

Fire Alarm Control Panel **AFP-3030**

Installation Manual

Australia Edition



Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or inter-connecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until manuals are read and understood.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% voltage drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all

cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, or printed circuit board location.

Do not tighten screw terminals. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

The equipment must be correctly programmed and installed to suit the specific application. Please ensure correct operational parameters are set prior to commissioning. If further details on programming options are required, please consult the programming manual or contact our helpful technical support personnel.

EMC Warning:

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Electromagnetic Interface (EMI) tests are performed in accordance with Class A requirements of AS/NZS CISPR 22:2009

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Section 1: About This Manual

1.1 Agency Approvals

- **AS 7240.2-2004**
Fire Detection and Alarm Systems
Part 2: Control and Indicating Systems
(ISO 7240.2:2003, MOD)

The AFP-3030 supports the following optional functions of AS7240.2:

- Output to fire alarm devices, to clause 7.8
- Control of fire alarm devices, to clause 7.9
- Output to fire protection equipment, Output Type B to clause 7.10
- Delays to outputs, to clause 7.11
- Dependency on more than one fire signal, Type A Dependency to clause 7.12
- Supervisory signal condition, to clause 8
- Fault signals from points, to clause 9.3
- Output to fault warning routing equipment, to clause 9.9
- Disabled condition, to clause 10
- Disabling of addressable points, to clause 10.5 as well as these ancillary functions not required by AS7240.2:
- Any output may be programmed (at Access Level 3) to only respond to signals from one of the following:
 - from any zone (Z000 to Z999), or
 - from any logic zone (ZL1 to ZL1000), or
 - from any release zone (ZR0 to ZR9), or
 - from any special zone, or
 - from any fault zone (ZT1 to ZT100)
- The ability to disable any input or output, not just those required by AS7240.2
- The PSI PCB has a terminal labelled ‘General Fault Input’, which is normally a closed circuit. Interrupting this circuit results in a ‘PSI EXT FLT MONITOR’ fault warning.
- Outputs to automatic fire protection equipment (smoke control) may be configured so that they can be reset following an alarm by either:
 - the ‘RESET’ control, or
 - the ‘SMOKE CONTROL Reset’ control
- The fire panel retains a history of the last 4000 events.
- The ability to test the alarm devices by pressing the ‘Alarm Devices Test’ control.

- **AS 7240.4-2004**
Fire Detection and Alarm Systems
Part 4: Power Supply Equipment
(ISO 7240.4:2003, MOD)

The AFP-3030 supports the following optional functions of AS7240.4:

- Battery function check, to clause 5.5

- **AS 4428.3-2010**
Fire Detection, Warning, Control, and Intercom Systems - Control and Indicating Equipment
Part 3: Fire Brigade Panel

- **AS 1670.1-2004**
Fire Detection Installations
Part 1: Fire Detection and Alarm Systems

1.2 Related Documents

The table below provides a list of documents referenced in this manual, as well as documents for selected other compatible devices.

Off-line Programming Utility	Document Number
VeriFire Tools Programming Utilities	Available for download: www.notifier.com.au
Fire Alarm Control Panel (FACP) and Main Power Supply Installation	Document Number
AFP-3030 Installation, Programming, and Operations Manuals	DOC-01-031 DOC-01-032 DOC-01-033
NPS (Notifier Power Supply) Installation Sheet	DOC-03-057
Battery Connection Installation Kit	DOC-03-046
Networking	Document Number
Noti•Fire•Net Version 5.0 & Higher Manual	51584
High-Speed Notifier Network Manual	54013

Table 1.1 Related Documents (1 of 2)

HS-NCM Installation Document	54014
System Components	Document Number
ARE Interface Board Installation Sheet	DOC-03-062
Zone Mimic Manual	DOC-01-028
ACM-8RA Installation Sheet	DOC-03-052
Intrinsically Safe Barrier Manual	DOC-01-029
Annunciator Name Plate Installation Sheet	DOC-03-060
Extinguishing Agent release Module Manual	DOC-01-005
DA Series BOWS Manual	DOC-01-004
DVC Digital Voice Command Manual	52411
DVC-RPU Manual	50107425-001
DAA2 and DAX Amplifiers Manual	53265
DAL Devices Reference Document	52410
Mass Notification Systems Configuration, Programming and Operations Manual	LS10063-000NF-E
Annunciator Control System Manual	15842
LCD2-80 Manual	53242
LDM Series Lamp Driver Annunciator Manual	15885
SCS Smoke Control Manual (Smoke and HVAC Control Station) Manual	15712
SCS-8A/SCE-8A Installation Sheet	LS10126-000AU-E (DOC-03-086)
First Command Manual	LS1001-001NF-E
XP10-M Ten Input Monitor Module Installation Document	I56-1803
XP6-C Supervised Control Module Installation Document	I56-1805
XP6-MA Six Zone Interface Module Installation Document	I56-1806
XP6-R Six Relay Control Module Installation Document	I56-1804
FSA-8000 FAAST Intelligent Aspiration Sensing Technology Document	I56-3903
SLC-IM Manual	LS10026-000NF-E

Table 1.1 Related Documents (2 of 2)



NOTE: Where used in this manual, the term CPU refers to the main circuit board for the fire alarm control panel's central processing unit (see Section 2.3 "System Components" for a more detailed list of part numbers.)

1.3 Cautions and Warnings

This manual contains cautions and warnings to alert the reader as follows:



CAUTION: SUMMARY IN BOLD

INFORMATION ABOUT PROCEDURES THAT COULD CAUSE PROGRAMMING ERRORS, RUNTIME ERRORS, OR EQUIPMENT DAMAGE.



WARNING: SUMMARY IN BOLD

INDICATES INFORMATION ABOUT PROCEDURES THAT COULD CAUSE IRREVERSIBLE DAMAGE TO THE CONTROL PANEL, IRREVERSIBLE LOSS OF PROGRAMMING DATA OR PERSONAL INJURY.

Section 2: System Overview

2.1 System Description

2.1.1 Standard Features

- Connections to easily mount from one to ten Signalling Line Circuit (SLC) loops
- Network operation
- Uses Notifier's VIEW® early warning fire detection and the FlashScan® or CLIP families of detectors and modules
- Alarm, Fault, and Supervisory relays
- Support for 32 annunciator addresses with either 64 or 96 points each (depending on the capability of the annunciator)
- Supports Open (Style 4) and Closed (Style 6/7) SLC loops
- Logic Equations
- Multi-line display
- Ability to activate local sounder or relay bases in alarm or pre-alarm
- Supervisory duct and smoke detectors
- Supports Intelligent Sensing algorithms
- EIA-485 connections for wiring ACS annunciators (including LDM custom graphic annunciators), TM-4 transmitter
- EIA-232 connection for printer
- Autoprogram feature for faster programming of new devices
- Easy connection to VeriFire® Tools programming utility
- The basic system power supply charges sealed lead-acid batteries ranging in capacity from 11 to 85 amp hours, and provides up to 5 amps of power for use by the CPU.
- Easy connection to auxiliary power supplies and battery chargers for custom design of very large systems.
- Ground fault detection
- Mass Notification System compatible¹

2.1.2 Options

Refer to Section 2.3 "System Components" for descriptions of the various optional modules.

- Rubberized keypad with a standard "QWERTY" keyboard layout, a 640-character LCD display, indicator LEDs, and switches.
- Separately ordered Loop Control Modules and Loop Expander Modules provide up to ten SLC loops.
- Optional equipment includes: ACS devices, ACM-8RA remote relay module to provide additional relay points, and audio/voice components.

2.1.3 System Limitations

System expansion must take into consideration the following:

1. The physical limitations of the cabinet configuration.
2. The electrical limitations of the system power supply.
3. The capacity of the secondary power source (standby batteries).

2.2 Specifications

2.2.1 Supply Rating

Supply Rating Parameter	Details
Input Fuse Rating	M205 Fuse - 250V, 8.0A
Input Voltage Rating	NPS-5CHS: 100-240 V AC, 50-60 Hz, 0.8-2.5 A NPS-11CHS: 100-240 V AC, 50-60 Hz, 1.5-5.0 A
Output Ratings	Details
Output Current	NPS-5CHS: 5.6 A @ 27.3 V DC NPS-11CHS: 11.7 A @ 27.3 V DC
Output Ratings (Charger)	Details
Charger Voltage	27.3 V DC

2.2.2 Environmental Specifications

Environmental Specifications Parameters	Details
Environmental Limits	0°C to 49°C dry heat 40°C @ 93% relative humidity
IP Rating	CAB650, CAB900: IP30 18U, 28U, 40U: IP52

1. Control Active LED is not supported.

2.3 System Components

Central Processing Unit (CPU) with Power Supply The central processing unit for the AFP-3030 is a combination of the CPU and on board power supply (NPS-5CHS or NPS-11CHS). The power supply provides +24 V DC power and a battery charger for the basic system. Auxiliary power supplies and/or battery chargers are available to customize large systems.

Keypad/Display The keypad with built in LCD display serves as a primary display for the AFP-3030.

Enclosures Five cabinet sizes are available; CAB650, CAB900, 18U, 28U, and 40U. Refer to Section 2.5, “System Cabinets”, on page 10 for additional information.

SLC Loops: LCM-320, LEM-320 To provide one SLC loop, connect one LCM-320 to the panel. Connect an LEM-320 to the LCM-320 to provide a second loop. Up to five pairs of modules can be installed on the panel to provide a maximum of ten SLC loops.

Network Connection Connect a wire or fibre version of the NCM or the HS-NCM to provide a connection to the Noti•Fire•Net (network version 5.0 or higher) or High-Speed Noti•Fire•Net.

Annunciators The AFP-3030 supports ACM-24AT/ACM-48A (and their expanders) with either 64 or 96 points at an address, as well as LDM-32 (and expanders) and Notifier’s other ACS devices. (See Section 2.6 “Compatible Equipment” if looking for specific ACS devices.)



NOTE: Annunciators for the AFP-1010, AM-2020, and AFP-2800 operate on a different baud rate and are not compatible with the AFP-3030.

Audio System Voice evacuation applications are documented in the Audio System manuals: *DVC Digital Voice Command Manual*, *DAA2 and DAX Amplifiers Manual*, *DS-DB Digital Series Board Manual*, *DVC-RPU Manual* and the *AA-series Audio Amplifiers Manual*.

Mass Notification System The AFP-3030 supports Mass Notification applications. Installation, programming and operation information for Mass Notification systems are documented in the *Mass Notification Manual*. Refer to the AFP-3030 programming and operation manuals for additional information.



NOTE: The AFP-3030 does not support Control Active LED.

2.3.1 Replacement Kits

The system components that are available as replacement kits for the AFP-3030 are listed in Table 2.1.

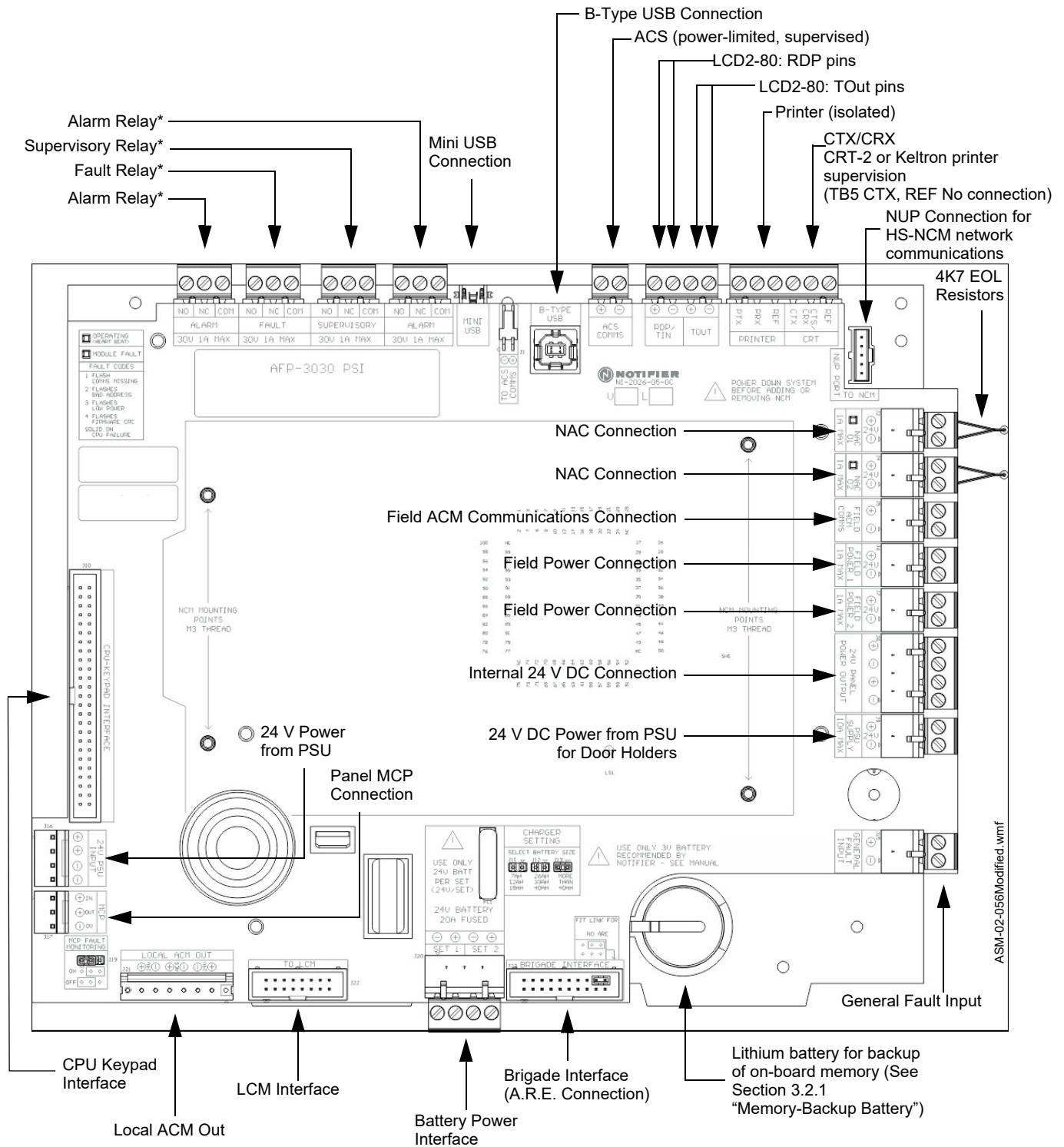
Model Number	Description
ASY-02-034	NPS-5CHS 5.6 A Power Supply Replacement Kit
ASY-02-033	NPS-11CHS 11.7 A Power Supply Replacement Kit
ASY-02-056	CPU2-3030AU CPU Replacement Kit for Australian AFP-3030
FG-50-011	DISP-3030AU Keypad Replacement Kit for Australian AFP-3030
ASY-01-035	Battery connection pack
FG-65-012	3 V BR2335 23mm Lithium Battery

Table 2.1 Available Kits

2.4 Product Diagram

The control panel electronics are contained on one printed circuit board assembly that holds the central processing unit and power supply interface, collectively known as the CPU.

The following figure illustrates the location of the various connections, switches, jumpers and LEDs on the circuit board. See Section 3 “Installation” for more details.



* For software versions prior to V23.12: Relay may energise at power up and should not be used for Alarm Signalling Equipment. Alternative connections are available via the Brigade Interface (A.R.E. Connection). See the *A.R.E. Interface Board Installation Sheet* for connection details.

Figure 2.1 CPU Connections

The keyboard/display assembly is shown in Figure 2.3.

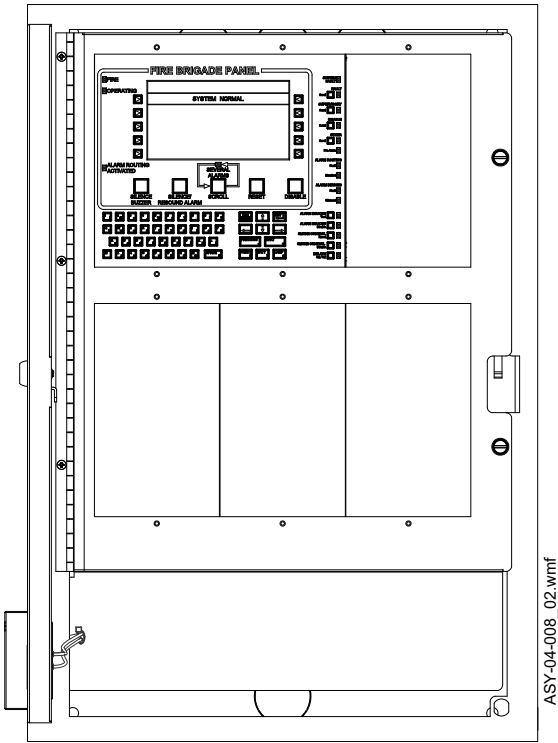


Figure 2.2 AFP-3030 installed in a CAB650

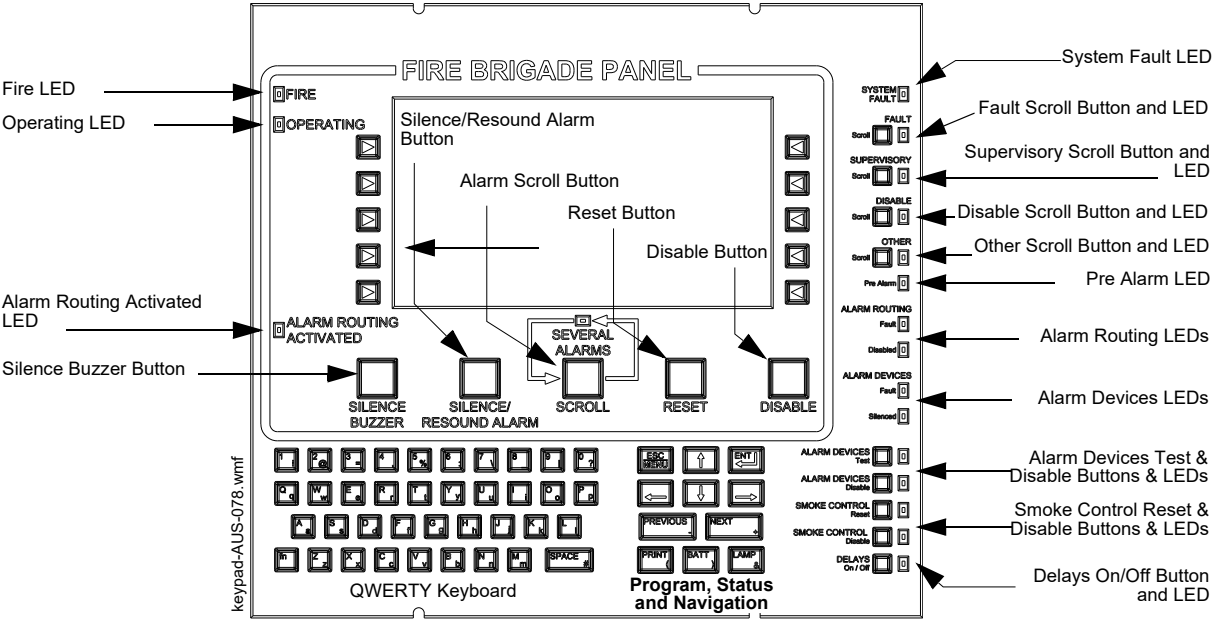


Figure 2.3 AFP-3030 Keypad

2.4.1 Main Power Supply

The NPS-5CHS or NPS-11CHS power supply provides a total of 5.6 A or 11.7 A to the CPU and has a built-in charger. During normal operation, the NPS can recharge batteries ranging in capacity from 7 to 85 amp-hours. See Section 3.7, “Connecting Power Sources and Outputs”, on page 18 for basic power information.

2.5 System Cabinets

The CPU and modules are installed in a CAB650, CAB900 or U-Series backbox, holding up to four rows of equipment plus batteries (up to two 85AH batteries). Backboxes can be ordered with windowed or solid doors. The doors of the 28U and 40U can be mounted on the left or the right side of the cabinet. A trim ring option is available for semi-flush mounting. External measurements for each cabinet backbox are provided in Appendix B, “Cabinet and Mounting Information”, on page 31. Refer to the *CAB650*, *CAB900*, or *U-Series* documentation for dimensions and door mounting specifications.

2.6 Compatible Equipment

Compatible Notifier and System Sensor equipment that connects directly to the CPU is listed below. These are the most common devices at time of publishing; the most complete list of compatible intelligent SLC loop devices is provided in the *SLC Wiring Manual*; for conventional non-addressable equipment see the *Device Compatibility Document*. Other control panels and their equipment can also be connected in a network, via Noti•Fire•Net version 5.0 or High-Speed Noti•Fire•Net; refer to the *Noti•Fire•Net Version 5.0 Installation Manual* or the *High-Speed Noti•Fire•Net Installation Manual* for details. Some products are documented in a separate manual; see Section 1.2 “Related Documents”.

Annunciators	
ACM-24AT	Annunciator (Control)
ACM-48A	Annunciator (Control)
ACM-8RA	8-way Relay Output Annunciator
AEM-24AT	Annunciator (expander)
AEM-48A	Annunciator (expander)
ARM	Agent Release Module Kit
LCD2-80	LCD Annunciator Kit
LDM-32	Lamp Driver Kit
LDM-E32	Lamp Driver Expander Kit
LDM-R32	Lamp Driver Relay Kit
SCE-8A	Smoke Control Annunciator (Expander)
SCS-8A	Smoke Control Annunciator (Control)
SCS-8LA	Smoke Control Annunciator (Control)
Network Control Modules	
HS-NCM-MF	Network Control Module - Multi-mode optical fibre
HS-NCM-MFSF	Network Control Module - Multi-mode/ Single-mode optical fibre
HS-NCM-SF	Network Control Module - Single-mode optical fibre
HS-NCM-W	Network Control Module - Wire
HS-NCM-WMF	Network Control Module - Wire/Multi-mode optical fibre
HS-NCM-WSF	Network Control Module - Wire/Single-mode optical fibre
NCA-2AU	Network Control Annunciator
NCM-F	Network Control Module - Fibre
NCM-W	Network Control Module - Wire
RPT-W	NFN Wire-to-Wire Repeater
RPT-F	NFN MMOF-to-MMOF repeater
RPT-WF	NFN Wire-to-MMOF repeater
Gateways	
BACNET-GW-3	BACnet Gateway
DVC	Digital Voice Command
MODBUS-GW	Modbus Gateway
NWS-3	NOTI-FIRE-NET WebServer
NFN-GW-AU-EM-3	NFN gateway (Embedded)
OnyxWorks	OnyxWorks Workstation with and without PC gateway
VESDA-HLI-GW	VESDA-Net gateway
Detector/Sounder Base	
AIBS32	Intelligent Base Sounder with integrated isolator
B501BI	Addressable Detector Base with isolator
B501AUS	Addressable Detector Base (Replaces B501)
B524IEFT	Short Circuit Isolator Base
NFX-BF-IVR	Addressable Strobe Base (NFX Series)
NFX-BS-IV	Addressable Sounder Base (NFX Series)
NFXI-BS-IV	Addressable Sounder Base (NFX Series)

NFX-BSF-IVR	Addressable Sounder/Strobe Base (NFX Series)
NFX-WF-RR	Addressable Strobe (NFX Series)
NFX-WSF-RR	Addressable Sounder/Strobe (NFX Series)
NFX-WS-R	Addressable Sounder (NFX Series)
NFX-WS-W	Addressable Sounder (NFX Series)
FS-WSO	Wall Mount Sounder - Off White
FS-WSS	Wall Mount Sounder and Strobe - Red
FS-WST	Wall Mount Strobe - Red
FS-BSO	Detector Base Sounder - Off White
FS-BSS	Detector Base Sounder - Off White and Strobe - Red
Field Modules (FlashScan)	
AAM	Addressable Alarm Acknowledgement Module (HUSH)
FCM-1	Single Intelligent Control Module
FDM-1	Dual Switch Input Module
FDMR-1	Dual Input/Output Module
FMM-1	Single Switch Input Module
FMM4-20	4-20mA Intelligent Interface Module
FRM-1	Single Intelligent Relay Output Module
FZM-1	Single Conventional Zone Interface Module
ISO-X	Loop (SLC) Isolator Module
SLC-IM	Signalling Line Circuit-Integration Module
XP-10M	10-way Switch Input Module
XP-6C	6-way Control output (NAC) Module
XP-6MA	6-way Conventional Zone Interface Module
XP-6R	6-way Relay Output Module
ZCM	ZCM Conventional Zone Conversion Module
M700X	Isolator Module in 200 series
Detectors (FlashScan)	
FAPT-751AUS	Intelligent Photo-Heat (Acclimate)
FAPT-851AUS	Intelligent Photo-Thermal multi-sensor (Acclimate)
FSB-200	Beam Detector
FSB-200S	Beam Detector with built-in test facility
FSC-851AUS	IntelliQuad multi-criteria sensor
FSD-751P	Innovair DSU
FSI-751AUS	Intelligent Ion
FSI-851AUS	Intelligent Ionization Sensor
FSL-751	View™ High Sensitivity Laser Sensor
FSP-751AUS	Photoelectric Smoke Detector
FSP-851AUS, FSP-951AUS	Intelligent Photo Sensor
FSP-951TAUS	Intelligent Photoelectric and Temperature Sensor
FST-751AUS	Intelligent Fixed Temp. Detector
FST-751AUS	Intelligent Thermal
FST-851AUS, FST-951AUS	Intelligent Thermal Sensor
FST-851RAUS, FST-951RAUS	Intelligent Thermal Sensor (rate of rise)

FST-851R-WP	Intelligent Sealed Thermal Sensor (rate of rise)
FST-851-WP	Intelligent Sealed Thermal Sensor
FST-851HAUS, FST-951HAUS	Intelligent Flash Scan High Heat (Addressable)
FSV-951RAUS	Intelligent High-sensitivity Photoelectric Smoke Sensors
FPTI-951AUS	Multi-Criteria Photoelectric, Thermal and Infrared Sensor
DNRAUS	Duct Detector Housing for Intelligent Detector
DNRW	Weatherproof Duct Housing for Intelligent Detector
Detectors (CLIP)	
FDX-751BAUS	Intelligent Thermal Sensor
FDX-751RBAUS	Intelligent Thermal Sensor
FDX-851AUS	Intelligent Thermal Sensor
FDX-851RAUS	Intelligent Thermal Sensor
IDX-751AE	Intrinsically Safe Addressable Photoelectric Detector
SDX-851AUS	Intelligent Photo Sensor
Intelligent VESDA-E Detectors	
VEP-A00-1P-NTF	VESDA-E VEP 1-pipe with LEDs, Plastic Enc.
VEP-A00-P-NTF	VESDA-E VEP 4-pipe with LEDs, Plastic Enc.
VEP-A10-P-NTF	VESDA-E VEP with 3.5"Disp, Plastic Enc.
VEU-A00-NTF	VESDA-E VEU with LED display
VEU-A10-NTF	VESDA-E VEU with 3.5" Display
VEA-040-A00-NTF	VESDA-E VEA-40 Aspiring Smoke Detector with LED Display
VEA-040-A10-NTF	VESDA-E VEA-40 Aspiring Smoke Detector with 3.5"
Manual Call Point	
FSM-500K	Indoor Manual Call Point
NFX-MCP-GLASS	Intelligent Manual Call Point (SS India)
WCP-5A	Outdoor Manual Call Point
Addressable loop powered Audio Visual Alarm devices (CLIP)	
VAD-PC-I02	NTF CLIP Pure White Strobe, white flash, clear lens, with Isolator
WSS-PC-I02	NTF CLIP Pure White Sound/Strobe, red flash, clear lens, with isolator
DSS-PC-I02	NTF CLIP Pure White Sound/Strobe, red flash, clear lens, with isolator and base.
Wireless Equipment	
FWSGAUS	SWIFT FlashScan Wireless Gateway
FWD-200PAUS	Wireless FlashScan Photo Detector
FWD-200ACCLIMATEAUS	Wireless FlashScan Acclimate Detector
FWH-200FIX135AUS	Wireless FlashScan Fixed Heat Detector
FW-MMAUS	Wireless FlashScan Monitor Module
W-USBAUS	USB Adapter

Section 3: Installation

3.1 Preparing for Installation

Choose a location for the fire alarm system that is clean, dry, and vibration-free with moderate temperature. The area should be readily accessible with sufficient room to easily install and maintain it. There should be sufficient space for cabinet door(s) to open completely. Carefully unpack the system and inspect for shipping damage. Count the number of conductors needed for all devices and find the appropriate knockouts.

Before installing the fire alarm system, read the following:

- Review the installation precautions at the front of this manual.
- Installers should be familiar with the standards and codes specified in Section 1.1 “Agency Approvals”.
- All wiring must comply with the National and Local codes for fire alarm systems.
- Do not draw wiring into the bottom 25 cm of the cabinet except when using a separate battery cabinet; this space is for internal battery installation.
- Review installation instructions in Section 3.2 “Installation Checklist”.



WARNING: RISK OF IRREPARABLE EQUIPMENT DAMAGE

MAKE SURE TO INSTALL SYSTEM COMPONENTS IN THE SEQUENCE LISTED BELOW. FAILURE TO DO SO CAN DAMAGE THE CONTROL PANEL AND OTHER SYSTEM COMPONENTS.



WARNING: RISK OF IRREPARABLE EQUIPMENT DAMAGE

WEAR A STATIC DISCHARGE STRAP ON WRIST TO PREVENT EQUIPMENT DAMAGE.

3.2 Installation Checklist

The checklist that follows contains references to information included in other manuals; see Section 1.2 “Related Documents” for document part numbers.


	Task	Refer to:
1.	Mount the cabinet backbox to the wall.	Appendix B, “Cabinet and Mounting Information”
2.	Wire relays	Section 3.6 “Form-C Relays on the CPU”
3.	Attach & wire other system components	
	<input type="checkbox"/> Audio/Voice equipment	<i>DVC Digital Voice Command Manual, DAA Digital Audio Amplifiers Manual, DVC-RPU Manual</i>
	<input type="checkbox"/> Annunciators and other ACS devices	Installation document for the specific device (such as <i>ACS Manual, ACM-8RA Install Sheet</i> , etc.)
	<input type="checkbox"/> Printer or other output device(s)	Section 3.8 “Installing Printers”
	<input type="checkbox"/> Network devices	<i>Noti•Fire•Net Version 5.0 & Higher Manual/High-Speed Noti•Fire•Net Manual</i> , and/or Installation document for specific device(s)
4.	Wire the Signalling Line Circuits (Notification Appliance Circuits and Initiating Device Circuits)	Section 3.9 “Wiring a Signalling Line Circuit (SLC)” and the SLC Wiring Manual
5.	Calculate the proper battery rating.	Main Power Supply Manual
6.	Install main power supply & batteries in separate enclosure. Run cable to main & optional power supplies, DC power outputs, relays, etc.	Section 3.7 “Connecting Power Sources and Outputs”
	 Do not activate power at this time. Do NOT connect batteries.	
	<input type="checkbox"/> Main power supply.	<i>NPS Installation Sheet</i>
	<input type="checkbox"/> Auxiliary power supply and/or external battery charger	
7.	Check that all mounting holes are secured to insure a proper Earth Ground connection.	
8.	Connect wire shielding to Earth Ground.	
9.	Remove insulator from lithium battery on CPU	Section 3.2.1 “Memory-Backup Battery”
10.	Apply AC power to the control panel by placing the external circuit breaker to the ON position. Do NOT connect batteries until AC power is checked (see next step).	
11.	Check AC power.	Section 3.7.4 “Checking AC Power”
12.	Connect the batteries using interconnect cable as described in Section 3.7.3 “Connecting Local and Remotely Powered Devices”.	
13.	Program the control panel.	Programming Manual.

Table 3.1 Installation Checklist

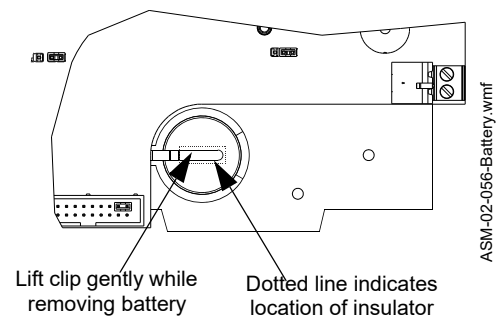
3.2.1 Memory-Backup Battery

The lithium battery on the CPU provides backup of the CPU's on-board memory during power loss. The CPU ships with an insulator to prevent the battery from discharging. To preserve the battery, the insulating tube should be left in place as long as possible before applying AC power.

If the insulator is *not* removed before applying AC power, the control panel will show a fault situation.

This battery's shelf-life should exceed 10 years, but if for some reason it fails, the control panel will show a fault when powered up. To replace the lithium battery:

1. Make a full backup of all system settings to prevent loss of all programming data.
2. Disconnect all power sources.
3. Lift clip gently using a hardware tool or screwdriver, and remove battery from under clip (use fingers, as screwdriver could damage components) before inserting new battery.



CAUTION: BATTERY REPLACEMENT

THE BATTERY USED IN THIS DEVICE MAY PRESENT A RISK OF FIRE OR CHEMICAL BURN IF MISTREATED.

DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 100°C, OR INCINERATE.

A REPLACEMENT 3 V BR2335 LITHIUM BATTERY CAN BE ORDERED FROM NOTIFIER BY QUOTING THE PART NUMBER FG-65-012. USE OF ANY OTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

4. Follow system power-up procedures.
5. Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

3.3 Attaching Option Boards

If installing option boards into a CAB650, CAB900, or U-Series backbox, mount & connect those boards at this time. This section contains general instructions for mounting an option board; see the documentation that shipped with your board for any product-specific instructions.

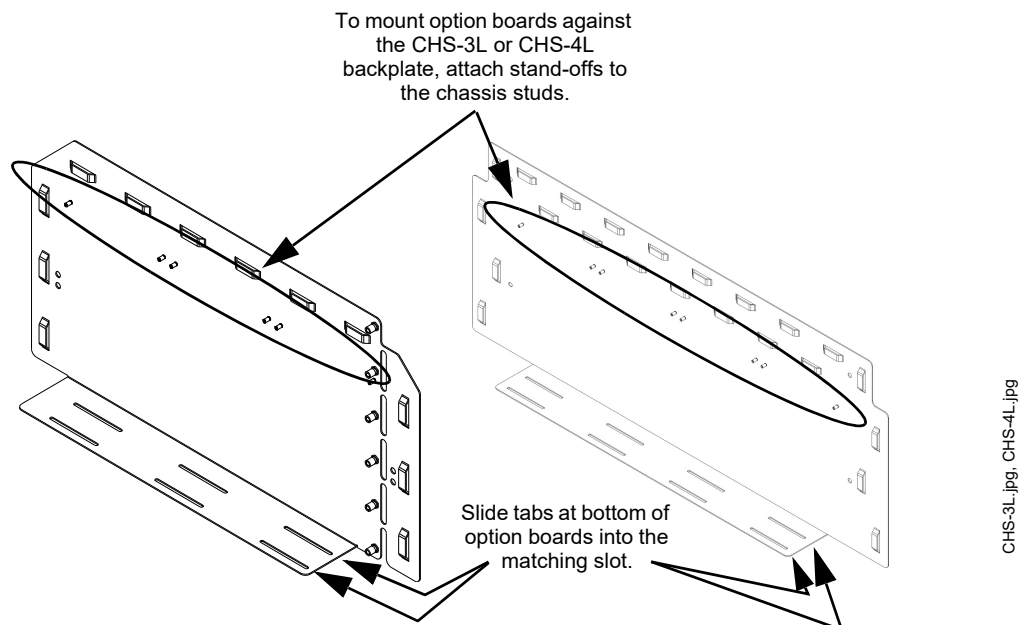


Figure 3.1 Mounting Option Boards in CHS-3L and CHS-4L

As described in Appendix B.6, "Laying Out Equipment in Cabinet and Chassis", up to three option boards can be mounted in CHS-3L or four option boards can be mounted in the CHS-4L; additional modules can be mounted in other chassis.

Mounting procedures: Chassis mount

1. Install two 3/4 inch (19.05 mm) stand-offs onto the chassis as shown in Figure 3.1.
2. Place the first option board over the stand-offs so that holes line up.
3. If no more option boards will be mounted in that position, securely fasten all stand-offs with screws (provided with module). If mounting a second option board, attach another layer of stand-offs and repeat steps 2-3. **Note:** Set the switches on an option board before mounting another layer in front of it.
4. If mounting a pair of SLC loop modules, refer to Section 3.5 "Connecting the Loop Control and Expander Modules" and to Section 3.5.3 "Installing a Multi-layer Module into the Chassis".

- 5. For the top (second) layer of option boards, slide the tab at the bottom of the board into the slots on the chassis, and lay the board back onto the top of the chassis so that the studs line up with mounting holes on the option board. Securely fasten all stand-offs with screws provided with module.



NOTE: Mounting two pairs of loop-control and -expander modules in one chassis position may cause intermittent electrical interference. If this occurs, move one pair to a separate chassis position.

Mounting procedures: Door mount

If mounting the option board in the door behind a blank dress plate, see Figure 3.2. This dress plate is suitable for option boards, which do not need to be visible or accessible when the door is closed.

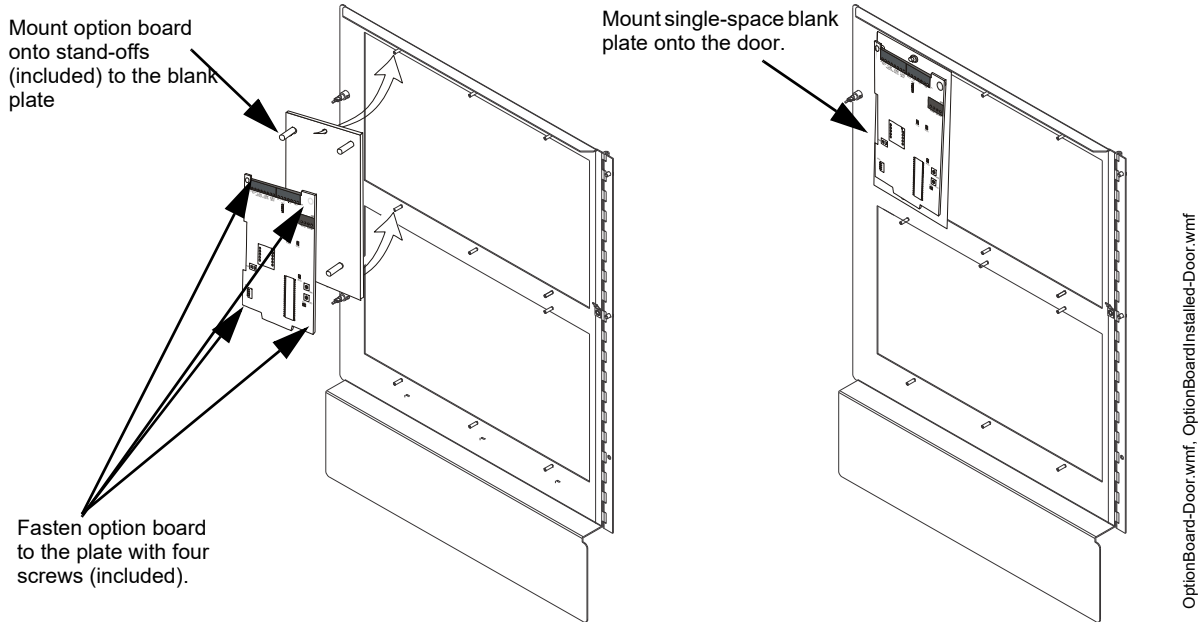


Figure 3.2 Door-Mounting Option Boards with a Single-space Blank Plate

3.4 Connecting the Network Communications Module

If networking two or more control panels (or network control annunciators), each one requires a Network Communications Module; a wire version and a fibre version are available. The wire and fibre versions on the NCM or HS-NCM can be installed on the CPU and power supply assembly. The preferred position is on top of the CPU assembly, as shown in Figure 3.3.

- 1. Mount the NCM or HS-NCM in the selected position. (See Figure 3.3)
- 2. Connect J1 on the CPU to J3 on the NCM or J6 on the HS-NCM using the network cable provided (P/N 75556). Do not connect two NCMs via NUP ports (aka NUP to NUP).
- 3. **When installing an NCM:** Connect Channel A and/or Channel B as described in the *NCM Installation Document*. **When installing a HS-NCM:** Connect Channel A to Channel B as described in the *HS-NCM Installation Document*.

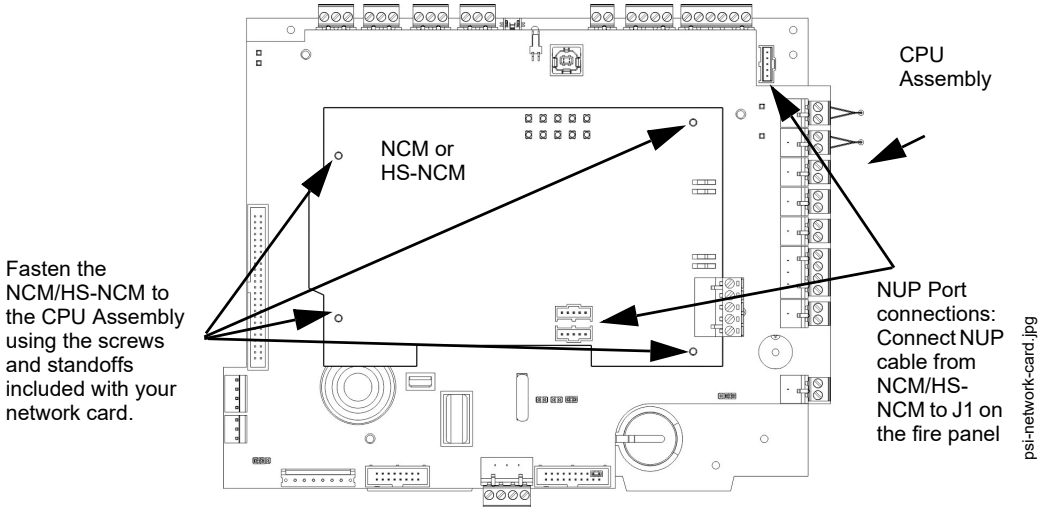


Figure 3.3 Mounting an NCM/HS-NCM to the CPU Assembly



NOTE: See the *Noti•Fire•Net Version 5.0 & Higher Manual* and the *NCM Installation Document* or the *High-Speed Noti•Fire•Net Manual* for system configuration information.



NOTE: Over-bending fibre-optic cable can damage it. Do not exceed a 8 cm minimum bend radius.



NOTE: NCM hardware is not compatible with HS-NCM hardware and should not be mixed on the same network.

3.5 Connecting the Loop Control and Expander Modules

3.5.1 Mounting Instructions

Mount loop control and expander modules within the cabinet with the CPU. Typical mounting positions are in the row immediately below the fire panel. Follow the basic chassis-mounting instructions given for option boards. Loop-expander modules are mounted first; Loop-control modules are mounted on top of those. Alternately, loop-control and loop-expander modules can be attached to each other and mounted as a pair to the chassis. See Figure 3.5 for connection instructions, connector locations and stand-off lengths.

If using loop control and expander modules in CHS-4L see Figure 3.6.



NOTE: Mounting two pairs of loop control and expander modules in one chassis position may cause intermittent electrical interference. If this occurs, move one pair to a separate chassis position.

After all loop-control and loop-expander modules are mounted in the cabinet, connect the SLC loops to TB1 on each loop-control and loop-expander module as shown in Figure 3.8. Daisy-chain the loop-control modules as shown in Figure 3.7. The ribbon-cable connection runs from header J7 on the CPU to header J1 (“Data in”) on the first loop-control module, from J3 (“Data out”) on that unit to J1 on the next unit in the chain, and likewise for up to five loop-control modules. Each module should be assigned a unique SLC loop number (see below); loop number does not need to match the module’s location in this daisy-chain.

FlashScan devices can operate in either FlashScan or, for retrofit applications, CLIP mode. Each LCM-320 or LEM-320 running a FlashScan SLC can support up to 159 detectors and 159 modules. CLIP loops are limited to 99 detectors and 99 modules. These and other capacity restrictions for CLIP mode loops are discussed in Section 3.9 “Wiring a Signalling Line Circuit (SLC)”. Refer to the *SLC Wiring Manual* for wiring requirements and specific details.



CAUTION: DO NOT EXCEED 99 ADDRESSES FOR CLIP

DO NOT PROGRAM MORE THAN 99 ADDRESSES ON A CLIP-MODE SLC LOOP, BECAUSE THIS WILL SLOW THE SYSTEM DOWN AND COMPROMISE THE RESPONSE TIME OF THE PANEL TO DISPLAY OFF-NORMAL EVENTS.

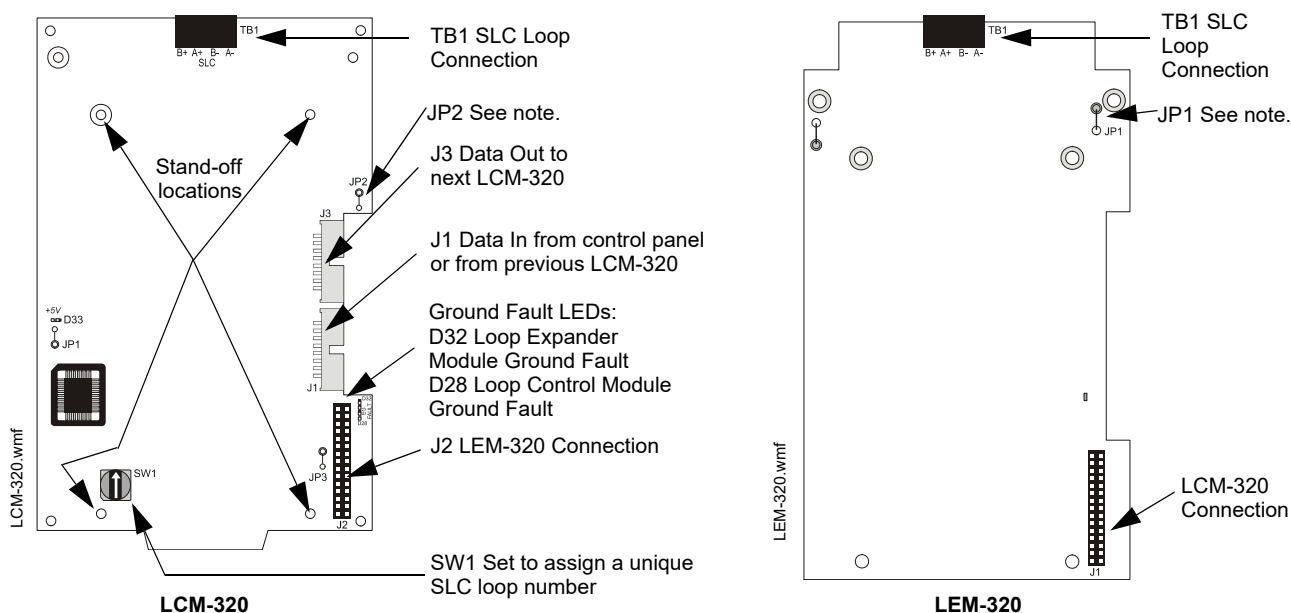
3.5.2 Setting SLC Loop Number

Assign a unique SLC loop number to the loop control module by setting SW1 on the module to 1, 3, 5, 7, or 9. The loop expander module which is mounted behind this loop control module will be assigned the next-higher even number. For example, if the LCM-320 is set to loop number 5, the LEM-320 mounted to it will be set to loop number 6.

3.5.3 Installing a Multi-layer Module into the Chassis

Follow the instructions illustrated in Figures 3.4 through 3.7 to install a pair of loop control/expander modules.

1. Angle the module into the chassis so that the upper end of the rear board (or boards) fits into the top slot.
2. Bring the module back down so that the lower board edges slip into the bottom slots.
3. Secure the module to the chassis with the two module screws. Tighten securely.
4. Connect the ribbon cable to the module.



NOTE: Do not cut any jumpers on the LCM-320 or LEM-320.

Figure 3.4 LCM-320 and LEM-320 Diagram

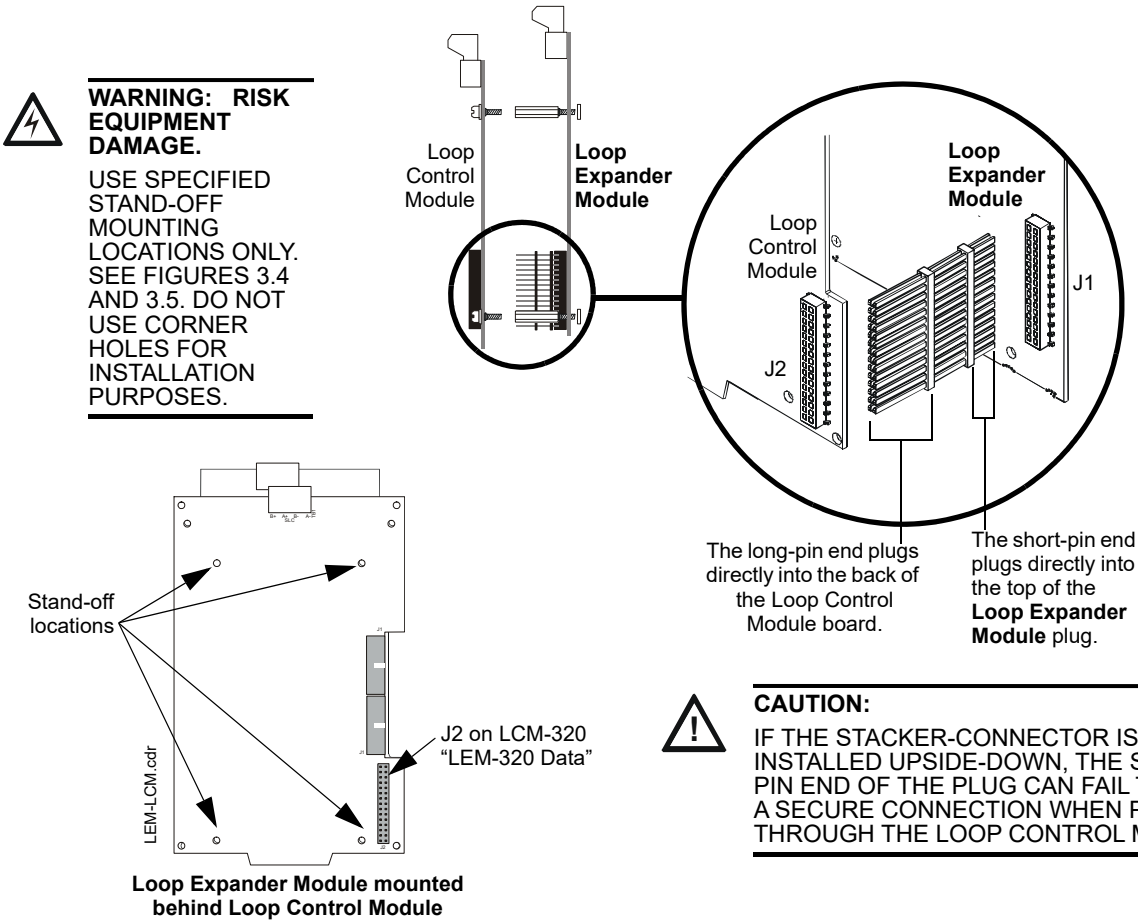


Figure 3.5 Connecting Loop Control Modules with Loop Expander Modules

NOTE: Depending on system components, clearance may be tight. Do not force modules! Move the assembly around gently until you find the angle where components and mounting studs pass each other without scraping together.

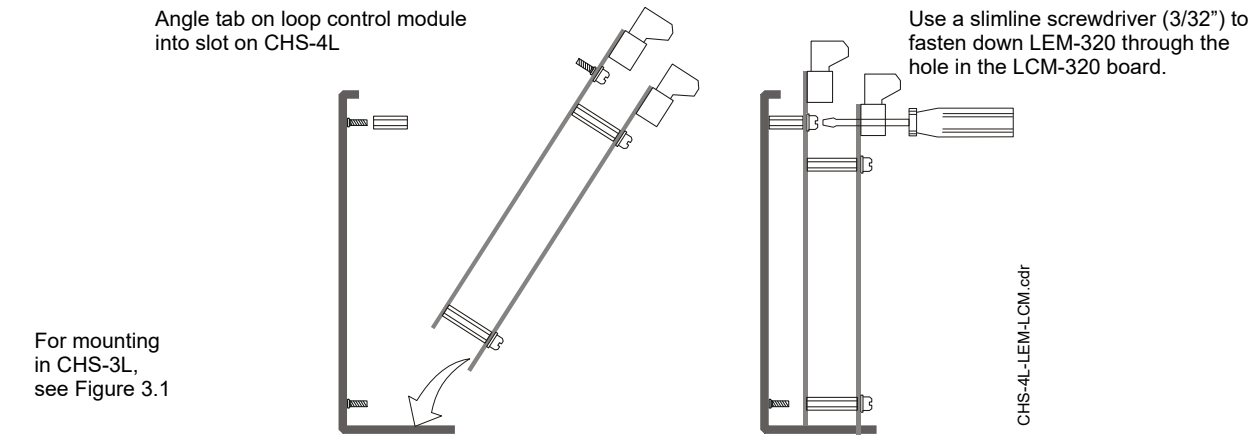


Figure 3.6 Inserting Pair of Loop Control and Expander Modules into CHS-4L

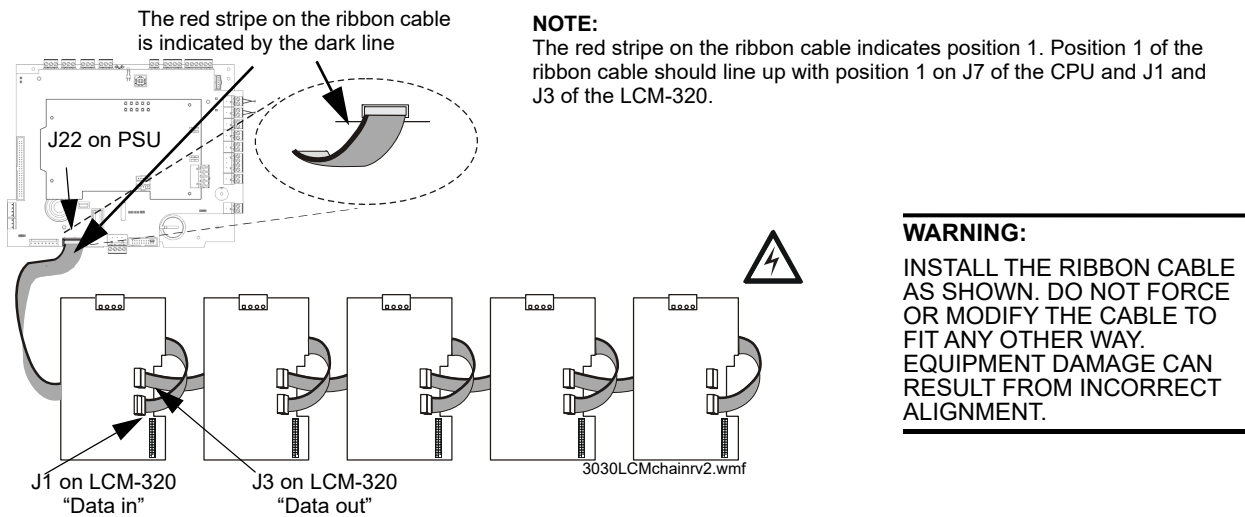


Figure 3.7 Connecting Multiple Pairs of Loop Control and Expander Modules

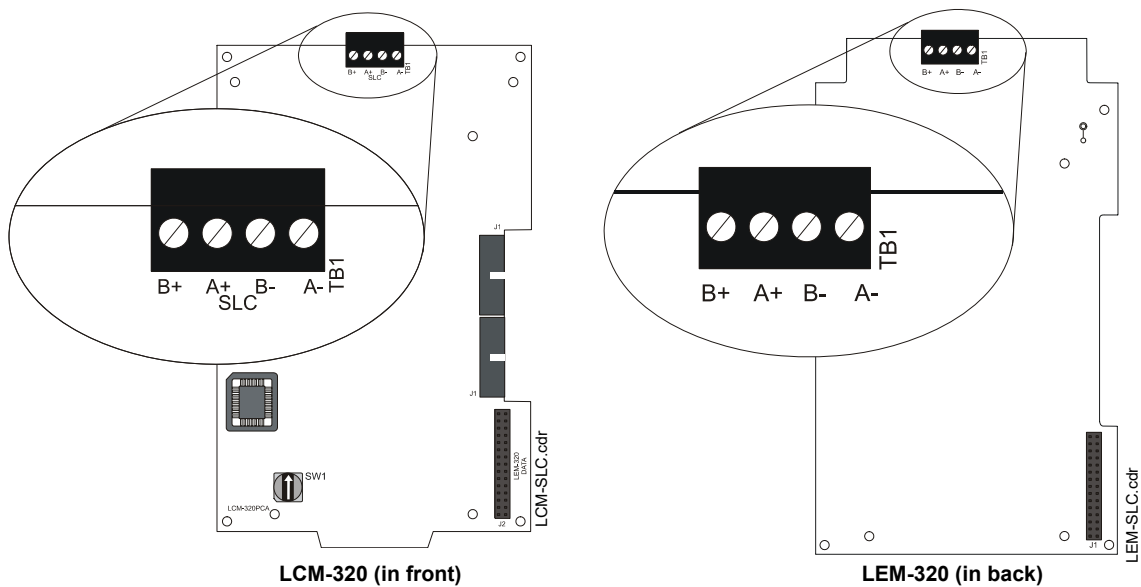


Figure 3.8 SLC Loop Connections on Loop-Control and Loop-Expander Modules

3.6 Form-C Relays on the CPU

The panel provides a set of Form-C relays. These are rated for 1 A at 30 V DC (resistive):

- Alarm - TB4
- Fault - TB3
- Supervisory - TB2
- Alarm - TB1

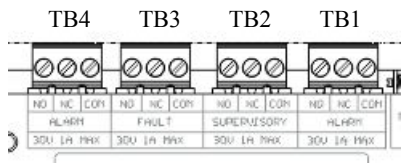


Figure 3.9 Form-C Relay Connections

FormCRelays.jpg



NOTE: Form-C Relays may energize at power up and should not be used for Alarm Signalling Equipment. See the *A.R.E. Interface Board Installation Sheet* for alternate connections for this purpose.

This is only applicable to software versions prior to V23.12. This operation was changed in V23.12 to not toggle the relays on start-up.

3.7 Connecting Power Sources and Outputs



WARNING: REMOVE POWER WHILE CONNECTING COMPONENTS TO THE SYSTEM

REMOVE ALL POWER SOURCES TO EQUIPMENT WHILE CONNECTING ELECTRICAL COMPONENTS. LEAVE THE EXTERNAL, MAIN POWER BREAKER OFF UNTIL INSTALLATION OF THE ENTIRE SYSTEM IS COMPLETE.



WARNING: CHECK FOR SECONDARY POWER SOURCES

SEVERAL SOURCES OF POWER CAN BE CONNECTED TO THE CONTROL PANEL. BEFORE SERVICING THE CONTROL PANEL, DISCONNECT ALL SOURCES OF INPUT POWER *INCLUDING THE BATTERY*. WHILE ENERGISED, THE CONTROL PANEL AND ASSOCIATED EQUIPMENT CAN BE DAMAGED BY REMOVING AND/OR INSERTING CARDS, MODULES, OR INTERCONNECTING CABLES.

3.7.1 Overview

Complete all mounting procedures and check all wiring before applying power. Electrical connections include the following:

- **Primary power source.** +24 V DC, delivered through the NPS main power supply. For cabinet placement information see Appendix B.6 “Laying Out Equipment in Cabinet and Chassis” and the *NPS Installation Sheet*.
- **Secondary power source.** +24 V DC from batteries, installed in the control panel (or in an optional battery cabinet). Secondary (battery) power is required to support the system during loss of primary power.
- **External power sources.** +24 V DC auxiliary power supplies.
- **Accessory power for peripheral devices.** The NPS provides +24 V DC power to devices within the same enclosure as the CPU. If those devices have outputs, the outputs must be power-limited. Power rating is limited by the NPS primary power source, which is +24 V DC and 5.6 Amps (NPS-5CHS) or 11.7 Amps (NPS-11CHS) max.



NOTE: The CPU ships with an insulator to prevent its lithium battery from discharging. To preserve the battery, this insulator should be left in place as long as possible before applying AC power. Some installers may find it convenient to remove the insulator before mounting all equipment.



NOTE: If using multiple power supplies with one set of batteries, refer to main power supply documentation for connection requirements.

3.7.2 Connecting 240 V Mains Supply



WARNING: CHECK POWER SUPPLY TERMINATION POINTS BEFORE APPLYING POWER

240 V MAINS SUPPLY TERMINATION POINTS WILL DIFFER DEPENDING ON THE CABINET SIZE IN USE. VERIFY CABINET SIZING AND MAINS TERMINATION POINT BEFORE APPLYING POWER.



NOTE: The AFP-3030 (Main PS Node) should have the 240V mains supply termination and NCA-2 /Secondary CPU should always be powered by AFP-3030 PSI to monitor power supply / battery fault on the NCA-2 PSI CARD.

CAB650/CAB900

When installing a panel housed in a CAB650 or CAB900 cabinet, terminate the 240 V mains supply directly to the fused terminal block on the NPS-5CHS or NPS-11CHS power supply assembly.

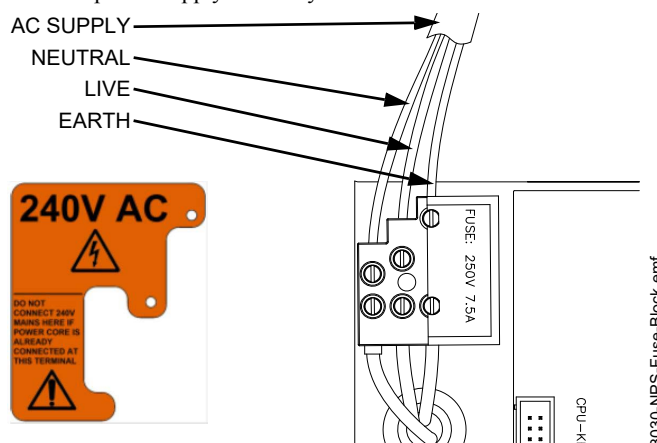


Figure 3.10 Fused terminal block on the NPS-xCHS power supply

U-series (18U, 28U, 40U)

An AFP-3030 panel in a U-series cabinet is fitted with a 240 V cable assembly terminated to the fused terminal block on the NPS-5CHS or NPS-11CHS.

Terminate 240 V mains supply to the double GPO inside the cabinet, and use this GPO to provide power to the NPS-5CHS or NPS-11CHS via the pre-terminated cable assembly.

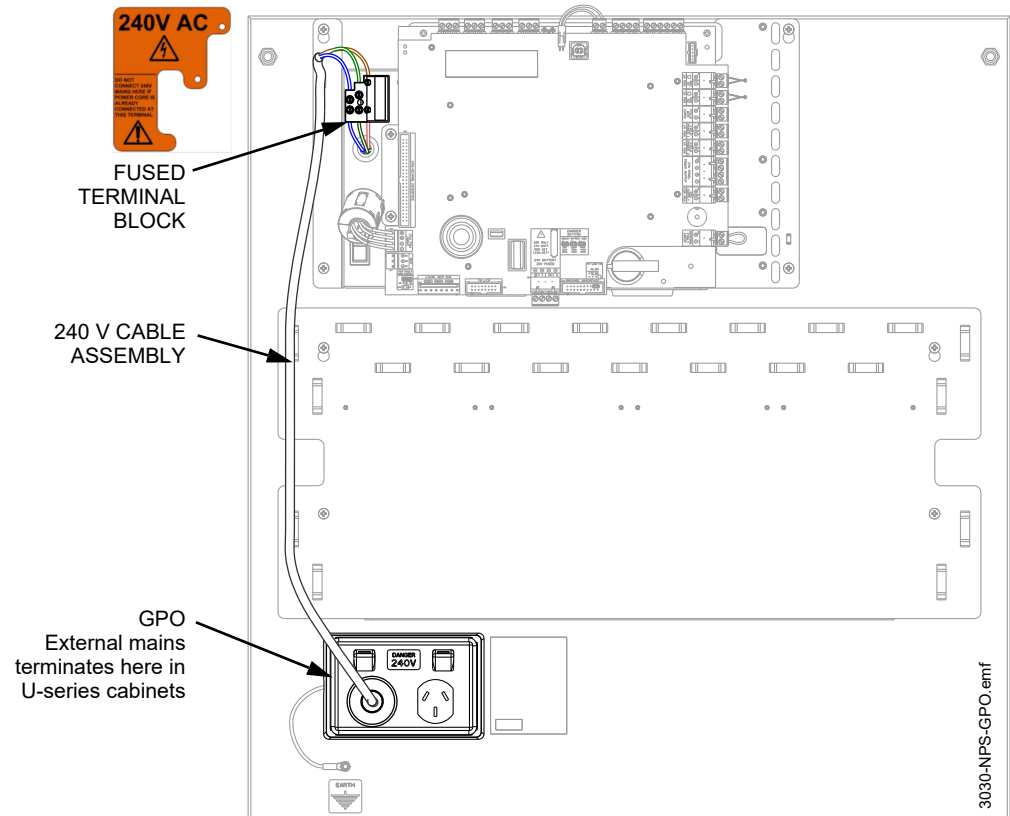


Figure 3.11 GPO in U-series cabinets

3.7.3 Connecting Local and Remotely Powered Devices

Refer to Figure 3.12 for power connections for a locally powered device. Refer to Figures 3.13 and 3.14 for power connections to a NCA-2 from a locally powered device.

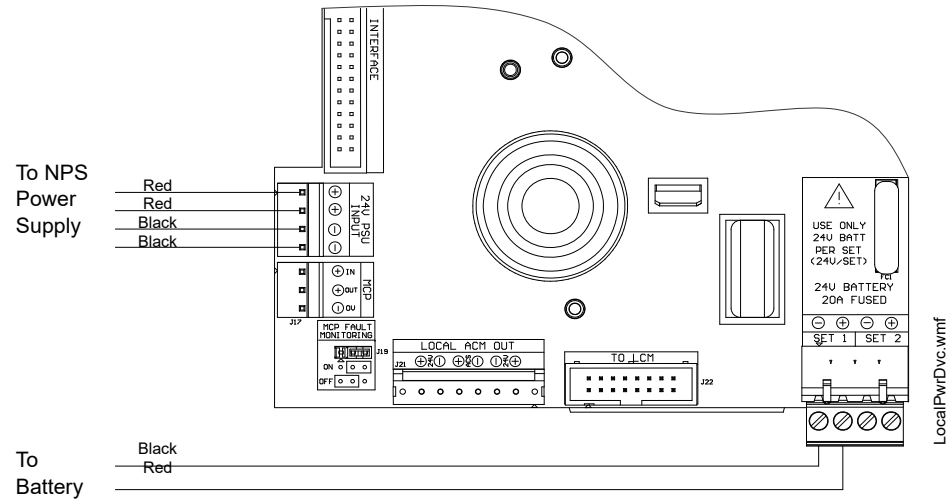


Figure 3.12 Connecting a Locally Powered CPU to Power



NOTE: The AFP-3030 (Main PS Node) should have the 240V mains supply termination and NCA-2 /Secondary CPU should always be powered by AFP-3030 PSI to monitor power supply / battery fault on the NCA-2 PSI CARD.



Figure 3.13 Connecting a Remotely Powered NCA-2 to the Main CPU

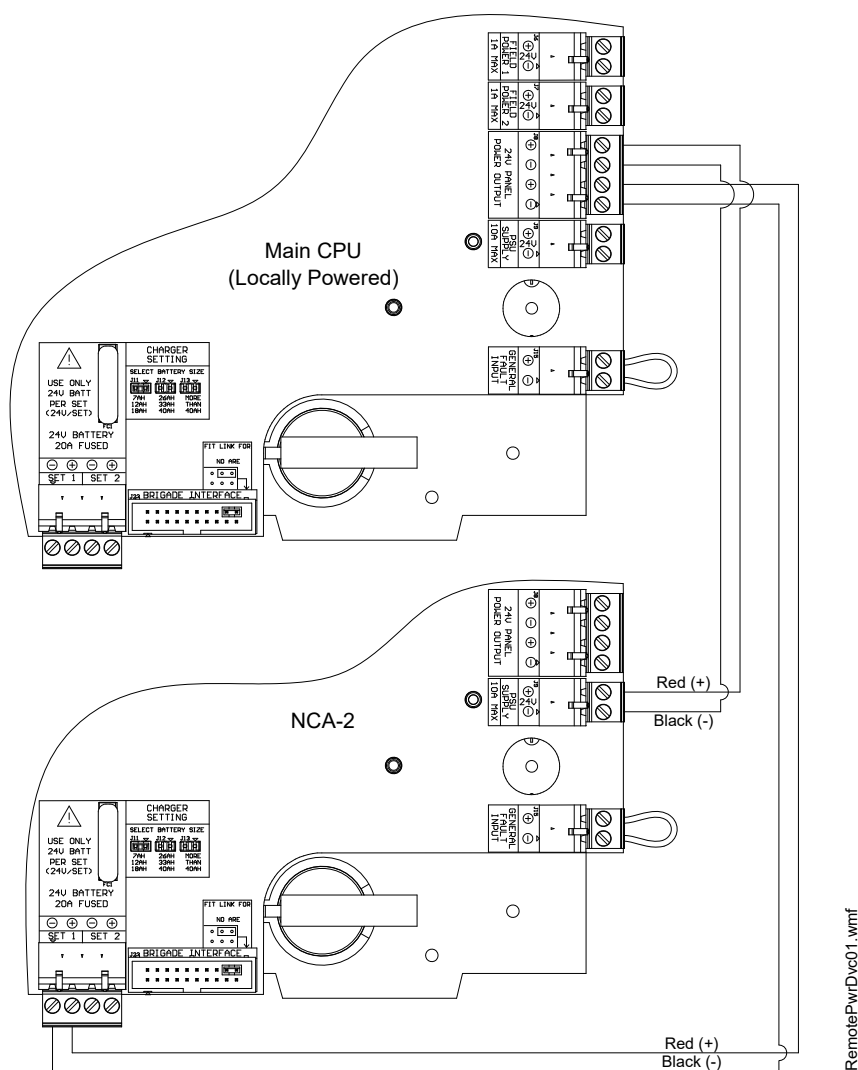


Figure 3.14 Connecting NCA-2 to the Main CPU within the same cabinet



NOTE: The NCA-2 must be programmed with the Main PS Node number of the CPU from which it is drawing power. This node number must be separate from its own node number. Refer to the 'SUPERVISION' section of the AFP-3030 Programming Manual for more information.

3.7.4 Checking AC Power

Power up the fire panel by switching on the PSU switch. The device will be on when the PSU switch is illuminated (red).

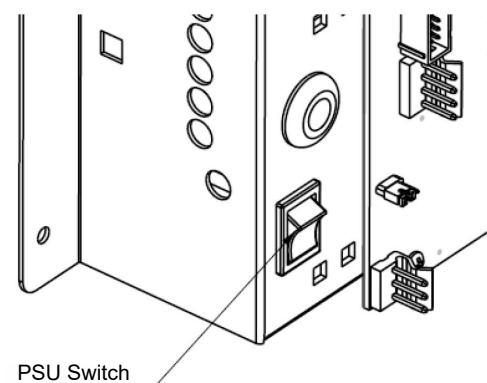


Figure 3.15 Location of the PSU Switch

Table 3.2 contains a checklist for checking the system with AC power applied to the main power supply:



CAUTION: CONFIRM BATTERIES ARE NOT CONNECTED
WHILE CHECKING AC POWER, MAKE SURE BATTERIES ARE NOT CONNECTED.

Component	Status
CPU/PSU	The green Operating indicator will come on when power is coming from the main power supply.
Main power supply	The green Operating indicator will come on when AC is supplied.
Each auxiliary power supply	Refer to the panel's LCD display for any auxiliary power supply issues.

Table 3.2 AC Power Checklist

3.7.5 Auxiliary Power Supply Connections

If an optional auxiliary power supply is installed in the cabinet, connect it at this time. Follow the connection procedures specified by your auxiliary power supply.

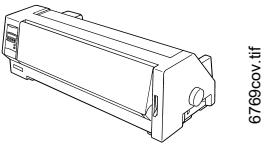
3.8 Installing Printers

This section contains information on connecting a printer to the CPU and for setting the printer options. The basic steps are as follows:

- 1. Make custom cable & connect it from printer to EIA-232 terminal on the CPU.
- 2. Connect printer's power supply.
- 3. Configure printer settings as described in printer documentation.

■ Overview: PRN Printer

The PRN provides a printed record (80 columns on standard 9" x 11" tractor-feed paper) of all system events (alarm, trouble) and status changes within the system. The control panel can be configured to time-stamp the printout with the current time-of-day and date for each event. The printer can be located up to 15 metres from the control panel. Installation and configuration instructions follow.



3.8.1 Printer Installation Sequence

- 1. Fabricate a custom cable to connect a printer to the system. Length of the cable will vary with each installation, but should not exceed a maximum length of 15 metres. Printer must be installed in the same room as panel. Using overall foil/braided-shield twisted-pair cable, properly connect one end to the DB-25 Connector (provided) using the wiring specifications shown in Figure 3.16.



NOTE: Alternative wiring specifications are also shown in Figure 3.16 for a printer with a 9-pin connector. Refer to printer manual for detailed connection information.

- 2. Tighten clamp on connector to secure cable. Connect the four open leads of the custom cable to the TB5 terminal block on the CPU as shown in Figure 3.16.

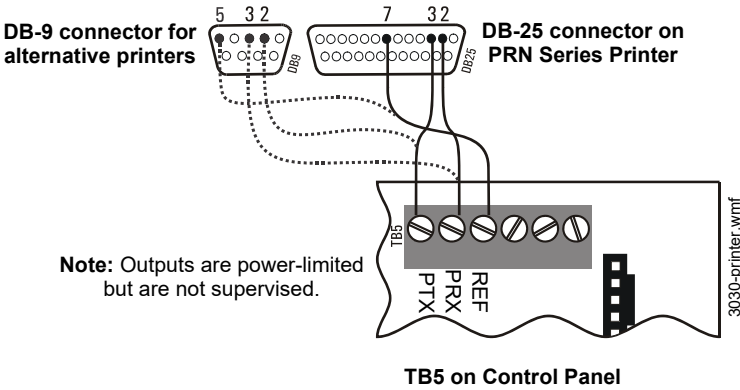


Figure 3.16 Printer Connections

- 3. If installing a PRN series printer, plug it into your AC power source. **Note:** PRN printers require a 240 V AC, 50 Hz primary power source. If required for the fire alarm system configuration (for example, a Proprietary Fire Alarm System), a remote printer requires a secondary power source (battery backup). Because a secondary power source is not provided, use a separate Uninterruptible Power Supply (UPS).
- 4. Plug the DB-25 connector end of the custom cable into the EIA-232 port of your printer. Tighten securely.
- 5. Configure the printer as described in Section 3.8.2 "Configuring the Printer".

3.8.2 Configuring the Printer

Refer to the documentation supplied with the printer for configuration instructions.

PRN Printer Settings

Set the printer options (under the menu area) according to the settings listed in Table 3.3.

Option	Setting
L/R Adjust	0
Font	HS Draft
CPI	10 CPI
LPI	6 LPI
Skip	0.0
ESC Character	ESC
Emulate	FX-850
Bidirectional Copy	ON
I/O	
Interface	Serial
Buffer	40K
Serial	
Baud	9600
Format	8 Bit, None, 1 Stop
Protocol *	ENQ/STX
CG-TAB	Graphic
Character Set	Standard
Country	E-USA ASCII
Select Zero	ON
Auto-CR	OFF
Auto-LF	OFF

Option	Setting
Menu Lock	ON
Language	English

Option	Setting
Paper	
Single	
Form Adjust	12/72
Trac 1	
Form Adjust	12/72
Trac 2	
Form Adjust	12/72
Auto Sheet Feeder	
Form Adjust	12/72
Auto Tear	OFF
F-Eject	OFF
Form Length	
Trac 1	
Lines	66
Standard	10.5"
Trac 2	
Lines	66
Standard	10.5"
Barcode	Off
Barmode	Unsecured

*Protocol: When printing in graphics mode, set I/O Serial Protocol to "Robust XON/OFF".

Table 3.3 PRN Setup Options

3.9 Wiring a Signalling Line Circuit (SLC)

3.9.1 SLC Overview

Communication between the CPU and intelligent and addressable initiating, monitor, and control devices takes place through a Signalling Line Circuit (SLC). This manual provides requirements and performance details specific to this control panel; for installation information and general information, refer to the *SLC Wiring Manual*.

For electrical specifications, see Appendix A.2 "SLC Loops". For additional notes on SLC resistance values, see Section 4.1 "Operational Checks".

3.9.2 SLC Capacity

The AFP-3030 supports up to five pairs of LCM-320 and LEM-320 modules, providing from one to ten SLC loops. Loop capacity depends on operating mode:

- Flash Scan: 01-159 intelligent detectors, 01-159 monitor and control modules
- CLIP: 01-99 intelligent detectors, 01-99 monitor and control modules

FlashScan devices can operate in either FlashScan or CLIP mode. Older models of CLIP devices only support addresses up to address 99. CLIP loops are limited to 99 detectors and 99 modules.



NOTE: Response times for CLIP loops may vary. CLIP loops must be tested to assure that actuation of notification appliances occurs within 10 seconds after activation of an initiating device.

The following configuration guidelines may be used to improve the response times of CLIP loops:

1. All manual pull stations must be assigned addresses from 1-20.
2. Loops must be programmed for Rapid Poll (refer to the programming manual for specific instructions).
3. Modules on a fully loaded loop must adhere to a ratio of two monitor modules to one control module.

3.9.3 SLC Installation

Install loop control and expander modules as described in Section 3.5 “Connecting the Loop Control and Expander Modules”. Note that the unique SLC loop number assigned to a module does not need to match the module’s location in the cabinet. For details on designing, installing and configuring SLC loops, see the *SLC Wiring Manual*.

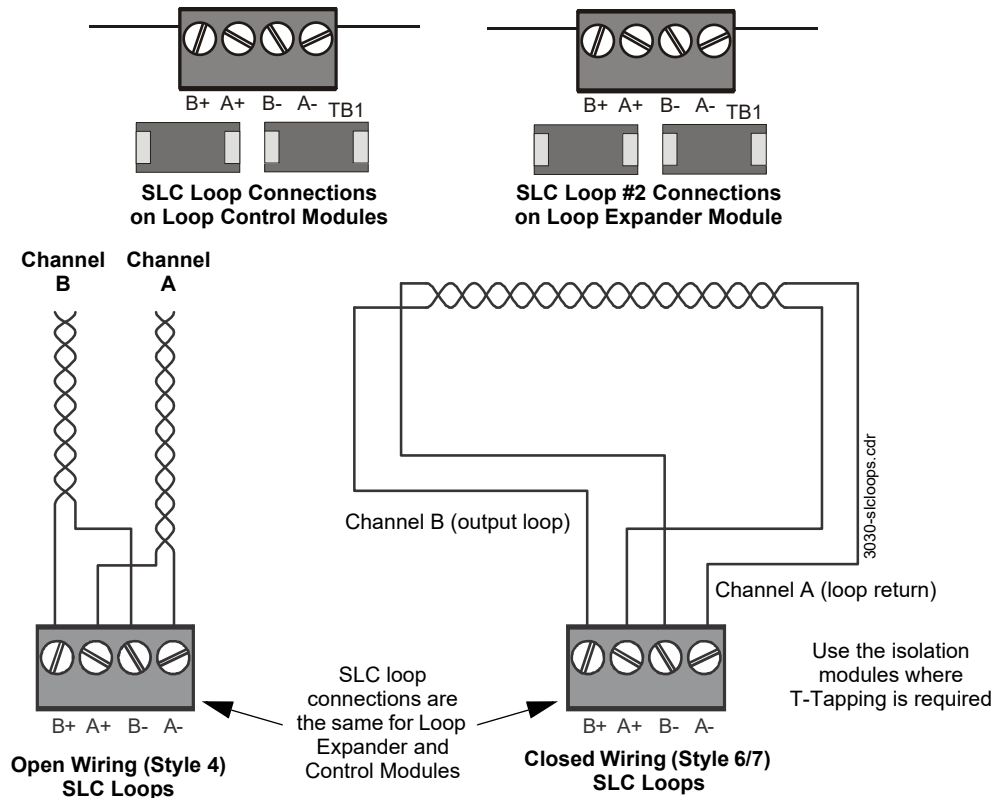


Figure 3.17 SLC Loop Connections and Wiring

3.10 Connecting a FFAST Intelligent Aspiration Detector

The FFAST Intelligent Aspiration detector may be used to provide early warning fire protection using aspiration sensing technology.

FFAST Wiring:

Figure 3.18 shows the wiring for the FFAST detector to the AFP-3030.

For additional installation information for the FFAST detector, refer the *FSA-8000 FFAST Installation and Maintenance Instruction* document (156-3903) and the *SLC Wiring Manual* (51253).

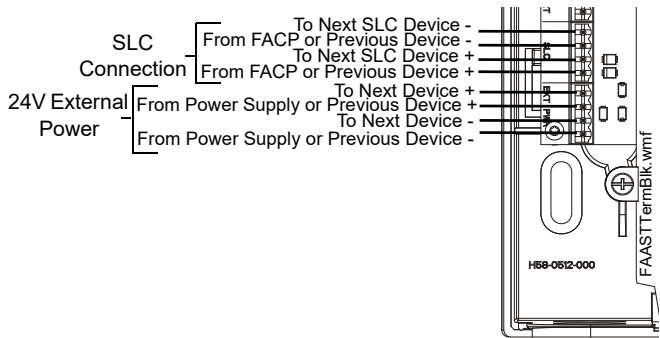


Figure 3.18 FSA-8000A Connection to the FACP

3.11 Connecting a PC for Programming

A PC running the VeriFire® Tools programming utility can upload and download the operating program of the control panel when attached to J15 USB Connection, J1 Network/Service Connection (NUP) or to the second Network/Service connection on an attached wire or fibre version of the NCM or HS-NCM. Refer to the VeriFire® Tools CD for instructions.

Section 4: Testing the System

4.1 Operational Checks

Between formal periodic testing and servicing intervals, the following operation checks should be performed monthly.

- Check that the green OPERATING LED lights.
- Check that all status LEDs are off.
- Press and hold the LAMP TEST key. Verify that all LEDs and all LCD display segments work.
- Before proceeding: a) notify the fire department and the central alarm receiving station if transmitting alarm conditions; b) notify facility personnel of the test so that alarm sounding devices are disregarded during the test period; and c) when necessary, disable activation of alarm notification appliances and speakers to prevent their sounding.
- Activate an Initiating Device Circuit using an alarm initiating device or an addressable initiating device on the SLC and check that all programmed active notification appliances function. Reset the alarm initiating device, the control panel, and any other associated equipment. In voice alarm applications, confirm that the proper tone(s) and/or messages sound during alarm conditions. Select the paging function and confirm that the message can be heard in the affected fire zones. Repeat the above step with each Initiating Device Circuit and each addressable device.



NOTE: SLC Resistance Values:

The total DC resistance of the SLC pair cannot exceed 50 ohms.

For instructions on how to measure the total DC resistance of a populated SLC pair, refer to the “Measuring Loop Resistance” section of the *SLC Wiring Manual* (P/N 51253).

The minimum DC resistance between conductors of an unpopulated SLC pair cannot be less than 1 K ohms. Measure DC resistance on an unpopulated loop as shown in Figure 4.1 on page 25.

- Zero Ohms to ground will cause a ground fault.
- On systems equipped with a firefighter’s telephone circuit, make a call from a telephone circuit and confirm a ring indication. Answer the call and confirm communication with the incoming caller. End the call and repeat for each telephone circuit in the system.
- Remove AC power, activate an Initiating Device Circuit through an alarm initiating device or an addressable initiating device on the SLC, and check that programmed active notification appliances sound, and alarm indicators illuminate. Measure the battery voltage with notification appliances active. Replace any battery with a terminal voltage less than 21.6 V DC and reapply AC Power.



NOTE: The battery test requires fully charged batteries. If batteries are new or discharged due to a recent power outage, allow the batteries to charge for 24 hours before testing.

- Return all circuits to their pretest condition.
- Check that all status LEDs are off and the green POWER LED is on.
- Notify fire, central station and/or building personnel when you finish testing the system.

Step 1. Disconnect the SLC channel B (Out) and SLC channel A (Return) at the control panel.

Step 2. Measure and record the resistance at SLC Out.

Step 3. Measure and record the resistance at SLC Return.

The minimum resistance is the lesser of two and three.

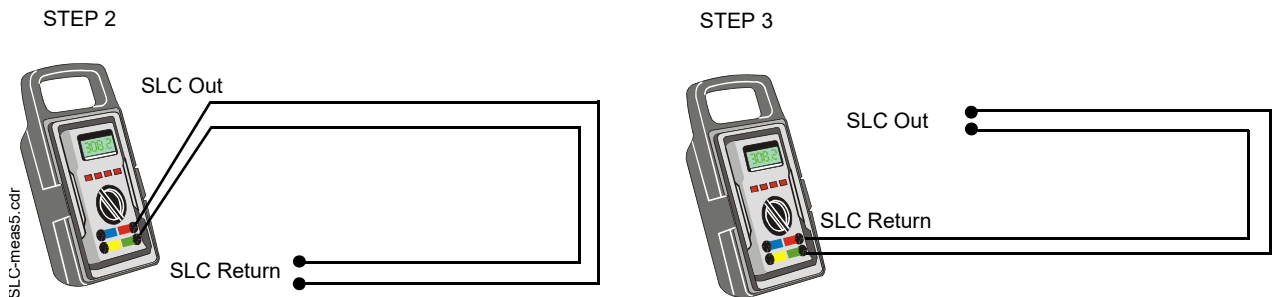


Figure 4.1 Measuring DC Resistance on an Unpopulated SLC Loop

4.2 Battery Checks and Maintenance



CAUTION:

THE MAXIMUM CURRENT RATING OF THE BATTERIES IS 11.6A. THE BATTERY CONNECTION IS FUSED. IF THE FUSE NEEDS TO BE REPLACED, IT MUST BE REPLACED WITH A 20A BLADE FUSE.

Maintenance-free sealed lead-acid batteries used in the system do not require the addition of water or electrolyte. These batteries are charged and maintained in a fully charged state by the main power supply’s float charger during normal system operation. A discharged battery typically reaches the float voltage of 27.3 V DC within 24 hours.

Follow the manufacturer recommendations for battery replacement intervals. Minimal replacement battery capacity appears on the control panel marking label. Immediately replace a leaking or damaged battery. You can get replacement batteries from the manufacturer.



WARNING: BATTERIES CONTAIN SULFURIC ACID,

WHICH CAN CAUSE SEVERE BURNS TO THE SKIN AND EYES AND DAMAGE TO FABRICS.

- If a battery leaks and contact is made with the Sulfuric Acid, immediately flush skin and/or eyes with water for at least 15 minutes. Water and household baking soda provides a good neutralizing solution for Sulfuric Acid.

continued...

- If Sulfuric Acid gets into eyes, seek immediate medical attention.
- Ensure proper handling of the battery to prevent short circuits.
- Take care to avoid accidental shorting of the leads from uninsulated work benches, tools, bracelets, rings, and coins.



CAUTION:
SHORTING THE BATTERY LEADS CAN DAMAGE THE BATTERY, EQUIPMENT, AND COULD CAUSE INJURY TO PERSONNEL.



CAUTION:
RISK OF EXPLOSION IF BATTERY IS REPLACED WITH INCORRECT TYPE.
DISPOSE OF BATTERY ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

4.2.1 PSI Status

Pressing the PSI STATUS button will display the status of the local power supply. This information includes the supply voltage, battery voltage, PSI output voltage, which supply source the panel is running from (PSI or battery), whether a battery test is in progress and whether or not the battery test and charger have been disabled.

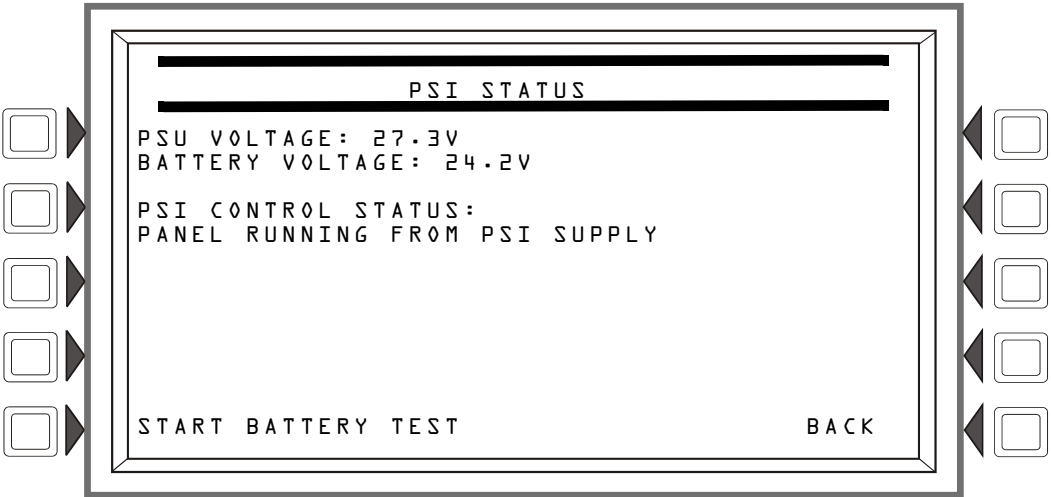


Figure 4.2 PSI Status Screen

Appendix A: Electrical Specifications

A.1 Operating Power

DC Power The control panel requires connection to NPS-5CHS or NPS-11CHS, which is a 27.3 V DC regulated, power-limited power supply, that can supply 0.1 amps continuous for the CPU without the display (0.3 amps for CPU with the display).

A.2 SLC Loops

Listed below are specifications for a Signalling Line Circuit loop. Refer to the *SLC Wiring Manual* for more detailed specifications and specific device listings:

Item	Value
Voltage	24 V DC nominal, 27.6 V DC maximum
Maximum length	The maximum wiring distance of an SLC using 12 AWG (3.25 mm ²) twisted-pair wire is 3810 m. Note: Refer to Appendix A.5 "Wire Requirements" for limitations.
Maximum current	130 mA: LCM-320 100 mA: LEM-320 400 mA max*: Single SLC loop; for battery calculations use 200 mA *Max short circuit; circuit will shut down until short circuit condition is corrected.
Maximum resistance	50 ohms (supervised and power-limited). For additional notes on SLC resistance values, see Section 4.1 "Operational Checks".

Table A.1

A.3 Notification Appliance Circuits

The power supply provides Notification Appliance Circuits. The maximum current rating for each NAC output is 1.0 A. Refer to the *Device Compatibility Document* for compatible devices and notification appliances.

A.4 Networks

Network Card	Communication Parameters
NCM-W	Supports twisted-pair wire medium, data is regenerated at each node. 312.5K baud transmission rate.
NCM-F	Supports fibre-optic medium (62.5/125 or 50/125 micrometres – multimode). Single mode available. 312.5K baud transmission rate. Data is regenerated at each node.
HS-NCM	High-speed data communications (12 Mb wire, 100 Mb MF/SF fibre). Multi-mode fibre optic (MF), single-mode fibre optic (SF), wire (W), or a combination of W/MF/SF communications path.

Table A.2

A.5 Wire Requirements

Each type of circuit within the Fire Alarm Control System requires use of a specific wire type to ensure proper circuit operation. The wire gauge of a particular circuit depends on the length of that circuit and the current traveling through it. Use the table below to determine the specific wiring requirements for each circuit.

Use twisted-pair shielded wire for any non-SLC-loop wiring entering or exiting the cabinet that is not enclosed in conduit. Use twisted-pair unshielded wiring for SLC-loop wiring.



NOTE: If running an SLC in conduit with Notification Appliance Circuits, you can reduce problems by exclusively using electronic sounders (such as the MA/SS-24 Series) instead of more electronically noisy notification appliances (such as electromechanical bells or horns).

Circuit Type	Circuit Function	Wire Requirements	Distance (feet/meters)	Typical Wire Type
SLC (power limited)	Connects to intelligent and addressable modules.	Twisted-unshielded pair, 12 to 18 AWG (3.25 to 0.75mm ²). 50 ohms, maximum per length of Closed (Style 6 & 7) loops.	3,810 m	12 AWG (3.31 mm ²)
		50 ohms per branch maximum for Open (Style 4) loops.	2,896 m	14 AWG (2.08 mm ²)
			1,829 m	16 AWG (1.31 mm ²)
			1,128 m	18 AWG (0.82 mm ²)
	or	Twisted-shielded pair.	1524 m	12 to 16 AWG (3.31 mm ² to 1.31 mm ²)
		NOTE: • Shields must be isolated from ground. • Shields should be broken at each device.	1,128 m	18 AWG (0.82 mm ²)
or		Untwisted, unshielded wire, in conduit or outside of conduit.	1524 m	12 to 16 AWG (3.31 mm ² to 1.31 mm ²)
		NOTE: Maximum total capacitance for all SLC wiring (both between conductors and from any conductor to ground) should not exceed 0.5 microfarads	1,128 m	18 AWG (0.82 mm ²)

Table A.3 Wire Requirements (1 of 2)

Circuit Type	Circuit Function	Wire Requirements	Distance (feet/meters)	Typical Wire Type
EIA-485 ACS Connection (power limited)	Connects to ACS devices such as annunciators and UDACT/UDACT-2	Twisted-shielded pair with a characteristic impedance of 120 ohms. 18 AWG (0.75mm ²) minimum.	1829 m (max)	16 AWG (1.31mm ²)
EIA-485 RDP Connection (power limited)	Connects to RDP devices	Twisted-shielded pair with a characteristic impedance of 120 ohms. 18 AWG (0.75mm ²) minimum.	1219 m (max)	16 AWG (1.31 mm ²)
EIA-232 (power limited)	Connects to Printers or PC.	Twisted-shielded pair. 18 AWG (0.75mm ²) minimum.	15.24 m without modem	16 AWG (1.31 mm ²)
IDC Initiating Device Circuit	FMM-1, FMM-101 (power limited)	12-18 AWG Maximum circuit resistance is 20 ohms.		12 to 18 AWG (3.31 to 0.82 mm ²)
NAC Notification Appliance Circuit	FCM-1 (power limited)	12-18 AWG. MPS-24A: At alarm current level, no more than a 1.2 V drop at the end of the circuit, or sized to provide the minimum rated operating voltage of the appliances used.	To meet 1.2 V drop, or sized to provide the minimum rated operating voltage of the appliances used.	12 to 18 AWG (3.31 to 0.82 mm ²)
Releasing Module	FCM-1-REL	12-18 AWG. 5 ohms maximum per circuit for class A or B, or sized to provide the minimum rated operating voltage of the appliances used.	To meet 5 ohms maximum circuit resistance, or sized to provide the minimum rated operating voltage of the appliances used.	12 to 18 AWG (3.31 to 0.82 mm ²)
24 VDC Power Runs (power-limited)	To TM-4 Transmitter, Annunciator and FCM-1 modules	12-18 AWG. Size wire so that no more than 1.2 V drop across wire run from supply source to end of any branch.	To meet 1.2 volt drop	12 to 18 AWG (3.31 to 0.82 mm ²)

Table A.3 Wire Requirements (2 of 2)

Relay Output circuits are “Common” 30 V DC, 2 A (see Section 3.6 “Form-C Relays on the CPU”).

A.6 Power Supply Calculations

Calculations must be done to determine standby and alarm DC current loads. Ampere-hour requirements must be calculated as well to determine battery size.

The NPS power supply provides filtered 24 V DC (nominal) power that may be used for operating external devices. The power for operating external devices is limited. Use Table A.4 to determine if external loading is within the capabilities of the power supply.

A.6.1 Calculating the System Current Draws

The NPS must be able to power all devices in the panel in either the alarm condition or quiescent condition. The NPS must also be able to provide enough current to charge the batteries when the panel is in the quiescent condition. Use column 1 in Table A.4 to calculate the Quiescent Load on the power supply. Use column 2 in Table A.4 to calculate the additional current needed during the fire alarm condition.

A.6.2 How to Use the Calculating Tables

In the following section:

The term “secondary” refers to the system’s backup batteries

The term “primary” is reserved for the NPS’s primary source of power, 240 V AC 50 Hz

The term “standby” refers to the output current required when no fire alarm is present.

The term “alarm” refers to the output current required when a fire alarm is present.

The Primary Quiescent Current and Fire Alarm Current columns are DC current calculations. Use these calculations to confirm that the NPS can provide enough current to support the system during Primary Quiescent and Fire Alarm conditions.

Quantities List the number of devices powered by the MAIN 24 V Main Output on the NPS and any auxiliary 24 V Outputs. Use these quantities to calculate total current draw of each set of devices in calculation columns 1, 2, and 3.

Calculation Column 1 (Primary, Quiescent Current in amps) Add the contents of Column 1 to get the current drawn from the NPS during a quiescent condition, with AC power applied.

Calculation Column 2 (Primary, Fire Alarm Current in amps) Column 2 lets the system designer determine the current load that the NPS must support during a fire alarm.

Typically, a system should contain capacity to activate all output circuits and relays, and support fire alarms on no less than 10% of Initiating Device Circuits.

If the system provides power for Notification Appliance Circuits, refer to the Device Compatibility Document for 24 V DC notification appliances.



NOTE: A current calculation tool can also be found in the Download Centre on the Notifier website:
<http://www.notifier.com.au/>

A.6.3 Calculation for Main Supply Current

	Quantities	Calculation Column 1 Primary, Quiescent Current (amps)	Calculation Column 2 Primary, Fire Alarm Current (amps)
AFP-3030/NCA-2 with display	[]	x [0.205]=	x [0.225]=
AFP-3030/NCA-2 without display	[]	x [0.140]=	x [0.150]=
LCM-320 (refer to Doc. 51330,52544)	[]	x [0.130]=	x [0.130]=
LEM-320 (refer to Doc. 51330,52544)	[]	x [0.100]=	x [0.100]=
SLC Loop*	[]	x [0.200]=	x [0.200]=
NCM-W, NCM-F	[]	x [0.110]=	x [0.110]=
HS-NCM-W/MF/MFSF/WMF/WSF	[]	x [0.400]=	x [0.400]=
DVC components (Refer to DVC manual)	[]	x []=	x []=
DVC-RPU components (Refer to DVC-RPU manual)	[]	x []=	x []=
DA-30/DA-60/DA-120 (Refer to DOC-01-004)	[]	x []=	x []=
FSD-751RPL (Duct Detector)	[]	x [0.025]=	x [0.087]=
FSA-8000/FSA-20000 (FAAST Detector)	[]	x [0.465]=	x [0.493]=
ACM-24AT	[]	x [0.016]=	x [0.070]=
ACM-48A	[]	x [0.016]=	x [0.070]=
AEM-24AT	[]	x [0.002]=	x [0.056]=
AEM-48A	[]	x [0.002]=	x [0.056]=
Maximum number of LEDs illuminated on these annunciators during quiescent conditions:	[]	x [0.0054]=	
SCS-8A (refer to Doc. 15712)	[]	x []=	x []=
LCD2-80	[]	x [0.100]=	x [0.100]=
ACM-8RA	[]	x [0.020]=	x [0.035]=
LDM (refer to Doc. 15885)	[]	x []=	x []=
ACM-ZM	[]	x [0.020]=	x [0.025]=
AEM-ZM8	[]	x [0.005]=	x [0.025]=
ARM (Refer to DOC-01-005)	[]	x []=	x []=
ARE Interface	[]	x [0.020]=	x [0.035]=
FZM-1, MMX-2	[]	x [0.0094]=	x [0.090]=
Four-Wire Smoke Detectors	[]	x []=	x []=
Compatible Devices not listed above†	[]	x []=	x []=
Sub-totals		Primary, Quiescent:	Primary, alarm:
Battery	[]	x [AH†] x [0.1]=	
Sum each column for totals		Primary, Quiescent:	Primary, alarm:

Table A.4 System Draw Current Calculations

* Value represents an SLC's maximum current draw. Refer to device datasheets for individual current draws. Total device current cannot exceed 200 mA.

† Refer to manual and/or Device Compatibility Document.

‡ Value represents battery size in amp hours. Refer to Appendix A.7, "Calculating the Battery Requirements", on page 30 to determine battery size.

A.6.4 Calculating the Maximum Secondary Power Quiescent Current Draw

Use the table below to determine the maximum current requirements of the secondary power source during quiescent conditions. The result obtained is the amount of current that the batteries must be able to supply to the fire alarm system. Use the result in Table A.5 to determine the size of the batteries needed for the fire alarm system.

Results taken from the table below assume that, while in a quiescent condition, batteries must feed the NPS (and any additional supplies) with the maximum rated power each supply can provide.

Device	Quantity	Alarm Current (in amps)	Total Current/Type
Alarm Current, from Table A.4, col 3		=	
Additional Load	[]	X	=
Sum Column for Secondary Quiescent Load		=	

Table A.5 Maximum Secondary Power Quiescent Current Draw

A.6.5 Calculating the Maximum Secondary Power Fire Alarm Current Draw

Use the table below to determine the maximum current requirements of the secondary power source during fire alarm conditions. The result obtained is the amount of current that the batteries must be able to supply to the fire alarm system. Use the result in Table A.6 to determine the size of the batteries needed for the fire alarm system.

Results taken from the table below assume that, while in a fire alarm condition, batteries must feed the NPS (and any additional supplies) with the maximum rated power each supply can provide.

Device	Quantity	Alarm Current (in amps)	Total Current/Type
Alarm Current, from Table A.4, col 2			=
Additional Load	[] X		=
Sum Column for Secondary Fire Alarm Load			=

Table A.6 Maximum Secondary Power Fire Alarm Current Draw

A.7 Calculating the Battery Requirements

A.7.1 Battery Power Equations

To calculate the battery size in accordance with AS 1670.0-2004, use the formula below:

$$C_{20} = 1.25 [(I_Q \times T_Q) + F_C (I_A \times T_A)]$$

Where:

C_{20}	=	battery capacity in Ah at 20 h discharge rate
I_Q	=	total quiescent current
T_Q	=	quiescent standby power source time (normally 24 h)
F_C	=	capacity de-rating factor
I_A	=	total current in alarm state
T_A	=	alarm load standby power source time (normally 0.5 h)
1.25	=	compensation factor for expected battery deterioration

Where the load may vary, the worse case average over required period shall be used.

A.7.2 Recommended Standby Battery Sizes

When selecting and installing batteries, ensure that there is enough available current to charge the batteries while in quiescent mode. A list of available batteries and the minimum charging current required is shown in Table A.7, "Recommended Battery Specifications".



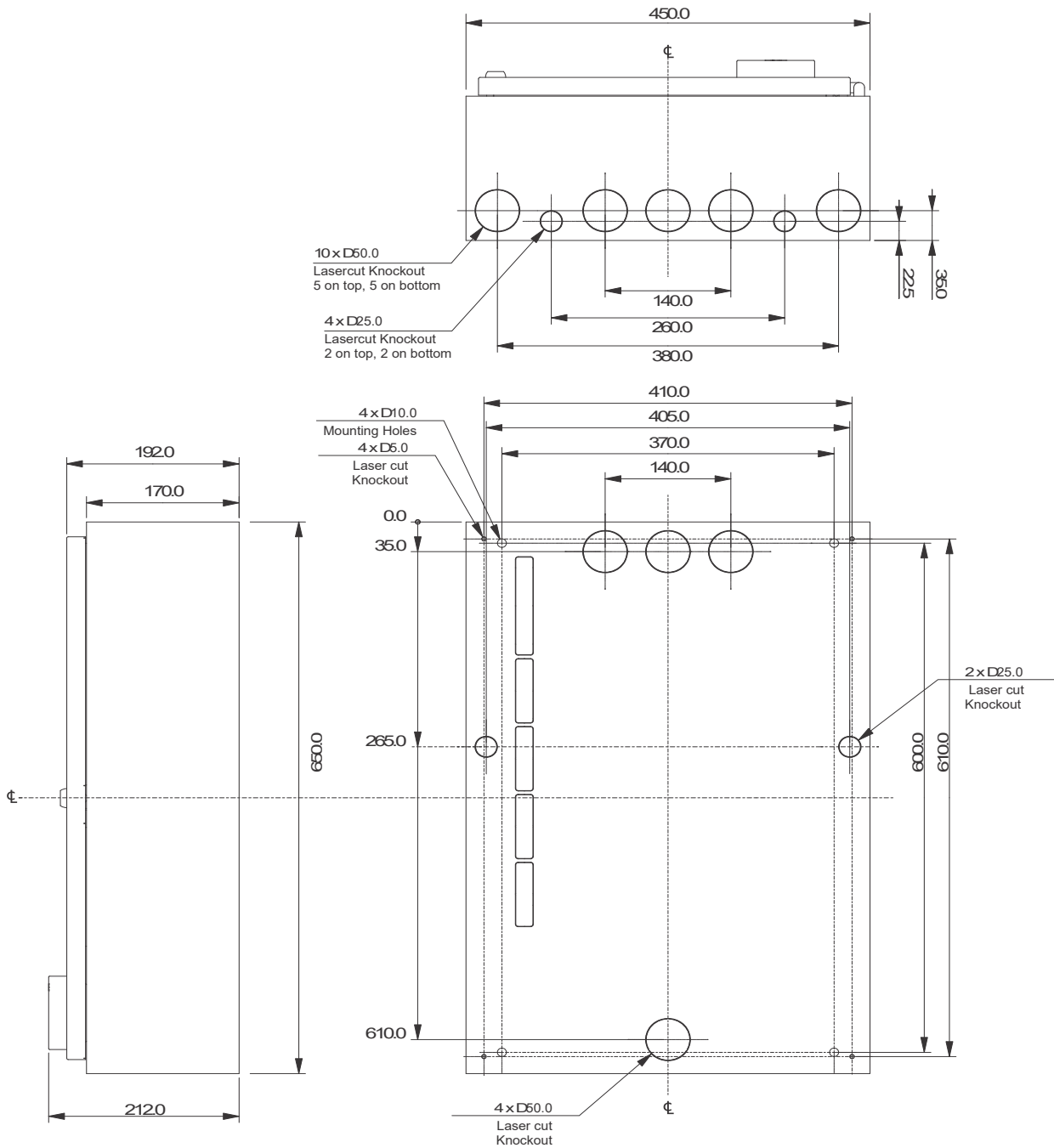
NOTE: Connect only sealed lead acid batteries.

Battery Description	Voltage	Capacity (Ah)	Minimum Charging Current (A)	Quantity
Olympic, 12 AH 12 V Battery - BATT/12 (CJ12-12)	12	12	0.44	2
Olympic, 18 AH 12 V Battery - BATT/18 (CJ12-18)	12	18	0.66	2
Olympic, 26 AH 12 V Battery - BATT/26 (CJ12-26)	12	26	0.95	2
Olympic, 33 AH 12 V Battery - BATT/33 (CJ12-33)	12	33	1.21	2
Olympic 40 AH 12 V Battery - BATT/40 (CJ12-40)	12	40	1.46	2
Olympic 85 AH 12 V Battery - BATT/85 (CJ12-85)	12	85	3.11	2

Table A.7 Recommended Battery Specifications

Appendix B: Cabinet and Mounting Information

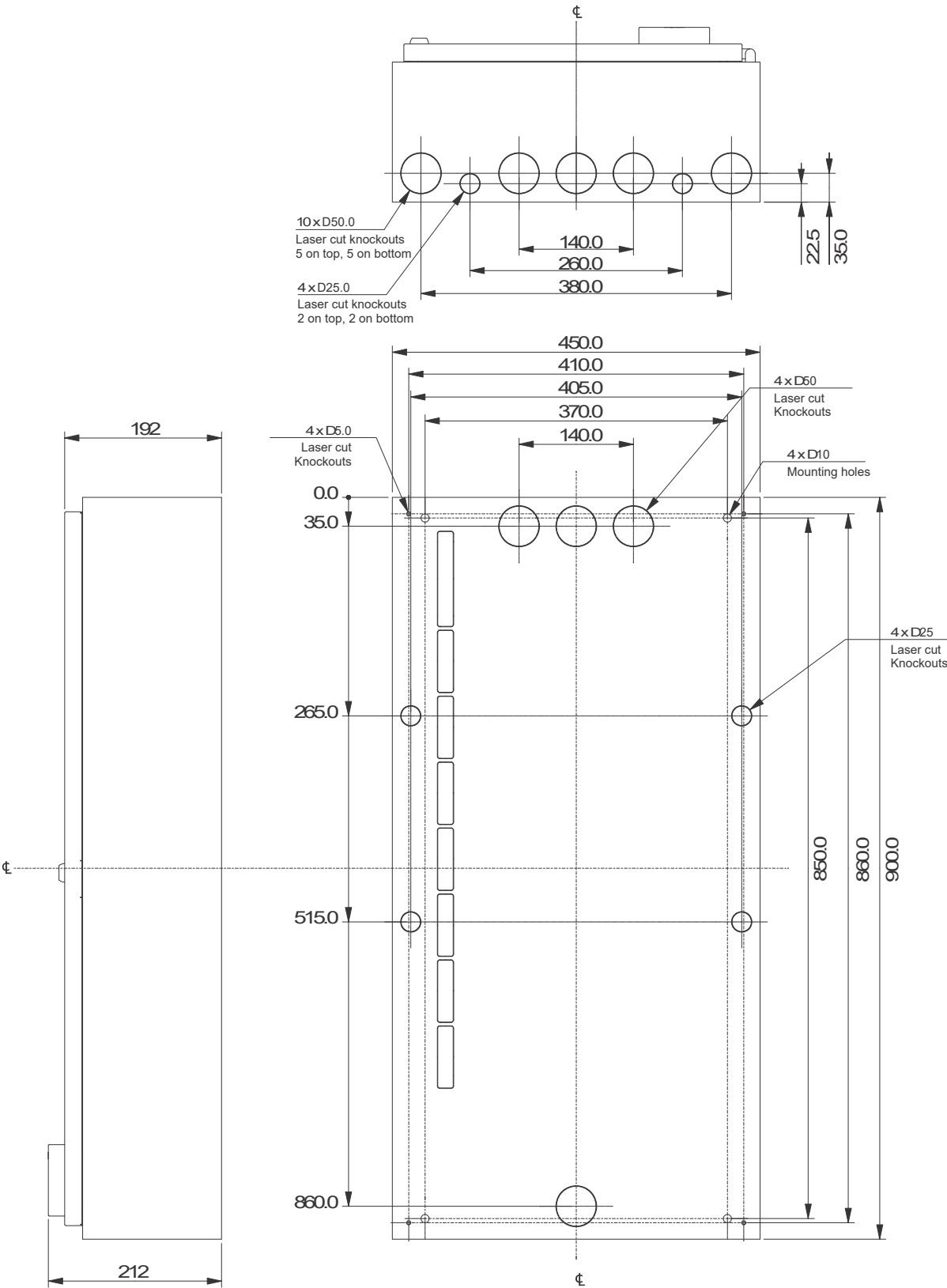
B.1 CAB650 Mounting Details



NOTE: All dimensions in Millimetres

Figure B.1 CAB650 Mounting Details and Dimensions

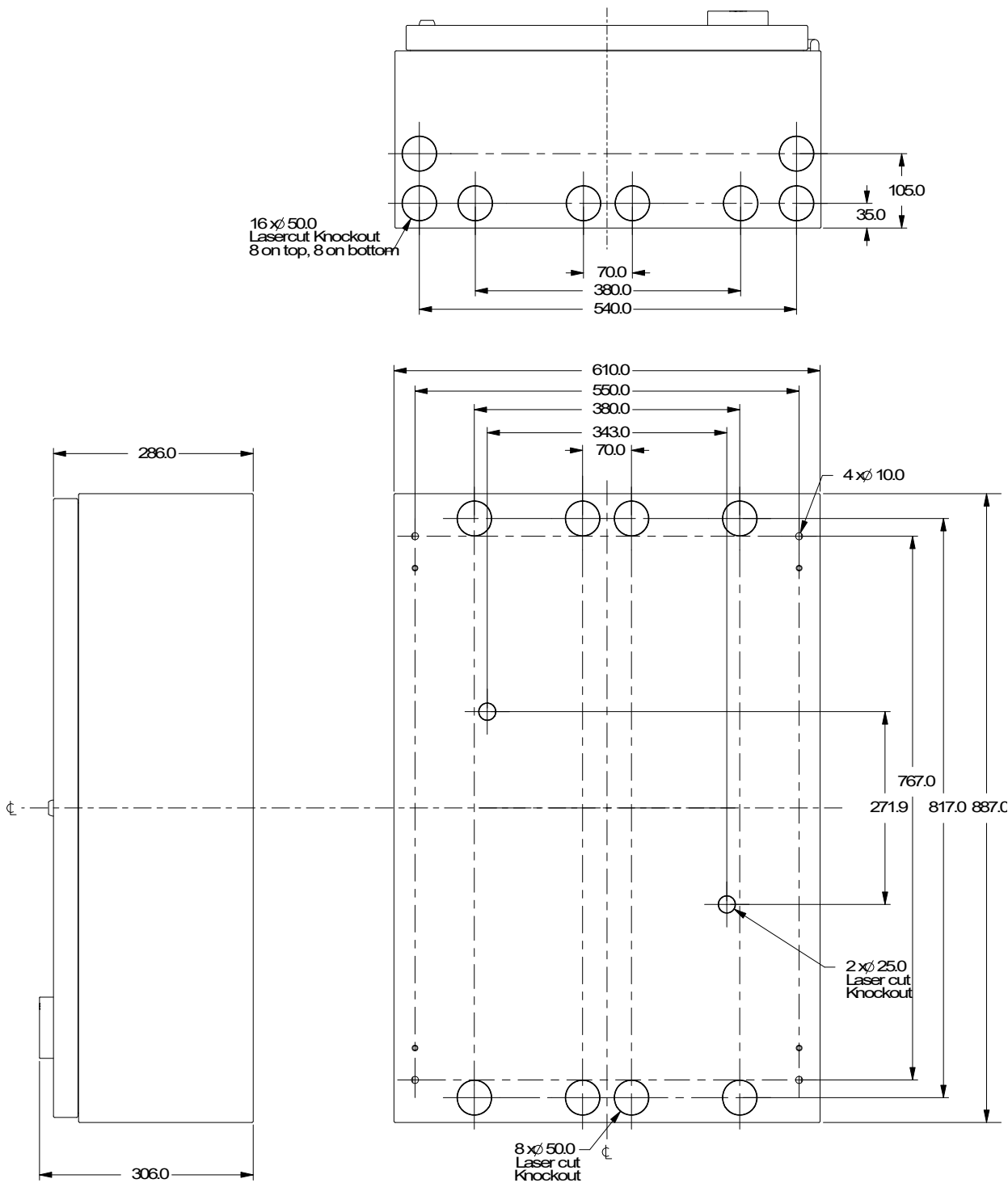
B.2 CAB900 Mounting Details



NOTE: All dimensions in Millimetres

Figure B.2 CAB900 Mounting Details and Dimensions

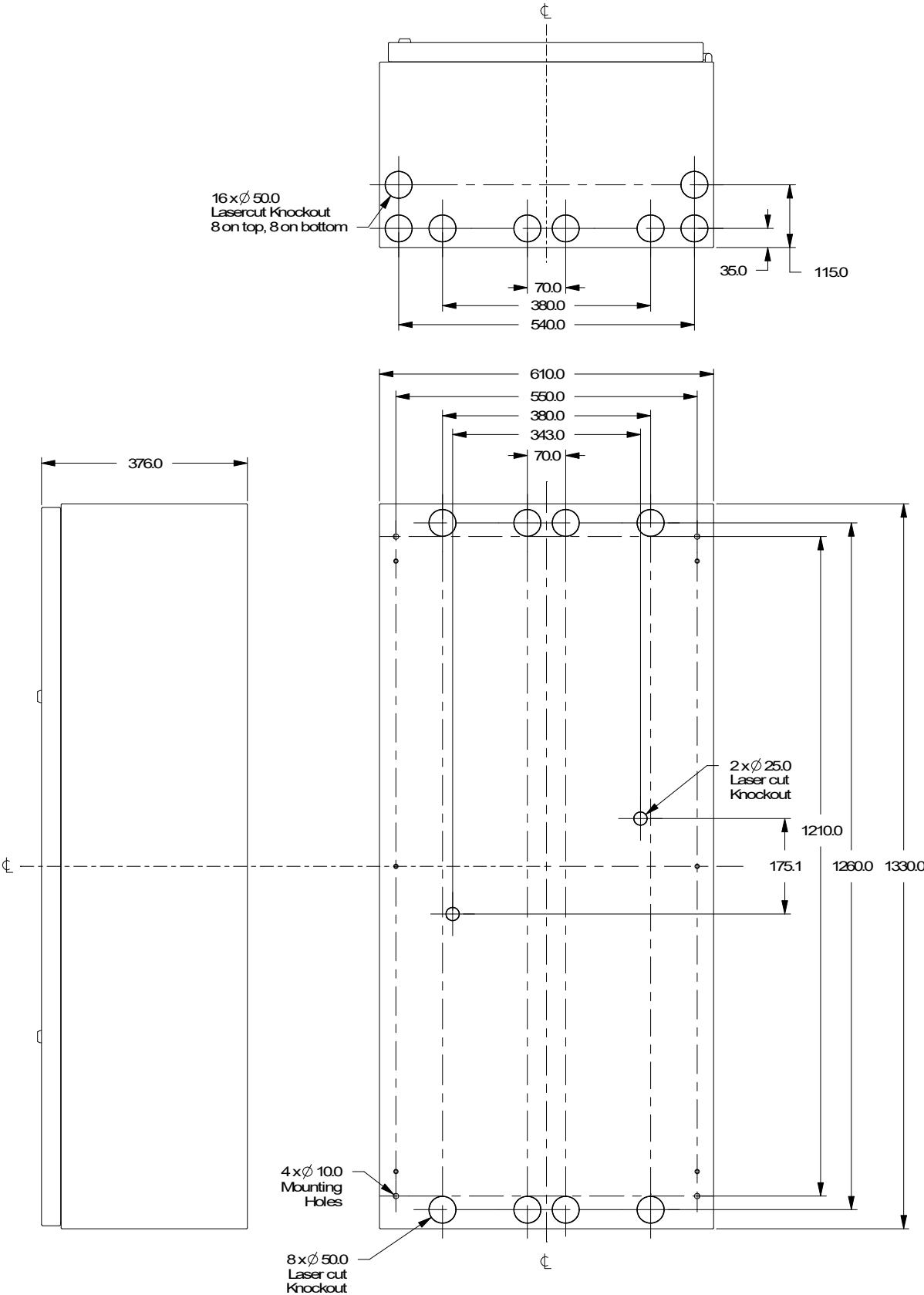
B.3 CAB 18U Cabinet Mounting Dimensions



NOTE: All dimensions in Millimetres

Figure B.3 CAB 18U Mounting Details and Dimensions

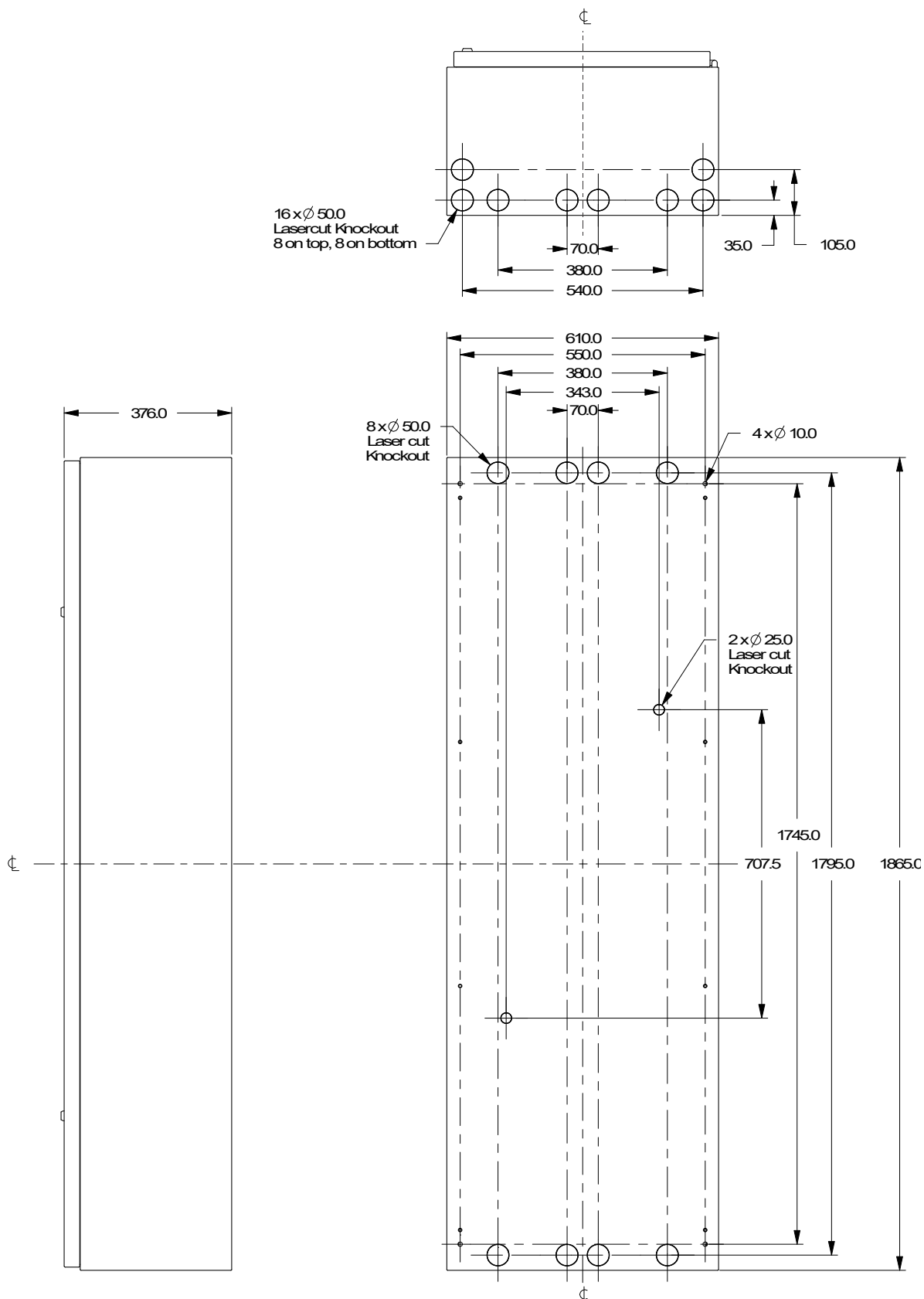
B.4 CAB 28U Cabinet Mounting Dimensions



NOTE: All dimensions in Millimetres

Figure B.4 CAB 28U Cabinet Mounting Details and Dimensions

B.5 CAB 40U Cabinet Mounting Dimensions



NOTE: All dimensions in Millimetres

Figure B.5 CAB 40U Cabinet Mounting Details and Dimensions

B.6 Laying Out Equipment in Cabinet and Chassis

The AFP-3030 allows for flexible system design. It mounts in a CAB650 or CAB900 backbox using the CHS-3L or in a U-Series backbox using the CHS-4L. Follow these guidelines when deciding where to locate equipment in the backbox. The number of layers that can be mounted in each position of the chassis depends on the module size.



CAUTION:

IT IS CRITICAL THAT ALL MOUNTING HOLES OF THE FIRE ALARM CONTROL PANEL ARE SECURED WITH A SCREW OR STAND-OFF TO INSURE CONTINUITY OF EARTH GROUND.

■ CHS-3L

The CPU and power supply assembly mount in the top row of the CAB650 or CAB900 cabinet. The AFP-3030 keypad is door mounted in front of the CPU and power supply assembly. The CHS-3L Chassis is mounted below the CPU and power supply assembly. In the CAB900, a second CHS-3L Chassis can be installed below the first for additional equipment.

Three positions
on chassis
CHS-3L

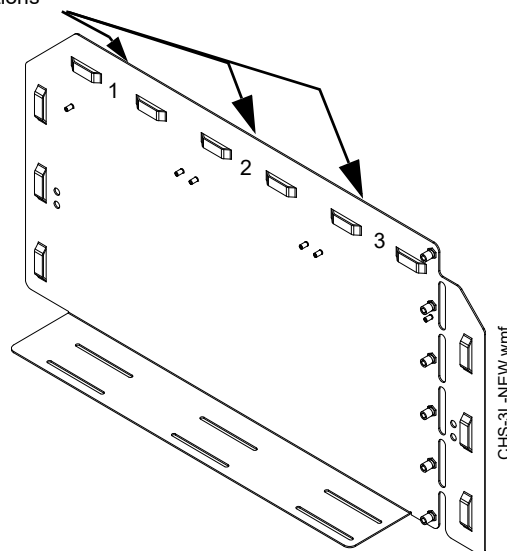


Figure B.6 Chassis CHS-3L

■ CHS-4L

The CPU and power supply assembly mount in the top row of the U-Series cabinet. The AFP-3030 keypad is door mounted in front of the CPU and power supply assembly. The CHS-4L Chassis is mounted below the CPU and power supply assembly.

In the 28U and 40U cabinets, additional CHS-4L Chassis can be installed below the first for additional equipment.

Four positions
on chassis
CHS-4L

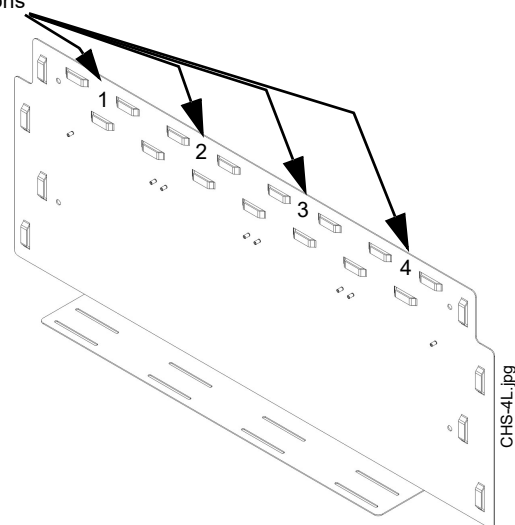


Figure B.7 Chassis CHS-4L

B.7 Installing Replacement Equipment

B.7.1 Installing a replacement keypad

The keypad enables the user to operate and program the fire panel.



CAUTION: POWER DOWN THE FIRE PANEL BEFORE FITTING THE KEYPAD.

1. Open the cabinet inner door and unplug the ribbon cable connecting the keypad to the CPU board.
2. From the cabinet inner door, remove:
 - a. The flanged nuts from the inner door studs.

b. The keypad from the studs as per Figure B.8.

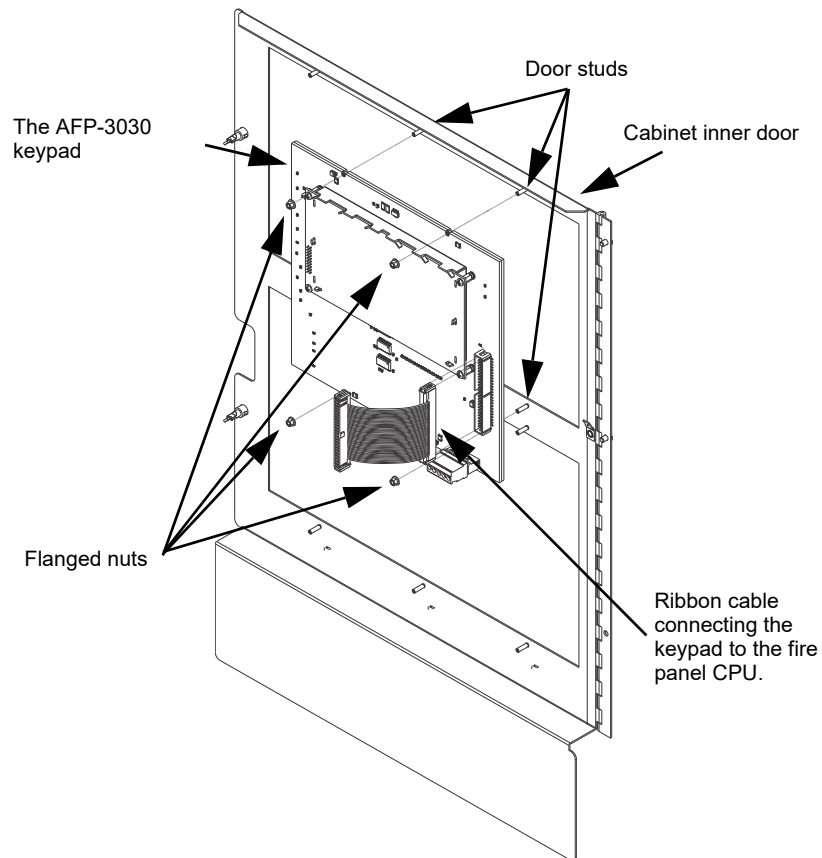


Figure B.8 Removing the fire panel keypad

3. Replace keypad on door studs.
4. Replace the Flanged nuts, fastening the keypad to the door.

AFP-3030-Keypad-00.wmf

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