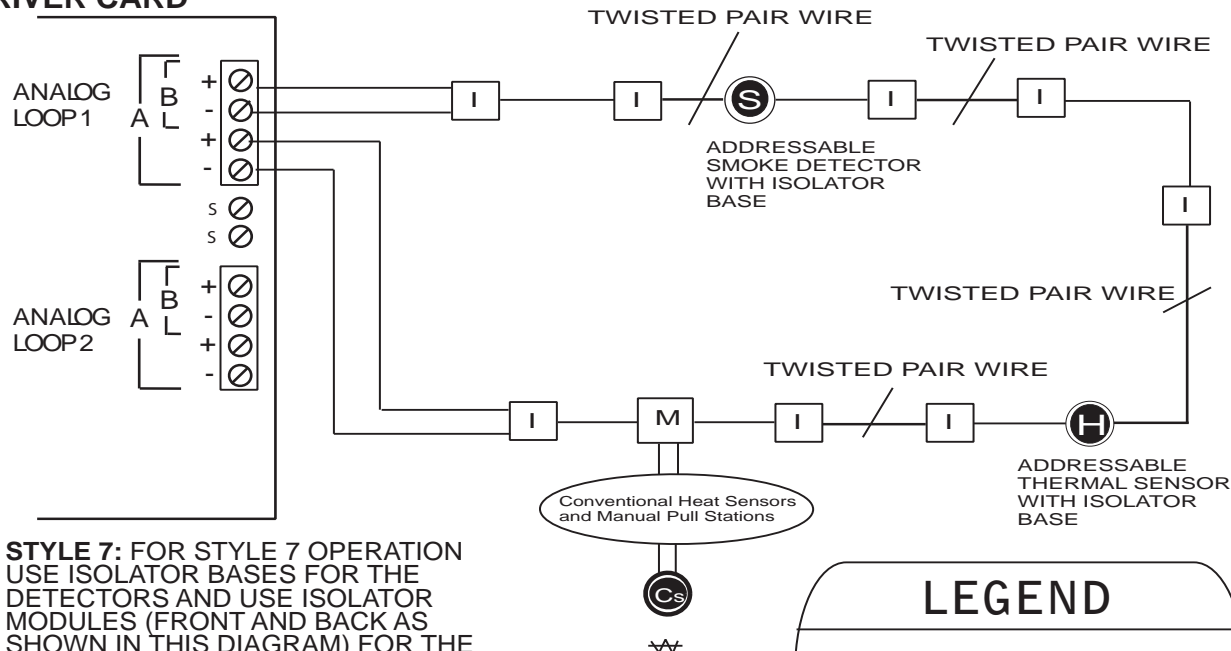
STYLE 7: FOR STYLE 7 OPERATION USE ISOLATOR BASES FOR THE DETECTORS AND USE ISOLATOR MODULES (FRONT AND BACK AS SHOWN IN THIS DIAGRAM) FOR THE ADDRESSABLE PULL STATIONS, MONITOR MODULES, AND CONTROL MODULES

TWISTED SHIELDED PAIR WIRE IS NOT RECOMMENDED. IF USED THE SHIELD SHOULD BE TERMINATED AT THE TERMINALS MARKED SHIELD

LEGEND

(S) Addressable Smoke Sensor with Isolator Base

(H) Addressable Thermal Sensor with Isolator Base

(Cs) Conventional Smoke Sensor

M   Addressable Monitor Module

I   Fault Isolator Module

End-Of-Line-Resistor

Notes:

- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Isolators need to be close nipple connected to the device being protected.
- Loop wiring: maximum loop resistance is 50 ohms total. These lines are power-limited and fully supervised.

Figure 25: Dual Loop Driver Card Terminal Connections - Style 6
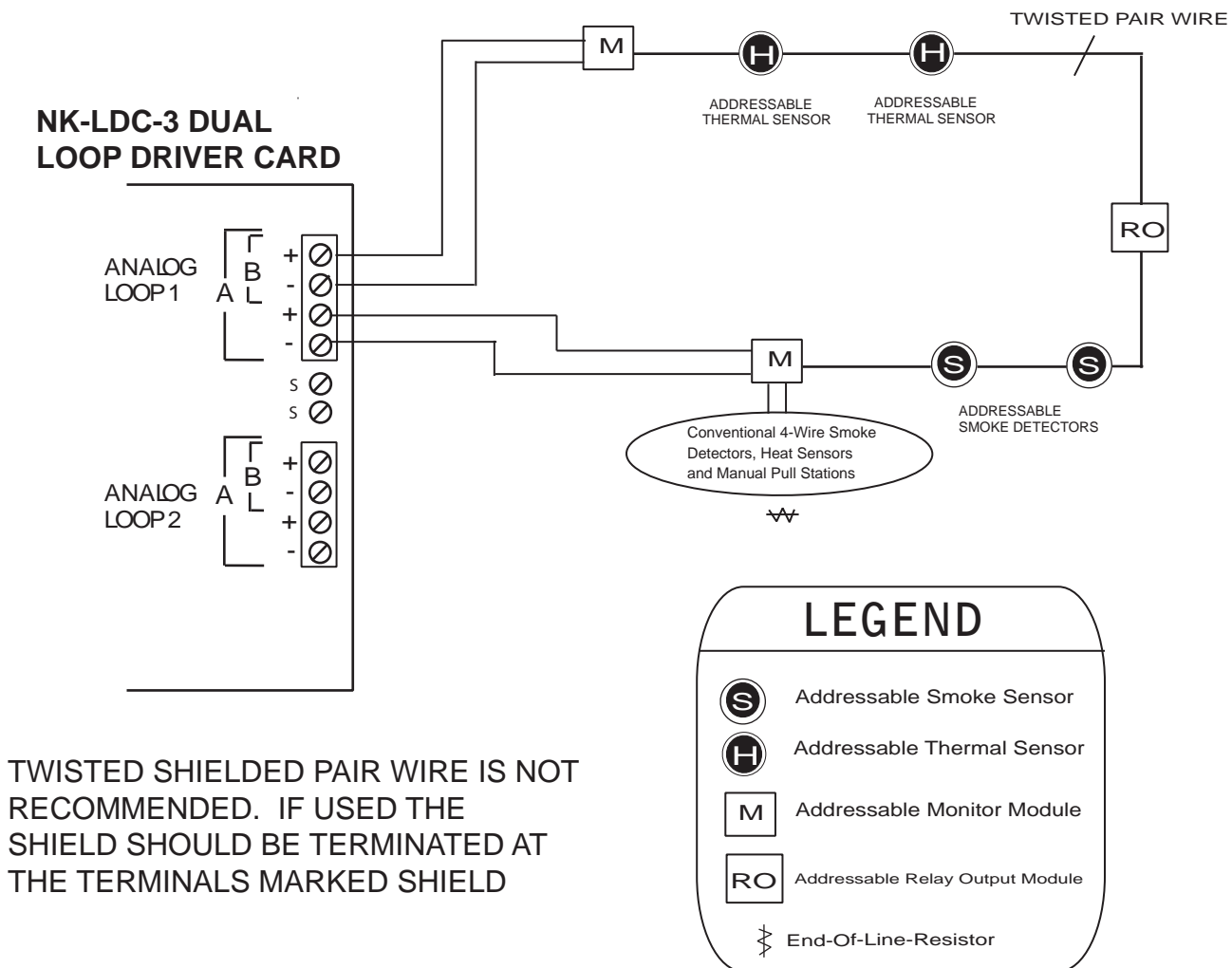
**NK-LDC-3 DUAL
LOOP DRIVER CARD**

ANALOG
LOOP 1

ANALOG
LOOP 2

TWISTED PAIR WIRE

ADDRESSABLE
THERMAL SENSOR

ADDRESSABLE
THERMAL SENSOR

RO

ADDRESSABLE
SMOKE DETECTORS

Conventional 4-Wire Smoke
Detectors, Heat Sensors
and Manual Pull Stations

TWISTED SHIELDED PAIR WIRE IS NOT
RECOMMENDED. IF USED THE
SHIELD SHOULD BE TERMINATED AT
THE TERMINALS MARKED SHIELD

LEGEND

S   Addressable Smoke Sensor

H   Addressable Thermal Sensor

M   Addressable Monitor Module

RO   Addressable Relay Output Module

End-Of-Line-Resistor

Notes:
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Loop wiring: maximum loop resistance is 50 ohms total. These lines are power-limited and fully supervised.

NK-FNC Fire Network Controller Module

The NK-FNC Fire Network Controller modules are wired from terminals marked Line A, positive and negative (see specific cable recommended in Figure 26) to the Line B terminals of the next NK-FNC module. **Use of shielded cable is not recommended**. Wire from Line B terminals to Line A of the next NK-FNC module. Start from the lobby panel and wire to all the NK-FNC, wiring the last NK-FNC back to Line B of the first NK-FNC at the lobby panel for Class A.

Figure 26: Style 7 Wiring for the NK-FNC Module

STYLE 7 WIRING

Line B — NK-FNC — Line A

Line A — NK-FNC — Line B

Line B — NK-FNC — Line A

Line A — NK-FNC — Line B

Line B — NK-FNC — Line A

Line A — NK-FNC — Line B

Line B   Line A

NK-FNC
Lobby Panel

Network Wiring Specifications

Power-Limited and Supervised

Voltage: 9V Max

Current: 800mA

Frequency: 625K Hz

Line Loss: 25 ohms

4000 feet (1220m) MAX wiring distance with twisted pair 18 gauge wire.

RECOMMENDED CABLE:
BELDEN 5320 UJ or 5320UM
Tyco Pyro CIC
Draka Lifeline
All above cables are 2x18AWG unshielded, low capacitance

Figure 27: Redundant Wiring for the NK-FNC Module

REDUNDANT WIRING

RECOMMENDED CABLE:
BELDEN 5320 UJ or 5320UM
Tyco Pyro CIC
Draka Lifeline
All above cables are 2x18AWG unshielded, low capacitance

Line A   Line C
NK-FNC
Line B   Line D

Line D   Line B
NK-FNC
Line C   Line A

Line A   Line C
NK-FNC
Line B   Line D

Line D   Line B
NK-FNC
Line C   Line A

Line A   Line C
NK-FNC
Line B   Line D

Line D   Line B
NK-FNC
Line C   Line A

Line A   Line C   Line D   Line B
NK-FNC
Lobby Panel

Network Wiring Specifications

Power-Limited and Supervised

Voltage: 9V Max

Current: 800mA

Frequency: 625K Hz

Line Loss: 25 ohms

4000 feet (1220m) MAX wiring distance with twisted pair 18 gauge wiring

NK-FOM-SP Fiber Optic Network Adder Module

The NK-FOM-SP Fiber Optic Network Adder Module is wired with fiber optic cable. It is wired OUT through the transmit connectors marked TX and IN through the receive connectors marked RX.

Figure 28: NK-FOM-SP Fiber Optic Network Adder Module Wiring
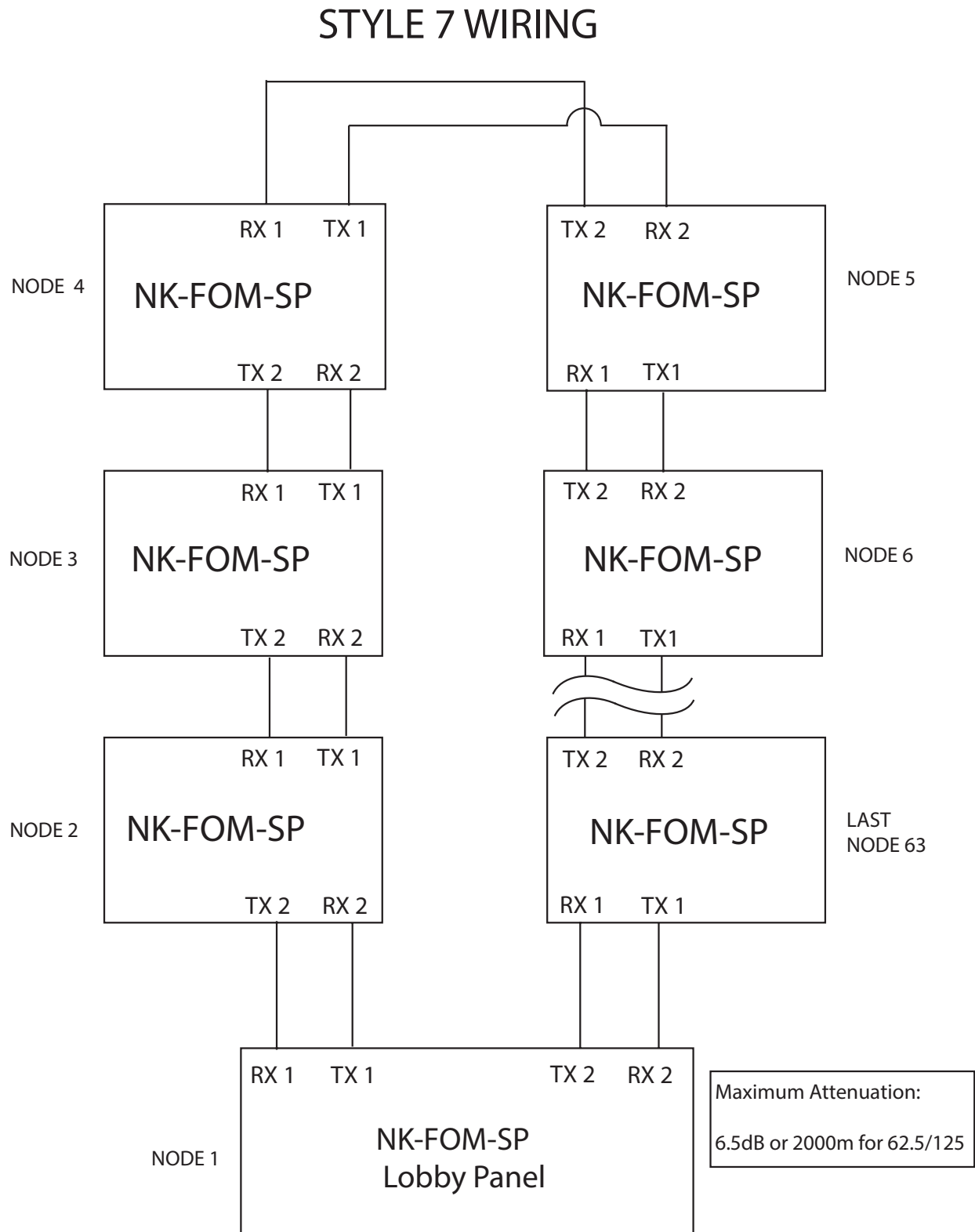
STYLE 7 WIRING

8 Initiating Circuit Module (NK-DM-8A) Terminal Connections

Wire devices to terminals as shown below. See wiring tables, and Appendix A for electrical specifications and document LT-1023NIT for compatible devices.

Figure 29: 8 Initiating Circuit Module (NK-DM-8A) Terminal Connections

STYLE D NOTE: Initiating circuits of the NK-DM-8A must be either all Style B (Class B) or all Style D (Class A). If Style D is selected, the number of circuits is cut in half.

Legend:

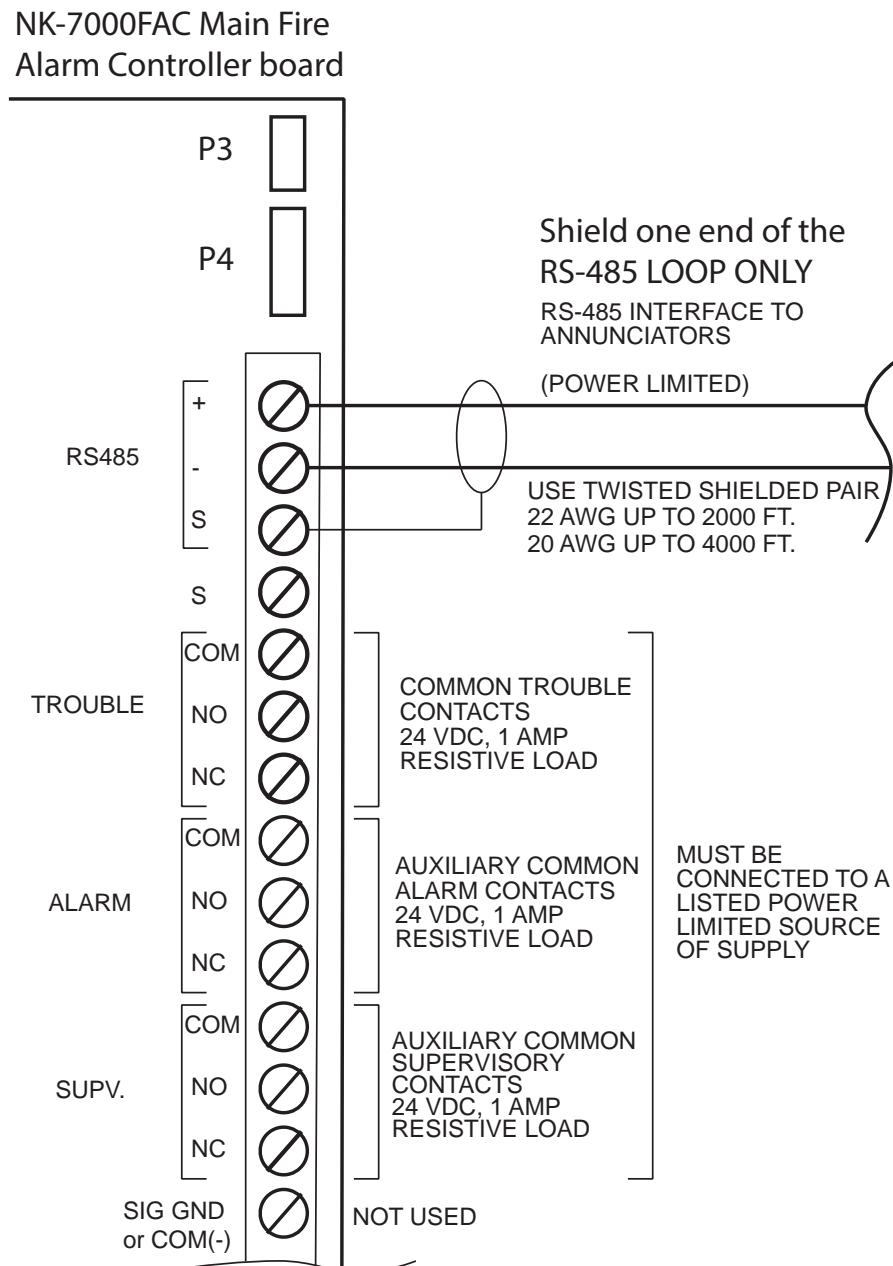|			
	SMOKE DETECTOR		SUPERVISORY OR WATERFLOW SWITCH (NO)
	HEAT DETECTOR		3.9K 1/2W ELR UL LISTED
	PULL STATION		
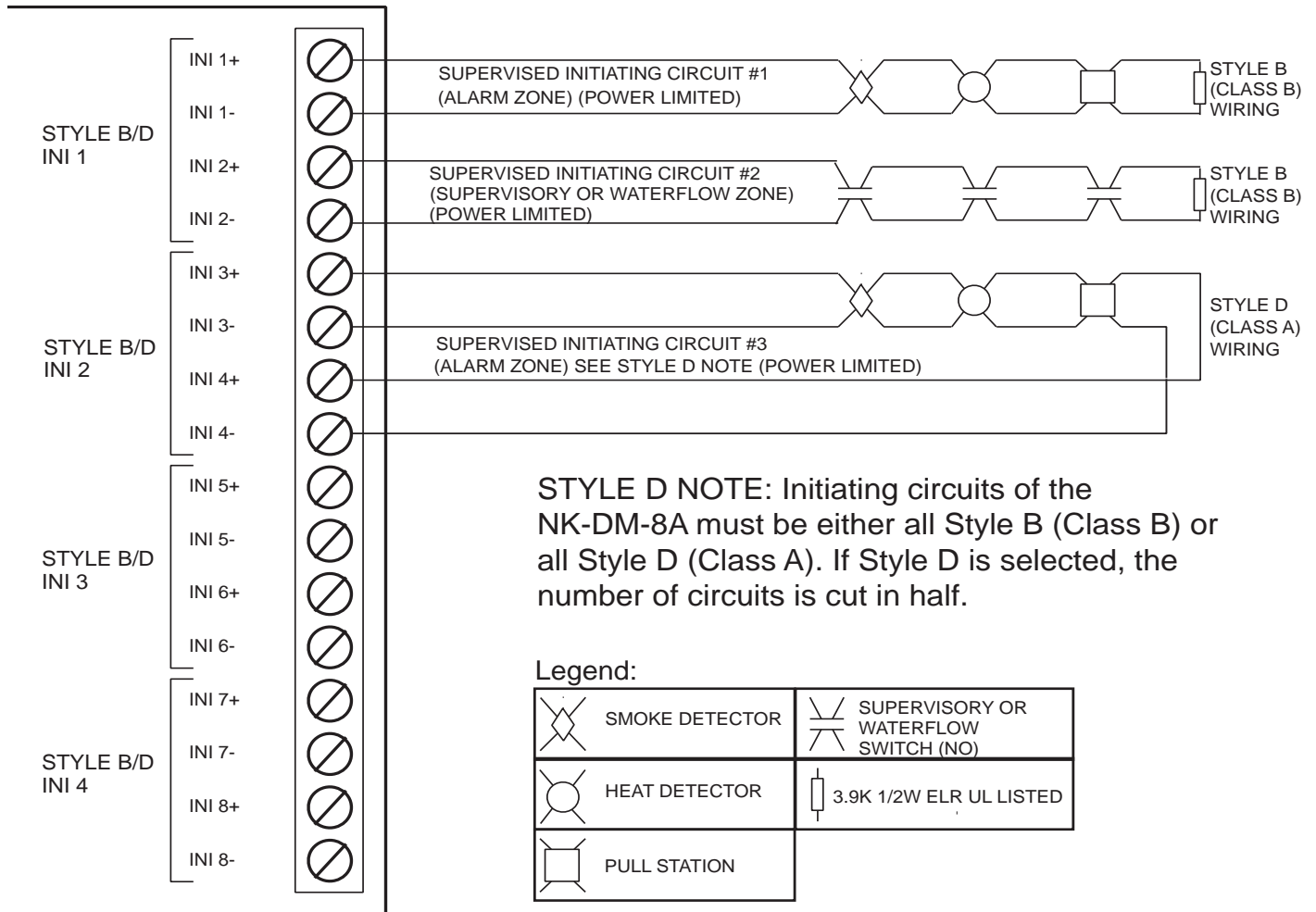
Note:

- Terminal blocks are "depluggable" for ease of wiring.
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- Initiating circuits are fully supervised and rated for 22 VDC, 3 mA standby, 5 mV ripple, 50 mA max alarm. They may be configured as required. The alarm threshold is 21 mA. Maximum loop resistance is 100 ohms, 50 ohms per side.
- All conventional hardwire initiating circuits are Compatibility ID "A".

4 NAC Circuit Module (NK-SGM-4A) Terminal Connections

Wire devices to terminals as shown in Figure 30 below. See Appendix A for NAC module specifications, and LT-1023NIT for compatible devices.

Figure 30: NK-SGM-4A NAC Circuit Module Terminal Connections
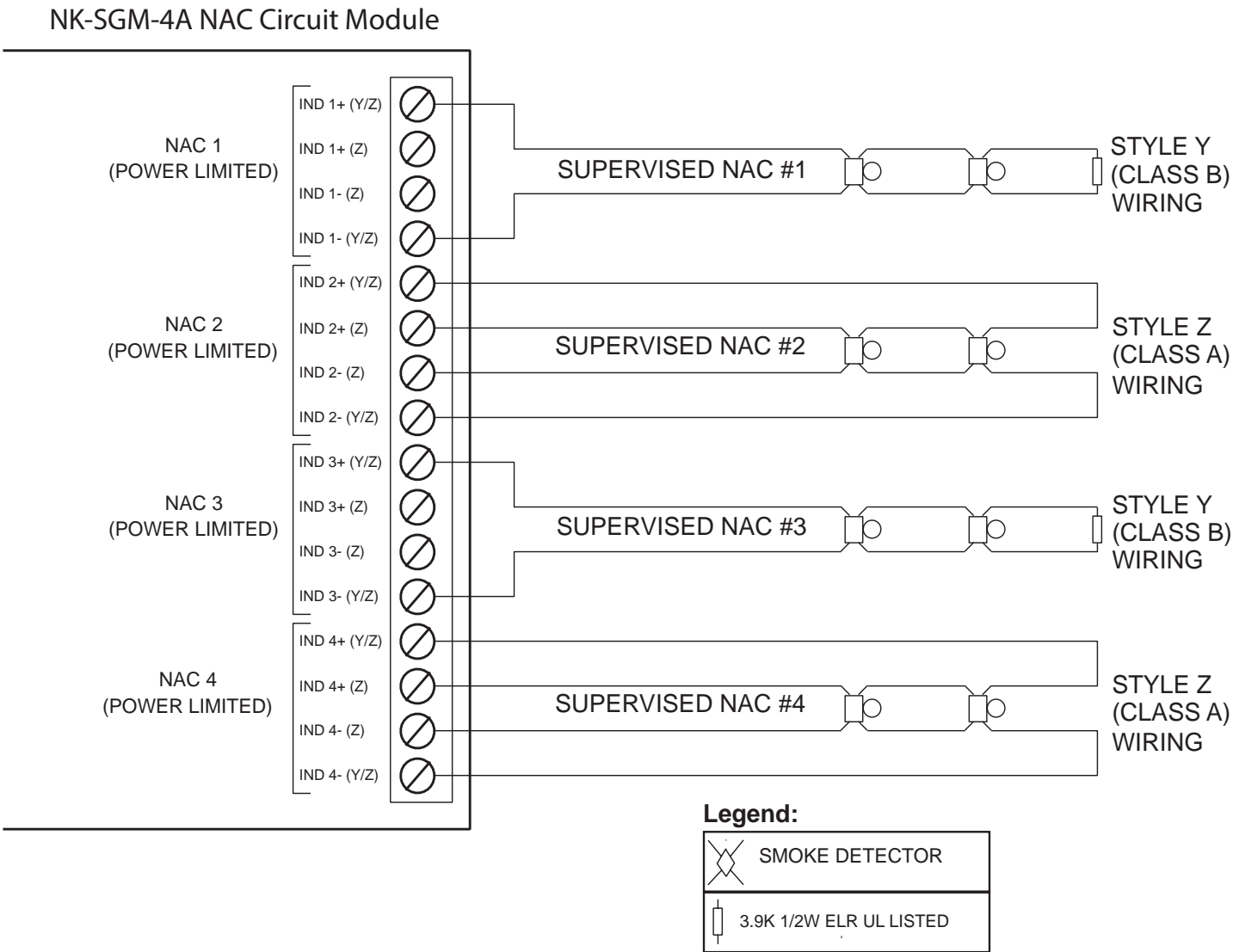
NK-SGM-4A NAC Circuit Module

NAC 1 (POWER LIMITED)	IND 1+ (Y/Z) / IND 1+ (Z) / IND 1- (Z) / IND 1- (Y/Z) — SUPERVISED NAC #1 — STYLE Y (CLASS B) WIRING
NAC 2 (POWER LIMITED)	IND 2+ (Y/Z) / IND 2+ (Z) / IND 2- (Z) / IND 2- (Y/Z) — SUPERVISED NAC #2 — STYLE Z (CLASS A) WIRING
NAC 3 (POWER LIMITED)	IND 3+ (Y/Z) / IND 3+ (Z) / IND 3- (Z) / IND 3- (Y/Z) — SUPERVISED NAC #3 — STYLE Y (CLASS B) WIRING
NAC 4 (POWER LIMITED)	IND 4+ (Y/Z) / IND 4+ (Z) / IND 4- (Z) / IND 4- (Y/Z) — SUPERVISED NAC #4 — STYLE Z (CLASS A) WIRING

Legend:

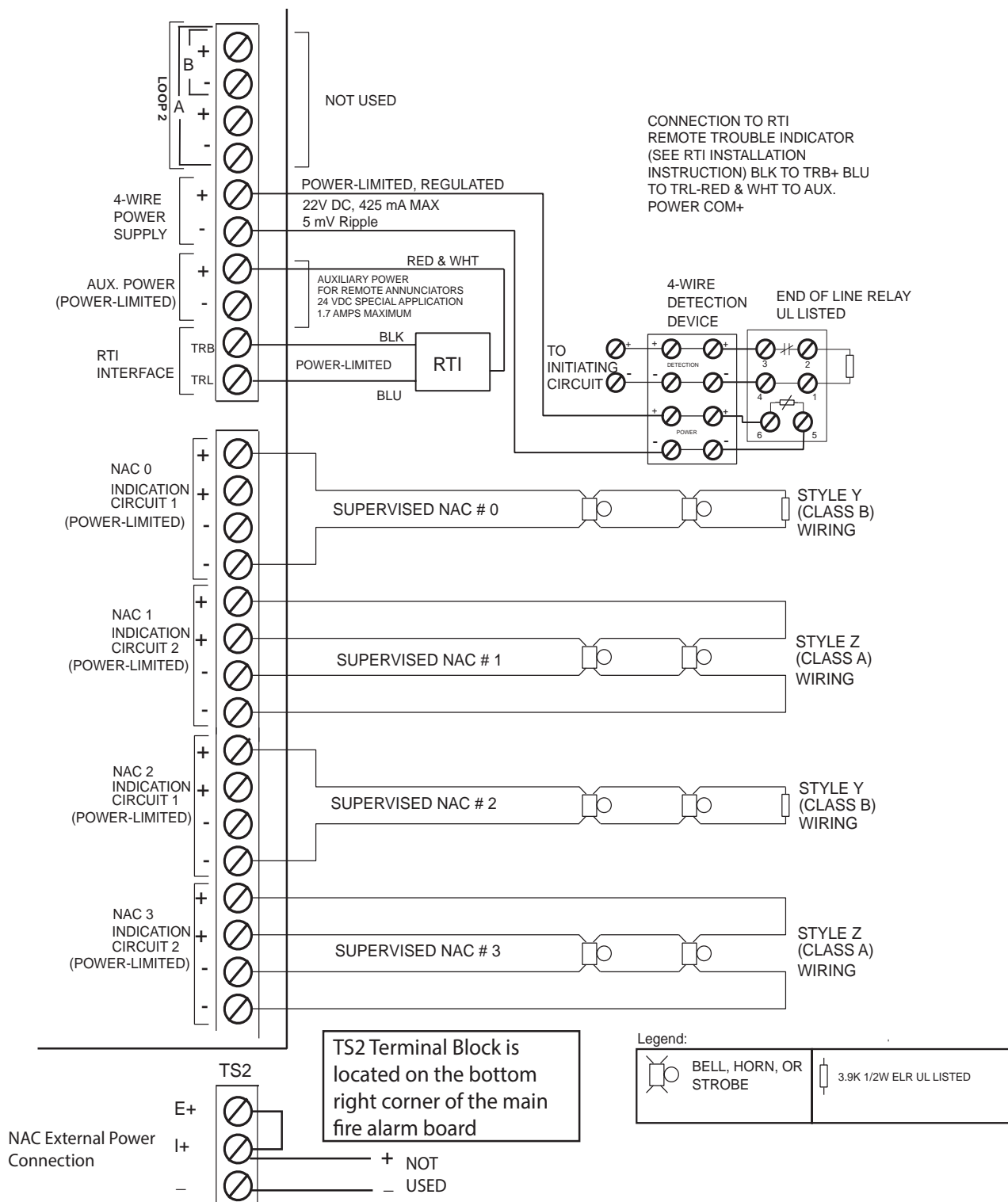|	
⊠	SMOKE DETECTOR
▯	3.9K 1/2W ELR UL LISTED

Notes:

- The terminal blocks are "depluggable" for ease of wiring.
- All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
- NK-SGM-4A NACs are fully supervised and rated for 24 VDC special application, 1.7A max. They must be wired as shown in the Wiring Tables on page 44.

8 Relay Circuit Module (NK-RM-8A) Terminal Connections

Relays are available as shown below.

Figure 31: NK-RM-8A 8 Relay Circuit Module Terminal Connections

NK-RM-8A Relay Module

RLY 5	COM / NC / NO	AUX RELAY 5 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD	RLY 1	COM / NC / NO	AUX RELAY 1 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD
RLY 6	COM / NC / NO	AUX RELAY 6 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD	RLY 2	COM / NC / NO	AUX RELAY 2 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD
RLY 7	COM / NC / NO	AUX RELAY 7 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD	RLY 3	COM / NC / NO	AUX RELAY 3 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD
RLY 8	COM / NC / NO	AUX RELAY 8 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD	RLY 4	COM / NC / NO	AUX RELAY 4 CONTACTS 28 VDC, 1 AMP RESISTIVE LOAD

Notes:
- All relay circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.
- All relay circuits must be connected to a listed power limited source of supply.

ATTENTION:
- Do not connect 220 VAC directly to these relays.

NK-AD-300 Main Board Terminal Connections

Wire the two telephone lines to RJ31X Connector terminals as shown in Figure 32 below. The NK-AD-300 terminals are located on the top left hand corner of the board. If using a cellular or wireless service, use the Line 2 interface connection only.

> ⓘ **Note: Most Authorities Having Jurisdiction (AHJ) do not allow the connection of premise telephones, see specifications for more information.**

Figure 32: Telephone Line Wiring Diagram
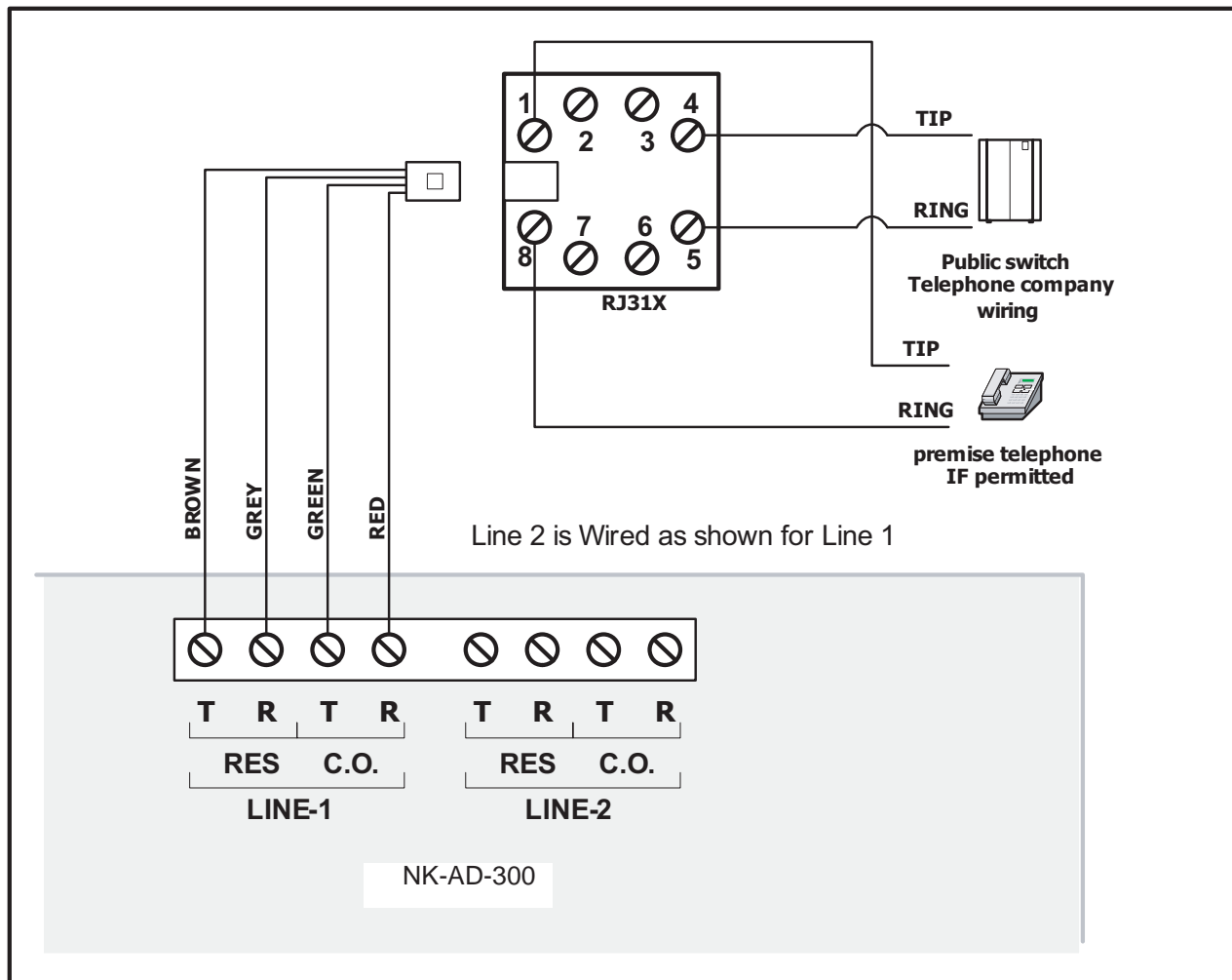
Power Supply Connections

The power supply is part of the main chassis. The ratings are outlined in the table below.

Model	Electrical Input Ratings	Power Supply Total Current	Battery Fuse on Main Module
NK-7000FAC	240 VAC, 50Hz, 2A 120 VAC, 60Hz, 4A	12 amps maximum	20 Amp, 1-1/4" Slow Blow Non-replaceable Fuse
Battery Cables	IN-LINE 20 Amp, 1 1/4" Fast Acting Fuse, positive side of Battery Connection		

See Appendix A for more power supply specifications. Wire as shown below with proper gauge wire.

Figure 33: Power Supply Connections
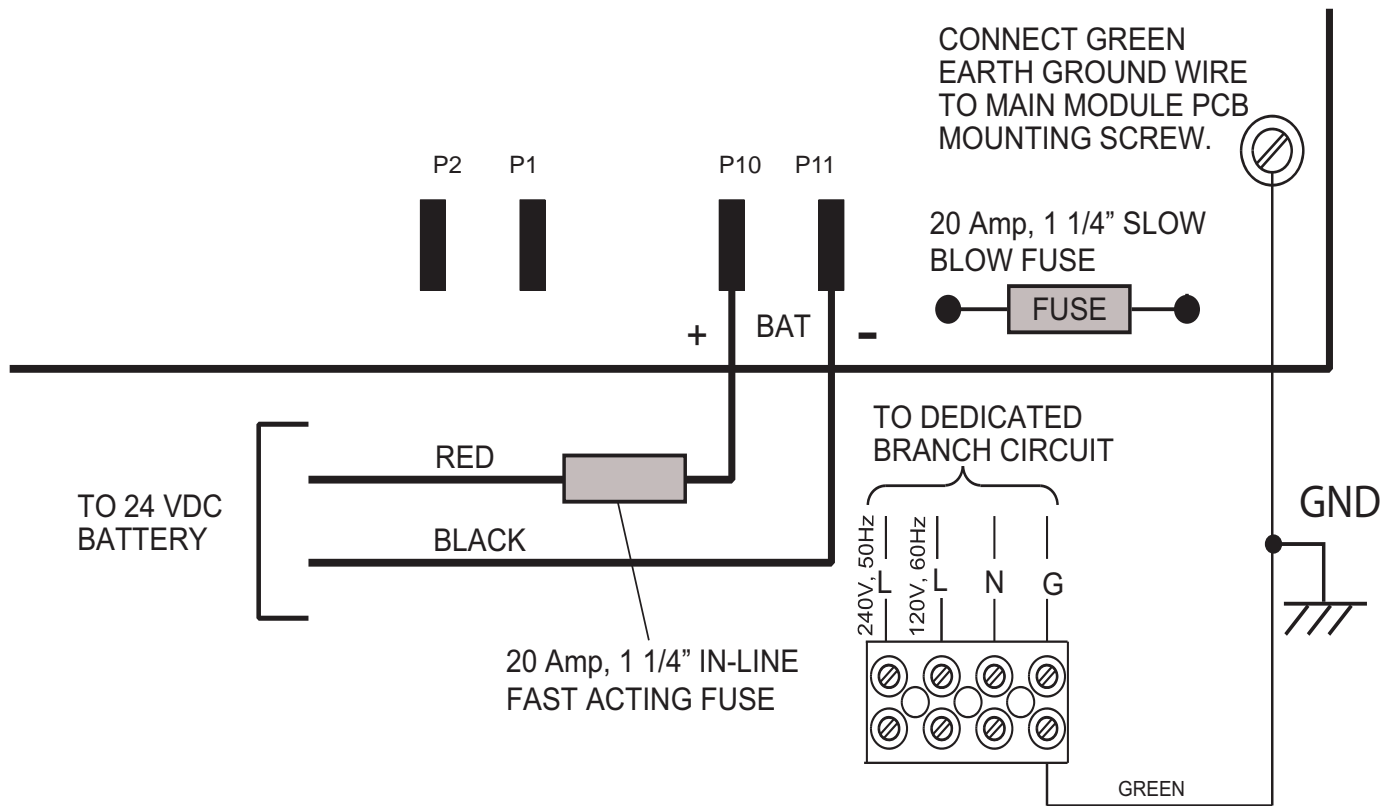
CAUTION:

- To prevent sparking, connect batteries after the system's main A.C. power is turned ON.
- *Do not exceed power supply ratings.*
- **Adhere to voltage markings as specified on labels.**

Wiring Tables and Information

Table 8: Wiring Table for Initiating Circuits.

Wire Gauge	Maximum Wiring Run to Last Device (ELR)	
(AWG)	ft.	m
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200

i **Note:** Maximum loop resistance should not exceed 100 Ohms.

Table 9: Wiring Table for NACs

Main board NACs are rated for 1.7 amps each. The NK-SGM-4A NACs are rated for 1.7 amps each.

Total Signal Load	Maximum Wiring Run to Last Device (ELR)								Max Loop Resistance
	18AWG		16AWG		14AWG		12AWG		
Amperes	ft.	m	ft.	m	ft.	m	ft.	m	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	1.5
1.50	94	29	150	46	240	73	343	105	1.2
1.7	78	24	125	38	200	61	285	87	1.0

i **Note:** Maximum voltage drop should not exceed 1.8 volts.

Table 10: SLC Loop Wiring

Wire Gauge (use twisted pair)	Loop Total (Out and In) Maximum Twisted Pair Wire Run	
(AWG)	ft.	m
12	6562	2000
14	6562	2000
16	6225	1897
18	3915	1193

Note:

- Line capacitance shall not exceed 0.1uF.
- Inductance shall not exceed 1 mH.
- Resistance shall not exceed 50 ohms.

Power Wiring: Use Table 9: Wiring Table for NACs on the previous page to see the wiring information for the remote annunciator being used.

RS-485 Wiring: See the wiring information for the remote annunciator being used.

4-Wire Smoke Wiring: The maximum allowable current is 0.4 amperes.

Shield for SLC Loop Wiring: Only twisted pair is recommended, but if shielded twisted pair is used, wire shield at the start and the end of the loop to the terminals marked Shield at the loop Driver Card.

System Checkout

Before Turning the Power On

1. To prevent sparking, *do not* connect the batteries. Connect the batteries after powering the system from the main AC supply.
2. Check that all modules are installed in the proper location with the proper connections.
3. Check all field (external) wiring for opens, shorts, and ground.
4. Check that all interconnection cables are secure, and that all connectors are plugged in properly.
5. Check all jumpers and switches for proper setting.
6. Check the AC power wiring for proper connection.
7. Check that the chassis is connected to EARTH GROUND (cold water pipe). Refer to NFPA 70.
8. Make sure to *close the front cover plate* before powering the system from main AC supply.

> **ⓘ** **Note:** When using Class A and isolators on an addressable loop, configure system as Class B, wire loop as Class A, except do not connect the last device back to the panel. Do a system checkout. Then connect the return of the Class A circuit and configure as Class A.

Power-Up Procedure

1. After completing the above procedures, power up the panel (AC only). The green AC On LED and the Common Trouble LED should illuminate, and the buzzer should sound.
2. Press the System Reset button. Since the batteries are not connected, the Battery Trouble LED should illuminate, the trouble buzzer should sound intermittently, and the Common Trouble LED should flash.
3. Connect the batteries while observing correct polarity: the red wire is positive (**+**) and the black wire is negative (**-**). All indicators should extinguish except for the AC On LED and the LCD should show a normal status condition.
4. PC Configure the fire alarm control panel as described in the Configurator Guide.

Troubleshooting

Message	Description
Circuit Trouble	Normally when a circuit trouble occurs, its designated trouble indicator will be illuminated, as well as the Common Trouble indicator and Trouble buzzer. To correct the fault, check for open wiring on that particular circuit loop or see if the circuit disconnect switch is in the ON or CLOSED position. *Note: disconnecting a circuit will cause a system trouble (off-normal position).*
Ground Fault	The NFU-7000 panel has a Common Ground Fault Detector. To correct the fault, check for any external wiring touching the chassis or other earth ground connection.
Battery Trouble	Check for the presence of batteries and their condition. Low voltage (below 20.4V) will cause a battery trouble. If battery trouble condition persists, replace the batteries as soon as possible.

Indicators, Controls, and Operation

Refer to Figure 34 below for LED indicators, control buttons, and switches locations.

Figure 34: Indicators and Control Location

LCD Display - 16 lines, 40 characters per line

Indicators for AC On, CPU Fault, and Ground Fault (GND FAULT)

Cursor buttons, ENTER, MENU, CANCEL, INFO

Two configurable switches & amber LEDs

Queue controls and indicators for Alarm, Supervisory, Trouble, and Monitor

Controls & Indicators for Signal Silence, System Reset, Visual Indicator Test and Fire Drill
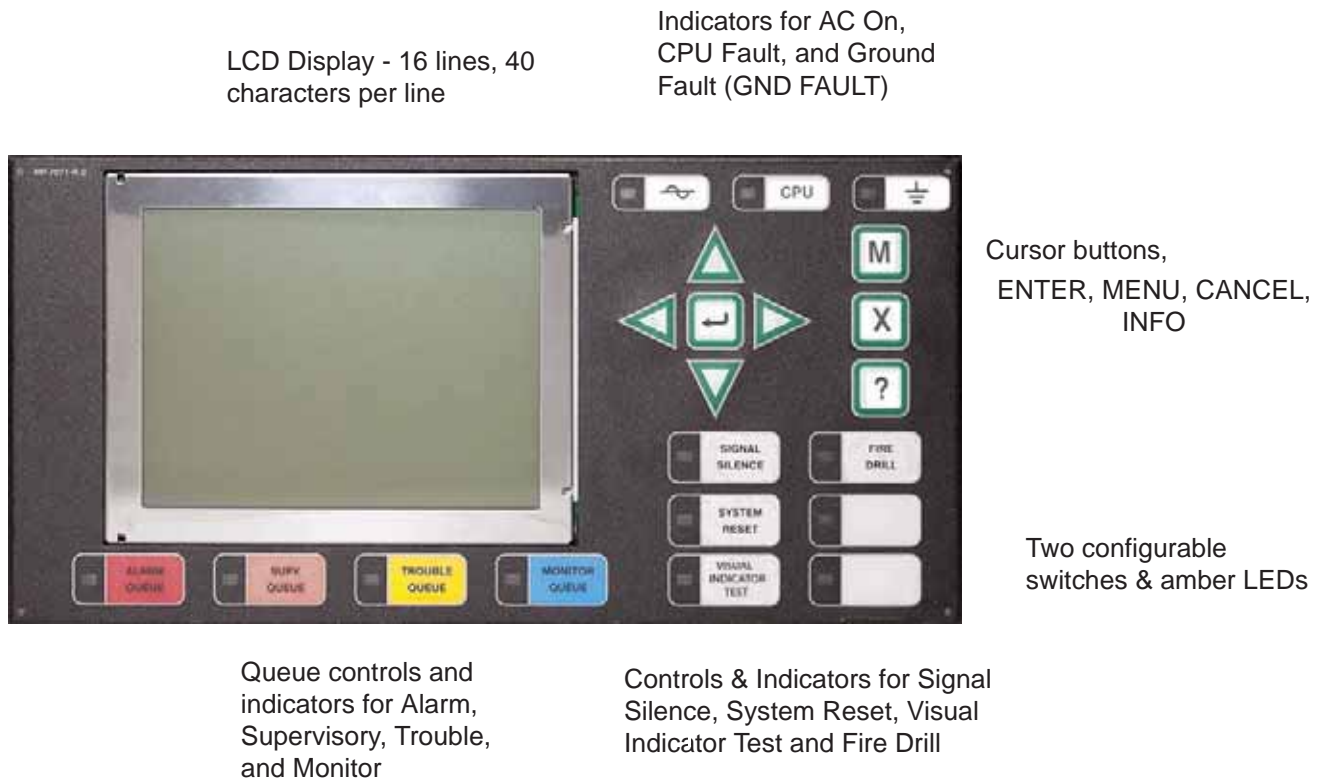
LED indicators are amber (trouble or supervisory), red (alarm), or green (AC On), and may illuminate continuously (steady) or at one of two flash rates:

- **Fast Flash:** 120 flashes per minute, 50% duty cycle
- **Trouble Flash:** 20 flashes per minute, 50% duty cycle

Paper Labels for Buttons and Indicators

Buttons and indicators are supplied with paper labels. These labels slide into the plastic label templates on the face of the panel. Paper labels allow for easy English / French selection and custom-printed zone information.

Common Indicators

Indicators	Description
Buzzer	The Buzzer is activated by any of the following Fire Alarm - Steady Supervisory Alarm - Fast Rate Trouble - Trouble Rate Monitor - Configurable to sound at Trouble Rate If the Buzzer is turned on in response to a Non-Latching Trouble or Supervisory, it will be turned off if the condition causing it goes away and there is no other reason for it to be on.
AC On LED	The AC On Indicator is activated steady green while the main AC power is within acceptable levels. It is turned off when the level falls below the power-fail threshold and the panel is switched to standby (battery) power.
Alarm Queue LED	The Common Alarm LED flashes red whenever the Panel is in Alarm. An alarm results from any alarm on any point or input programmed as Alarm. The Alarm Queue LED will go steady, once all alarms in the queue have been reviewed using the Alarm Queue button. Since all Alarms are latched until the Panel is reset, the Common Alarm LED will remain on until then.
Supervisory Queue LED	The Common Supv. (Supervisory) LED flashes amber at the Fast Flash Rate when there is a Supervisory Alarm in the Panel, as the result of any Latching or Non-Latching Supervisory Circuit. The LED turns off if all Non-Latching Supervisory Circuits are restored and there are no Latching Supervisory Circuits active. The Supv. Queue LED will go steady, once all supervisory alarms in the supervisory queue have been reviewed using the Supv. Queue button. Latching Supervisory Alarms remain active until the Panel is reset.
Trouble Queue LED	The Common Trouble LED flashes amber at the Trouble Flash Rate when there is any Trouble condition being detected on the panel. It is turned off when all Non-Latching Troubles are cleared. The Trouble Queue LED will go steady, once all troubles in the trouble queue have been reviewed using the Trouble Queue button.
Monitor Queue LED	The Monitor Trouble Indicator flashes amber at the Trouble Flash Rate when there is any Monitor condition being detected on the panel. It is turned off when all Monitors are cleared.
CPU Fault LED	The CPU Fault Indicator is flashed yellow at the Trouble Flash Rate if the CPU is faulty.
Fire Drill LED	The Fire Drill Indicator turns on steady amber while Fire Drill is active.
Signal Silence LED	The Signal Silence indicator is flashed amber, at the trouble rate when Indication Circuits are Silenced either by the Signal Silence button, or by the Auto Signal Silence Timer. It is turned off when the Signals are re-sounded by a subsequent Alarm.
Ground Fault LED	The Ground Fault Indicator flashes amber at the Trouble Rate when the Ground Fault Detector detects a Ground Fault on any field wiring. It turns off immediately when the Ground Fault is cleared.

Common Controls

LCD Display:

The display is a large 16 line by 40 character back-lit alphanumeric LCD. It displays information on the panel and its devices. There are cursor buttons for menu selection and control. Information provided by the LCD display is an alarm log, an event log, current levels, device information, verification and maintenance reports.

Queue Buttons

Use the queue buttons to select a particular queue to review.

- Use the **Alarm Queue** button to view all alarms. Pressing this button will show the latest alarm on the LCD display. Use △ and ▽ to view all previous alarms.

- Use the **Supervisory Queue** button to view all supervisory conditions. Pressing this button will show the latest supervisory information on the LCD display. Use △ and ▽ to view all previous supervisory conditions on the LCD display.

- Use the **Trouble Queue** button to view all trouble conditions. Pressing this button will show the latest trouble condition on the LCD display. Use △ and ▽ to view any previous troubles.

- Use the **Monitor Queue Button** to show all monitor conditions. Pressing this button will show the latest monitor information on the LCD display. Use △ and ▽ to view all queued monitor conditions.

Queues are displayed on the screen according to a priority sequence. Queue priority ranking from highest to lowest is as follows: alarm, supervisory, trouble, and monitor. If, for example, you are viewing a monitor queue and an alarm occurs, the display will immediately display the alarm condition. Also, if there is no activity on the system for 10 seconds after you have pressed a queue button, the display will switch to the highest priority condition.

Cursor Buttons
These four buttons around the Enter Button are used for up (previous), down (latest), left, and right selection of items on the LCD Display.

Enter Button
This button is used to select a displayed item on the LCD Display.

Cancel Button
This button is used to cancel an operation.

Menu Button
This button is used to initiate the NFU-7000 Menu System.

Info Button
This button is used to get more details about a displayed item.

ENTER

△

◁ ⏎ ▷

▽

M MENU

X CANCEL

? INFO

Indicators, Controls, and Operation
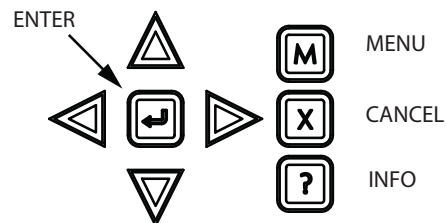
System Reset Button

The System Reset button causes the Fire Alarm Control Panel, and all Circuits, to be reset

- Resets all Latching, Trouble Conditions
- Resets all Initiating Circuits
- Resets 4-Wire Power Supply
- Turns off all NACs
- Turns off Signal Silence, Ack & GA Indicators
- Turns off Fire Drill
- Stops and resets all Timers
- Processes inputs as new events
- Aux Disconnect is not affected
- Reset cannot be activated until the Signal Silence Inhibit timer has expired.

Signal Silence Button

Activation of the Signal Silence button when the Panel is in Alarm, turns on the Signal Silence Indicator and deactivates any Silenceable NACs. Non-Silenceable Circuits are unaffected. Signals will re-sound upon any subsequent Alarm. This button does not function during any configured Signal Silence Inhibit Timer period. It also does not function if the NACs are active as the result of a Fire Drill.

Fire Drill Button

The Fire Drill button activates all programmed and non-Disconnected NACs, but does not transmit any Alarms via the City Tie, or Common Alarm Relay. Fire Drill may be programmed to operate specific NACs. Fire Drill is cancelled by pressing the button again (toggle switch), or if the Panel goes into a real Alarm.

Visual Indicator Test Button

Activation of the Visual Indicator (or Lamp) Test button turns all front panel indicators on steady in whichever colour they would normally be activated and turns the buzzer on steady.

Single Stage Operation

In a single stage system, all alarm inputs are treated in a similar manner. Alarm inputs include any of the following: non-verified alarm and verified alarm. Any of these alarm inputs occurring when the panel is not already in alarm cause the following:

- The buzzer sounds steadily
- If fire drill is active, it is cancelled
- The Common Alarm LED turns on
- The Common Alarm relay activates if Aux disconnect is not active
- The Auto Signal Silence timer, if configured, starts
- The Signal Silence Inhibit timer, if configured, starts
- All non-disconnected NACs programmed to the input are activated provided that Aux disconnect is not active
- Non-disconnected strobes associated with the input are activated
- Non-disconnected signals associated with the input are activated at the evacuation rate
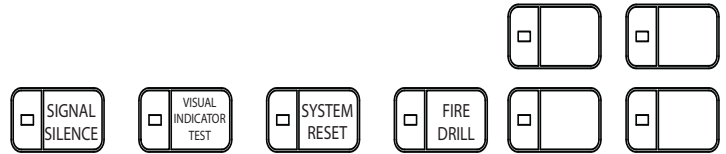
Subsequent alarms when the panel is already in alarm, cause the following:

- The alert buzzer sounds steadily
- If Signals have been silenced, they are resounded, the Signal Silence LED turns off, and the Auto Signal Silence timer, if configured, is restarted
- Any additional non-disconnected strobes associated with the input are activated continuously
- Any additional non-disconnected signals associated with the new input are activated at the evacuation rate

Pre-Signal Operation

To configure the panel for pre-signal, all alarm inputs must be correlated to one NAC circuit that is wired to a Notification Appliance in the Control Room that is constantly monitored by an Operator. Using the NFU-7000 Configurator, "Subsequent Alarm" in "Common System Status" must be correlated to turn on the Remaining NAC circuits in the system. To confirm the alarm (i.e. subsequent alarm) the operator can activate a Manual Station in the Control Room.

Circuit Types

The term **circuits** refers to an actual electrical interface, either initiating (detection) or indicating (signal). The term **zone** is a logical concept for a fire alarm protected area, and will consist of at least one circuit. Often the terms zone and circuit are used interchangeably, but in this manual the term circuit is used.

Initiating (Detection) Circuit Type

Initiating (Detection) Circuit Type	Description
Non-Verified Alarm	This is a "normal" type of alarm which may have pull stations, smoke detectors, or heat detectors attached. Any activation of these devices will immediately result in an alarm condition in the fire alarm control panel. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red.
Verified Alarm	These alarms are verified by a reset and timing procedure, and may have Manual Stations, smoke detectors attached. Any activation of Manual Stations will result in an alarm condition in the fire alarm control panel within four seconds. Smoke detectors will be verified for a real alarm within 60 seconds depending upon the start-up time of the smoke detectors being used. If four seconds is too long a response time for pull stations, then they should be wired separately on a non-verified alarm circuit. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red. Verified Alarm is not permitted for heat detectors, 4-wire smoke detectors and smoke detectors with built-in alarm verification. Refer to Appendix D Alarm Verification for details.
General Alarm	These alarms provide remote general alarm such as for remote key switches. In a single stage system, these inputs act the same as non-verified alarms, but if correlations are enabled, general alarm initiating circuits are correlated to *all* NACs.
Non-Latching Supervisory	These alarms are for supervisory devices. An activation on these circuits will cause the Circuit Status LED and the Common Supervisory LED to illuminate amber. The buzzer will sound continuously. If the circuit activation is removed, the supervisory condition will clear (so long as there are no other supervisory conditions in the system) and the circuit Status LED will extinguish.
Latching Supervisory	These alarms are for supervisory devices. An activation on these circuits will cause the Circuit Status LED and the Common Supervisory LED to illuminate amber. The buzzer will sound continuously. If the circuit activation is removed, the Supervisory condition will *not* clear.
Monitor	This is a supervised general purpose non-latching input used mainly for correlating to a relay circuit.
Trouble-Only	This circuit is used for monitoring a trouble condition from an external device. Both open and short circuits generate a non-latching trouble condition.

Indicating (Signal) Circuits Types

Indicating (Signal) Circuit Type	Description
Silenceable Signal	For audible devices such as bells and piezo mini-horns that may be silenced either manually or automatically. While sounding, these follow the pattern appropriate for the condition: the configured evacuation code (default is temporal code) during single-stage alarm.
Non-Silenceable Signal	For audible devices such as bells and piezo mini-horns that may not be silenced either manually or automatically. While sounding, these follow the pattern appropriate for the condition: the configured evacuation code (default is temporal code) during single-stage alarm.
Strobe	For visual devices such as strobes that use no code patterns (they are continuous).

Evacuation Codes

Single stage codes

Continuous	On 100% of the time
Temporal Code	3 of 0.5 second on, 0.5 second off then, 1.5 second pause
March Code	0.5 second on, 0.5 second off
California Code	5 seconds on, 10 seconds off

Two-stage codes:

Alert Code	0.5 second on, 2.5 seconds off
General Alarm	Evacuation code as selected from above.

Figure 35: Evacuation Codes

Continuous

Temporal Code

March Code

California Code

Alert Code
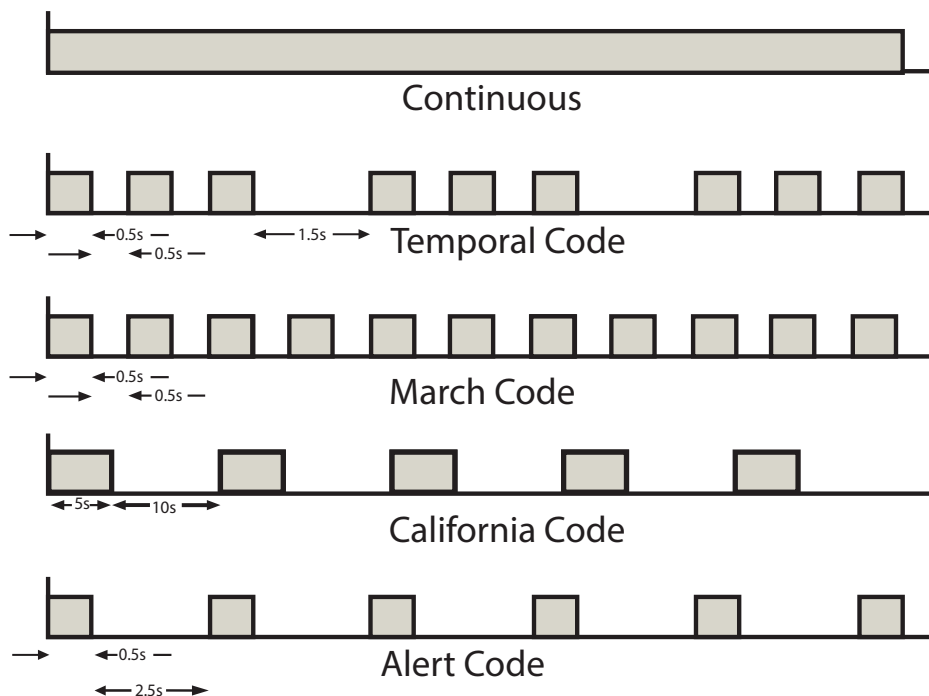
Configuration

The NFU-7000 network system which includes NK-7000FAC is configured using software NFU-CFG.

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES			
This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.			
Program feature or option	Permitted in UL 864? (Y/N)	Possible settings	Settings permitted in UL 864
Alarm Transmit Silence	No	Enabled or Disabled	Disabled or unchecked

Configuration Backup, Query and Fast-Forward

The panel now supports previous, current and next configuration. The panel can be load configured without taking the panel off-line. Configuration reverts back to previous or moves to future configuration through front-panel menu. Configuration load and setup is faster, improved and more reliable than ever.

Ethernet Port

Integrated TCP/IP Stack, Hardware based MAC address. Provides a fully configurable IP address. Use this ethernet port to connect to graphics software. This port also provides web server for diagnostic and system report via LAN or WAN connection on-site or remotely.

Boolean Logic Engine

Boolean logic functions are now available within the configuration software. Sophisticated logic functions such as:

AND, OR, NOT, ANY n of m, >, <, >=, <>

Appendix A: Specifications

Main Fire Alarm Chassis (NK-7000FAC)	Dual Loop Driver Card (NK-LCD-3)

General

Power limited: 38 VDC, 500 mA max, max SLC resistance 20 ohms

4 Style Y or Z (Class B or A) Indicating Circuits; configurable as strobes or audibles. Terminals are labelled "IND".

Power limited: 24 VDC unfiltered, 1.7 A @ 49°C per circuit

Displays (incl LCD) and Controls for all Common Functions.

Aux. Power Supply (for Remote Annunciators). Terminals are labelled "AUX PWR".

Power limited: 24 VDC unfiltered, 1.7 A @ 49°C

Resettable 4-Wire Power Supply. Terminals are labelled "4-WIRE".

Power limited: 22 VDC, 425 mA max., 5mV ripple

One RS-485 Connection for Remote Annunciators. Terminals are labelled "RS485".

Power Limited to 300 mA.

Auxiliary relays: (resistive loads)

Must be connected to a Listed Power Limited Source of Supply. Terminals are labelled "ALARM, TROUBLE, SUPV".

Common Alarm: Form C, 1 Amp, 24 VDC
Common Supv: Form C, 1 Amp, 24 VDC
Common Trouble: Form C, 1 Amp, 24 VDC

Micro-controller based design.

Fully Configurable with PC software.

Full walk test function.

Ground Impedance 3k3 ohms

Electrical Ratings

AC Line Voltage: 120V 60Hz / 240V, 50Hz
                         4 Amps / 2 Amp (primary)
Power Supply ratings: *12 Amps. max. (secondary)*
For Indicating Circuits: 24VDC unfiltered
                         10 Amps. max.
Battery: 24VDC, Gel-Cell/Sealed Lead-Acid
Charging capability: 17-65 AH batteries
Current Consumption: standby: 310 mA
                         alarm: 733 mA

Dual Loop Driver Card (NK-LCD-3)

Dual Loops capable of monitoring 254 Sensors and Modules per loop, total for the two loops 508.

Power limited: 38 VDC, 500 mA max (20 ohms loop resistance), or 200mA (50 ohms loop resistance) 10kHz frequency
                     max loop resistance 50 ohms

Current Consumption: standby: 130 mA
                         alarm: 170 mA

8 Detection Adder Module (NK-DM-8A)

Eight supervised Class B (Style B) or four Class A (Style D) initiating circuits; fully configurable. Terminals are labelled "INI". Initiating circuits are Compatibility ID "A".

Current Consumption: standby: 80 mA
                         alarm: 1 zone active: 125 mA
                                  2 zone active: 170 mA
                                  4 zone active: 275 mA
                                  6 zone active: 370 mA
                                  8 zone active: 465 mA

4 NAC Circuit Module (NK-SGM-4A)

Four Class B or A (Style Y or Z) NAC circuits; configurable as strobes or audibles. Terminals are labelled "IND".

Power Limited: 24 VDC unfiltered
                         max. 1.7 amps @ 49C per circuit
Current Consumption: standby: 60 mA
                         alarm: 258 mA

8 Relay Circuit Module (NK-RM-8A) (resistive loads)

Must be connected to a listed power limited source of supply. Terminals are labelled "RLY".

Eight fully configurable Form C indicating.

Form C, 1 amp., 28 VDC (resistive loads)

Current Consumption: standby: 25 mA
                         alarm: 150 mA

NK- FNC Fire Network Controller Module

Current Consumption: standby: 190 mA
                         alarm: 190 mA

NK-FOM-SP Fiber Optic Network Adder Module	NK-AN-LCDG Annunciator

Current Consumption: standby: 15 mA
                         alarm: 15 mA

24V DC nominal.
Standby: 117 mA Max., All LED's "On": 150 mA Max

NK-AN-LCD Annunciator	NK-DISP-420 and NK-DISP-1640 Displays

24V DC nominal, range of 20 to 39V DC.
Standby: 100 mA Max., All LED's "On": 150 mA Max

Current Consumption: standby: 25 mA and 29 mA
                         alarm: 25 mA and 35 mA

Fan Damper Display Module (NK-FDX-8/-8K)	48 LED Annunciator Adder Module NK-TZDS-48A

24V DC nominal, range of 20 to 39V DC. *Current Consumption:* standby: 15mA Max. alarm (all LEDs ON): 35mA Max.	48 Display Points and 48 Trouble Display Points. *Current Consumption:* standby: 22 mA alarm: 1 zone LED active: 26 mA 2 zone LEDs active: 30 mA 3 zone LEDs active: 35 mA 4 zone LEDs active: 39 mA 48 zone LEDs active: 262 mA
Digital Communicator Module (NK-AD-300)	**Programmable Input Switches Module (NK-IPS-24)**
Transmit alarm, supervisory, and trouble to a central monitoring station. *Current Consumption:* standby: 45 mA alarm: 120 mA	*Current Consumption:* standby: 10 mA alarm (one zone active): 15 mA

Compliance

System Model: NFU-7000 Series Fire Alarm/Alarm Control Panels NK-7000FAC.

System Type: Local, remote protected premise station (using NK-AD-300), central station protected premises (using NK-AD-300).

Type of Service: A, M, WF, SS (with NK-AD-300)

Type of Signalling: Non-coded

Applicable Standards: NFPA 70,72, 92A and 92B, UL-864 Rev. 9

Appendix B: Power Supply and Battery Calculations

Model Number	Description	Qty		Standby	Total Standby	Alarm	Total Alarm
NK-7000FAC	Main Chassis (12 Amp)		X	0.310	=	0.733	=
NK-LDC-3	Dual Analog Loops		X	0.130	=	0.170	=
NK-FNC	Fire Network Controller Module		X	0.190	=	0.190	=
NK-FOM-SP	Fiber Optics Module		X	0.015	=	0.015	=
NK-DM-8A	8 Initiating Circuit Module		X	0.080	=	1 zone active: 0.125 2 zone active: 0.170 4 zone active: 0.275 6 zone active: 0.370 8 zone active: 0.465	=
NK-SGM-4A	4 Indicating Circuit Module		X	0.060	=	0.258	=
NK-RM-8A	8 Relay Circuit Module		X	0.025	=	0.150	=
NK-FDX-8	Fan Damper Control Module		X	0.015	=	0.035	=
NK-DISP-420	Narrow Display		X	0.025	=	0.025	=
NK-DISP-1640	Graphic Display		X	0.029	=	0.035	=
NK-AD-300	Dialer Module		X	0.045	=	0.120	=
NK-TZDS-48A	Adder Annunciator Chassis		X	0.022	=	1 zone active: 0.026 2 zone active: 0.030 3 zone active: 0.035 4 zone active: 0.039 48 zone active: 0.262	=
NK-AN-32TZDS	Adder Annunciator Chassis		X	0.050	=	32 zone active: 0.300	=
NK-AG-48	Adder Graphic Driver Board		X	0.035	=	__(#of LEDs) x 4mA (Refer to LT-847NIT if using lamps)	=
NK-IPS-24	Programmable Input Switches Module		X	0.010	=	0.015	=
Compatible Conventional 2-wire Smoke Detector			X		=		=
EVA-PY Analog Photo Smoke Detector			X	0.0002	=	0.005	=
EVA-H2(-H) Analog Thermal Sensor			X	0.0002	=	0.005	=
EVA-PYH Analog Multisensory Detector Head			X	0.0002	=	0.005	=
EVA-DPH Dual Optical/Heat Detector			X	0.0002	=	0.005	=
EVA-DIP-SCI Dual Input Module with SCI			X	0.003	=	0.017	=
EVA-ZMU-SCI Conventional Zone Module with SCI			X	0.0026	=	0.036	=
EVA-MiniIP Mini Input Monitor			X	0.0017	=	0.007	=
EVA-SCM-SCI Sounder Control Module			X	0.0008	=	0.0036	=
EVA-DOP-SCI Relay Dual Output Module with SCI			X	0.0006	=	0.033	=
EVA-SCI Fault Isolator Module			X	0.0001	=	0.022	=
EVA-STB-SCI Analog Base with Isolator			X	0.0001	=	0.022	=
EVA-STB-RL Low Power Relay Base			X	0.0001	=	0,0002	=
EVA-S6 Base			X	0.0005	=	0.0014	=
Four-Wire Smoke Detectors			X		=		=
Signal Load (bells, horns, strobes, and etc.)			X				=
Auxiliary Power Supply for **Remote Annunciators**					=		=
Total currents (Add above currents)				STANDBY	(**A**)	Alarm	(**B**)

Battery Calculations continued. . . .

Appendix B: Power Supply and Battery Calculations

To Calculate Chassis and Battery Size:

Add all the alarm currents in column (B), and use this value to determine main chassis selection and the battery capacity requirement.

Total Current Requirement: ALARM (total from column **B**)_____ Amps.

Use the total from column (A) as the standby current required. Multiple this value by 24 hours or 60 hours depending on AHJ (Local Authority Having Jurisdiction). Add this total to the total of column (B) multiplied by the time in hours to sustain alarm.

⁂ Use **0.084** for five minutes of alarm or **0.5** for thirty minutes of alarm as a multiplier figure.

Battery Capacity Requirement:

([STANDBY (**A**) _____] X [(24 or 60 Hours) ___ **]) + (**[ALARM (**B**) _____] X [**⁂**Alarm in Hr.] _____**) = (C**) _____AH

Battery Selection: Multiply (total from column **C**) by 1.20 to derate battery.

Batteries: 17AH will fit in the NK-7000BB
           24AH will fit in the NK-7000LBB
           40AH will fit in the BC-160 battery cabinet

NK-AN-LCD/NK-AN-LCDG Remote Annunciators:

The NK-AN-LCD Remote Shared Display is a remote annunciator that provides the same functions as the main display on the fire alarm control panel. The NK-AN-LCDG is similar to the NK-AN-LCD except its display is a graphical LCD. It is equipped with expanded memory of more than 18,000 system points, large 4 line x 20 character backlit alphanumeric LCD display (or for the NK-AN-LCDG a graphical display) which uses a simple menu system complete with a directional key pad and switches for Enter, Menu, Cancel and Info. For more information see documents LT-895NIT and LT-6033NIT.

Models:
• **NK-AN-LCD** or **NK-AN-LCDG** Main Annunciator Chassis with Common Indicators and Controls.

• **NK-TZDS-48A:** Adder Annunciator Chassis with 48 Circuit Capacity.

• **NK-IPS-24:** Programmable Input Switches module with 48 LEDs and 24 buttons.

ENCLOSURES for NK-AN-LCD and NK-AN-LCDG Remote Annunciators:
• **NK-AN-BB1R** With capacity for one Annunciator Chassis.

• **NK-AN-BB2R** With capacity for two Annunciator Chassis.

• **NK-AN-BB3R** With capacity for three Annunciator Chassis.

> **Notes:**
> • **Finish:** Painted, textured, off-white (standard), for other paint available colours and finishes, please contact factory.
> • **Material:** 18 GA (1.27 mm) cold roll steel (CRS).

Appendix C: DIP Switch Settings

## NK-7000FAC Network Main Board Address Setting (DIP SWITCH SW2)

Node Address	SW2 DIP SWITCHES							
	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8
1	ON	OFF	OFF	OFF	OFF	OFF		
2	OFF	ON	OFF	OFF	OFF	OFF		
3	ON	ON	OFF	OFF	OFF	OFF		
4	OFF	OFF	ON	OFF	OFF	OFF		
5	ON	OFF	ON	OFF	OFF	OFF		
6	OFF	ON	ON	OFF	OFF	OFF		
7	ON	ON	ON	OFF	OFF	OFF		
8	OFF	OFF	OFF	ON	OFF	OFF		
9	ON	OFF	OFF	ON	OFF	OFF		
10	OFF	ON	OFF	ON	OFF	OFF		
11	ON	ON	OFF	ON	OFF	OFF		
12	OFF	OFF	ON	ON	OFF	OFF		
13	ON	OFF	ON	ON	OFF	OFF		
14	OFF	ON	ON	ON	OFF	OFF		
15	ON	ON	ON	ON	OFF	OFF		
16	OFF	OFF	OFF	OFF	ON	OFF		
17	ON	OFF	OFF	OFF	ON	OFF		
18	OFF	ON	OFF	OFF	ON	OFF		
19	ON	ON	OFF	OFF	ON	OFF		
20	OFF	OFF	ON	OFF	ON	OFF		
21	ON	OFF	ON	OFF	ON	OFF		
22	OFF	ON	ON	OFF	ON	OFF		
23	ON	ON	ON	OFF	ON	OFF		
24	OFF	OFF	OFF	ON	ON	OFF		
25	ON	OFF	OFF	ON	ON	OFF	Leave in "OFF" position as Factory Set.	Leave in "OFF" position as Factory Set.
26	OFF	ON	OFF	ON	ON	OFF		
27	ON	ON	OFF	ON	ON	OFF		
28	OFF	OFF	ON	ON	ON	OFF		
29	ON	OFF	ON	ON	ON	OFF		
30	OFF	ON	ON	ON	ON	OFF		
31	ON	ON	ON	ON	ON	OFF		
32	OFF	OFF	OFF	OFF	OFF	ON		
33	ON	OFF	OFF	OFF	OFF	ON		
34	OFF	ON	OFF	OFF	OFF	ON		
35	ON	ON	OFF	OFF	OFF	ON		
36	OFF	OFF	ON	OFF	OFF	ON		
37	ON	OFF	ON	OFF	OFF	ON		
38	OFF	ON	ON	OFF	OFF	ON		
39	ON	ON	ON	OFF	OFF	ON		
40	OFF	OFF	OFF	ON	OFF	ON		
41	ON	OFF	OFF	ON	OFF	ON		
42	OFF	ON	OFF	ON	OFF	ON		
43	ON	ON	OFF	ON	OFF	ON		
44	OFF	OFF	ON	ON	OFF	ON		
45	ON	OFF	ON	ON	OFF	ON		
46	OFF	ON	ON	ON	OFF	ON		
47	ON	ON	ON	ON	OFF	ON		
48	OFF	OFF	OFF	OFF	ON	ON		
49	ON	OFF	OFF	OFF	ON	ON		
50	OFF	ON	OFF	OFF	ON	ON		
51	ON	ON	OFF	OFF	ON	ON		
52	OFF	OFF	ON	OFF	ON	ON		
53	ON	OFF	ON	OFF	ON	ON		
54	OFF	ON	ON	OFF	ON	ON		
55	ON	ON	ON	OFF	ON	ON		
56	OFF	OFF	OFF	ON	ON	ON		
57	ON	OFF	OFF	ON	ON	ON		
58	OFF	ON	OFF	ON	ON	ON		
59	ON	ON	OFF	ON	ON	ON		
60	OFF	OFF	ON	ON	ON	ON		
61	ON	OFF	ON	ON	ON	ON		
62	OFF	ON	ON	ON	ON	ON		
63	ON	ON	ON	ON	ON	ON		

NK-7000FAC Network Main Board Address Setting

NK-LDC-3 Loop Adder Module (CPU) Address Setting (DIP SWITCH SW1)

	ADDR	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
NK-LDC-3	1	ON	OFF	OFF	OFF	OFF	OFF	OFF	Put in "ON" position for firmware restore to defaults during power up. At all other times put in "OFF" state.
	2	OFF	ON	OFF	OFF	OFF	OFF	OFF	
	3	ON	ON	OFF	OFF	OFF	OFF	OFF	
	4	OFF	OFF	ON	OFF	OFF	OFF	OFF	
	5	ON	OFF	ON	OFF	OFF	OFF	OFF	
	6	OFF	ON	ON	OFF	OFF	OFF	OFF	
	7	ON	ON	ON	OFF	OFF	OFF	OFF	

NK-AN-LCD/NK-AN-LCDG Remote Annunciator Address Setting (DIP SWITCH SW1)

	ADDR	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
NK-AN-LCD and NK-AN-LCDG	33	ON	OFF	OFF	OFF	OFF	ON	Leave in "OFF" position as Factory Set	
	34	OFF	ON	OFF	OFF	OFF	ON		
	35	ON	ON	OFF	OFF	OFF	ON		
	36	OFF	OFF	ON	OFF	OFF	ON		
	37	ON	OFF	ON	OFF	OFF	ON		
	38	OFF	ON	ON	OFF	OFF	ON		
	39	ON	ON	ON	OFF	OFF	ON		

Appendix D: Alarm Verification Timing
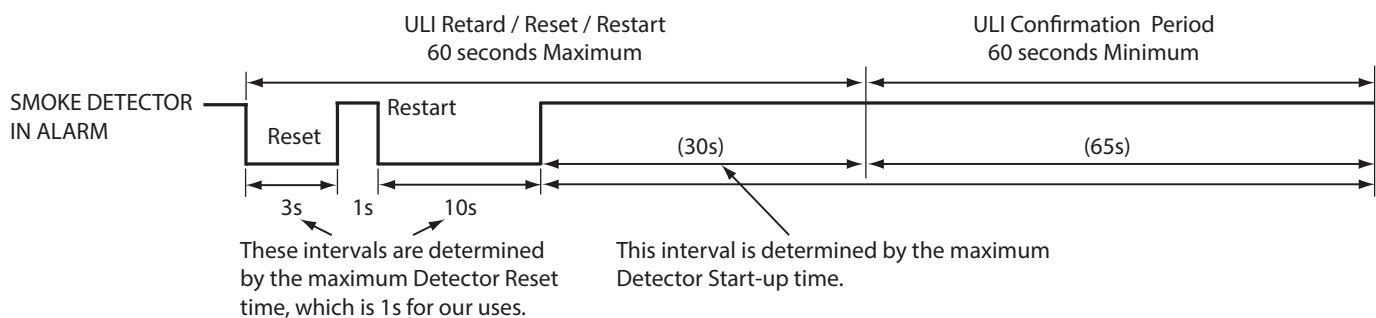
A Manual Station, or other contact-closure device, would remain shorted and be detected during the very short Zone Power burst within the first three seconds. A Smoke Detector will have been reset, and will require some minimum time to power-up, thus the Verification cycle will be entered.

SPERA™ System Configuration

NFU-7000 / NFU-7000-L
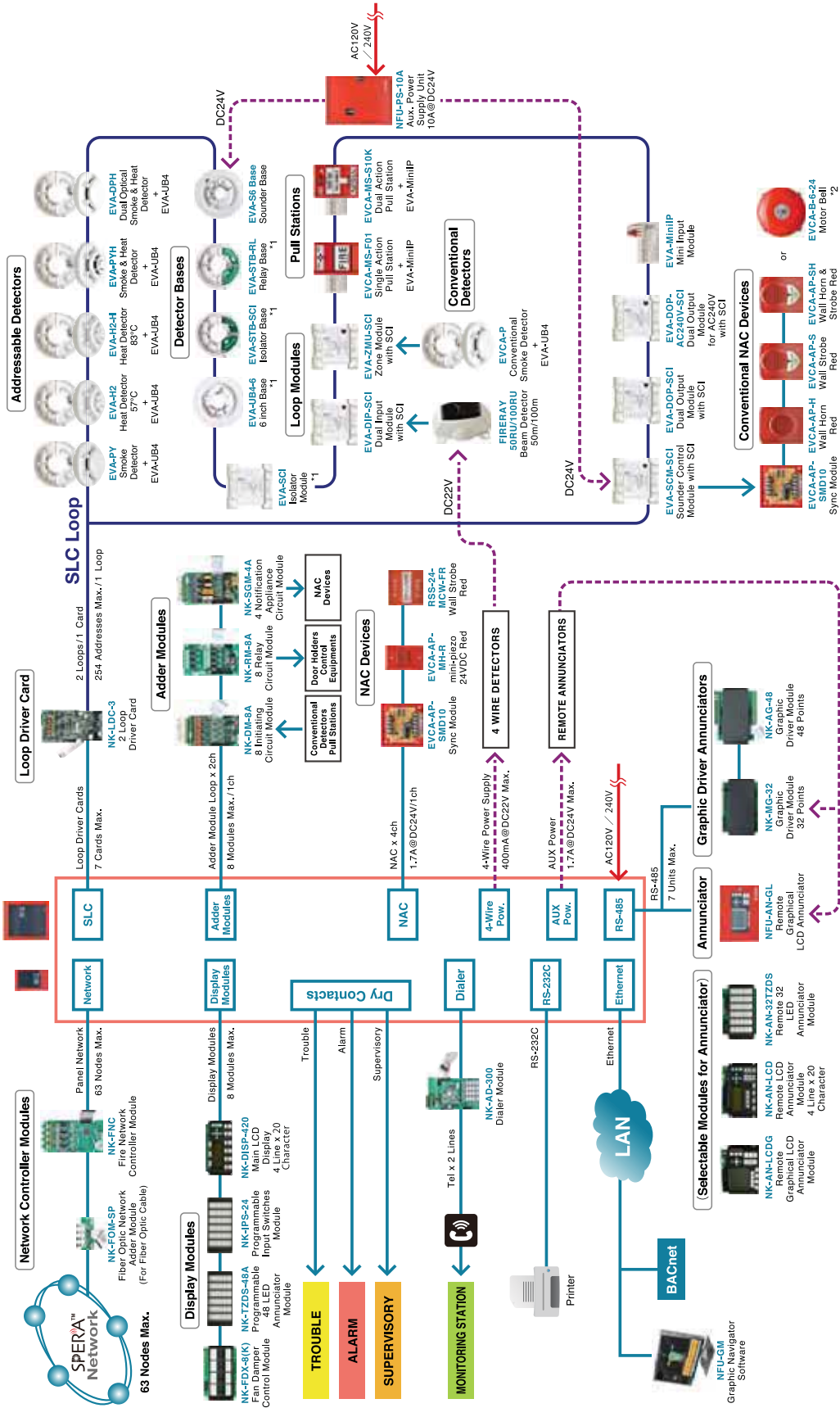
Warranty & Warning Information

1. Nittan warrants to the customers that:

(a) all products supplied hereunder will be of merchantable quality and will comply with any specification agreed between Nittan and customer.

(b) it is not aware of any rights of any third party in the market which would or might render the sale of the products, or the use of any of the trade marks on or in products, or the use of any of the trade marks on or in relation to the products, unlawful.

2. In the event of any breach of Nittan's warranty in Clause 1(a) whether by reason of defective materials, production faults or otherwise, Nittan's liability shall be limited to:

(a) replacement of the products in question; or
(b) at Nittan's option, repayment of the price where this had been paid.

And the warranty period is three (3) years from the shipment from Nittan's factory.

3. Notwithstanding anything to the contrary in this warranty terms, Nittan shall not be liable to the customer by reason of any representation or implied warranty, condition or other term or any duty at common law, or under the express terms of this warranty terms, for any consequential loss or damage whether for loss of profit or otherwise and whether occasioned by the negligence of Nittan or its employees or agents or otherwise, arising out of or in connection with any act or omission of Nittan relating to Nittan or supply of the products, their use by any customer.

Customer shall indemnify Nittan against all loss, damages, liabilities, costs and expenses which Nittan may suffer or incur as a result of or in connection with any breach by customer of this warranties terms or any laws or regulations of any jurisdiction or any rules of any governing authorities.

NITTAN