Advanced Axis AX

Demo Hardware Setup Example

Contents

INTRODUCTION

This document provides a detailed overview of the setup instructions for the Advanced Fire Panel demo unit as part of the training from Harding Instruments. The purpose of this document is to guide users through the step-by-step process of assembling, configuring, and testing the demo panel to ensure proper practice and trainings.

The demo panel serves as a training and testing tool, allowing users to familiarize themselves with the system's features, operation, and troubleshooting procedures.

The document covers key aspects of the setup process, including hardware installation, wiring configurations, software programming, and initial system testing.

By following the guidelines outlined in this document and attending training sessions will gain a comprehensive understanding of the Advanced Fire Panel demo unit, enabling them to operate and maintain the system effectively.

COMPONENT LIST

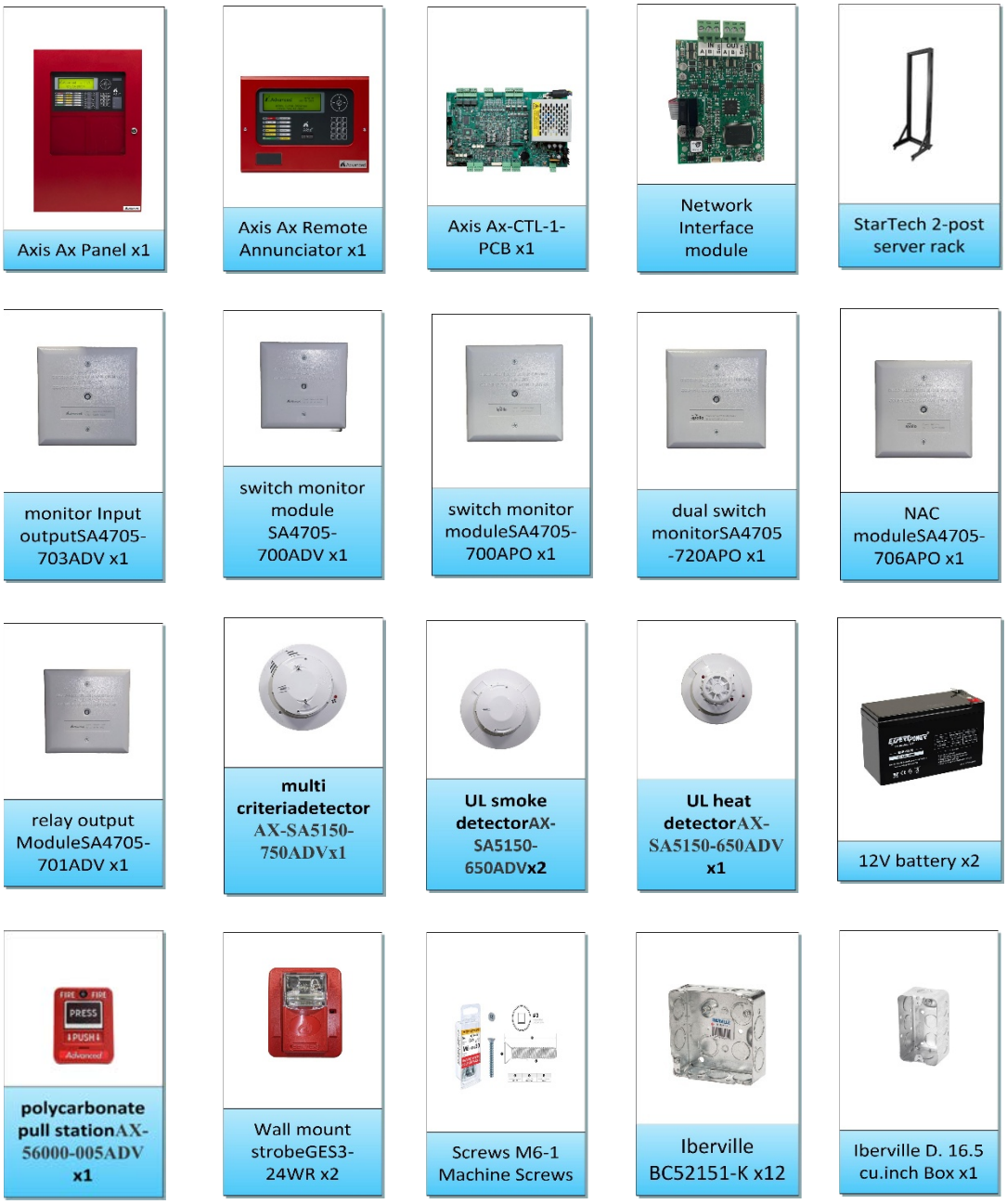


Figure 1 - List of Components

For more details on components refer to the Appendix section

TRAINING DEMO HARDWARE LIST

USA

Order Qty.	Model Number	Part ID	Equipment Descriptions
1	AX-CTL-1L-10	AXU0278	Red Single Loop Networkable Panel (Large Expandable enclosurehas space for two aptional Switch/le
1	AX-ANN-C-10	AXU0264	Red Remote Control Annunciator - Style 4 (requires NET-4 card installed in panel)
1	AX-NET4-10	AXU0292	Network Interface Module - Style 4, 64 nodes (Network adding a Panel and/or annu)
1	AX-SA5150-650ADV	AXU0131	Optical (photo) Detector (edition 7)
1	AX-SA5800-450ADV	AXU0132	Thermal Detector (edition 7)
1	AX-SA5150-750ADV	AXU0102	Multicriteria Detector (combination Heat/Smoke) (edition 7)
1	AX-SA5000-230ADV	AXU0075	6" E-Z Fit Base (edition 7)
1	AX-56000-005ADV	AXU0136	Poly Pull Station (Dual Action)
1	AX-56000-006ADV	AXU0185	Polycarbonate Surface Backbox
1	AX-SA4705-703ADV	AXU0141	Single Channel I/O Unit
1	AX-SA4705-700ADV	AXU0140	Single Input Module
1	AX-SA4705-720ADV	AXU0144	Dual Input Module
1	AX-SA4705-706ADV	AXU0143	NAC Module
1	AX-SA4705-701ADV	AXU0142	Soteria Relay Output Module
1	SA5300-805APO	FAD0441	CO Sounder Base 6 Inches Low Frequency
1	SA5300-800APO	FAD0046	CO Base Assembly
1	GES3-24WR	FAD0147	Selectable Candela Strobe, Wall Mount, Red Faceplate

Figure 2 - Demo Hardware list for US

CANADA

Order Qty.	Model Number	Part ID	Equipment Descriptions
1	CAX-CTL-1L-04	AXC0011	Gray Single Loop Networkable Panel
1	CAX-ANN-C-04	AXC0017	Gray Remote Control Annunciator - Style 4
1	CAX-NET4-04	AXC0032	Network Interface Module - Style 4, 64 nodes
1	CAX-APS2-F2-04	AXC0015	Dual Action Manual Pull Station
1	CAX-SA4705-703ADV	AXC0066	Single Channel I/O Unit
1	CAX-SA4705-700ADV	AXC0065	Single Input Module
1	CAX-SA4705-720ADV	AXC0069	Dual Input Module
1	CAX-SA4705-706ADV	AXC0068	NAC Module
1	CAX-SA4705-701ADV	AXC0067	Soteria Relay Output Module
1	SA5800-450APO	FAD0377	Discovery / Solteria UL Heat Detector Non-Iso
1	SA5150-750APO	FAD0378	Solteria UL Multi-Criteria Detector (Smoke/Heat)
1	SA5150-650APO	FAD0379	Solteria UL Smoke Detector
1	SA5000-230APO	FAD0359	Soteria UL Base 6"
1	SA5300-805APO	FAD0441	CO Sounder Base 6 Inches Low Frequency
1	SA5300-800APO	FAD0046	CO Base Assembly
1	GES3-24WR	FAD0147	Selectable Candela Strobe, Wall Mount, Red Faceplate

Figure 3 - Demo Hardware list for Canada

RECOMMENDED LAYOUT

It is advisable to consider the following approach for setting up the demo unit to enhance consistency and improve convenience.

STEP 1 - SETTING UP THE STARTECH RACK

Ensure that the rack is assembled to support its intended weight and minimize the risk of it toppling over. Below is an example of how to properly assemble the STARTECH rack for your setup shown in Figure 4.

Figure 4 - Rack setup

STEP 2 - ATTACH THE PLYWOOD TO THE RACK.

Prepare the plywood according to the specified dimensions for the selected rack. In this instance, the plywood should be cut to a length and width which fits the plywood into it perfectly as shown in figure 3 It is also essential to mount the plywood using screws that are spaced two feet apart vertically, as illustrated in the accompanying diagram. Additionally, use stain and then clear coat for a proper wood surface. For first coat we used Minwax wood finish, and the final coat was Minwax fast-drying polyurethane clear satin as shown in figure 6 & 7.

Figure 5 - Insert Plywood

Figure 6 - Wood Finish Stain

Figure 7 - Wood Clear Stain

STEP 3 - WIRE THE PANEL AND DEVICES

Complete the wiring, starting with the panel power supply, SLC loop, and NAC circuit, as shown in the forthcoming pages for reference. Ensure all wiring is double-checked before turning on the circuit. Proper grounding must be provided for the safety of all equipment as shown in figure 8.

Front View

Rear View

Figure 8 - Wiring

STEP 4 - ARRANGE THE DEVICES TO THE RACK

Organize the relay modules, sensors and panels in accordance with the arrangements and number each module in logical order. An example is shown below of how to number the devices in figure 9.


Module 1 – Address 1


Module 2 – Address 2

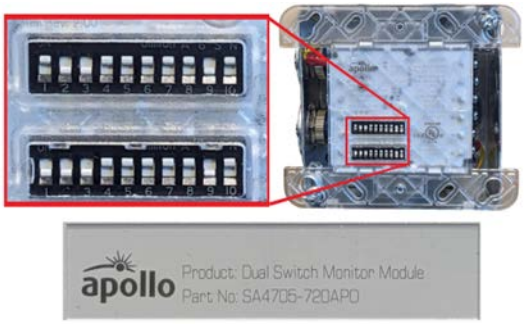

Module 3 – Address 3


Module 4 – Address 4


Module 5 – Adress 5


Module 6 – Address 6

Figure 9 - Modules



In example in figure 10, demonstrating how to number the Dual Switch Monitor Module, where the top switch is assigned the number 5 and the bottom switch is assigned the number 6.

Figure 10 – Addressing Example

The Completed demo looks like the images provided below in Figure 11.

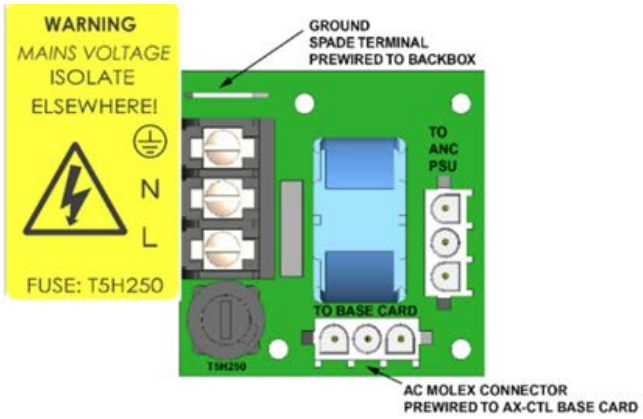
Figure 11 - Arrangements Of Devices
Left US Advanced Axis AX UL – Right Canadian Advanced Axis ULC

WIRING DIAGRAM

In this section, we show how to wire AC power, SLC loop, and NAC circuit. For more information refer to manual 686-001 REV-1 (686-001 Rev 1 AX-CTL-1L, 2 and 4 Manual).

AC Power

The AX-ACB has three (3) AC installation wiring terminals which connect ground as green wire, white as neutral and black as load(hot) as shown in figure 12.



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

Figure 12 - AC Power

BATTERY CONNECTION

To connect the batteries to the AX-CTL base card, attach the two supplied battery leads to the BAT+ (red battery lead) and BAT- (black battery lead) terminals of the AX-CTL base card. Connect the red battery lead (BAT+) to the positive terminal of one 12 VDC battery and connect the black battery lead (BAT-) to the negative terminal of the second 12 VDC battery as shown in figure 13.

Additionally, use the provided battery link with a 10A, 250V fuse to connect the negative terminal of the first 12 VDC battery to the positive terminal of the second 12 VDC battery. When a fully charged set of batteries is connected to the AX-CTL base card.

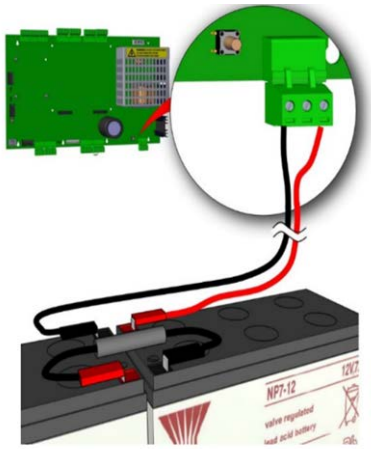


Figure 13 - Battery Connection

BATTERY RECOMMENDATIONS

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

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

Recommended batteries from the manufacturer are:

- YUASA
- POWERSONIC

Referred to document 686-073 Rev 1 section 8.1 (686-073 Rev 1 AX-CTL-1C Manual)

SLC LOOP WIRING

To wire the signaling line circuit(SLC) Class A, wire the AX-CTL base card Loop OUT + and OUT - to the positive and negative inputs of the field analog/addressable devices, at the last wired analog/addressable device wire the positive and negative outputs to the Loop IN + and IN – terminals of the AX-CTL base card as shown in figure 14.

(Red wire indicates positive and black wire indicated the negative wire)

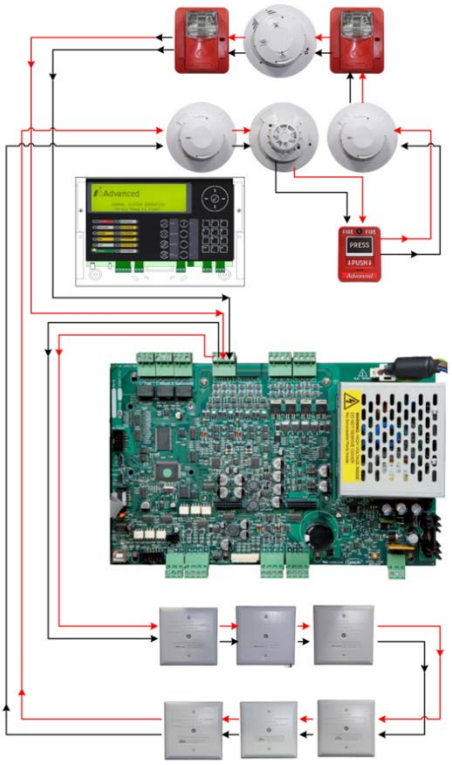


Figure 14 - SLC Loop Wiring

NAC CIRCUIT WIRING

To wire the notification appliance circuits Class B, wire B+ and B- to the positive and negative inputs of the notification appliance devices, B+ to positive and B- to negative as shown in Figure 15. Terminate the supplied UL-listed 10K end-of-line (EOL) resistor at the last notification appliance as shown in figure 15 below.

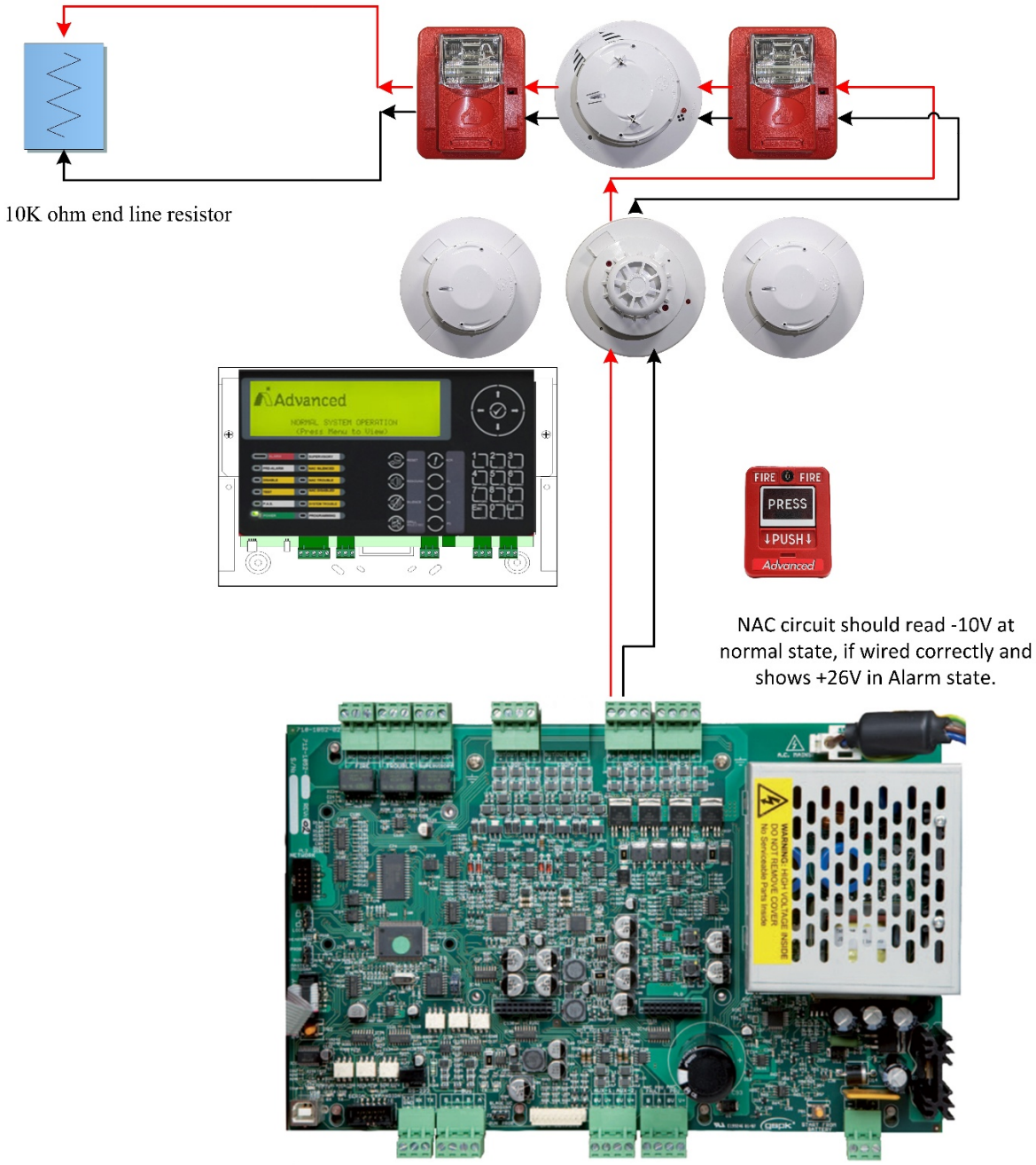


Figure 15 - NAC Circuit

ANNUNCIATOR WIRING

The “IN” terminals on the first node and the “OUT” terminals on the last node are not used. Connect an EOL resistor (150Ω) between A and B on the terminal blocks of the unused terminals. For reference document 686-003 Rev 1 (686-003 Rev 1 AX-ANN-C & D Remote Annunciator Manual(1)).

The 24-volt power is supplied through the AUX 2 power source from the main board (AX-CTL-1-PCB) to the power input located on the left side of the annunciator.

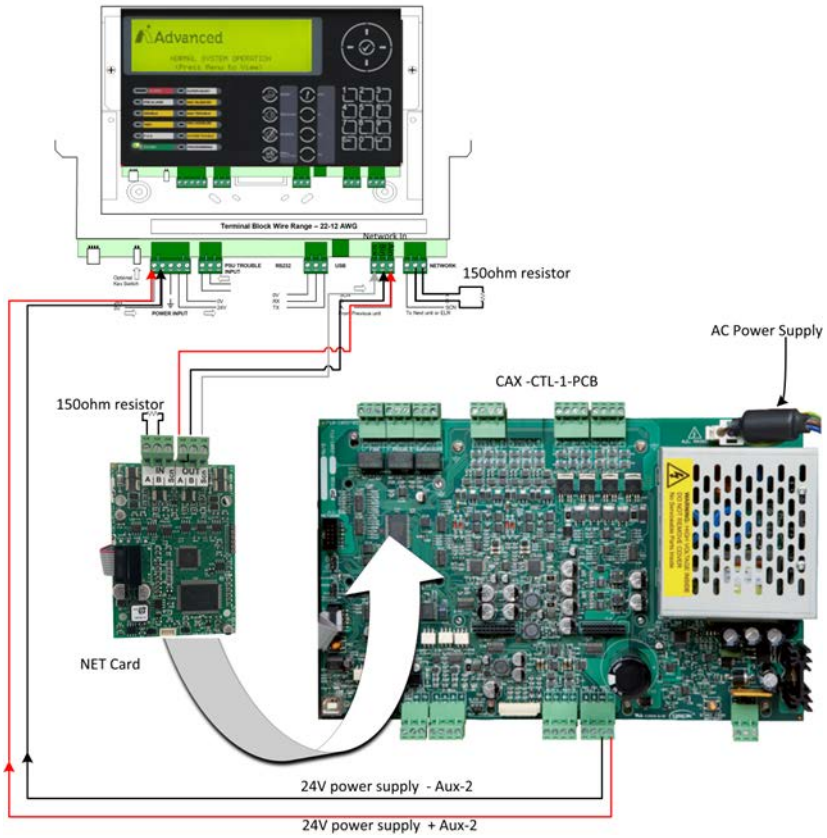


Figure 16 - Annunciator Wiring

Three wires are connected to the OUT terminal of the NET card, which is mounted on top of the main PCB board. These wires are labeled A, B, and SCN, and they connect to the Network IN of the annunciator, as illustrated in Figure 16. A 150-ohm resistor is used in the network IN of the NET card and the network OUT of the annunciator, as shown in Figure 16.

PROGRAMMING AND AUTO LEARN

This session will address fundamental programming concepts necessary for activating the panel and implementing the auto-learn feature to facilitate configuration. For comprehensive information and additional details, please refer to document 686-002 (686-002 Rev 1 Front Panel Programming Manual).

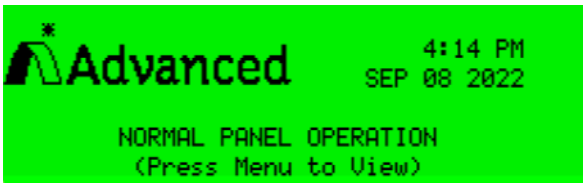


Figure 17 - Normal Panel Operation Menu

Upon power up, the panel display will show figure 17

Figure 18 - Level 2 Access Main Menu

The MENU screen is shown as figure 18. To access programming press the MENU button on the keypad.

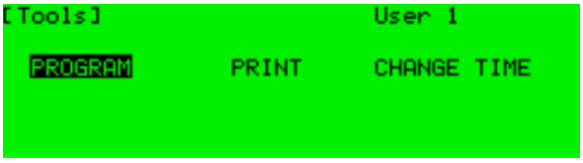


Figure 19 - Level 2 Access Tools Menu

Level 2 Access - Tools Menu (figure 19). Scroll to the TOOLS heading and press the ✓ button or press the number 6 on the keypad.

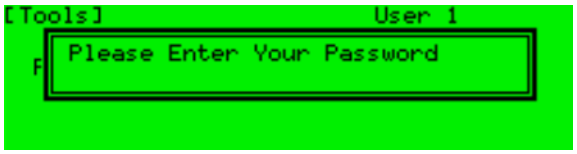


Figure 20 - Program Level 3 Password (7654)

Program Level 3 – figure 20. Press the ✓ button or press the number 1 on the keypad.

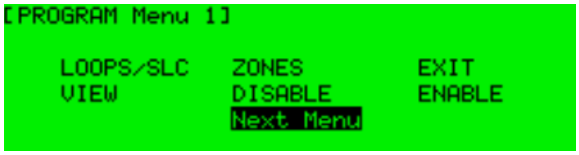


Figure 21 - Level 3 Access Program Menu

Enter the factory default Level 3 programming code 7654 and press the ✓ button to enter the password, figure 21 will be displayed

Identify the number of SLC/LOOPS installed. Perform AUTO-LEARN, and once you enter the LOOPS/SLC area, a Select Loop sub-menu will appear. Highlight the required Loop # submenu (Loop 1, Loop 2, Loop 3, or Loop 4) containing the SLC device requiring the addition or modification

of its user text. Highlight the Loop # within the Select Loop. We only have one loop available, so please use loop #1.

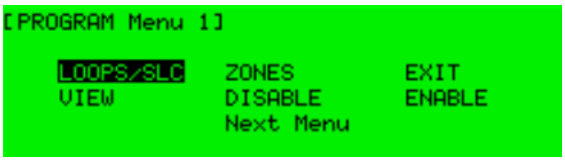


Figure 22 - Level 3 Access

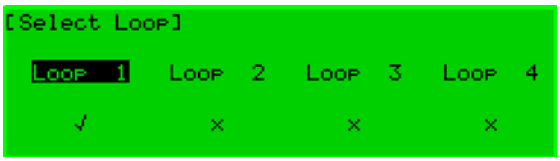


Figure 23 - Selecting Loop

Alter/enter device text and more. In addition, opens several sub-menus. To add or change an SLC loop device text, highlight the LOOPS/SLC sub-menu within the Program Menu PROGRAM Menu 1 area as the image shown below in figure 24.

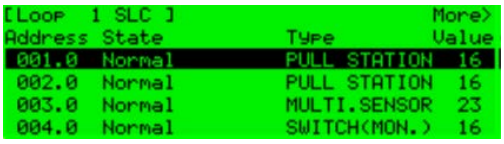


Figure 24 - SLC Loop Device List

To set the node address for the main panel and the annunciator, start at the setup tab on the panel screen. For the main panel, set “This Network Node” to 1 and “Next Network Node” to 2, as illustrated in Figure 25.

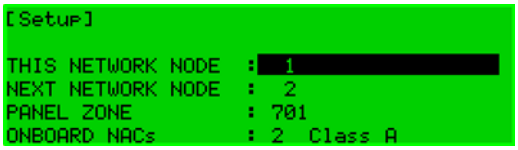


Figure 25 - Node Address Setup

For the annunciator “This Network Node” will be 2 and “Next Network Node will be 1.

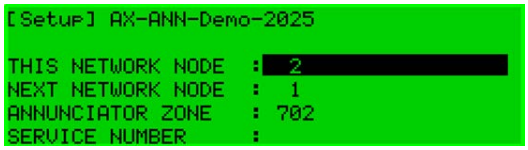
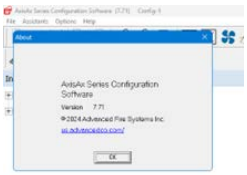


Figure 26 - Annunciator Node Address Setup

The next step is to connect the panel with the configuration tool software, which can be downloaded from the Harding Tech/Distributor portal Harding Fire Distributor Portal. If you encounter any issues with logging in, please contact our office for assistance.



NOTE: Download the latest version of the config tool software which is Axis Ax Series Configuration Software version: 7.71 as per March 2025, as shown in figure 27.

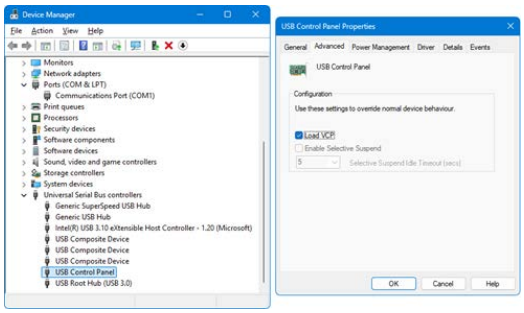
Figure 27 - Software Version

SOFTWARE CONFIGURATION AND SET-UP

The following provides step-by-step instructions for setting up and configuring the software.

STEP 1: Connect the USB cable to the USB port in the panel

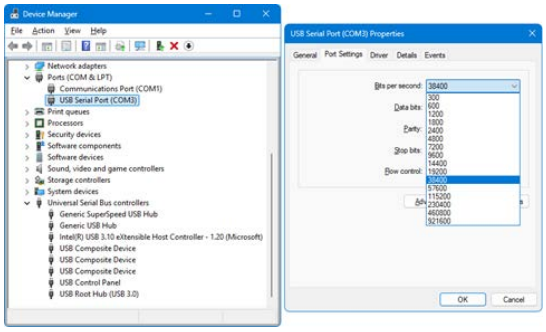
Figure 28 - USB Port



STEP 2: Setting the COM port to communicate with the Panel.

To set up the COM port, go to Device Manager, double click on “USB control Panel” go the “Advanced” section and select checkmark the “Load VCP” as shown in figure 29.

Figure 29 - Com Port Setting



Disconnect and reconnect the USB cable and make sure USB Serial Port can be visible under the Ports section. Next, expand the "Ports (COM & LPT)" section and select "USB Serial Port (COM3)." Then, go to "Port Settings" and set the Bits per second to "38400," as shown in the figure 30.

Figure 30 - Setting Baud Rate

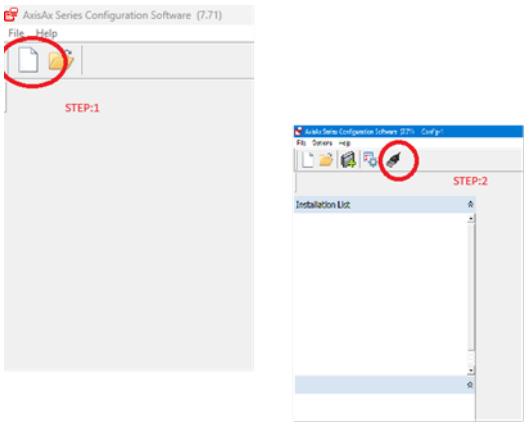


Figure 31 - Create New Configuration File

STEP 3: Create new installation configuration file.

Follow figure 31 to create a new installation file and connect to the panel be pressing the USB icon in the right image.

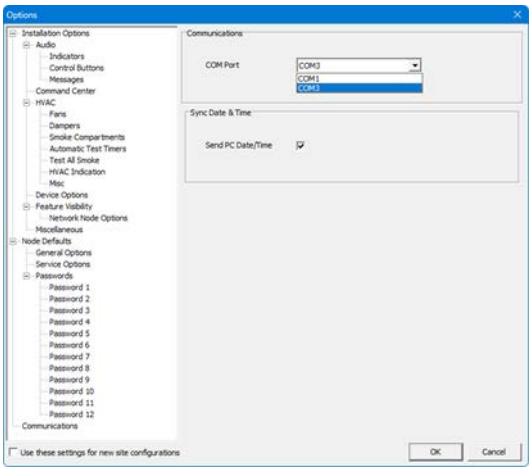


Figure 32 - Selecting COM Port

Then in the Axis Config tool, add the COM port to COM Port 3 in the Communication section as shown in the figure 32

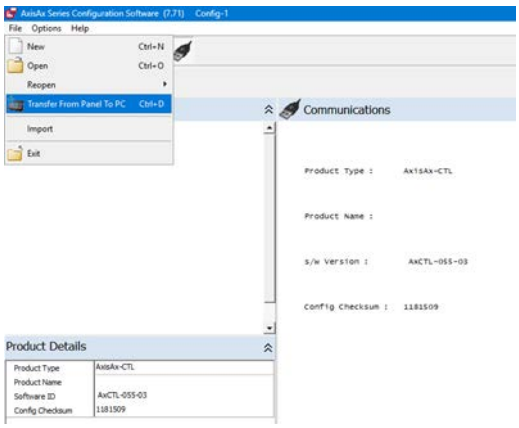


Figure 33 - Transferring Data From Panel To PC

STEP 4: Transfer from Panel to PC.

In the configuration software, select "File," then click on "Transfer from Panel to PC" to transfer data from the panel to the PC as shown in figure 33

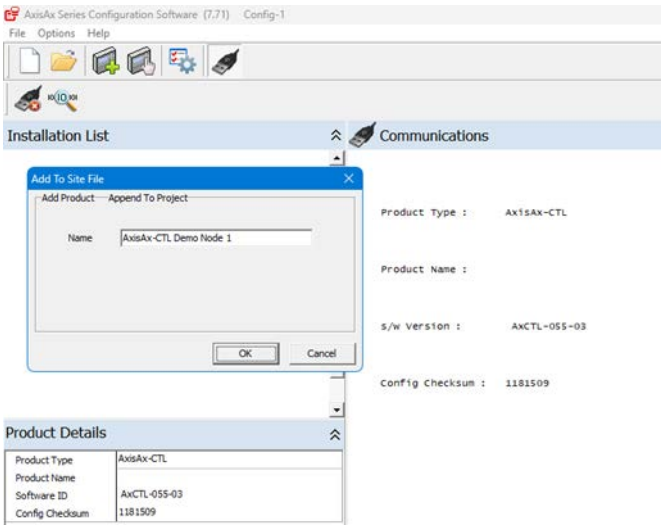


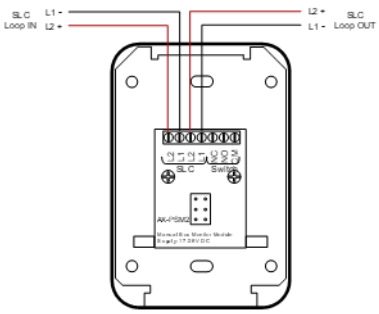
Figure 34 - Name the Configuration File

After the configuration is downloaded from the panel to the PC, you will be asked to assign a name to the project file, as shown in the figure 34

APPENDIX

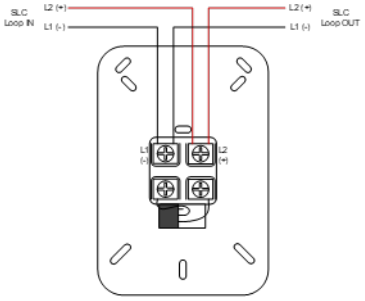
This section will provide additional information for your reference.

ALARM DEVICES - AX PULL STATIONS AND WIRING



- Die-Cast Metal
- Dual action
- Model: CAX-APS2-F2

Figure 35 - Die Cast Metal Pull Station



- Polycarbonate
- Dual Action
- Model: AX-56000-005ADV

Figure 36 - Polycarbonate Pull Station

ALARM DEVICES: AX DETECTORS

- Photoelectric
- Model Number: AX-SA5150-650ADV

Figure 37 – Photoelectric Detector

- Multi-Sensor (Combination Photoelectric and Thermal Technology)
- Model Number: AX-SA5150-750ADV

Figure 38 – Multi-Sensor Detector

- Heat (Fixed Temp = 135 °F, 1500F and 200 °F) (Combo Fixed Temp/ Rate-of-Rise= 150 °F and 200 °F)
- Model Number: AX-SA5150-650ADV

Figure 39 – Heat Detector

CO DETECTORS BASE WIRING

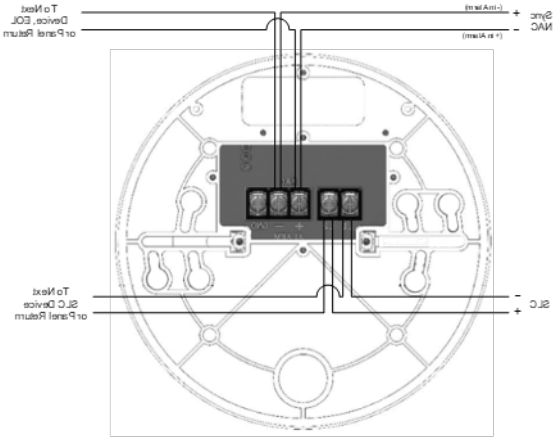


Figure 40 - CO Low Frequency

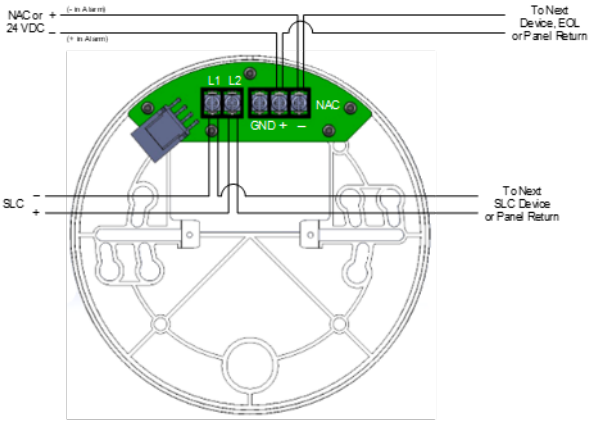


Figure 41 - CO High Frequency

DETECTOR BASE XPERT CARDS

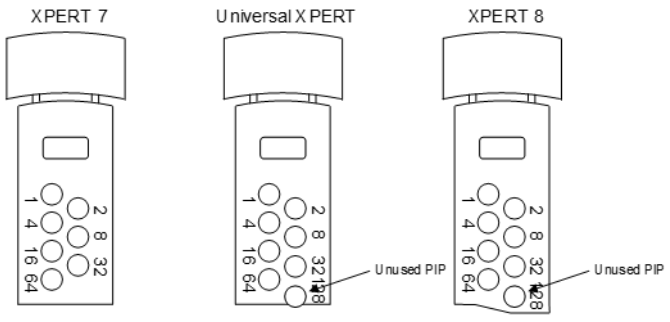
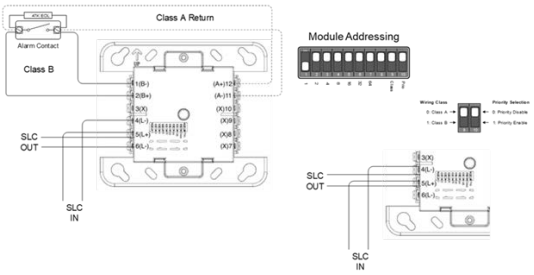


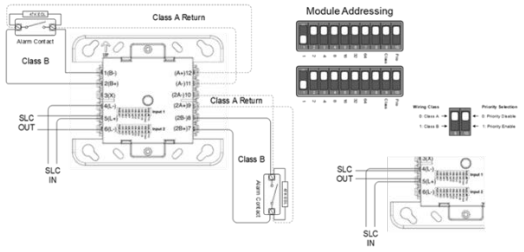
Figure 42 - Detector Base Cards

INTERFACE MODULES: INPUT/OUTPUTS



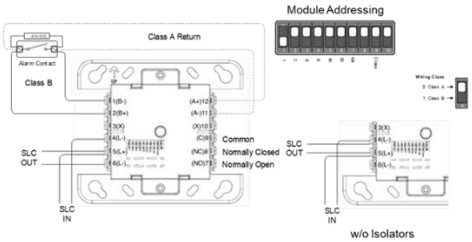
Switch Monitor
(SA4705-700ADV)

Figure 43 - Switch Monitor Module Wiring



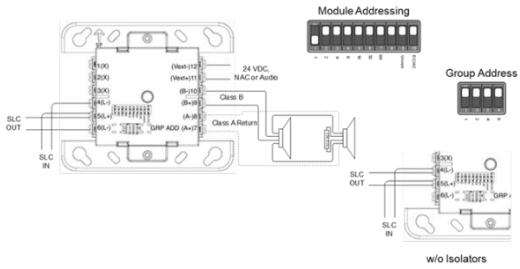
Dual Switch Monitor
(SA4705-720ADV)

Figure 44 - Dual Switch Monitor Module Wiring



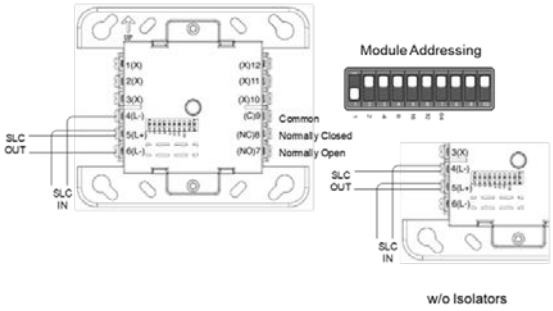
Input/Output
Module
(SA4705-703ADV)

Figure 45 - Switch Monitor And Relay Wiring



NAC Module
(SA4705-706ADV)

Figure 46 - NAC Module Wiring



Relay Module
(SA4705-701ADV)

Figure 47 - Relay Module Wiring

2-POST SERVER RACK

Click the following link to see the instruction manual for the 2-Post 42U Mobile Open Frame Server Rack to setup the demo unit.

Instructions manual -

Product Code: 2POSTRACK42

MACHINE SCREWS

These types of screws are used to hold the plywood with the rack.
On our demo we have 8 on each side separated by 2 feet

Figure 48 - Screws Used In Mounting The Plywood To The Rack

Thank you for taking the time to review this document. More information will be covered in the upcoming training. If you have any questions or need further assistance, please do not hesitate to contact us.

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We look forward to hearing from you!