7706-ULF
Integrated Fire Monitoring System

Installation, Operation & Programming Manual



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Table of Contents

1. Introduction

Purpose of This Manual 7
System Overview 7
Communication Path Configuration 9
Sole Path Delivery (Single Reporting) 12
Single Reporting with Backup 12
Dual Delivery Path (Dual Reporting) 12
System Features 13
P-Link Accessories 14
How to Use this Manual 14
Common Terminology 14
Installation Tasks Overview 14

2. Before You Start Installation

System Specifications 16
Cabinet Description 16
Visual Indicators 16
LCD Description 16
Environmental Specifications 16
Model/Available Cabinet Colors 16
System Configurations/Appliances 17
Electrical Specifications 17
System Size Specifications 17
Mainboard Wiring Specifications 18
Circuit Separation 18
Wiring Types 18
Cabinet Dimensions 20

3. Subscriber Antenna Planning and Installation

Antenna Safety Considerations 21
Coaxial Cable Options 22
Coaxial Cable and Antenna Installation Tips 23
Transceiver Antenna 23
Antenna Grounding and Surge Protector 24

4. Cabinet Mounting – Subscriber and Mainboard Mounting and Wiring Instructions

Cabinet Wiring Connections 30
Battery Circuit Calculations 31
Battery Calculation Worksheet 31
Main Supply Circuit 32

Battery Connections 32

5. Control Panel Installation

Input Circuits 33
- Input Wiring Specifications 33
- Input Circuit #1 Class A, Style D Wiring Configuration 34
- Input Circuits #1-6 Class B, Style B Wiring Configuration 35

Notification Appliance Circuits Installation 36
- NAC Wiring Characteristics 36
- NAC Maximum Wiring Impedance Formula 37
- NAC Wiring Configuration 37

P-Link Points 38
- Configuration Characteristics 38
- Maximum Wire Resistance Formula (Wire Length) 38
- P-Link Addresses 39

Remote Annunciators Installation (RA-6075) 39
- Setting Addresses 39

Auxiliary Power 40
- Auxiliary Power Characteristics 40

DACT Connection 41

6. Control Panel Operation

Control Panel Basic Operation 42
- LCD Display 43
- Menu Navigation Keys 43
- Numeric Keypad 44
- Function Keys 44
- Status LEDs 45

Control Panel Menu Tree 46

7. Subscriber Specifications

Features 47

Optional Accessories 47

Subscriber Technical Specifications 47

Subscriber Local Trouble Output 47

Subscriber Programming 47

ID # and System Cipher Code 49

Timing Parameters 51

Modes 52

Time to Live 53

Account Override 55

User Codes....56
Report Account....57
Default PIC....58
Local Status Check (PIC Status)....59
Display Route Table....61
Self-Test Error Codes—Status Error Codes....62
Status Indicators and Subscriber Reset Button....63

8. Control Panel Programming

Programming Options....65
Programming Overview....67
The Programming Cycle....68
Software Installation....68
LEARN Programming....68
Connecting the Computer and Panel....69
Connecting a Computer to the Panel via a Network....69
Transferring Data....71
Uploading from Panel to Computer....72
Downloading Configuration File to Panel....74
Enable Remote Access....74
File New....74
File Save / Save As....75
Audit Errors....75
Downloading a Configuration File....76
Uploading History Events Status Reports....77
History Reports....77
Printing Reports....79
Panel Software Overview....81
Window Regions / Areas....81
Program Icons....82
Programming Functions Overview....83
Remote Access Code....84
User Name / Password....84
General System Functions....85
Job Details....85
System E-mail Functions....86
P-Link E-mail Notification Requirements....87
Connecting the Panel to a Network....88
E-mail Report Programming....88

E-mail Sent from Panel....89
E-mail Report Requested from PC....90
Receiving E-mail Status Reports....92
Creating E-mail Reminders....94
System Programming....95
Mapping Zones Overview....95
Single Zones....96
Multiple Zones....96
Mapping Terminology....97
Zone Types / Styles....97
Zone Attributes....98
Creating Zones....99
Configuring Zones....100
Configuring Points....101
Input Circuit Functions....101
NAC Functions....102
AUX Functions....102
Adding Points to Zones....105
Group by Area....107
Programming Points and Appliances....109
On-Board DACT....109
Reporting Accounts....110
Remote Annunciators....111
Verify Input and Output Points....112
Examine Firmware Versions....113
LCD Control Firmware....113
7788F Subscriber Firmware....113
Mainboard and 7764 PIC Firmware....113

9. IP Communication

IP Reporting Accounts....115

A. Basic Operating Instructions....118

B. System Maintenance and Testing....120

C. Device Compatibilities....122

D. Compatible Smoke Detectors Table....123

E. Compatible Auxiliary Circuit Devices....125

F. Control Panel Menu....126

G. Verifying 7764 PIC Operation and Troubleshooting Steps....127

H. PFC-6006 NAC Compatibility List....128

Section 1. Introduction

The 7706-ULF Integrated Fire Monitoring System is a compact, simple panel designed to monitor all facets of a wet or dry fire sprinkler system and communicate the status to a monitoring station. The 7706-ULF System is a listed and approved microprocessor-based sprinkler monitoring panel and complies with UL-864, NFPA-70, and NFPA-72. The panel is provided with six inputs and with one 24 VDC, 0.5A Notification Appliance Circuit (NAC) with strobe synchronization. The 2.0A power supply provides ample power to meet any jurisdictions requirements and will charge up to two 18 Ah batteries. **Note:** The cabinet will house up to two 14 Ah batteries. Larger size batteries must be placed in an NFPA 72 compliant external battery box. In addition, the panel has the Potter P-Link for connection to a remote annunciator.

Purpose of This Manual

This manual is intended to assist in installing and programming the 7706-ULF Integrated Fire Monitoring System. Refer to this manual to properly install and program the 7706-ULF System. It is recommended that the user follow the procedures as outlined in this manual to assist in the proper installation of, and prevent damage to, the control panel and associated equipment.

System Overview

The 7706-ULF Integrated Fire Monitoring System is designed for use as a sprinkler fire control panel for life safety applications. The system must be used with an AES-*IntelliNet* system, a two-way data radio network (see Figure 2), as alarm, supervisory, and trouble messages generated by the 7706-ULF system are transmitted to the AES- *IntelliNet* system's central receiver.

The main components of the 7706-ULF System include a mainboard, an interface card, and a subscriber unit (see Figure 1). The 7706-ULF System is a single enclosure located at the protected premise. Data messages from the control panel (mainboard) are transferred through the AES 7764 Potter Interface Card (PIC) to the subscriber.

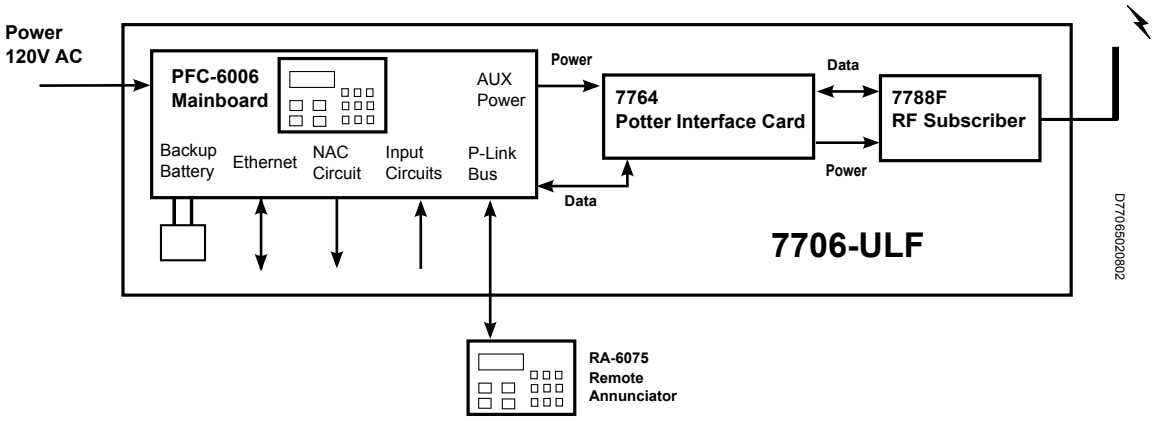


Figure 1. 7706-ULF System Components

The subscriber transfers the data messages to the AES RF mesh network as shown in Figure 2. The mesh network consists of a group of subscribers that provide a path for transmitting messages from the 7706-ULF System to the 7705i *MultiNet* central receiver. Subscribers in the mesh network automatically establish a path to the central receiver. The configuration is dynamic, so a path will be re-established if a subscriber in the route fails to function. Messages are passed between subscribers in a repeater fashion, allowing subscribers out of direct radio range to communicate with the central receiver.

Messages in the RF mesh network are passed between subscribers until received at the AES 7170 IP-Link. The 7170 IP-Link functions as a gateway between the AES RF mesh network and a TCP/IP network connection to the central receiver through direct Ethernet connection, LAN, WAN, or Internet.

Messages terminate at the 7705i AES-*MultiNet* receiver. The receiver is capable of either sending the messages to automation software, displaying them on the receiver front panel LCD display, or printing them to the attached printer.

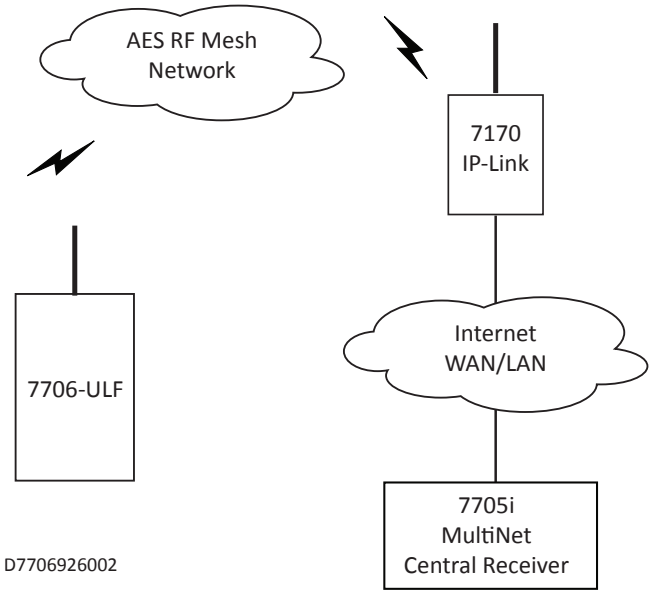


Figure 2. AES Intellinet System Diagram

Communication Path Configuration

The 7706-ULF Integrated Fire Monitoring System is designed to communicate with the 7705i *MultiNet* using the AES mesh radio network, eliminating the need for POTS telephone lines.

The communication path is provided by the 7788F RF Subscriber which communicates via the mesh radio network. Alarm, trouble, and supervisory messages are delivered to automation as shown below when the 7706-ULF Integrated Fire Monitoring System is installed and configured according to installation instructions.

Three configurations of the Model 7706-ULF are shown in the diagrams below:

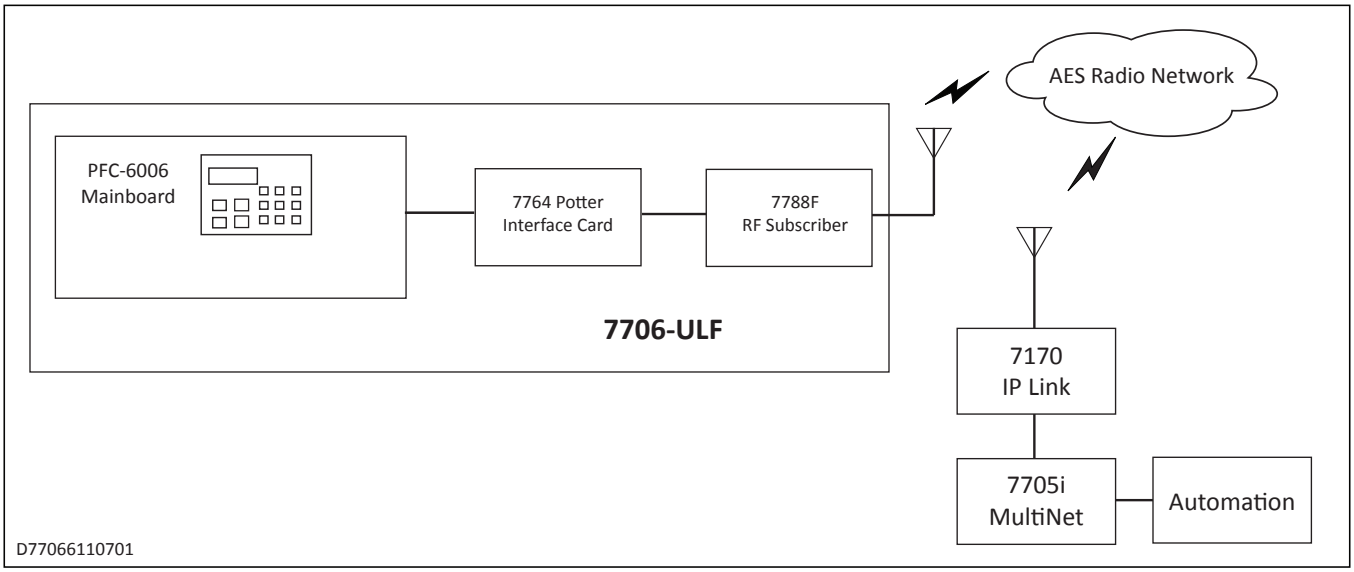


Figure 3. Sole Path (Single Reporting)

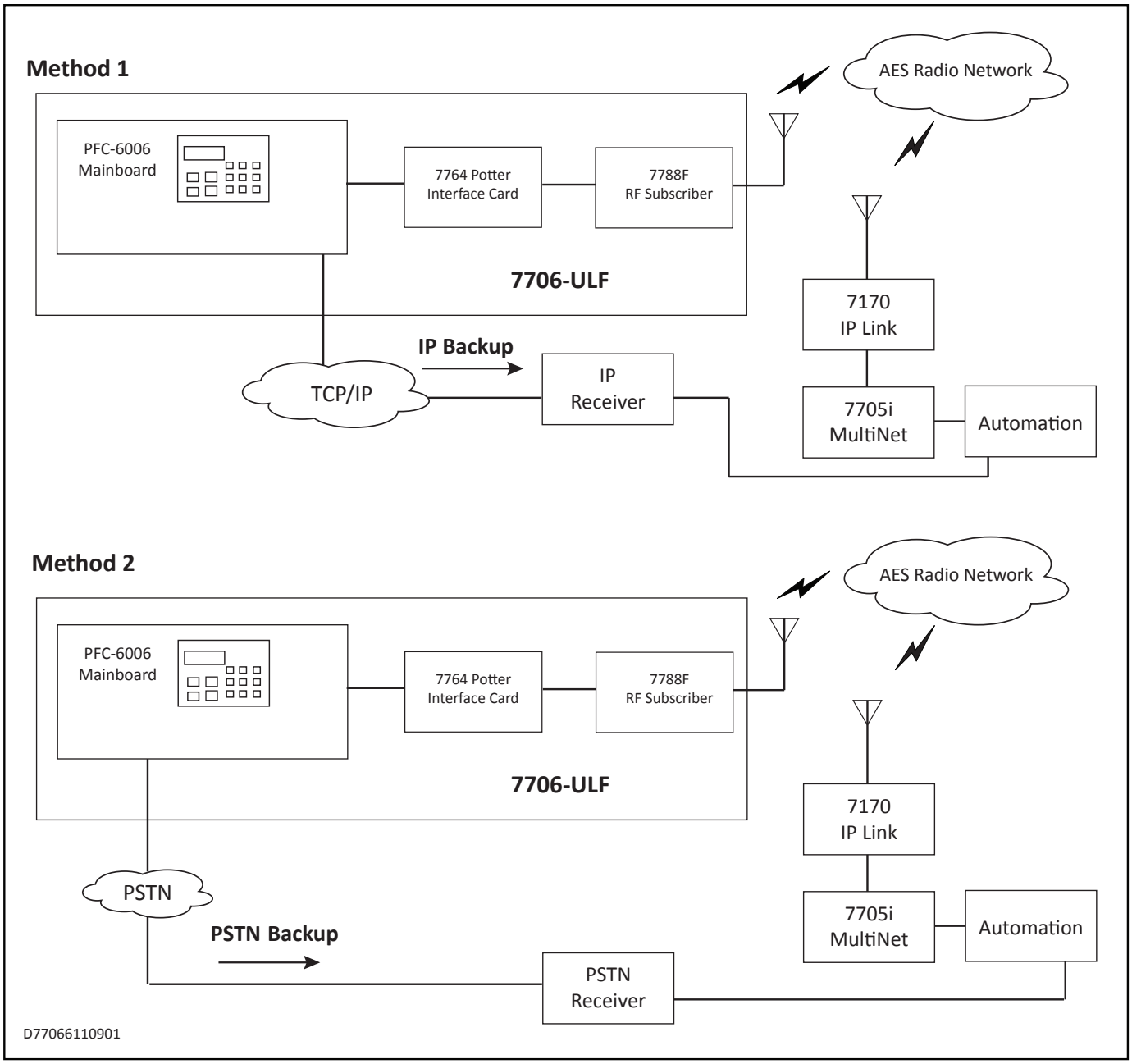


Figure 4. Single Reporting with Backup

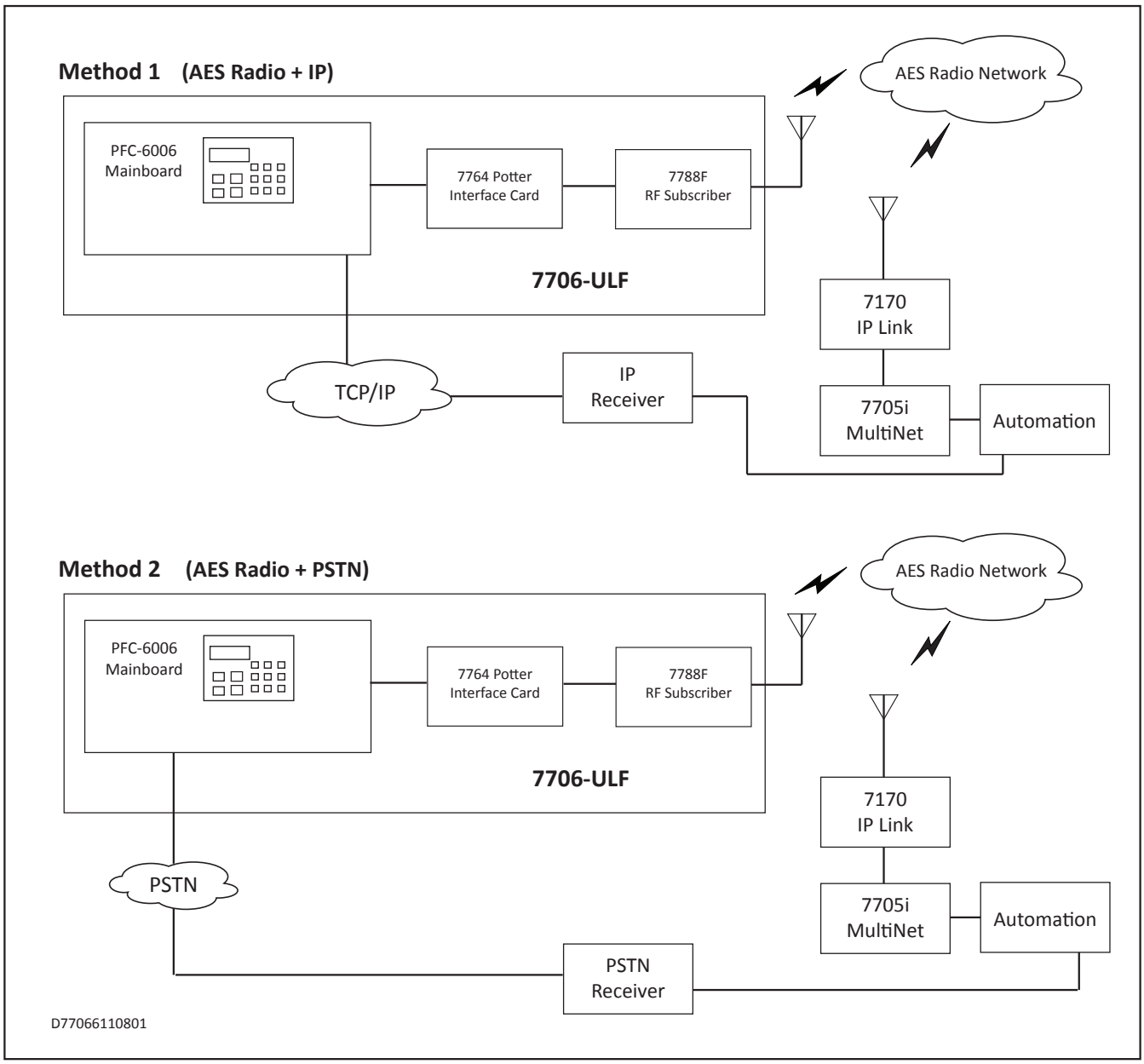


Figure 5. Dual Delivery Path (Dual Reporting)

Table 1: Communications Configurations

	Subscriber Programming (Page 48)	DACT Connection (Page 42)	Onboard DACT (Page 114)	Connecting the Computer and Panel Via Network (Page 71)	IP Communications (Page 118)
Sole Path (Single Reporting)					
	✓	—	—	—	—
Single Reporting with Backup					
	✓	—	—	—	—
AES Radio + IP	—	—	—	✓	✓
AES Radio + DACT	—	✓	✓	—	—
Dual Delivery Path (Dual Reporting)					
	✓	—	—	—	—
AES Radio + IP	—	—	—	✓	✓
AES Radio + DACT	—	✓	✓	—	—

Sole Path Delivery (Single Reporting)

- Configure the subscriber (refer to "Subscriber Programming" on page 47).

Single Reporting with Backup

- Configure the subscriber (refer to "Subscriber Programming" on page 47).

For IP as backup:

- Connect the panel to the network (refer to "Connecting the Computer and Panel" on page 69).
- Set **Reporting Method Priority** to **Secondary** (refer to "IP Communication" on page 114).

For DACT as backup:

- Connect the PSTN line to the panel (refer to "DACT Connection" on page 41).
- Configure the **Reporting Accounts** settings to allow the panel to dial via the PSTN and report (refer to "On-Board DACT" on page 109).

Dual Delivery Path (Dual Reporting)

- Configure the subscriber (refer to "Subscriber Programming" on page 47).

For IP Path:

- Connect the panel to the network (refer to "Connecting the Computer and Panel" on page 69).
- Set **Reporting Method Priority** to **Primary** (refer to "IP Communication" on page 114), and configure other settings to enable IP communications.

For DACT Path:

- Connect the PSTN line to the panel DACT (refer to "DACT Connection" on page 41).
- Configure the **Reporting Accounts** settings to allow the panel to dial via PSTN and report (refer to "On-Board DACT" on page 109).

System Features

- Six Programmable Input Circuits
- One Notification Appliance Circuit (NAC) rated at 0.5A maximum:
  - Power Limited
  - Built-in Sync
  - Cadence and Temporal Patterns
  - Programmable as Supervisory
- Support for all major synchronization patterns:
  - Potter/AMSECO®
  - Gentex®
  - CooperWheelock®
  - System Sensor®
- Auto Silence and Silence Inhibit
- Built-in Ethernet Port (for programming and network connectivity)
- P-Link RS-485 Bus (for system accessory support)
- Dead-Front Cabinet Design

P-Link Accessories

- Maximum of one RA-6075 remote annunciator per system

How to Use this Manual

Refer to this manual before contacting Technical Support. The information in this manual is the key to a successful installation and will assist you in understanding proper wire routing, system requirements, and other guidelines specific to the 7706-ULF Integrated Fire Monitoring System

- 47"Subscriber Programming" on page 47 contains instructions for configuring the AES radio subscriber used by the control panel to communicate with central monitoring stations.
- 65"Section 8. Control Panel Programming" on page 65 contains instructions for configuration and operation of the fire alarm control panel.

Common Terminology

The following table provides you with a list of terms and definitions used with the PFC-6006 system:

Table 2: Terminology

Term	Definition
7706-ULF Cabinet	Enclosure
EOLR	End of Line Resistor Assembly
Remote Annunciator	LCD-type Remote Annunciator
NAC	Notification Appliance Circuit
P-Link	Proprietary RS-485 Communication Bus
PIC	AES 7764 Potter Interface Card
PFC-6006 Mainboard	PCB Board Assembly containing LCD, keypad, terminal blocks, and alarm circuitry
Subscriber	AES RF subscriber consisting of AES 7788F, 7764 PIC, and 7085UE5 transceiver

Installation Tasks Overview

Table 3 lists tasks to perform when installing the AES 7706-ULF Integrated Fire Monitoring System. Use the list to verify that installation tasks have been identified and completed. Tasks do not have to be performed in the order listed unless specifically identified.

Important! Verify AES mesh network connectivity for the control cabinet *before* cabinet installation.

Table 3: Installation Tasks	
Control Cabinet Installation Tasks	**Page Reference**
Network Connectivity: Cabinet location and connectivity to AES mesh network	25
Select Antenna: Network connectivity and ability to mount on cabinet	22–23
External Antenna: Safety, grounding, and surge Protection requirements	24
Environmental: Mounting location conditions meet Environmental Specifications	16
Mount Control Cabinet: Flush surface/recessed mount	25–29
General cabinet wiring: Power limited/non-limited spacing requirements	20–21
Subscriber Wiring: 7788F subscriber to 7764 PIC card wiring	27
7764 PIC P-Link address: Verification of DIP switch address 7764	26
Mainboard wiring: Mainboard to 7764 PIC card wiring	29
Input Circuit install: Connection of compatible listed devices and detectors	33–35
NAC Circuit install: Connection of compatible listed strobe/horn/module appliances	36
Remote Annunciator	
• Set P-Link address	39
• Wiring - connect single remote annunciator	38
Connect AC main power	32
Connect batteries (usually the final step)	32–33
7788F Subscriber Configuration Tasks	
Control Panel Operation: Using LCD/keypad for panel	42
Control Panel Menu Tree: LCD/keypad to change programmable settings/view info	46
Subscriber Programming Parameters:	
ID # and System Cipher Code	49
Timers: Checkin, NTR RPT DLY, Comm Timeout	51
Modes: Enable/Disable Repeating	52
Time to Live: Checkin, Alarm, Trouble, Restoral, Intellitap, Special	53
Account Override: Enable/Disable	55
User Codes: Enable/Disable	56
Report Account	57
Subscriber Self-Test: Power on self-test	62
Subscriber Network Status: LED for visual network connect status; LCD for messages	63–64
Subscriber Reset: Replace existing setting with factory default settings	63
Control Panel Programming Tasks	
System Software Configuration	
• LEARN programming: Detect remote annunciator connection	68
• Computer connection	69
Control Panel System Programming	
• Zone type, Style, Attributes	95–105
• Programming Points & Appliances	109
• Configuration file upload/download	74

Table 3: Installation Tasks	
Verify Input and Output Points	112
Examine Firmware Versions	113
Post Install Test	114

Section 2. Before You Start Installation

This section addresses information that will help you in completing a successful installation such as the 7706-ULF cabinet layout, specifications, and environmental considerations.

System Specifications

Cabinet Description

- 18-gauge sheet steel with hinged, removable locked door
- Enclosure dimensions: 18-1/2" × 14-1/4" × 4-3/4"

Visual Indicators

- LCD (2 × 16 alphanumeric character display)
- Mainboard LED indicators (red, green, amber)
- Subscriber LED indicators (red, green, amber)
- PIC LED indicators (green - viewable by installer only)

LCD Description

- Displays alarm, supervisory and trouble conditions, status and circuit for each correlating condition. Also displays subscriber configuration and status information.

Environmental Specifications

- Mount indoors only.
- Temperature: 32° to 120°F, humidity: 93% non-condensing.
- Verify panel is properly grounded.
- Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides, bottom, or rear of the cabinet. Verify that they will not interfere with the batteries or other components.
- The panel and system must be tested and maintained in accordance with all local and national codes and ordinances.
- Panel shall be installed so that the display is easily readable and the door has adequate clearance to access the controls.

Model/Available Cabinet Colors

- 7706-ULF Integrated Fire Monitoring System — Red

System Configurations/Appliances

Table 4: System Configurations / Appliances					
Model	**Description**	**Local**	**Remote Station**	**Central Station**	**Propri-etary**
7788F	Subscriber	Y	Y	Y	Y
PFC-6006	Mainboard/Panel Assembly	Y	Y	Y	Y
RA-6075	LCD Remote Annunciator (UL)	O	O	O	O
3005013	End of Line Resistor Assembly	Y	Y	Y	Y
Y = Yes, required for applicable section N = No, not required for applicable section O = Optional, may or may not be used, has no affect on the applicable section.					

Electrical Specifications

Please refer to the table below for electrical specifications:

Table 5: System Panel Electrical Specifications		
Panel - PFC 6006		
Low Voltage Power Limited Circuit	**Rating per Circuit**	**Class**
NAC	0.5A	B
Conv. Input 1	2.5mA Normal Standby	B
Conv. Inputs 2, 3, 4, 5 & 6	2.5mA Normal Standby	B

System Size Specifications

Please refer to the table below for system size specifications:

Table 6: System Size Specifications	
Accessories/Subassemblies	**Maximum System Size**
PFC-6006	• Six input circuits on the mainboard • One notification circuit on the mainboard • One on-board DACT • One P-Link connection* • Auxiliary power output**
*P-Link 24 VDC and auxiliary power combined are not to exceed 0.5A. P-Link is factory-wired with the option for additional field wiring of one remote annunciator. **Auxiliary power output is dedicated and unavailable for external accessory use.	

Mainboard Wiring Specifications

There are several wiring requirements to consider before connecting circuits to the mainboard: (1) the circuit separation and (2) wiring types.

All wiring should be sized and installed to comply with NFPA-70, NFPA-72, and local codes and ordinances.

Circuit Separation

Proper separation between the different types of circuits must be maintained between Power Limited, Non-Power Limited, and High Voltage wiring to reduce electrical interferences, transient voltage, or voltage ratings.

Separations between the different wiring types must be maintained by at least ¼ inch and the wire insulation must be for the higher voltage.

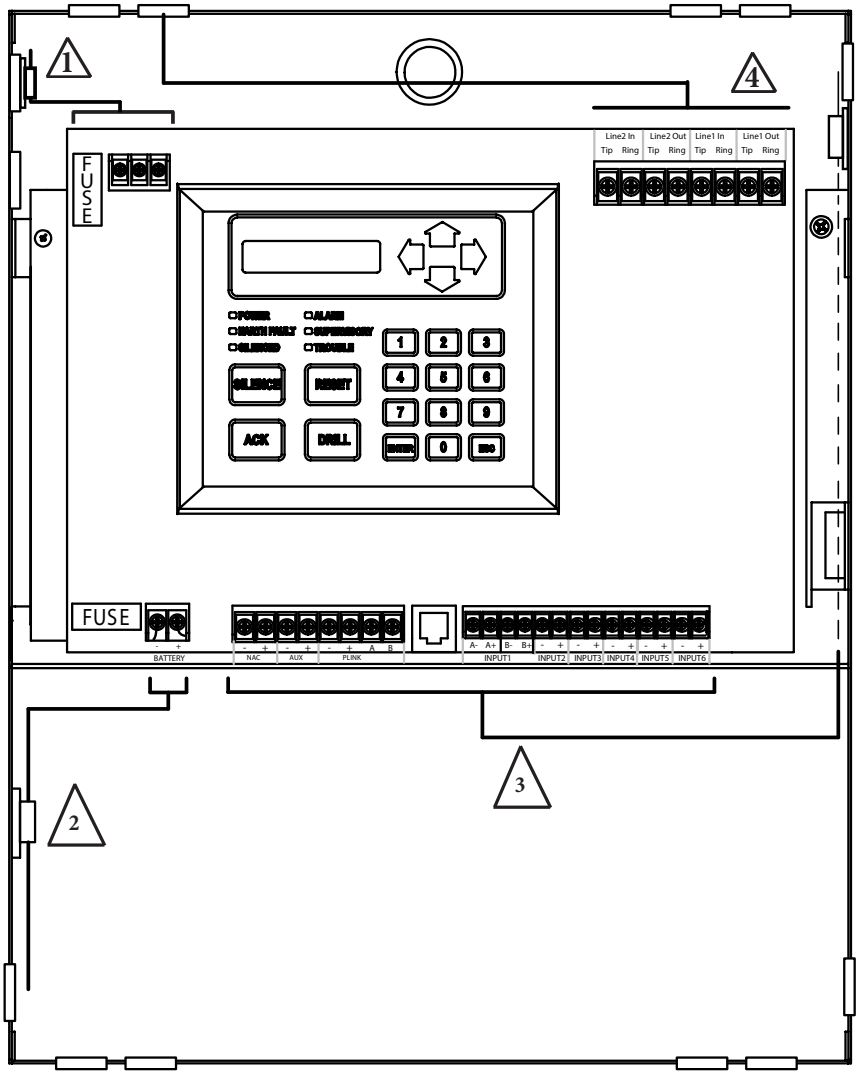
The control panel cabinet has sufficient knockouts located around the periphery allowing the installer to maintain separation between power limited and non-power limited connections.

Wiring Types

Wiring specifications must be followed to prevent damage or other consequences. Please refer to the wiring diagram in Figure 6 on page 19 for proper wiring requirements.

Wire Routing for 7706-ULF

(*Shown with false front removed)



DWG #559-12-1

1 Power Inputs

2 Battery leads

3 Route all other wiring away from power input wiring.

4 Run DACT phone lines separately.

NOTICE

All field installed wiring connected to this panel must maintain a spacing of 1/4” between all electric light, power, class 1 or non-power limited fire protective signaling conductors.

Figure 6. 7706-ULF Wire Routing Example

Refer to Table 7 below for a breakout of the different wiring requirements shown by circuit type:

Table 7: Wiring Types		
Mainboard Circuit	**Voltage**	**Power**
AC Connection	High Voltage	Non-Power Limited
Battery Connection	Low Voltage	Non-Power Limited
Input Circuits	Low Voltage	Power Limited
Notification Device Circuit (NAC)	Low Voltage	Power Limited
P-Link RS-485 Connections	Low Voltage	Power Limited
AUX Power	Low Voltage	Power Limited
Ethernet	Low Voltage	Power Limited
Phone Line - DACT	High Voltage	Non-Power Limited
7788F/7764 Circuit	**Voltage**	**Power**
Zone Input	Low Voltage	Power Limited
Trouble Relay	Low Voltage	Power Limited
DC Input Connection (battery leads)	Low Voltage	Power Limited

Cabinet Dimensions

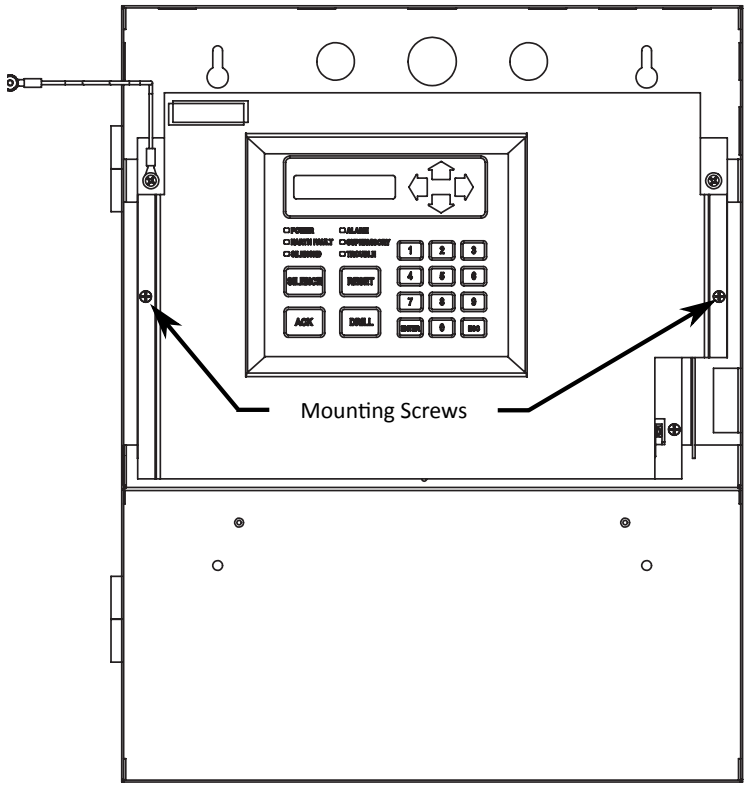


Figure 7. PFC-6006 Mainboard Module Shown Installed in Cabinet (shown with door removed)

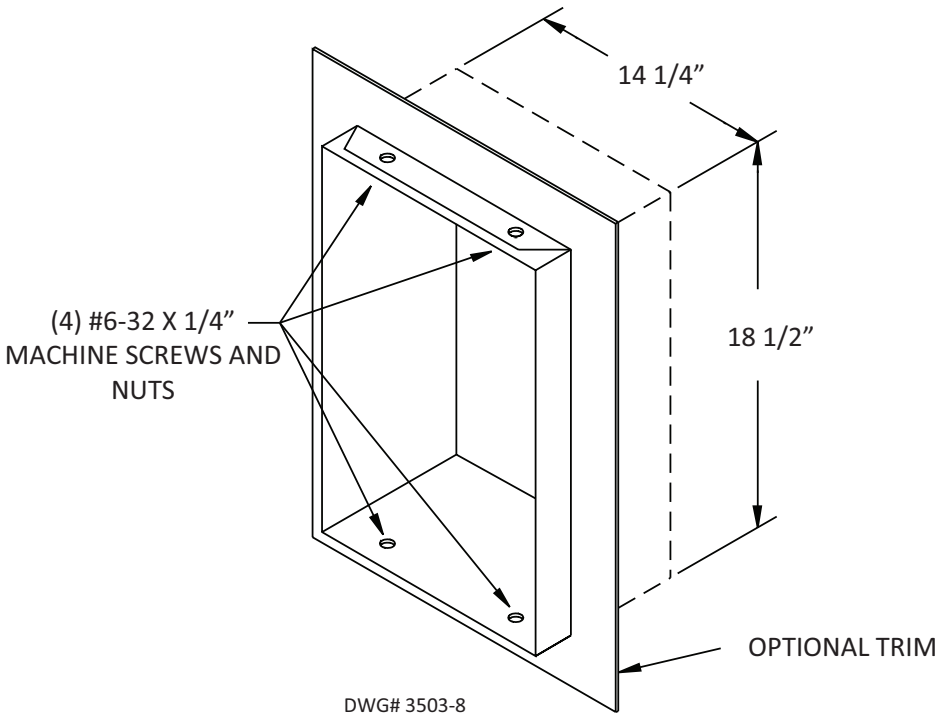


Figure 8. 7706-ULF Panel Showing Bezel Dimensions

Section 3. Subscriber Antenna Planning and Installation

Important! A UL fire compliant fire alarm installation for the 7706-ULF System needs to be in a location that has a NetCon of 5. Refer to 60"Table 13: PIC Menu Screen Displays" on page 60 for additional details. It is important to verify that a location is suitable before deciding on the antenna used and mounting the cabinet. A check of the location can be done with the AES Network Connectivity Tool (NCT). The AES NCT provides a quick means for verifying NetCon or finding suitable locations for installation.

A tamper resistant “rubber duck” flexible antenna is part of the standard package for the 7706-ULF System and mounts on top of the steel cabinet. Depending on cabinet mounting, physical location, and mesh network connectivity, a remotely mounted antenna may be required.

Antenna Safety Considerations

Following is a list of important considerations as well as information on antenna and coaxial cable accessories available from AES.

- If the antenna or cables connected to this equipment come in contact with electrical power lines, DEATH or SERIOUS INJURY may result.
- It is unlawful to operate this equipment in the United States without a valid FCC radio station license. Other countries most likely require licensing through appropriate authorities as well.

- All equipment must be installed in accordance with National Electric Code, NFPA -70, National Fire Code NFPA-72 and local building codes.
- Be certain to properly ground the antenna, enclosure and any surge protection devices to help dissipate surges away from the equipment and personnel. The grounding of the antenna and surge protector is for your safety and the safety of your equipment and should not be neglected.

UHF antenna options are listed in Table 8. The frequency range is 450–480 MHz. Contact factory at (800) 237-6387 or info@aes-intellinet.com for other frequencies.

Table 8: UHF Antenna Options

Antenna dB	Construction	Usage	Length	P/N	Notes
2.5-dB Case Top Flex Tamper Resistant	Vinyl Clad	Indoor	11 in.	7214	1, 2
3-dB Stealth	Vinyl Clad	Indoor	1.5 ft.	7211	3
3-dB Standard Gain	Steel Mast	Indoor	1.5 ft.	7210-3-UM	4, 5
5-dB High Gain	Steel Mast	Indoor	3 ft.	7210-5-UM	4, 5
6-dB Rugged High Gain	Fiberglass Mast	In/Outdoor	4.5 ft.	7210-6-UC	4
7-dB Rugged Higher Gain	Fiberglass Mast	In/Outdoor	6 ft.	7210-7-US	4
9-dB Central Station High Gain	Fiberglass Mast	In/Outdoor	8 ft.	7210-9-UC	4

Notes:

1. These alternate antennas may be used with the 7706-ULF Integrated Fire Monitoring System.
2. Included standard tamper-resistant antenna mounts on alarm unit's enclosure (includes cable).
3. Mounts in attics, vents, walls, behind drapes, etc. (includes 10-foot cable).
4. Requires coaxial cable. Usually requires user-supplied mounting hardware such as a pole with mounting brackets/hardware.
5. Antenna is intended for outdoor use. Supplied mount is intended for indoor use, as coaxial connection is exposed. To use outdoors, connection must be sealed with a suitable product such as a self-fusing tape to protect against moisture.

   The antenna must be installed in accordance with the National Electric Code and local electric code. A surge protector must be installed in line with any type of remotely installed antenna. Refer to Figure 9 on page 24 for installation details.

Coaxial Cable Options

- Cables with connectors, BNC ↔ N, for all AES subscriber units, high performance, low-loss cables for all -UM, -UC and -US antennas above
- 10-foot RG-58 cable, Part No. 7220-10-N
- 25-foot RG-58 cable, Part No. 7220-25-N
- BNC plug/connector (male), crimp style for RG-58 coaxial, Part No. 12-0102

- 100-foot RG-8 W/1 N male (on spool), Part No. 13-0345-100 (this coaxial cable is available for longer runs, cut to length and installer terminated)
- Loose connectors required to complete RG-8 assembly, Part No. 12-0101
- Crimp tool required for 12-0101, Part No. 7244
- Cable assembly; 18" RG-58 (N female, bulkhead ↔ BNC male) (used to connect RG-8 with N male to enclosure body), Part No. 13-0346

Coaxial Cable and Antenna Installation Tips

- Avoid using 25-foot coaxial cable length if a 10-foot length will be sufficient.
- Never use more than 25 feet of RG-58 cable in any antenna installation.
- Always use shortest length of coaxial cable possible. Longer than necessary coaxial cable lengths translate into greater signal loss.
- Always use the straightest most direct routing possible in any coaxial cable installation. Unnecessary and tight bends add to potential signal loss.
- Use 50-ohm impedance coaxial cable only. Do not use 75-ohm coaxial cable for the connection of remote antenna. RG-8, 9913, LMR-400, LMR-600, and RG-58 are among a list of acceptable 50-ohm coaxial cables.
- RG-59 and RG-6 are 75-ohm coaxial cables and are NOT to be used.
- Use the proper coaxial connectors and crimp tool for the coaxial selected. Incorrect or poorly installed connectors can have a significant effect on the performance of the RF.

Transceiver Antenna

- The supplied case top tamper resistant flexible 2.5 dB antenna is mounted on the enclosure as shown in Figure 9 on page 24.
- A separately purchased remote antenna may be used with the 7706-UL unit in UL installations. Contact AES at (800) 237-6387 or info@aes-intellinet.com for a selection of antennas suitable for use with your subscriber unit. Refer to 22"Table 8: UHF Antenna Options" on page 22 for information on antennas available from AES.
- Mount antenna as high as possible, on or in the structure, with attics and rooftop locations preferred. Height need not be higher than is required to overcome nearby obstructions to the signal path if any additional height would use a longer coaxial cable length.
- A remote antenna should be mounted in a location near the transceiver to minimize inherent signal loss due to unnecessary cable length. Do not use longer coaxial cable than is needed to reach the antenna.
- Avoid installing the antenna in close proximity to other metal surfaces which may severely impact the performance of the radio communications due to the effects of signal reflections or detuning the antenna.
  - Remember that pipes, conduit, wiring, ductwork, and other metal are commonly installed within walls and could affect antenna performance.
  - Take into account foil-backed insulation and wallpaper.
  - Metal objects may also be located in adjacent rooms or above ceilings.
  - Metallic framing is in common use today. Antenna should not be mounted directly over, or in close proximity to, metal studding.
  - Metallic supports are in common use today. Antenna should not be mounted in ceilings constructed of metal beams and supports that may interfere with the RF signal.

  - The antenna must be grounded properly to help reduce damage due to surges produced by lightning. Grounding must be done in accordance with local building codes as well as those in accordance with any other authority having jurisdiction.
  - When needed, use higher gain antenna with rated cable and connectors. Mount antenna as high as possible. Attics that meet the temperature and humidity range specification can help to improve performance.

    See the UHF antenna options in 22"Table 8: UHF Antenna Options" on page 22 for available and approved options.

- Antenna must be mounted in a vertical orientation.
- Avoid tightly coiled or bunched coaxial cable, as this could also affect RF performance. Use coaxial cable length that best fits the installation.
- The antenna must be installed in accordance with National Electric Code and local electric code.
- A protective surge suppressor must be installed in line with any type of remotely installed antenna.

Antenna Grounding and Surge Protector

Figure 9 shows the grounding and surge protector for the transceiver with a remote antenna installation.

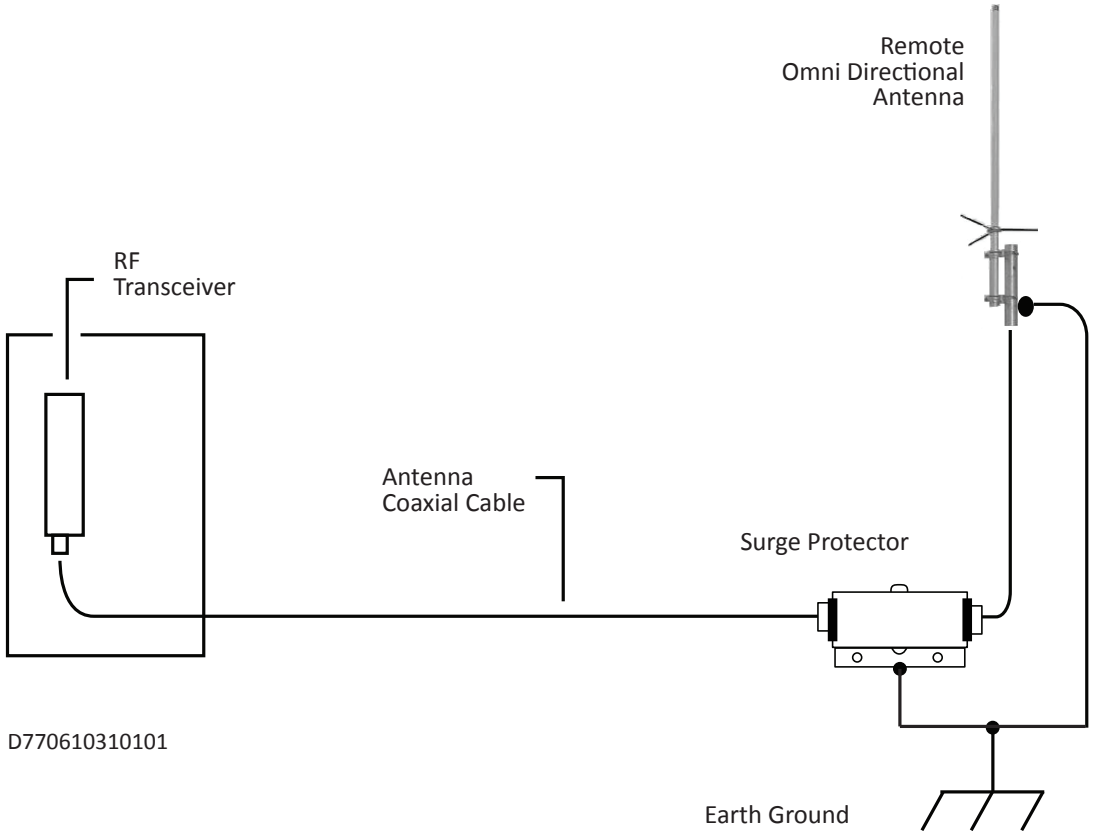


Figure 9. Grounding and Surge Protector for Transceiver with Remote Antenna Installation

Section 4. Cabinet Mounting – Subscriber and Mainboard Mounting and Wiring Instructions

To mount the cabinet:

> **Important!** The 7706-ULF System needs to be in a location that allows the subscriber to connect to the AES mesh network. It is important to verify that a location is suitable before deciding where the cabinet is mounted. A check of the location can be done with the AES Network Connectivity Tool (NCT). The AES NCT provides a quick means for verifying or finding suitable locations for installation.

1. Select a convenient location, approximately 5 feet from the floor, where it will be accessible for testing and servicing.

> **Note:** The system is supplied from the factory with the subscriber components mounted to the subscriber mounting and installed in the cabinet. The subscriber mounting plate must be removed before installing the cabinet.

2. Remove the panel motherboard from the cabinet by removing two screws mounting the black dead-front bezel, removing the bezel, and then removing the two screws mounting the panel motherboard.
3. Remove the two screws holding the mounting plate to the cabinet. See Figure 10 for screw location labeled mounting plate standoff. Lift the mounting plate upwards, approximately 1/2", in order to clear the cross-beam of the cabinet on which the mounting plate rests. Remove the mounting plate and set aside.

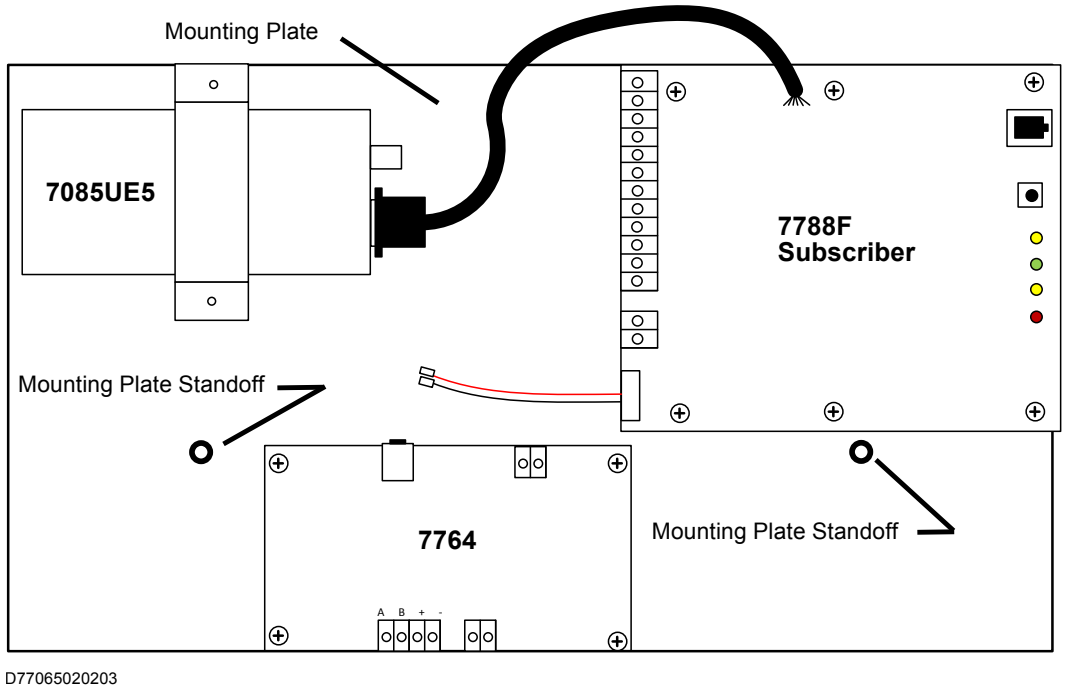


Figure 10. Subscriber Mounting Plate

4. The cabinet may be surface mounted or semi-flush mounted using the optional trim bezel (refer to Figure 7 and Figure 8).

Note: For semi-flush mounting the supplied "rubber duck" antenna cannot be used and a remote antenna will be required.

For semi-flush installations, mount the housing so that the front edge protrudes 1" from the finished wall surface. After all conduits and wiring are in place and the wall surface is completely finished, insert the supplied plug in the case antenna mounting hole, slide the trim bezel in place and fasten with 4 #6-32 × 1/4" machine screws and nuts.

5. Install all required conduits, external wiring, and points and make all connections that are external to the panel.
6. Install the subscriber mounting plate first in the cabinet. Tilt the subscriber mounting plate so it slides in between the cross-beam and the two mounting tabs for the main circuit board panel. Use the nylon spacers and screws as shown in Figure 11 below to secure the subscriber mounting plate to the cabinet:

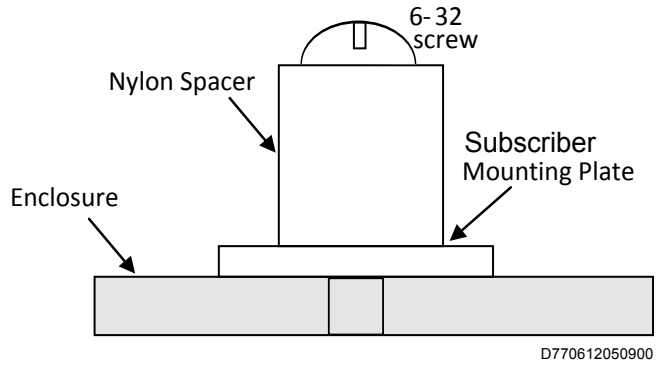


Figure 11. Subscriber Mounting Plate Standoff Hardware Assembly

7. Verify that the P-Link address on the 7764 PIC Card address is set to **1**. Check the S1 DIP switch shown in Figure 12 below. Switches must be in positions shown.

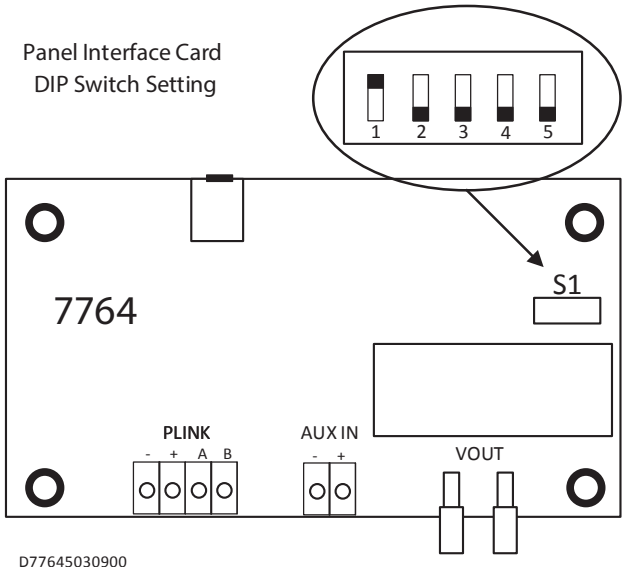


Figure 12. 7764 PIC P-Link Bus Address Switch Setting

8. Connect the interconnect cabling on the subscriber board as shown in Table 9 below.

Table 9: Interconnections

Cable/Wire Identification	From	To
AES Part No. 13-0395	7764 J3	7788F J1
End of Line Resistor: 02-0029-EOL-2.2k 22 AWG Stranded Wire	7764 J4 - N.C. 7764 J4 - C	7788F J2 - Z1 7788F J2 - G
7788F Battery Leads (Supplied)	7788F BAT (-) 7788F BAT (+)	7764 J5 (BLACK) 7764 J6 (RED)
AES Part No. 13-7706-P1	7764 J1 PLINK V- (Black) V+ (Red) A (White) B (Green) V- (Brown) V+ (Blue)	PFC-6006 J1 PLINK* - (Black) + (Red) A (White) B (Green) PFC-6006 J1 AUX* - (Brown) + (Blue)

* Connect cable to PFC-6006 mainboard after installation.

Notes:

- Do not use 7764 connectors P1 and P2.
- Switch S1 is factory set. Do not change the switch setting.

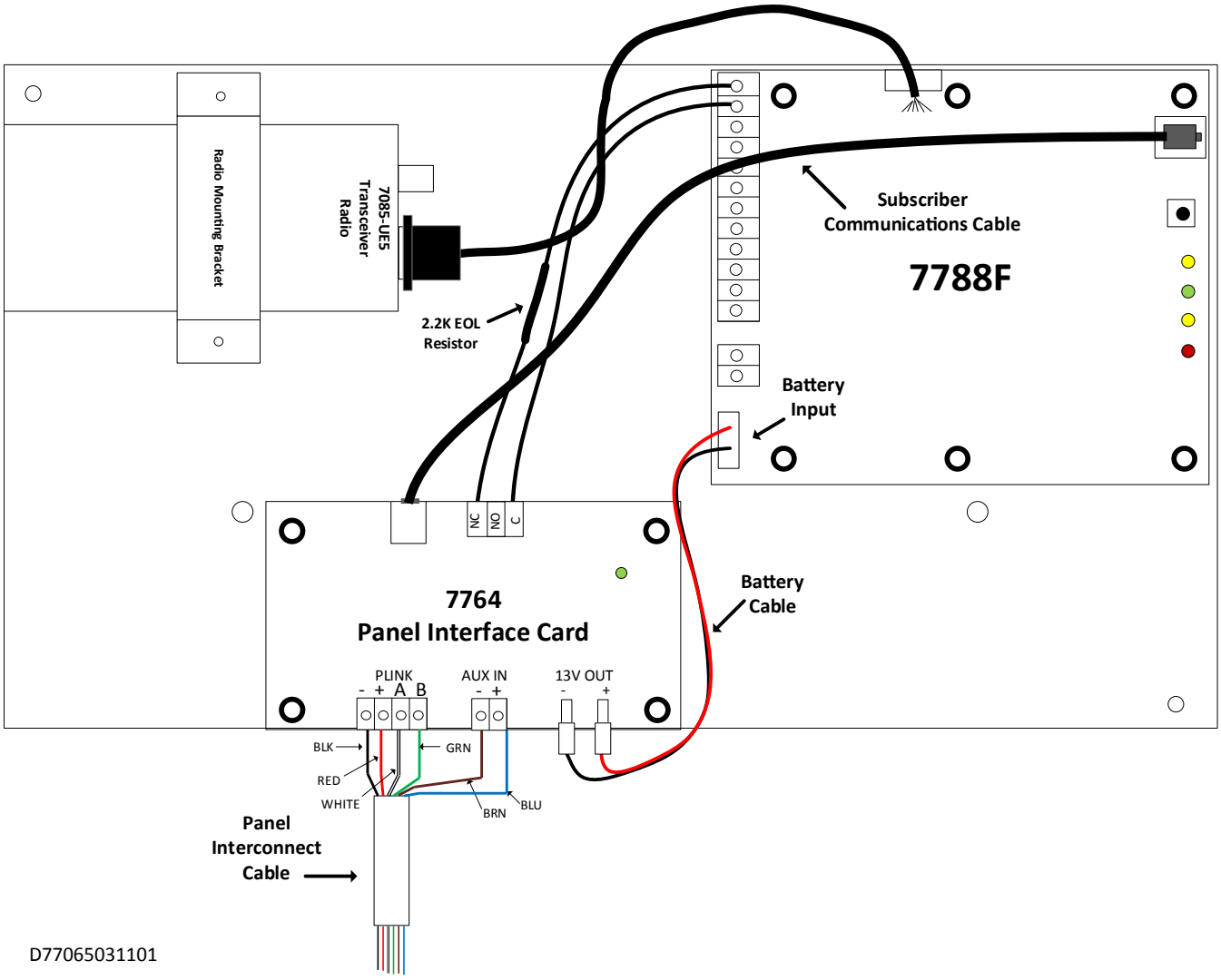


Figure 13. 7706-ULF Cabinet Wiring Diagram – Subscriber

9. Before proceeding, verify that the following items are complete. The wire terminal blocks and other connectors for the subscriber and PIC are not easily accessible with the mainboard installed.
   - Cables are connected to correct terminals on PIC and subscriber.
   - Antenna (case mounted) is installed, or coaxial cable is installed for external antenna.
   - P-Link bus address of 7764 PIC is set to **1**.

10. Replace the panel motherboard. Fasten using the two screws that hold the motherboard module to the cabinet.

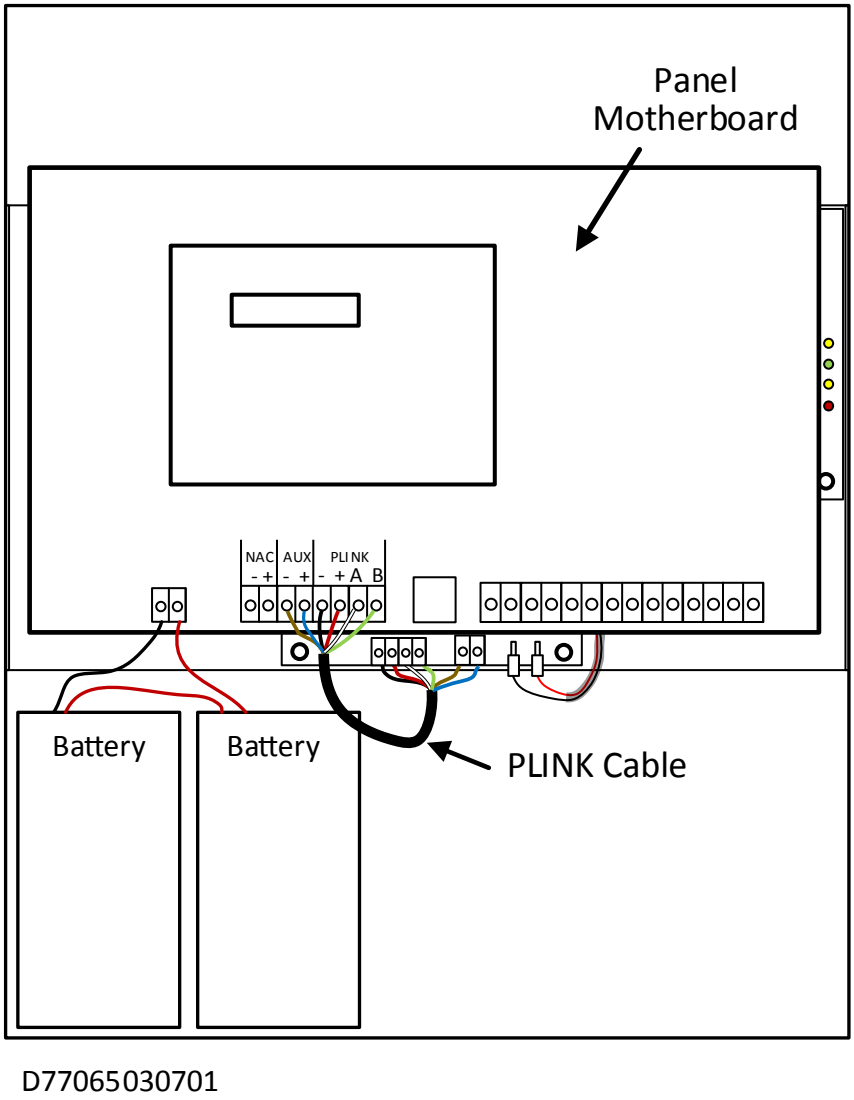


Figure 14. 7706-ULF Cabinet Wiring Diagram – Panel Motherboard

11. Connect the AUX cable from the 7764 PIC to the AUX terminals on the mainboard. Connect the P-Link cable from the 7764 PIC to the P-Link terminals on the mainboard.
12. Check to see that the AC power is turned OFF at the circuit breaker panel. Connect the AC hot, neutral and ground wires to the mainboard terminal block TB5 as shown in Figure 14 above.
13. Connect all the other wiring to the terminals (refer to Figure 15).
14. Replace dead front panel and secure with mounting screws using care so as to not damage LED annunciator module cable.
15. Configure the system and verify the operation of the complete system as outlined in the test procedure section.

Cabinet Wiring Connections

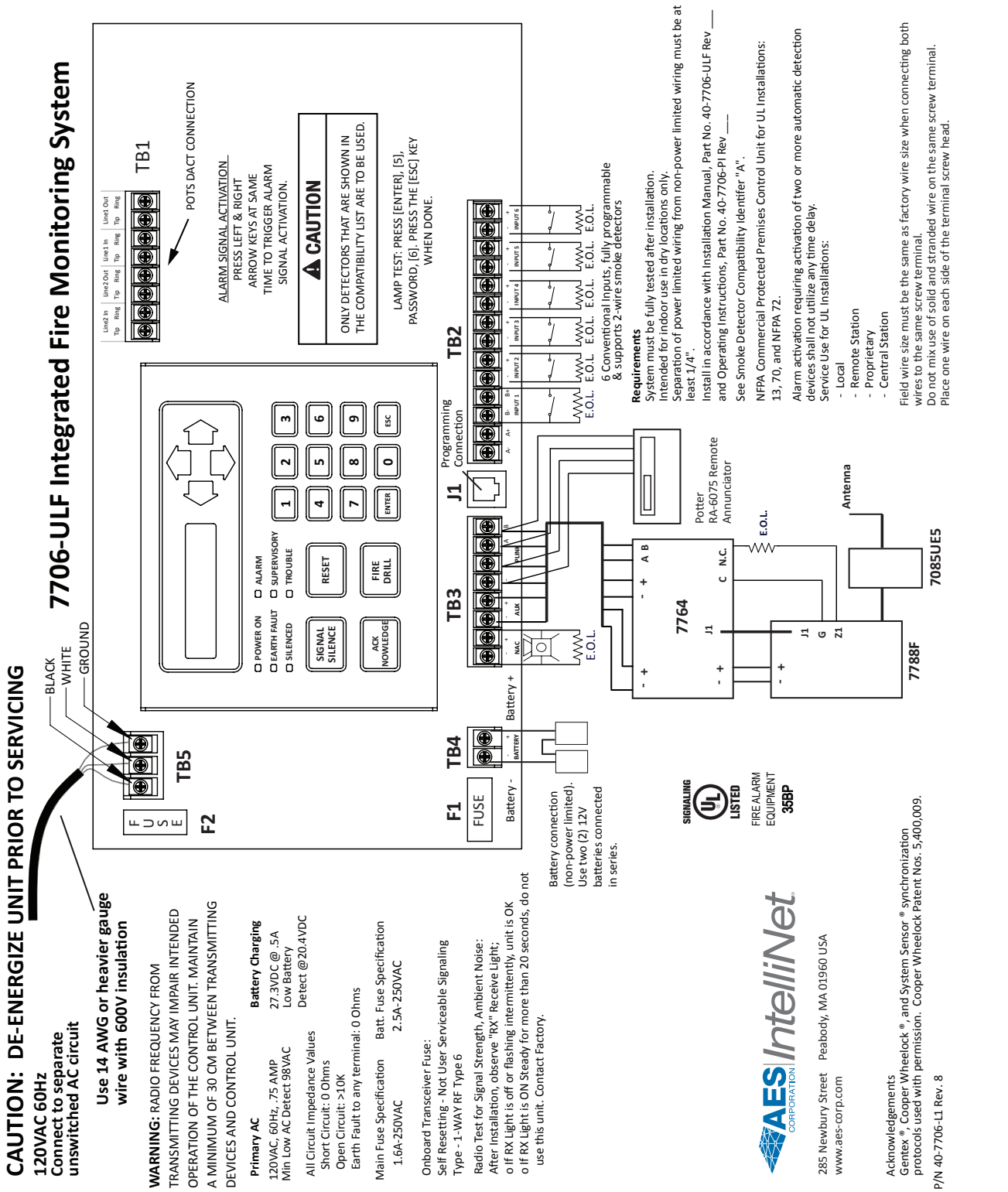


Figure 15. 7706-ULF Cabinet Wiring

Battery Circuit Calculations

Before selecting the battery, it is important to determine the minimum size batteries for standby and alarm times desired for each application. If the wrong batteries are installed in a specific application or incorrect current draw is used, the proper standby and minimum alarm time will not be present.

The battery circuit is rated for 8 to 18 Ah batteries and will operate the panel alarm for at least 24 hours and 5 minutes. The cabinet will house up to two 14 Ah batteries. Larger size batteries must be placed in an NFPA 72 compliant external battery box.

Please use the worksheet shown below to calculate the battery size and current draw required for each application:

Battery Calculation Worksheet

Description	Quantity	Standby (mA)	Total Standby (mA)	Alarm (mA)	Total Alarm (mA)
Mainboard (PFC-6006)	1	105	105	160	105
Subscriber (7788F, 7764, and 7085UE5)	1	200	200	200	200
LCD Remote RA-6075	1	20		25	
Input Circuit #1					
Input Circuit #2					
Input Circuit #3					
Input Circuit #4					
Input Circuit #5					
Input Circuit #6					
NAC 1					
		Total (mA)		Total (mA)	
		Convert to Amps	× 0.001	Convert to Amps	× 0.001
		(*Refer to maximum allowable standby current) Total A:		Total A:	
		Multiply by standby hours	× ____	60 minutes per hour Alarm time (minutes) *Example:* 5 minute alarm: enter 12	÷ ____
		Total Standby Ah		Total Alarm Ah	
				+Total Standby Ah	
				Total Ah	
				Efficiency Factor	÷ 0.85
				Required Ah	

*Maximum Allowable Standby Current (UL 24-Hour standby time)	
7 Ah	.244 A
12 Ah	.421 A
18 Ah	.634 A

Important Notes:

1. FACP enclosure can house up to two 14 Ah batteries.
2. NFPA-72 requires 24 hours of standby power followed by 5 minutes of alarm activation.
3. LED/Relay current must be accounted for in the battery calculation for the supplying source.
4. Total current must not exceed power supply rating of 2A.

Main Supply Circuit

The AC terminals are located in the upper left-hand portion of the mainboard. The mainboard supervises the main AC power and provides indication that the AC power is absent. The terminals are rated at 120 VAC 60 Hz and are marked accordingly on the board.

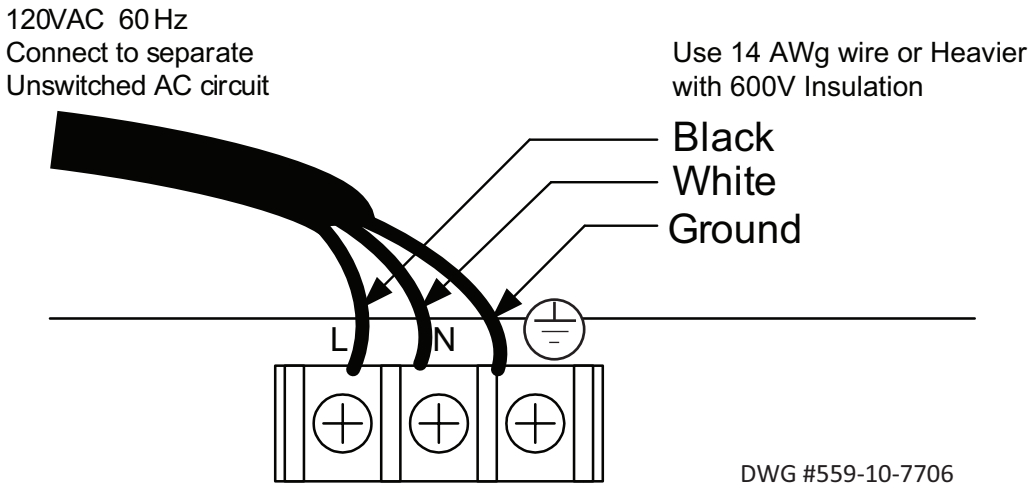


Figure 16. 7706-ULF AC Terminals

The earth ground connection is marked as "  " and is the furthest connection from the line voltage connection.

The AC input power rating is a maximum of 0.75A at the nominal 120 VAC rating.

Battery Connections

The battery charging circuit is located on the main panel in the lower left portion of the board. The maximum battery charging current is 0.5A DC; the charging voltage is approximately 27.3 VDC and is supervised.

Note: The battery should be clearly labeled as *"Sealed Lead Acid Battery"* or equivalent UL listed or UL recognized.

Connect the battery wire leads to the terminal connections, as shown in Figure 17 below. Batteries should be replaced every 5 years or sooner depending on annual testing.

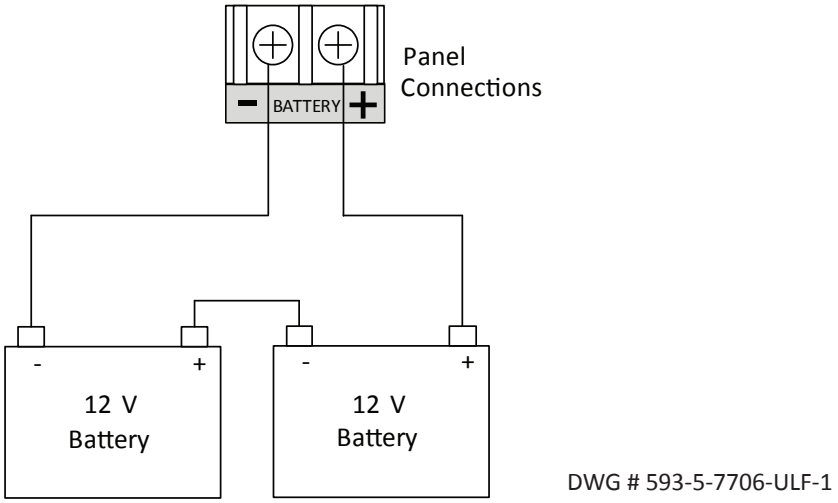


Figure 17. 7706-ULF Battery Connections

Section 5. Control Panel Installation

This section addresses installation procedures for Input Circuits 1–6, the NAC, and the optional RA-6075 remote annunciator. Wiring requirements and configuration examples are included throughout this section. Please read this section carefully before installing points and accessories to ensure proper installation.

Input Circuits

There are six programmable Input or Initiating Device Circuits (IDC) provided on the PFC-6006, which are the same as an integrated fire system input. They are supervised and power-limited to protect two-wire smoke detectors. Input Circuit #1 may be wired for either Class A, Style D or Class B, Style B, whereas Inputs #2-6 may be Class B, Style B only. All inputs are suitable for automatic, manual, waterflow or sprinkler supervisory service (refer to Figure 20 on page 37).

Note: The panel has the intelligence to determine the applicable style for Input Circuit #1 based on the wiring configuration used.

Input Wiring Specifications

- Maximum short circuit current = 32 mA.
- Maximum wiring resistance = 100 ohms.
- Maximum wiring capacitance = 1 mF.
- Maximum wire length in feet = 100/ohms per 1 foot of wire.
- Normal standby current = 2.5 mA.
- Operating voltage range = 15.1– 25.4 VDC.

Input Circuit #1 Class A, Style D Wiring Configuration

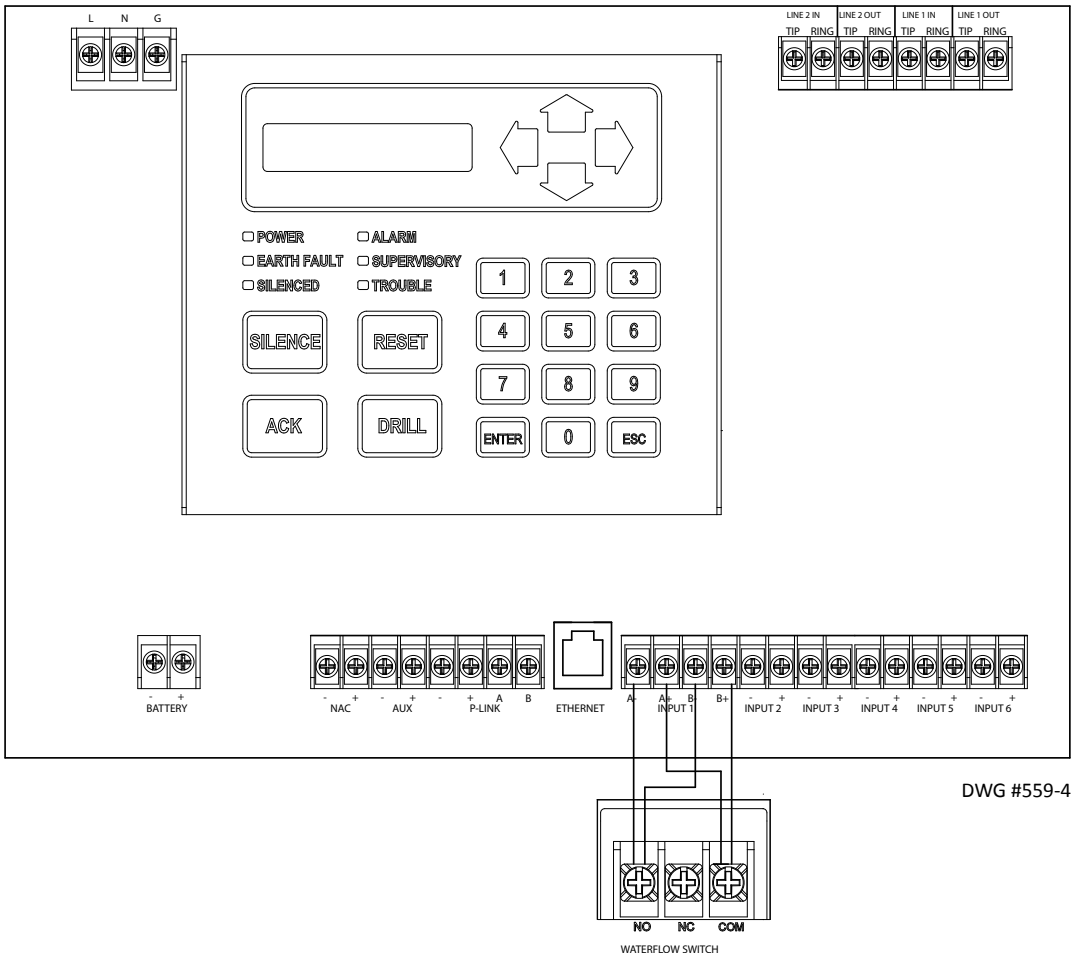


Figure 18. Example of Input 1, Class A, Style D

Notes:

- Input Circuit #1 may be wired as either Class A or Class B.
- All other inputs are Class B only.
- Maximum wiring resistance must not exceed 100 ohms.
- The input has ground fault detection with 0-ohm impedance to ground.
- The EOL resistor assembly is a listed 5.1k ohm resistor.

Input Circuits #1-6 Class B, Style B Wiring Configuration

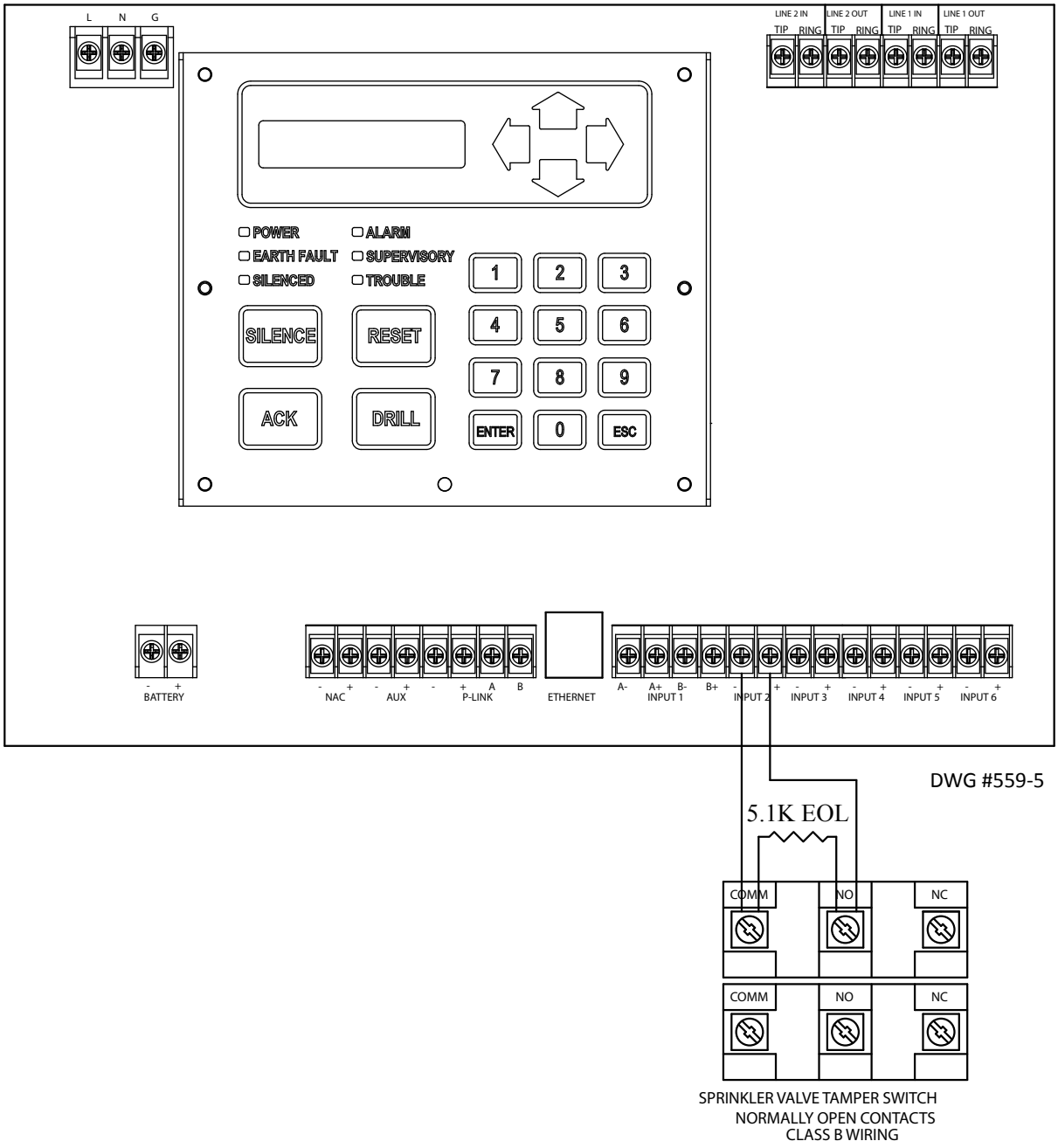


Figure 19. Example of Inputs Wired as Class B, Style B

Notes:

- Maximum wiring resistance must not exceed 100 ohms.
- The input has ground fault detection with 0-ohm impedance to ground.
- The EOL resistor assembly is a listed 5.1k ohm resistor.

Notification Appliance Circuits Installation

There is one NAC circuit provided on the PFC-6006 rated as continuous 0.5A at 24 VDC. The NAC circuit is configurable as Class B, Style Y only. *(Please refer to the wiring example located in this section.)*

NAC Wiring Characteristics

- Output is supervised and regulated.
- Circuit is power limited.
- Normal standby supervisory current is approximately 1.2 mA
- Low current trouble activation is 0.8 mA; high current trouble activation is 1.7 mA.
- Maximum RMS current is 0.5A.

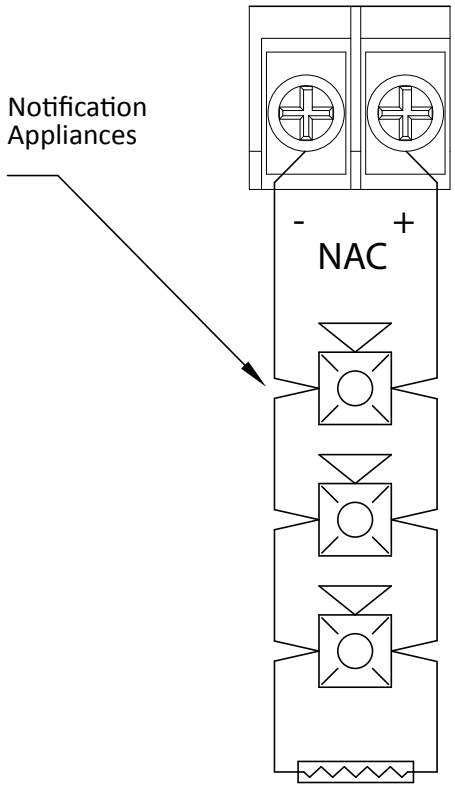
Note: Type of NAC output is selectable, and may be configured for strobe synchronization with Potter/ AMSECO®, Cooper Wheelock®, Gentex®, or System Sensor® strobe points. Refer to the listing of compatible models located in 128"Appendix H. PFC-6006 NAC Compatibility List" on page 128.

NAC Maximum Wiring Impedance Formula

The maximum impedance is a *function* of the *load* placed on the circuit. To calculate the maximum line current impedance, use the following formula:

(Alarm Current of Notification Appliance) x (Wire Resistance) < 1.2 Volts

NAC Wiring Configuration



Note: The resistance of external wiring shall be determined using the following formula:

(Alarm Current of Notification Appliance) x (Wire Resistance) < 1.2 Volts

Potter Part # 3005013 DWG #559-6A

Figure 20. NAC Class B, Style Y Wiring Example

Notes:

- The EOL resistor assembly is a listed 5.1k ohm resistor.
- The panel has ground fault detection on the NAC circuit. The impedance to ground for ground fault detection is 0 ohm.
- The 1.2 volts is based on the worst case loading at the remote end of the NAC circuit (lump sum method). The total drop of 1.2 volts should be measured from the terminals to the most remote device.

P-Link Points

Accessory points, such as the RA-6075 remote annunciator, are connected to the main control panel utilizing the four-wire P-Link bus for power and communication. This panel supports a single P-Link point, which can be connected using a Class B, Style 4 wiring style.

Configuration Characteristics

- P-Link current rating may *not* exceed 0.5A based on the total between auxiliary and P-Link.
- P-Link maximum current is 500 mA.
- P-Link voltage rating is 24 VDC.
- Continuous DC frequency.
- P-Link circuit is supervised and power-limited.

Maximum Wire Resistance Formula (Wire Length)

The maximum resistance is based on the *load* placed on the circuit. To calculate the maximum wire resistance, use the following formula: **(Total Annunciator Alarm Current) x (Wire Resistance) < 6 Volts**

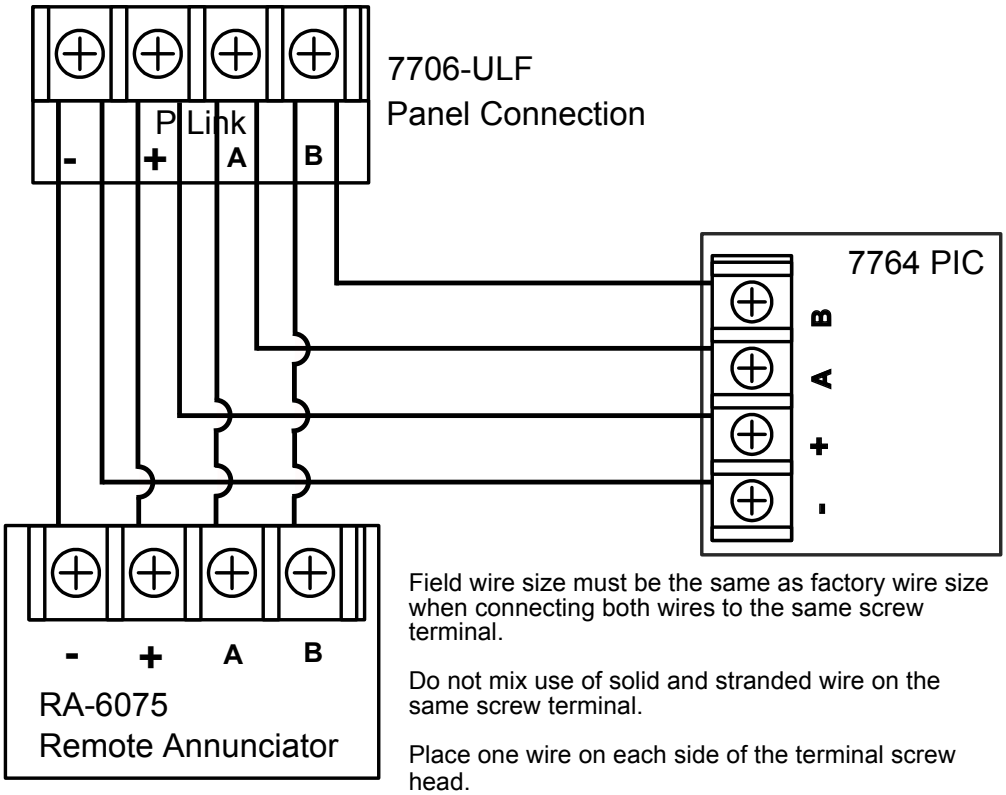


Figure 21. P-Link Device Class B Wiring Example

P-Link Addresses

Every P-Link device has a five-position DIP switch which is used to program the device address. The addresses range from 1–31. See the chart below to reference DIP switch settings:

Annunciator Address	DIP Switch Settings				
	SW-1	SW-2	SW-3	SW-4	SW-5
1	On	Off	Off	Off	Off
2	Off	On	Off	Off	Off
3	On	On	Off	Off	Off
4	Off	Off	On	Off	Off
5	On	Off	On	Off	Off
6	Off	On	On	Off	Off
7	On	On	On	Off	Off
8	Off	Off	Off	On	Off
9	On	Off	Off	On	Off
10	Off	On	Off	On	Off
11	On	On	Off	On	Off
12	Off	Off	On	On	Off
13	On	Off	On	On	Off
14	Off	On	On	On	Off
15	On	On	On	On	Off
16	Off	Off	Off	Off	On

Annunciator Address	DIP Switch Settings				
	SW-1	SW-2	SW-3	SW-4	SW-5
17	On	Off	Off	Off	On
18	Off	On	Off	Off	On
19	On	On	Off	Off	On
20	Off	Off	On	Off	On
21	On	Off	On	Off	On
22	Off	On	On	Off	On
23	On	On	On	Off	On
24	Off	Off	Off	On	On
25	On	Off	Off	On	On
26	Off	On	Off	On	On
27	On	On	Off	On	On
28	Off	Off	On	On	On
29	On	Off	On	On	On
30	Off	On	On	On	On
31	On	On	On	On	On

Remote Annunciators Installation (RA-6075)

One annunciator may be connected to the main sprinkler monitoring panel. The RA-6075 provides a 2 × 16 character LCD display, along with standard function and numeric keys. It is listed and designed to be mounted on a flat noncondensing surface or electrical box.

Setting Addresses

The annunciator's address is set by DIP switch S1, which is located on the back of the annunciator. The address must be set in the range of 1–31 to be recognized by the panel.

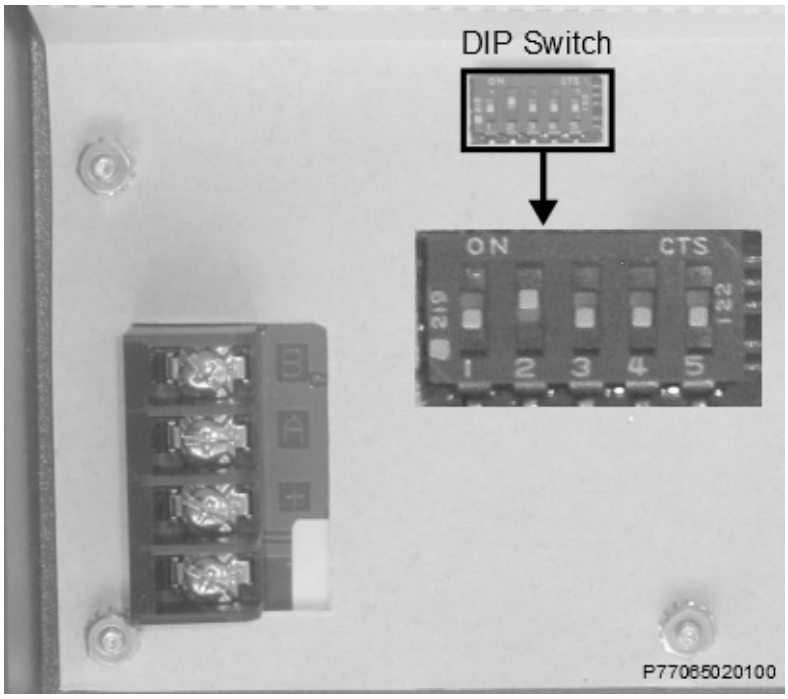


Figure 22. Remote Annunciator Back Panel View

Auxiliary Power

The Auxiliary Power is a 24 VDC output rated at a maximum of 0.5A. The auxiliary power connection is dedicated for use with the AES 7764 PIC and 7788F subscriber and is not programmable. Do not connect auxiliary power to other external devices.

Auxiliary Power Characteristics

- The impedance to ground for ground fault detection is 0 ohm.
- Supervised and power-limited.
- Circuit is provided with battery back-up.
- Special application.

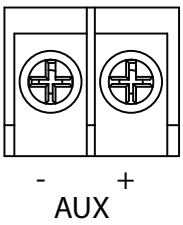


Figure 23. Auxiliary Connections Example

DACT Connection

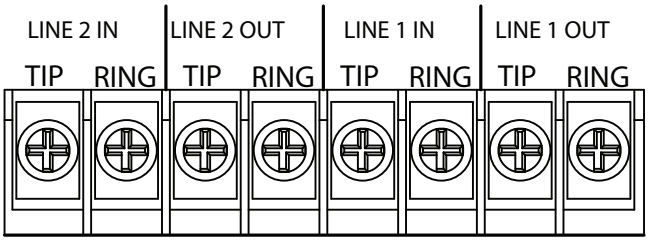
NOTICE

Phone lines are high voltage and should be run in a separate conduit from other circuits. The wire conductors connecting the DACT to the phone system should be 26 AWG or larger.

The Digital Alarm Communicator Transmitter (DACT) provides connections for two phone lines for communication to a monitoring station. The DACT communicates using the SIA-DCS or Ademco Contact ID protocols. The DACT is selectable and fully programmable.

The PFC-6006 automatically monitors each phone line for voltage and has the ability to seize the line and connect with a remote receiver. Once the communication is complete, the DACT will hang up the phone line.

The DACT is provided with a terminal block for each phone line, as shown in the figure below. In order for the DACT to work properly, it must be installed on a plain old telephone service (POTS) or equivalent as deemed by the authority having jurisdiction. The DACT must be installed before any other equipment to ensure it can seize the line and disconnect any other lines.



When the phone lines are connected to the control panel, the phone lines are supervised. The phone lines are non-power limited and should be routed accordingly.

In order for the system to comply with building and fire codes, the DACT is to be connected between the telephone company connection and other appliances serving the building. Failure of the DACT to be the first device on the line will prevent it from seizing the phone line and acquiring dial tone.

Section 6. Control Panel Operation

This section provides an overview of the control panel basic operations, which includes the status LEDs, function keys, and a quick reference sheet for the Control Panel Menu tree. The control panel is used for configuration of the 7788F subscriber and the alarm control panel.

Control Panel Basic Operation

The control panel is comprised of a two-line × 16-character LCD display panel, arrow keys, function keys, status LEDs, and the numeric keypad. A description of each component is included in this section (refer to Figure 24 below).

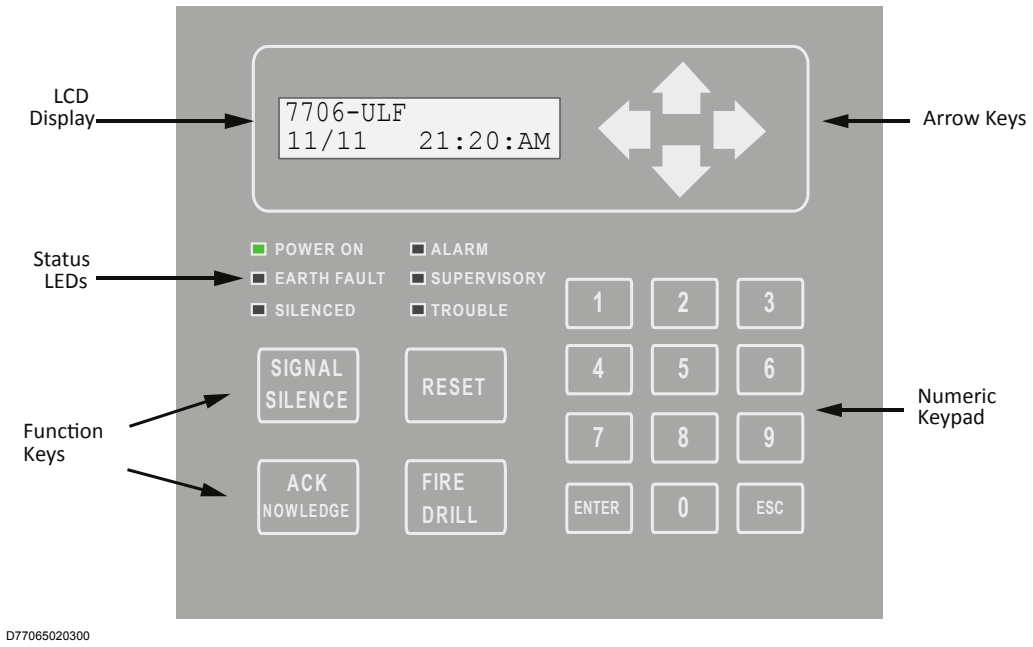


Figure 24. 7706-ULF Control Panel Display

Note: Authorized system operators must use a key to open the outer door of the cabinet.

LCD Display

The LCD panel displays the standard Start-up menu as shown in Figure 25 below. The LCD displays up to 32 characters of information displays, providing important feedback to system users, i.e., system messages, status information, trouble conditions, or input changes. The LCD also provides access to the Main Menu for daily system operations and specific programming functions (refer to 42"Section 6. Control Panel Operation" on page 42 for details on these topics).

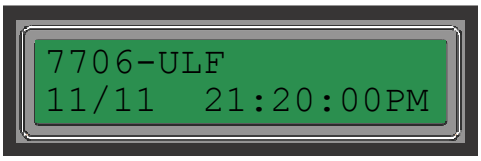


Figure 25. LCD Start-Up Screen

Note: You may customize the Start-up screen to display a specific job site name or other relevant descriptive text.

Menu Navigation Keys

The arrow keys allow you to scroll or move through the control panel menus. The **Enter** and **Esc** keys may also be used to navigate through menus; they are located on the numeric keypad. Table 10 provides a summary of the navigation keys.

Table 10: Menu Navigation Keys

Keys	Description
	Moves/scrolls up or down through menus.
	Scrolls to the left or right to display details, if any, of current menu item. **Note:** When the LCD panel displays a left and/or right arrow, this indicates more information may be viewed.
	Displays the Main Menu or selects the current menu option. **Note:** The blinking "→" indicates the current menu option.
	Returns to previous menu or backs up to previous screen.

Numeric Keypad

The numeric keypad allows you to enter user codes when required to access restricted functions. Alternatively, the numbers may be used to quickly select menu options, rather than using the arrow and **Enter** keys to select a function.



Figure 26. Control Panel Numeric Keypad

Function Keys

The four function keys are used when system alarm/trouble conditions occur or to perform a fire drill. Refer to Table 11 below for a brief summary of the function keys:

Table 11: Control Panel Function Keys

Function Keys	Description
	Press to *acknowledge* the currently displayed condition.
	Press to *silence* all outputs programmed as *silenceable* and buzzer.
	Press to *reset* panel to *normal condition*.
	Press to begin a fire drill.

Status LEDs

The control panel's LEDs communicate system conditions by illuminating and/or flashing the applicable green, red, or amber indicators. These are described in the table below.

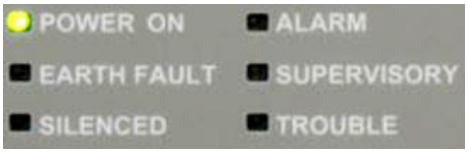


Figure 27. Control Panel Status LEDs

Table 12: Status LEDs

LED Type	LED Color/Action	Description
POWER ON	Steady Green	Power is present. If power is absent for more than 5 seconds, LED will extinguish.
ALARM	Flashing Red	An alarm device is active.
ALARM	Steady Red	An alarm device is acknowledged.
EARTH FAULT	Flashing Amber	A ground fault is present.
SUPERVISORY	Flashing Amber	A supervisory condition is present.
SILENCED	Steady Amber	A fault condition has been silenced.
TROUBLE	Flashing Amber	A fault condition is present.

Control Panel Menu Tree

Figure 28 displays the menu options as they appear on the LCD panel (see also Appendix G for the menu tree).

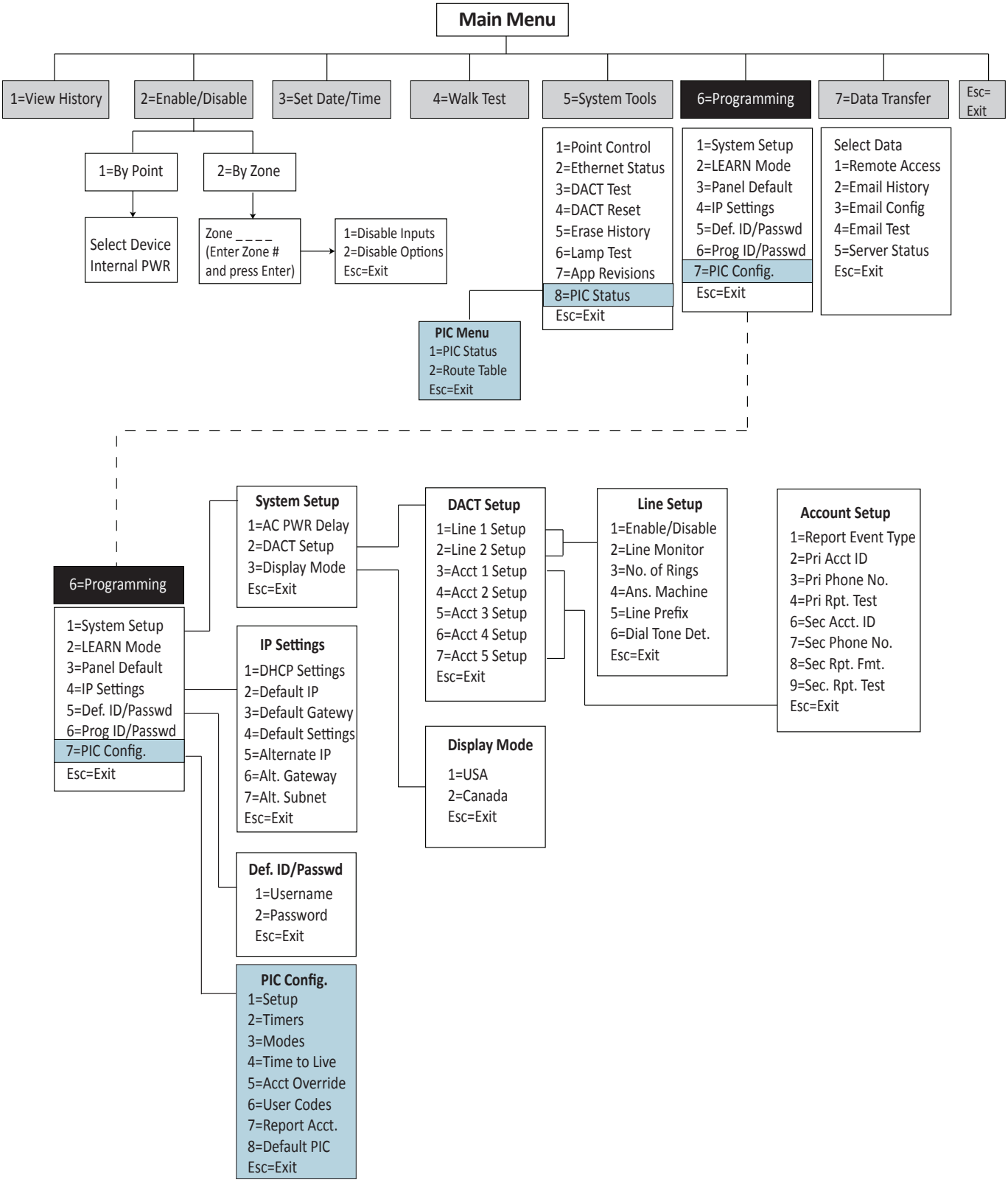


Figure 28. Control Panel Menu Tree

Section 7. Subscriber Specifications

Features

This section is included for those customers familiar with other AES-*IntelliNet* UL Subscriber products. Listed below are the new features utilized with the unit as part of the 7706-ULF System.

- Fail Secure Relay on board relay function is monitored through the 7764 PIC card. Connection to the relay is not required. The status of the 7788F is monitored by the PFC-6006 mainboard.
- Transceiver power PTC is added. It is installed in series with the power line to the transceiver disconnecting power if the transceiver draws too much current.
- Remote AES 7788F subscriber programming using software at the central station is disabled .This is to comply with UL/NFPA requirements.

Optional Accessories

No optional accessories are available with the 7788F used in the 7706-ULF Integrated Fire Monitoring System.

Subscriber Technical Specifications

- Voltage: 12 VDC nominal; power supplied from the PCF-6006 mainboard
- Current: 150 mA standby; 1.2A transmit
- **RESET** button: Located on the PCB
- Transceiver: Standard UHF Frequency Ranges (410-440 MHz, 440-470 MHz, 470-512 MHz)
- Transceiver Fuse: 400 milliamp PTC, not serviceable
- Standard RF Output Power: 2 Watts
- Antenna Cut/Low Battery/Charger Fail Local Reporting: Controlled by the PFC-6006 mainboard

Subscriber Local Trouble Output

- The control panel monitors the 7788F Trouble condition.
- *Do not* connect to the J4 Trouble Output relay terminals.

Subscriber Programming

This section describes the configuration required for a subscriber to join the AES mesh network. Initial subscriber configuration must be performed on factory new units for the subscriber to join and communicate on the network properly.

The subscriber is programmed through the AES 7764 PIC card. The keypad on the control panel display allows navigation of the LCD panel menu options (see 46"Figure 28. Control Panel Menu Tree" on page 46) and the ability to examine and change settings for the 7788F subscriber. Previously programmed information is stored in non-volatile memory, so the settings are not lost during power-down of the 7706-ULF or power failure.

Important! The following 7788F subscriber features are not available in the 7706-ULF System.

- Remote Programming (disabled to comply with UL/NFPA requirements)
- Monitor Transmitter

- Key Transmitter
- Display Zone Status
- Text Messages
- AC Fail, Charger Fault, Ground Fault: Not configurable on the 7788F when used in the 7706-ULF Integrated Fire Monitoring System. AC fail functionality is handled by the mainboard.
- Zone Programming: Zone programming is fixed and cannot be changed for the 7788F when used as part of the 7706-ULF System.

1. Turn on the AC power to the system.
2. Connect the standby batteries with the cable provided to perform programming.

Important! Battery polarity must be observed.

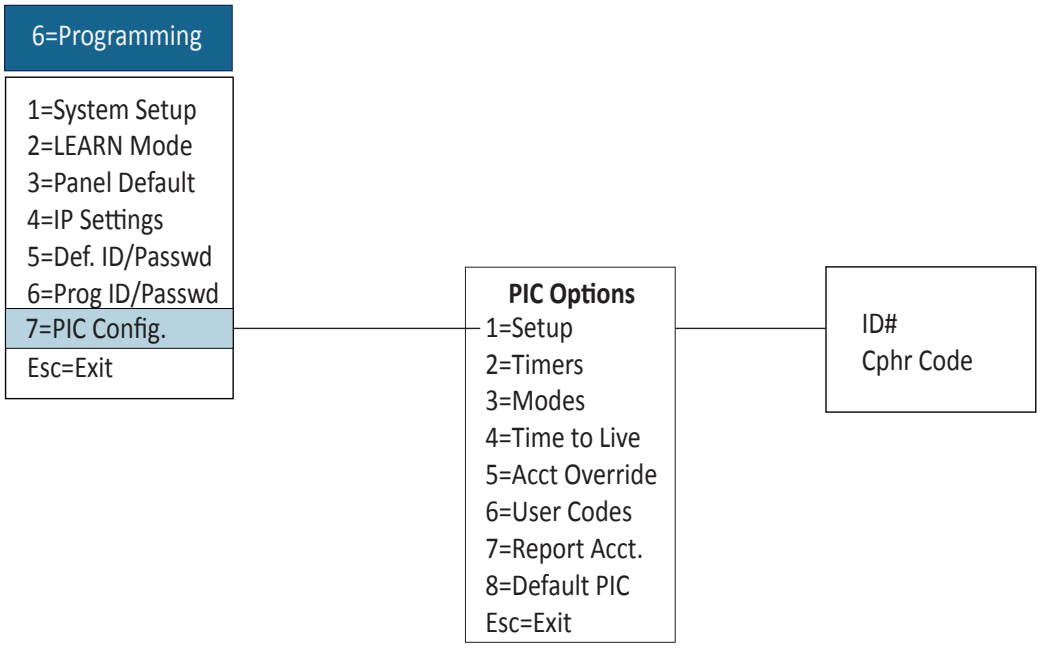
Notes:

- The panel will perform initialization and self-test after power is applied. A series of messages appear in the display.
- The error message `Trb-AES Comm` in the display means the mainboard is unable to communicate with the 7788F subscriber (see "Appendix G. Verifying 7764 PIC Operation and Troubleshooting Steps").

ID # and System Cipher Code

This function programs the unit ID# and the AES system cipher code. Access to view or change is available locally through the mainboard keypad or through the optional Potter Remote Annunciator.

Menu location: Programming > PIC Config > PIC Options > 1=Setup



Notes:

- It is not possible to remotely program the unit ID# or system cipher code through the AES radio network.
- The unit ID# must be unique and different from all other ID#'s in your network.
- Entering new data overwrites (erases) any previously stored ID number and system cipher code.

1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to access the Programming menu. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu:
   - Press **7** to select **PIC Config**.
   - From the PIC Options menu, press **1** to select **Setup**.

   The ID# prompt displays the current ID number. The subscriber ID# is four hexadecimal characters.

5. To change the existing ID#, press the characters of the subscriber ID# on the keypad.

Note: To enter characters A–F, first press the up-arrow key. Then press the keypad number that corresponds to the hexadecimal character as shown in Figure 29.

Keypad Number	1	2	3	4	5	6
Hex Character	A	B	C	D	E	F

Figure 29. Keypad Number to Hexadecimal Character Chart

❖

Example: To enter the ID# `ABCD`:

1. Press the up-arrow key once on the keypad. The word `Shift` appears in the LCD.
2. Press **1**. The letter `A` appears in the ID#.
3. Continue by pressing the up-arrow key and then **2** for **B**.
4. Repeat the up-arrow and number key combination for the remaining characters until the full ID# has been entered.

6. Press **ENTER** after entering the ID#. The `Cphr Code` prompt displays with the current cipher code.

Note: The actual characters of the current cipher code are not shown for security. Instead, four asterisks (****) are displayed.

7. Enter the 4-character hexadecimal cipher code as assigned by the system administrator. The cipher code must match the system cipher code. Only a correct cipher code will allow the subscriber to log on to the network to communicate.

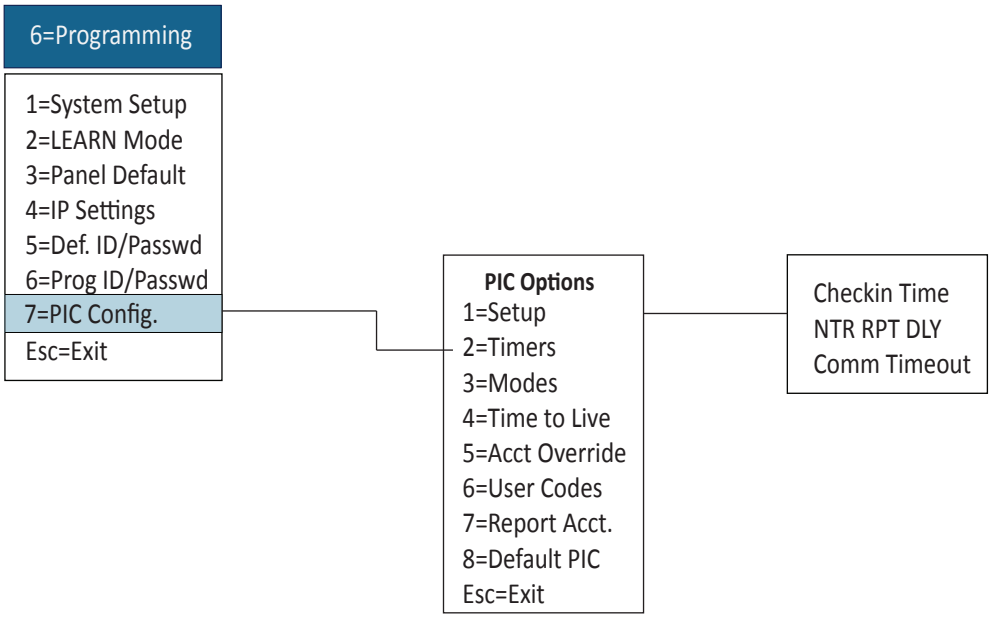
Note: To enter characters A–F, first press the up-arrow key. Then press the keypad number that corresponds to the hexadecimal character as shown in Figure 29.

8. Press **ENTER** after entering the cipher code. The PIC Options display appears. ID# and cipher code programming is complete.

Timing Parameters

This programming function is used to set timing parameters of `Checkin Time`, `NTR RPT DLY`, and `Comm Timeout` for the 7788F.

Menu Location: Programming > PIC Config > PIC Options > 2=Timers



1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to access the Programming menu. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**.
5. At the PIC Options menu, press **2** to select **Timers**. The `Checkin Time` prompt displays with the subscriber check in time value.

Note: Checkin Time default is 23:45 (23 hours and 45 minutes). This is also a recommended setting.

Important! Short intervals between check-in times are a cause of more traffic on the radio network. Carefully consider the effect before implementing a short interval.

6. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.
7. Press the right-arrow key to move the cursor to the minute position.
8. Enter the number of minutes using the numeric keypad. 00 hours, 00 minutes is an illegal entry and will not be accepted.
9. Press **ENTER** after entering the Checkin Time value. The `NTR RPT DLY` prompt displays.

   The Reporting Delay sets the rate at which a subscriber's own signals are transmitted. The initial alarm is sent immediately regardless of setting. Subsequent alarms are sent as specified by the delay setting. The

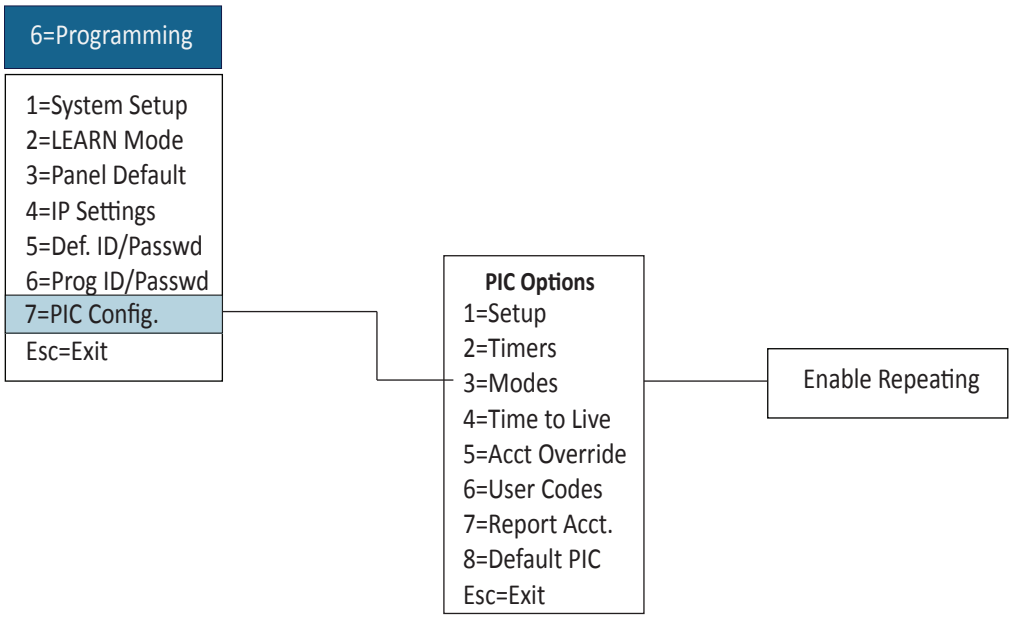
default value and recommended setting is 10 seconds; transmissions are sent at least 10 seconds apart (this helps to meter traffic on the system). The range is 0–80 seconds (no delay, not recommended).

For all commercial fire alarms, the reporting interval must not exceed 20 seconds. After the reporting delay has expired, a new event will not have any delay, and the attempt to send a new message will begin immediately after activation.

10. Enter the number of seconds using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Default Reporting Delay is 10 seconds.
11. Press **ENTER** after entering the delay value. The `Comm Timeout` prompt displays.
12. Enter the number of seconds using the numeric keypad, or press **ENTER** to skip. Valid entries are between 1–120 seconds. The recommended value for this setting is 120 seconds.

Modes

Menu Location: Programming > PIC Config > PIC Options > 3=Modes

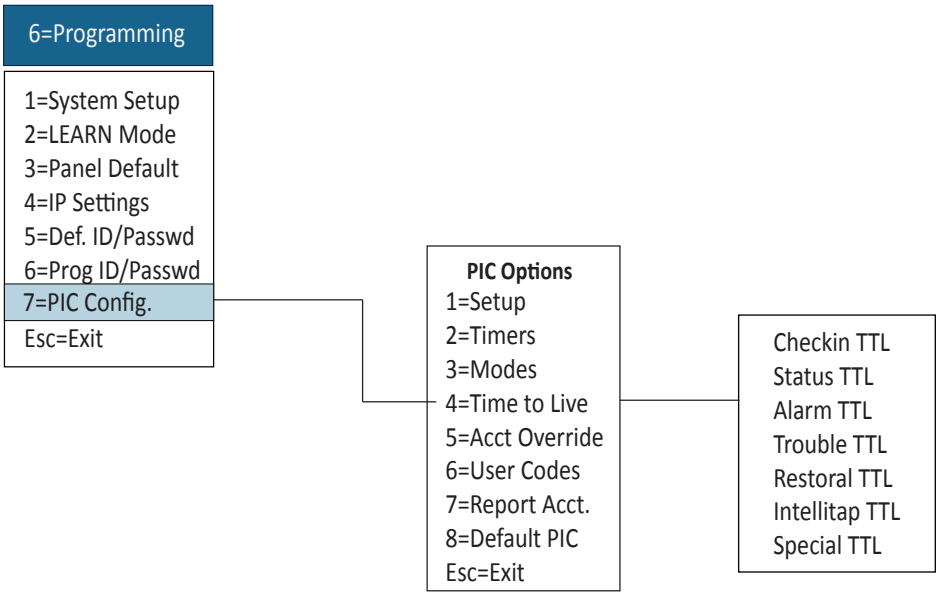


1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to access the Programming menu. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**.
5. At the PIC Options menu, press **3** to select **Modes**. The `Enable Repeating` prompt displays.
6. To accept the default value of Yes, press **ENTER**. To change the value to No, press the left-arrow or right-arrow key, then press **ENTER**.
7. The `3=Mode` prompt displays. Select the next parameter item to configure, or press **ESC** to exit the PIC Options menu.

Time to Live

These settings are for the length of time that a packet message is retried for transmission by the subscriber to the AES mesh network.

Menu Location: Programming > PIC Config > PIC Options > 4=Time to Live



1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to access the Programming menu. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**.
5. At the PIC Options menu, press **4** to select **Time to Live**. The `Checkin TTL` prompt displays.

> **Note:** The Checkin TTL value must be entered in hours and minutes. The Checkin TTL default is 00:10 (0 hours and 10 minutes).

6. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.
7. Press the right-arrow key to move the cursor to the minute position.
8. Enter the number of minutes using the numeric keypad. 00 hours, 00 minutes is an illegal entry and will not be accepted.
9. Press **ENTER** after entering the Checkin TTL value. The `Status TTL` prompt displays.

> **Note:** The Status TTL value must be entered in hours and minutes. The Status TTL default is 00:10 (0 hours and 10 minutes).

10. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.

11. Press the right-arrow key to move cursor to the minute position.
12. Enter the number of minutes using the numeric keypad. 00 hours, 00 minutes is an illegal entry and will not be accepted.
13. Press **ENTER** after entering the Status TTL value. The `Alarm TTL` prompt displays.

> **Note:** The Alarm TTL value must be entered in hours and minutes. The Alarm TTL default is 03:00 (3 hours and 0 minutes)

14. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.
15. Press the right-arrow key to move the cursor to the minute position.
16. Enter the number of minutes using the numeric keypad. 00 hours and 00 minutes is an illegal entry and will not be accepted.
17. Press **ENTER** after entering the Alarm TTL value. The `Trouble TTL` prompt displays.

> **Note:** The Trouble TTL value must be entered in hours and minutes. The Trouble TTL default is 03:00 (3 hours and 0 minutes).

18. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.
19. Press the right-arrow key to move the cursor to the minute position.
20. Enter the number of minutes using the numeric keypad. 00 hours, 00 minutes is an illegal entry and will not be accepted.
21. Press **ENTER** after entering the Trouble TTL value. The `Restoral TTL` prompt displays.

> **Note:** The Restoral TTL value must be entered in hours and minutes. The Restoral TTL default is 03:00 (3 hours and 0 minutes).

22. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.
23. Press the right-arrow key to move the cursor to the minute position.
24. Enter the number of minutes using the numeric keypad. 00 hours, 00 minutes is an illegal entry and will not be accepted.
25. Press **ENTER** after entering the Restoral TTL value. The `IntelliTap TTL` prompt displays.

> **Note:** The IntelliTap value must be entered in hours and minutes. The IntelliTap default is 00:10 (0 hours and 10 minutes)

26. Enter the number of hours using the numeric keypad, or press **ENTER** to skip and go to the next parameter. Valid entries are between 00–24 hours.
27. Press the right-arrow key to move the cursor to the minute position.
28. Enter the number of minutes using the numeric keypad. 00 hours, 00 minutes is an illegal entry and will not be accepted.

29. Press **ENTER** to go to the next parameter. The `Special TTL` prompt displays.

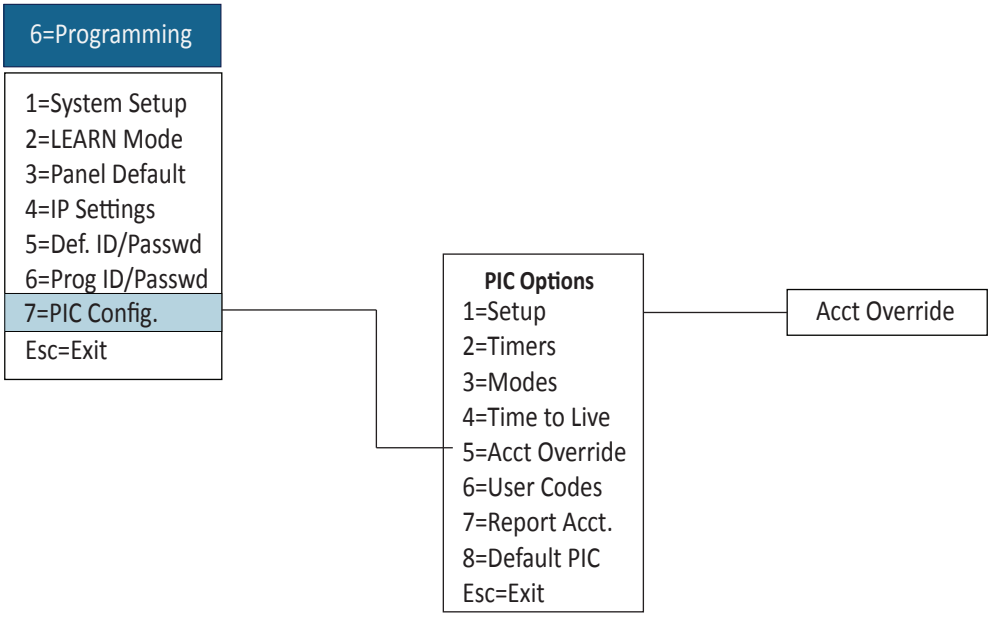
> **Note:** The Special TTL value is not used in this application.

30. Press **ENTER**. The `4=Time to Live` prompt displays. Press **ESC** to exit the PIC Options menu.

Account Override

The Account Override option allows use of the subscriber ID# in place of the FACP identification number.

Menu Location: Programming > PIC Config > PIC Options > 5=Acct Override



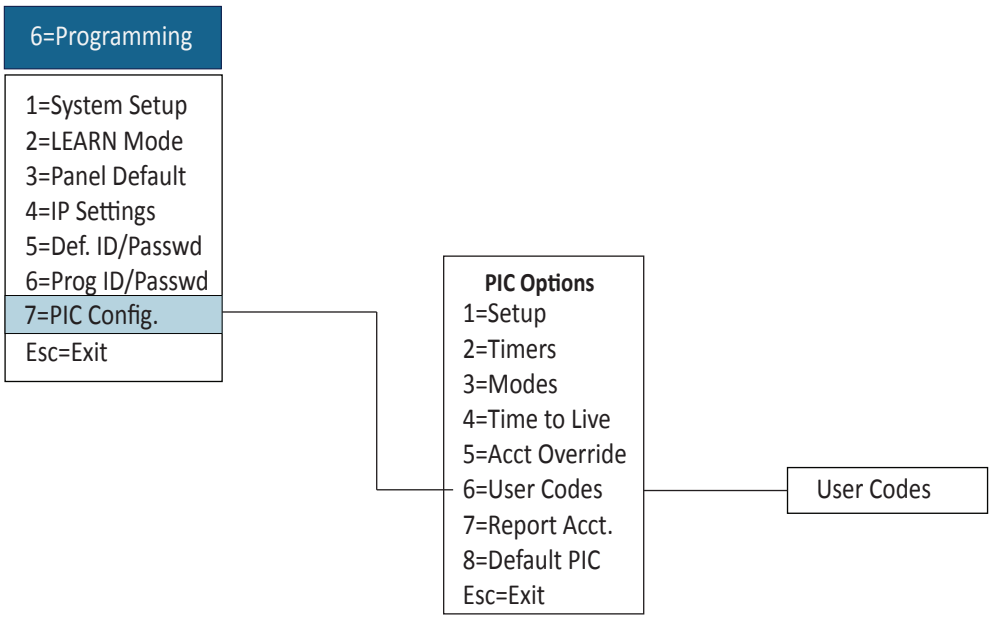
1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to access the Programming menu. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**. The `PIC Options` prompt displays.
5. Press **5** to select **Acct Override**. The `Acct Override` prompt displays.

> **Note:** Acct Override default setting is No.

6. Press the up-arrow key to change the value, or press **ENTER** to skip and go to the next parameter. Press **ESC** to exit the PIC Options menu.

User Codes

Menu Location: Programming > PIC Config > PIC Options > 6=User Codes



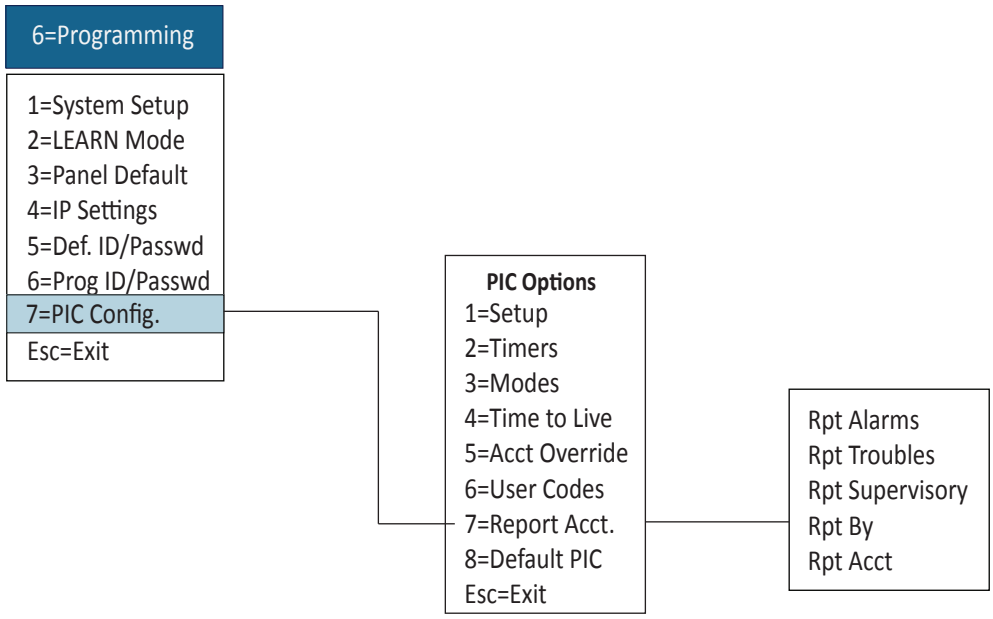
1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to select **Programming**. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**. The `PIC Options` prompt displays.
5. Press **6** to select **User Codes**. The `User Codes` prompt displays.

> **Note:** User Codes default setting is No.

6. Press the up-arrow key to change the value, or press **ENTER** to skip and go to the next parameter.
7. Press **ESC** to exit this menu.

Report Account

Menu Location: Programming > PIC Config > PIC Options > 7=Report Acct



1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to select **Programming**. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**. The `PIC Options` prompt displays.
5. Press **7** to select **Report Acct**. The `Rpt Alarms` prompt displays.

> **Note:** The default setting is Yes.

6. Press the up-arrow key to change the value, then press **ENTER** to go to the next parameter. The `Rpt Troubles` prompt displays.

> **Note:** The default setting is Yes.

7. Press the up-arrow key to change the value, then press **ENTER** to go to the next parameter. The `Rpt Supervisory` prompt displays.

> **Note:** The default setting is Yes.

8. Press the up-arrow key to change the value, then **ESC** to exit, or press **ENTER** to skip and go to the next parameter. The `Rpt Test` prompt displays.

> **Note:** The default setting is Yes.

9. Press the up-arrow key to change the value, then **ESC** to exit, or press **ENTER** to skip and go to the next parameter. The `Report By` prompt displays.

> **Note:** The default setting is Zone.

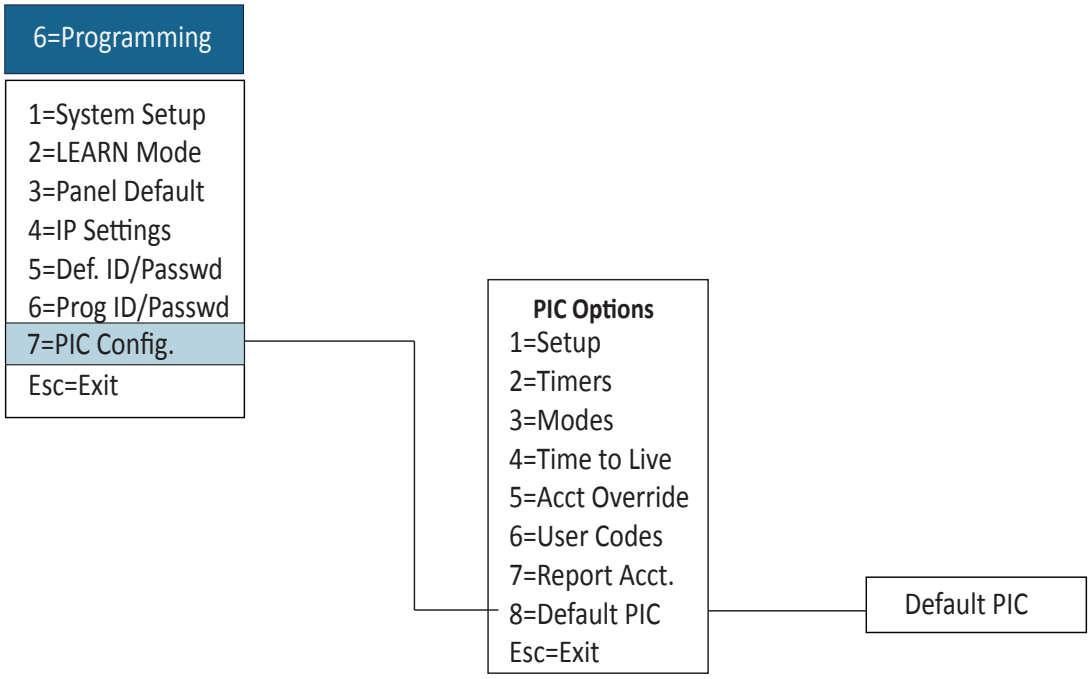
10. Press the up-arrow key to change the value, then **ESC** to exit, or press **ENTER** to skip and go to the next parameter. The `Report Account` prompt displays.

> **Note:** The default setting is 1234.

11. Press the up-arrow key to change the value. The left/right arrow key allows movement between digits to set them. Press **ESC** to exit after entering values, or press **ENTER** to skip and go to the next parameter.
12. Press **ENTER** to return to the Report Acct menu.

Default PIC

Menu Location: Programming > PIC Config > PIC Options > 8=Default PIC



> **Important!** This command functions the same as the 7788F Reset RAM function. It should be used only when a reset to factory settings of subscriber parameters is required. All existing parameters, except **ID#** and **System Cipher Code**, are reset back to factory default values.

1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **6**, then **ENTER**, to select **Programming**. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the Programming menu, press **7** to select **PIC Config**. The `Default PIC` prompt displays.

5. Press **8** to select **Default PIC**. The `Default PIC` prompt displays.

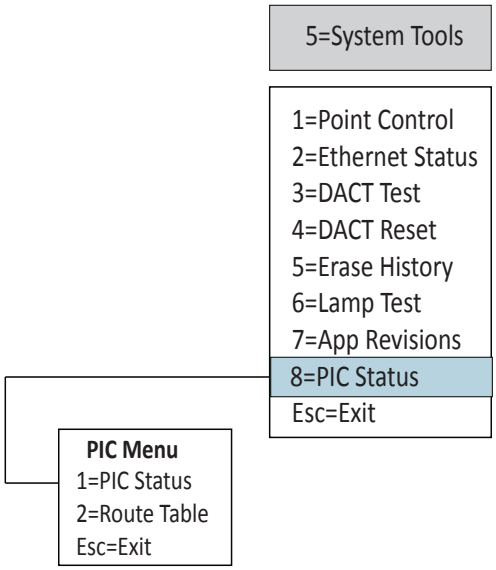
> **Note:** Default PIC setting is No.

6. Press the up-arrow key to change the value to Yes (**Note**: Selecting Yes will reset all parameters back to factory default values), or press **ENTER** to return to the PIC Option menu.

Local Status Check (PIC Status)

This function performs a quick diagnostic check at any time and is shown across a set of four screens.

Menu Location: System Tools > PIC Status > PIC Menu > 1= PIC Status



1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **5**, then **ENTER**, to access the System Tools menu. The `Enter Code` prompt displays.
3. Enter the user access code.
4. At the System Tools menu, press **8** to select **PIC Status**. You are now in the PIC Menu.
5. Press **1** to select **PIC Status**. The `PIC Menu` prompt displays.

Table 13: PIC Menu Screen Displays		
Screen Display	Meaning	Required Action

First screen display:
`Type:SUB`
`X.XXXX 7788F`
	Subscriber Model 7788F – X.XXX is the FW Version Number	Press the down-arrow on the keypad to move to the next screen, or press **ESC** to exit.

Second screen display:
`ID:NNNN`
`Route:NNNN`
	`ID`: 4-digit ID number programmed into this unit.
	`Route`: The ID of the first subscriber or IP Link that will be attempted in route to the central station.
	If the letters `XXXX` appear in the display, then the unit is not on the network.
		Press the down-arrow key on the keypad to move to the next screen, the up-arrow to return to prior screen, or **ESC** to exit.

Third screen display:
`Link Layer:N`
`NetCon:N`
	`Link Layer`: Refers to the subscriber unit "level" or "link layer," which suggests the expected number of "hops" the message packet might make to get to the IP-Link.
	In general, if the number is 1, then this unit is attempting communication directly with the IP-Link. If the number is 2, the unit expects to relay its message through one other subscriber unit to reach the IP-Link. If the number is 3, the message goes through 2 other subscribers ... and so on. Also, the level number of subscriber with a weak signal to the unit on the top of its routing list will be incremented by 1. A unit level = 255 indicates that the unit is not on the network.
	`NetCon`: (NETwork CONnectivity) An internal rating used in the automatic positioning of this unit in the network. The possible values are 5, 6, or 7. A value of 5 indicates there are two or more paths available. A value of 6 indicates there is one path available. A value of 7 may indicate a problem with this unit or a unit in its path to the IP Link.
		Press the down-arrow key on keypad to move to next screen, the up-arrow key to return to prior screen, or **ESC** to exit.

Fourth Screen display: `Status:NNN`	Status: Status shows the subscriber self-test data. Refer to 62"Self-Test Error Codes—Status Error Codes" on page 62 for explanations and resolution.	Press the up-arrow key to return to the prior screen, or **ESC** to exit.

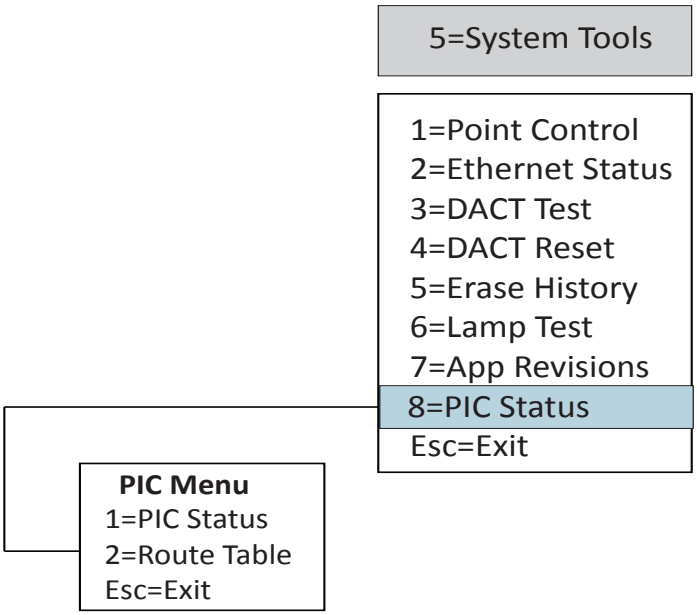
Notes: All Fire Alarm installations require a NetCon value of 5. Minimum criteria for a "good" repeater are as follows:

1. The RF signal exceeds good threshold.
2. No faults are indicated in status (such as low battery).
3. Level/Link Layer of Subscriber/IP-Link is less than or equal to that of this unit.
4. The signal received from the Subscriber/IP-Link occurs at least once every 6 hours.

Display Route Table

Use this function to display the ID#'s listed in this Subscriber's current Routing Table. Up to eight ID numbers may be available for display. A single ID in the Routing Table is displayed in the LCD display.

Menu Location: System Tools > PIC Status > PIC Menu > 2=Route Table



1. From the control panel, press **ENTER** to display the Main Menu.
2. Press **5**, then **ENTER**, to select **Programming**. The `Enter Code` prompt displays.
3. Enter the user access code. The Programming menu will appear.
4. At the Programming menu, press 8 to select **PIC Status**. The `PIC Status` prompt displays.
5. Press **2** to select **Route Table**. The `Route Table` prompt displays.
6. Use the up-arrow/down-arrow keys to move to the next/previous screen.

Fields displayed are as follows:

Preference or sort order [1.- 8.]
ID
L: - Link Layer or Level:##
N: NetCon:# (0-7)
Q: Signal Quality:## (03 = Best , 81 = worst)

Table 14: Routing Table Display Examples	
Screen Display	**Meaning/Definition**
1.AA11 L:00,N:0,Q:03	An IP-Link AA11, top of the list = RT1
2.BB12 L:00,N:0,Q:03	An IP-Link BB12, Good Signal (03)
3.7107 L:01,N:5,Q:03	Unit 7107, Good Signal (03)
4.5678 L:02,N:5,Q:83	Unit 5678, Weak signal (8x)

- Routing Table – A routing table is a list of up to eight IDs that a subscriber maintains for selecting the ID to pass its data packets on through. It is sorted so that the best ID is at Preference location 1. If no Packet Acknowledge is received after attempting transmissions to the #1 ID, then the #1 ID is removed from the table and all other preferences are incremented by 1. Transmission attempts resume using the new Preference 1 ID.
- Link Layer or Level – Link layer as reported by last transmission from ID. The value displayed in the table will be incremented by 1 if the signal quality is not "good" or if faults are reported by the ID. Link layer is the number of hops a data packet would need using the ID as first in the route, assuming all IDs in the route successfully used their Preference 1 IDs as well.
- NetCon – An internal rating used in the automatic positioning of this unit in the network. The possible values are 5, 6, or 7. A value of 5 indicates there are two or more paths available. A value of 6 indicates there is one path available. A value of 7 may indicate a problem with this unit or a unit in its path to the IP Link.
- Signal Quality – The first digit is either an 8 or a 0. 0 means that Carrier Detect (CD) was on during signal reception, while 8 means it was off. CD is related to signal strength where it is on when the strength of the signal is above a certain threshold. The second character is related to readability of the data. A value of 3 is the best, as it indicates that all three of the data repeats were properly read, and a value of 1 is the lowest, as it means that only one of the three was read. Therefore, a good signal would read 03, and a marginal would be 82 or 81.

Self-Test Error Codes—Status Error Codes

A subscriber status error code is displayed in the LCD on the PIC Status screen when the subscriber unit fails the diagnostic self-test. Self-test is performed as part of the power-on sequence of the subscriber.

When an error code appears, press the **Reset** button located on the subscriber board to see if the problem clears (refer to Figure 30 on page 63) for the **Reset** button location. If the error code does not clear, use the procedure below based on the error code that is displayed.

Table 15: Status Error Codes		
Status Error Code	**Error Code Description**	**Procedure**
001	Battery power is low	Check the battery. Press the subscriber **RESET** button.
002	RAM Checksum Failure	Press the **RESET** button. See note below.
003	Problems 01 and 02 above	
004, 006	EEPROM Failure	Press the **RESET** button. See note below.
008	Analog Digital Converter/ADC Failure	Same as 004/006 failure. See the procedure above for 004/006.

Table 15: Status Error Codes		
Status Error Code	**Error Code Description**	**Procedure**
080	Loopback Test Failure	Press the **RESET** button. Unit will likely pass self-test when this is done. See note below.
100	AC Not Present	Check AC power input and transformer.
200	Battery Charge Fail	Unit may need servicing.
300	Combination of error code problems 100 and 200	Unit powered up by battery alone. If true, you may continue.
400	Ground Fault	Ground Fault condition exists on a G terminal of the Zone input section.
Other error code displayed.	Error code is result of multiple error code numbers added together.	Error code of 084 indicates a loopback failure and EEPROM fail (080+004). AC fail and low battery would report error code 101. This example and other messages may indicate that the unit requires AES authorized servicing. See note below.

Note: If unit passes, it must now be reprogrammed (see "Subscriber Programming"). If unit repeatedly fails the self-test with a message unrelated to AC fail or low battery, service may be required.

If you are utilizing the assistance of AES Support, please report the error code to the AES service staff.

As a general rule, if the self-test fail is not related to low battery, AC, battery charger, or ground fault, then verify that any ICs installed in sockets are properly seated. If the fault is still present, the subscriber will need to be returned to AES for service.

Status Indicators and Subscriber Reset Button

Four LED indicators are located on the circuit board of the 7788F. The LEDs are located near the top edge of the circuit board next to the J1/Programmer connector and the **Reset** button. The indicators are visible in the cabinet on the right side of the mainboard panel. The photograph in Figure 30 shows the location of the LEDs and **Reset** switch

(Figure 31 shows a graphic representation of the Subscriber Status Indicator LEDs and **Reset** button).

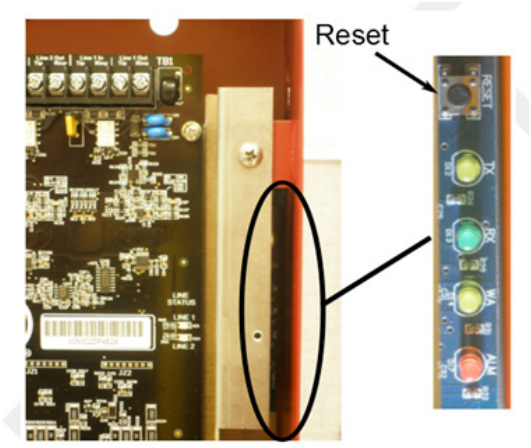


Figure 30. Subscriber Status Indicator LED and Reset Button Location

The function of each LED indicator is described below:

Table 16: LED Indicators

LED	Color	Function
TX	Yellow	Illuminated indicates radio transmit.
RX	Green	Illuminated indicates radio transceiver receiving RF signal. Steady on for 20 seconds or more indicates RF interference (includes any radio activity on this frequency strong enough to break squelch).
WA	Yellow	Steady On = Waiting for acknowledgment of last transmission Steady Blinking = Not on Network; Off = Normal
ALM	Red	Status/troubleshooting indicator; see Figure 20 for interpretation of blink patterns.

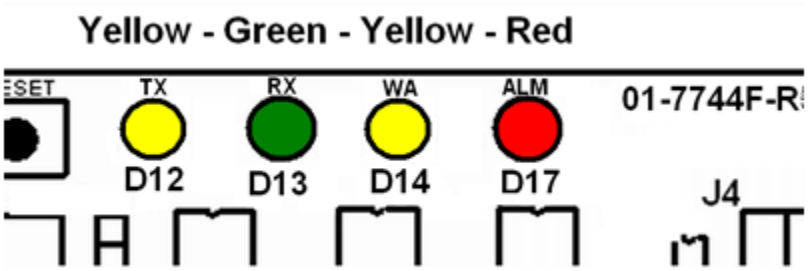


Figure 31. LED Indicators

Table 17 shows the various blink patterns utilized by the ALM LED and the status conditions indicated by the blink pattern.

Table 17: ALM LED Blink Patterns

Blink Pattern | 1 sec. |	Meaning
● ● ●	Steady blink – system OK
●● ●● ●●	Short-short blink – low battery
● — ● — ● —	Short-long blink – an input zone is in alarm or trouble
●● — ●● — ●● —	Short-short-long blink, low battery and zone in alarm/trouble
————————	Steady/no blink – Self-test failure (excluding low battery)
Symbols as follows:	"●" = short blink, " — " = long blink Period between patterns is about 1 second with chart showing pattern repeated 3 times.

Test for expected signals arrival at the monitoring system. Perform the tests below and confirm that the monitoring system and personnel received the correct messages and understand what they mean.

Section 8. Control Panel Programming

This section addresses programming options and their parameters, provides an overview of the programming process, and addresses how to use the two programming methods: (1) the LEARN function and (2) the remote computer programming process. The LEARN function allows the addition and removal of remote annunciators.

This section also includes procedures on uploading and downloading configuration data using the panel configuration software. Please refer to this section to learn how to navigate within the software, access and modify programming settings, such as the system clock, displaying events, and programming optional remote annunciators or the IP Communicator, if installed.

Programming Options

NOTICE

To users, installers, authorities having jurisdiction, and other involved parties: This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.

Table 18: Programming Options

Topic	Feature or Option	Permitted in UL (Y/N)	Possible Settings	Setting(s) Permitted in UL864?	Comment
Misc	Idle LCD Message	Y	Yes/No	All settings allowed	
Misc	Display Events	Y	Initial Event Newest Event	Initial Event	Auto display of first event
Misc	Waterflow Delay	Y	0–255 seconds	0–90 seconds	
Misc	AC Report Delay	Y	0–30 hours	1–3 hours	For UL864, use 1–3 hours
Misc	DH Low AC Dropout Delay	Y	No delay, 15 seconds, 1 minute, 5 minutes	All settings allowed	
Misc	Auto Test Time	Y	Time of Day	All settings allowed	
Misc	Strobes Active When Silenced	Y	Yes/No	All settings allowed	
Misc	Display AM/PM	Y	AM/PM, 24 hour	All settings allowed	
Misc	Time Zone	Y	24 Time Zone Selections	All settings allowed	
Misc	DST Enabled	Y	Yes/No	All settings allowed	
Misc	DST Start	Y	Month/Day	All settings allowed	
Misc	DST End	Y	Month/Day	All settings allowed	

Table 18: Programming Options

Topic	Feature or Option	Permitted in UL (Y/N)	Possible Settings	Setting(s) Permitted in UL864?	Comment
Zone	Zone Style	Y	Alarm Supervisory Auxiliary Fire Drill System Alarm System Supervisory System Trouble	All settings allowed	
Zone	Silenceable	Y	Yes/No	All settings allowed	
Zone	Silence Inhibit	Y	Yes/No	All settings allowed	
Zone	Auto Silence	Y	Yes/No	All settings allowed	
Zone	Auto Unsilence	Y	Yes/No	All settings allowed	
Zone	Restore Delay	Y	0–300 seconds	Full range allowed	
Zone	Latching	Y	Yes/No	All settings allowed	
Zone	Local	Y	Yes/No	All settings allowed	
Zone	Output Pattern	Y	Constant ANSI Temp 3 March Code Double Time		
Input Point	Dry Contact Input Functions	Y	Water Flow, Pull Station, Supervisory, Tamper, Fire Drill, Trouble Monitor, General Alarm, Conventional Smoke, Conventional Heat	All settings allowed	Applies to all input points and circuits.
Input Point	Supervisory	Y	Yes/No	All settings allowed	
NAC	Function	Y	Potter/AMSECO Sync Gentex Sync System Sensor Sync Wheelock Sync General Purpose	All settings allowed	Specifies use of NAC circuit
Subscriber	Daily Test Call	Y	Any time of day	All settings allowed	
On-Board DACT	Daily Test Call	Y	Any time of day	All settings allowed	Alternates between lines 1 and 2 if line 2 is enabled.

Table 18: Programming Options					
Topic	**Feature or Option**	**Permitted in UL (Y/N)**	**Possible Settings**	**Setting(s) Permitted in UL864?**	**Comment**
Subscriber	Control Panel Daily Test Call	Y	Any time of day	All settings allowed	
Subscriber	Reporting Delay	Y	0–80 seconds	10–20 seconds	
Subscriber	Enable Repeating	Y	Y/N	Y	
E-Mail	E-mail Status Reports	N	Alarms, Troubles, Supervisory Test & History		
IP-Dialer	IP-Based Central Station Reporting	Y	None/Primary/ Secondary	Reporting Method Priority: None/ Primary/Secondary	
AUX	Function	Y	Constant*	Y	* Default, fixed setting. AUX output is dedicated and unavailable for external accessory use.
PIC Config	Modes	Y	Y/N	Y	
Programming	Display	Y	USA/Canada	USA	

Programming Overview

Note: The configuration software below refers to the PFC-6006 which is the control panel portion of the 7706-ULF Integrated Fire Monitoring System.

The LEARN function, available through the control panel, is an efficient way to automatically configure remote annunciators. LEARN detects all connected P-Link devices, assigns a name, and selects the applicable device type.

The panel configuration software allows custom programming and configuration for all points via a network or remote computer. At the click of a mouse, you may fine-tune device behavior characteristics or create mapping zones for a more sophisticated fire protection system. By using the system software, you will realize the power and flexibility of the PFC-6006 system. *(*Refer to 81"Panel Software Overview" on page 81 and 95"Mapping Zones Overview" on page 95 for details on these procedures.*)*

The Programming Cycle

The following approach is recommended for programming the system, if not using the default setup:

1. Install software.
2. Connect Ethernet cable.
3. Upload data to the computer.
4. Program the system.
5. Download configuration file.

Note: This approach may eliminate programming errors; however, these are only recommendations.

Software Installation

It's easy to install the PFC-6006 software and requires only a few minutes to complete. Once done, the program automatically creates a shortcut icon on your desktop for easy access.

The system software is compatible with Windows XP, Windows Vista, and Windows 7 Operating Systems, and it incorporates conventional shortcuts and features (i.e., right-click to display shortcut menus, drag and drop, etc.). The software's flexibility enables you to effectively program individual and/or groups of points. Several examples in configuring a basic fire system are provided in 95"System Programming" on page 95.

Note: The latest version of Microsoft .NET Framework is required.

To install the software:

- Access the Potter website at http://www.pottersignal.com and locate the appropriate link to begin the software download.
- The default installation directory is C:\ProgramFiles\Potter\Potter Fire Panel Programmer.
- You may change the location of the application files.

LEARN Programming

The LEARN mode enables you to efficiently configure all connected, addressed remote annunciators. Only authorized users may access this function. LEARN generates a list of all remote annunciators, which may be viewed on a remote computer. (Refer to 101"Configuring Points" on page 101 and 95"Mapping Zones Overview" on page 95 for details.)

To run the LEARN mode:

1. From the control panel, press **Enter** to display the Main Menu.
   - Press **6** to select **Programming.** The `Enter Code` prompt displays.
   - Enter the user code as prompted.
   - Press **2** to select **LEARN**. The `P-Link Initializing` prompt displays, and the system begins the initialization process.

2. Results are grouped by device type. If no changes are detected, the prompt `No changes` displays.
   - Use the down-arrow key to scroll through the results by device type:

     1=P-Link Found

     2=P-Link Removed

     Esc=Exit
   - Select **Esc** when finished reviewing results. The system prompts to save or discard file.
3. Press **1** to save changes; press **2** to discard changes.
   - If option **1** is selected, the `Accept confirmation` prompt displays.
   - Press **Enter** to accept or **Esc** to discard.
4. Press **Esc** to exit the Programming menu.

Connecting the Computer and Panel

This section provides instructions on setting up connectivity between a laptop or networked computer and the control panel. Once this is achieved, you may program your system using the panel configuration software.

Note: These instructions are relevant to all system configurations. If your PC connects directly to the panel, any procedural differences are noted throughout.

Connecting a Computer to the Panel via a Network

1. Connect the cable to the Ethernet port on the network (or directly to the panel if not using a network)**.**
2. Connect the Ethernet cable to the port as shown in Figure 32 on page 69.

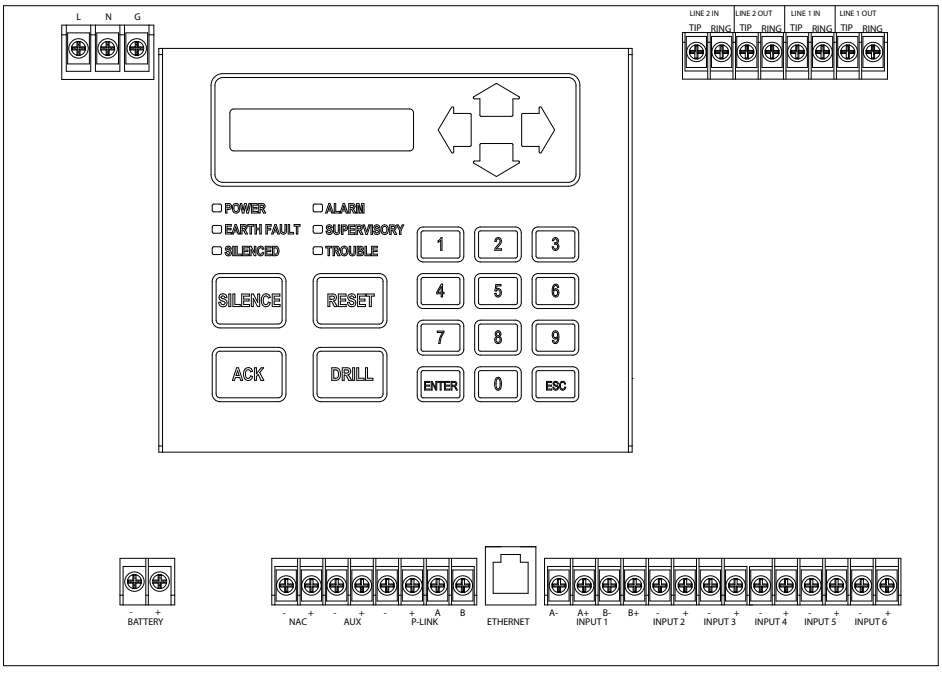
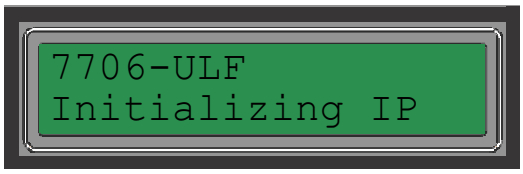
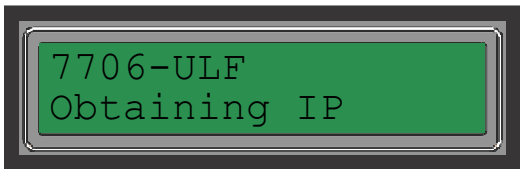


Figure 32. Control Panel Showing Ethernet Port

The following series of messages display on the LCD:





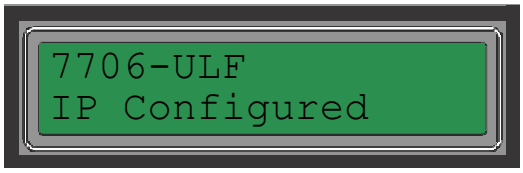
Notes:

- If the Ethernet cable is connected to a PC, you will see the `Initializing IP` message prior to the `Obtaining IP` message.
- If your PC is connected directly to the panel, the `Obtaining IP` message displays for approximately 45 seconds, followed by the `Private IP` message (the `Private IP` message is not shown here).



Note: The number `10.0.5.27` shown above represents an example of a panel's IP address or identifier used for illustration purposes only. The panel's IP address is unique to each computer/network. Write down the IP address; it is required to transfer programming data between the panel and the computer.

3. The `IP configured` and `IP address` prompts alternatively display until configuration is completed.



Note: If Ethernet connectivity is lost, the message `Ethernet Lost` displays on the panel. This indicates that the Ethernet cable is disconnected at the panel or network (computer) port.

Transferring Data

This section provides step-by-step instructions for uploading and downloading data transfers. The transfer icons are located at the top of the Programmer window and are briefly described below.

Table 19: Transfer Functions

Icons	Description
	Downloads configuration file from the computer to the panel.
	Uploads the configuration file from the panel to the computer.
	Uploads the history events file from the panel to the computer.
	Prints the selected file.

The Transfers region is located at the bottom of the Programmer window and lists all completed transfers. This area displays transfer details, including the date and time. You may also access the Transfer shortcut menu from this location to select any of the transfer functions.

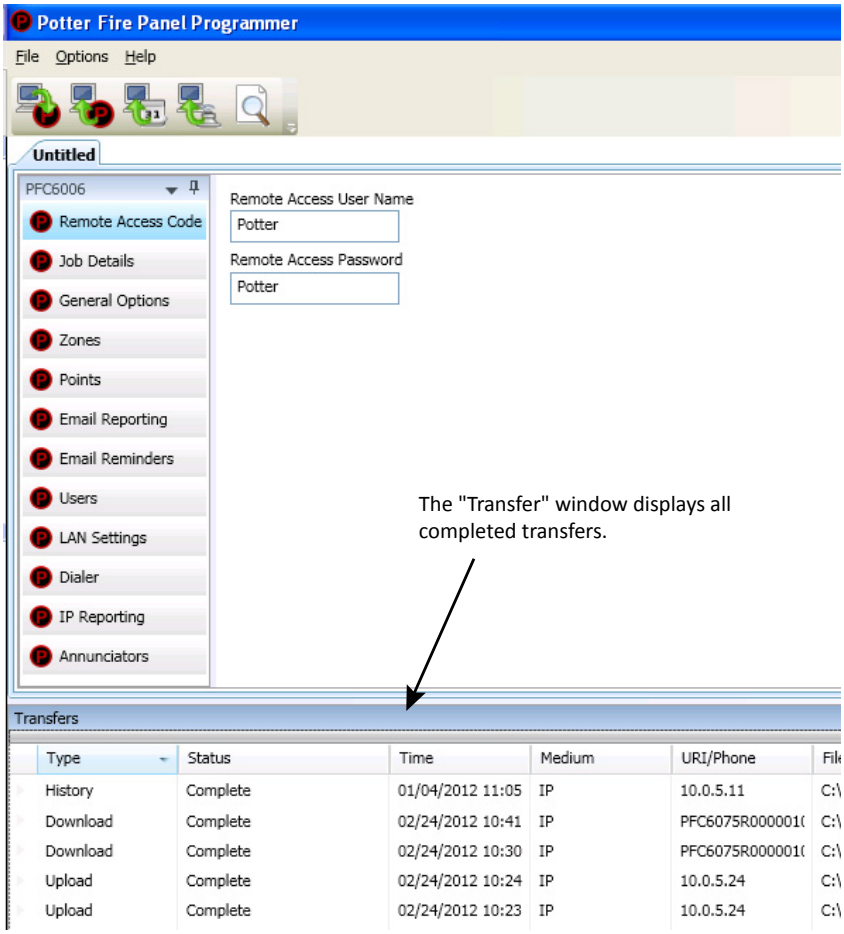


Figure 33. Example of Programming Window Showing Transfer Icons and Transfer Section

Note: Double-click anywhere on the transfer record to view details.

Uploading from Panel to Computer

The **Upload Configuration File to Computer** transfer icon is used to upload the configuration file from the panel to the computer once the LEARN function is completed or whenever points are added to or removed from the panel.

To upload programming changes to computer:

1. Click the **Upload Configuration File to Computer** icon or right-click from the Transfers region as shown Figure 34:

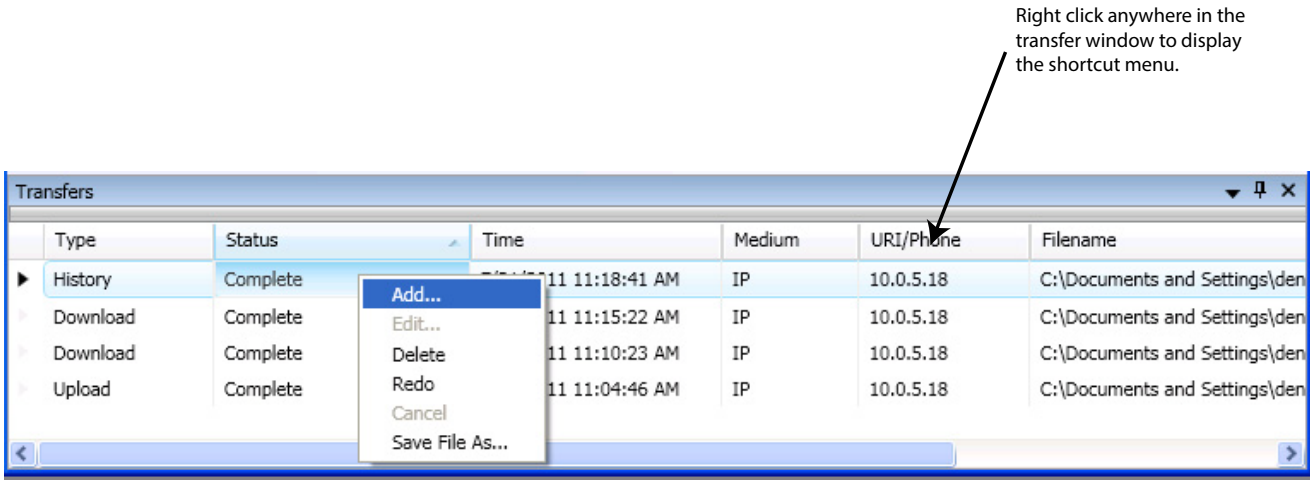


Figure 34. Example of Transfer Shortcut Menu

2. Click the **Add** option from the shortcut menu to choose the transfer type.

   The Transfer dialog box displays.

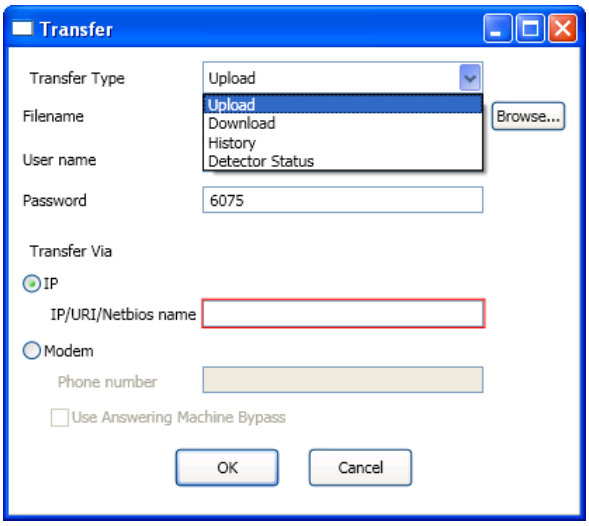


Figure 35. Example of Transfer Upload Dialog Box

3. Verify that **Upload** is selected in the Transfer Type field.

4. Enter the configuration filename in the Filename field or leave blank to autoname.

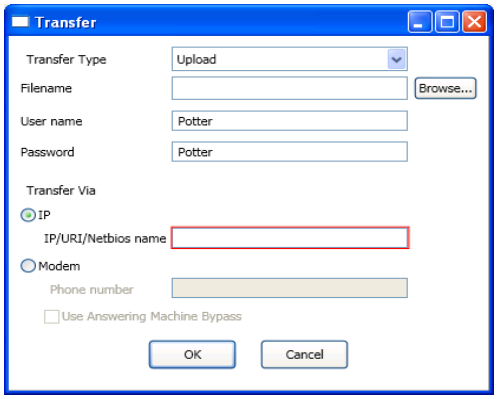


Figure 36. Example of Transfer – Upload Window

Notes:

- If you do not name the file, the program automatically names it using the transfer type and date stamp as the file name.
- Once the file has been saved, and additional programming changes are made at a later date, click the **Browse** button to locate the file name to replace the old file with the updated configuration changes.

5. Enter the IP address or panel name in the Transfer Via IP field.

Notes:

- To capture your panel's unique IP address, disconnect the Ethernet cable from the panel. The message `Ethernet Lost` displays, indicating connectivity is lost. Be prepared to write down the address, and reconnect the cable.

6. Click **OK.** The **Transfers** region displays the uploaded file.



Figure 37. Example of Transfers Download Results

- Double-click the transfer file to display results.
- All points detected during the LEARN process have been uploaded to the panel configuration software.

Note:

- Details on viewing and configuring points are addressed in detail in 101"Configuring Points" on page 101.

Downloading Configuration File to Panel

The **Download Configuration File to Panel** icon allows you to copy all programming changes to the panel.

Notes:

- Be sure to "Enable Remote Access" (as shown below) at the panel before choosing this option. If your PC is directly connected to the panel versus a network, this step is not necessary.
- Verify that the remote user name and password match the panel's user name and password. You will receive an error message when attempting to download data to the panel if they do not match.

Enable Remote Access

To enable remote access:

1. At the control panel, press **ENTER** to display the Main Menu.
2. Press **7** to select **Data Transfer**.
3. The `Enter Code` prompt displays. Enter the user code to continue.
4. The `Select Data option` displays. Press **1** to select **Remote Access.**
5. Press **ESC** to return to the Main Menu.

Note: Once enabled, the remote access will time out after 30 minutes if contact is not established.

File New

The **File New** menu option is used to complete *all* programming from scratch on the computer. You must select the correct panel model prior to programming.

Note: It is imperative that you choose the correct panel model *prior* to programming or completing any data transfers; otherwise, you cannot complete a successful download to the panel. If this occurs, you will have to reprogram the entire panel.

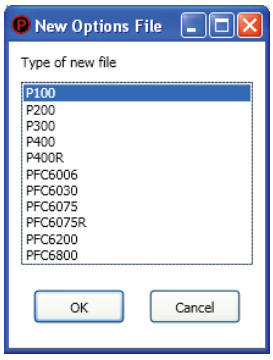


Figure 38. Example of File New Dialog Box

File Save / Save As

Once programming has been completed, save your configuration file using either the File > Save or File > Save As function. An audit is performed that checks for rule violations; if errors are encountered, you may choose to either save with errors or cancel the save operation.

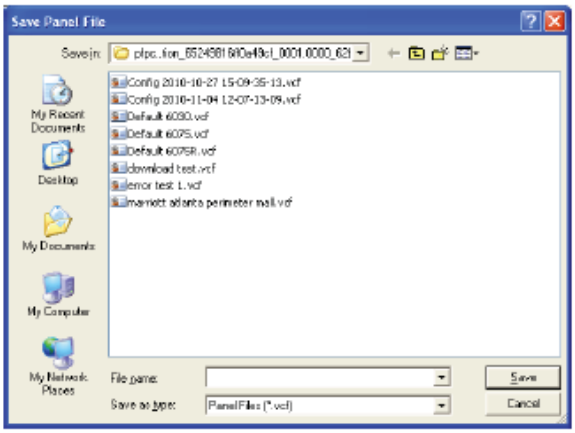


Figure 39. Example of Save Panel Dialog Box

Notes:

- All site-specific configuration data is stored in the panel's non-volatile memory.
- The next time you make programming changes, you may overwrite the original configuration file with changes. If you choose to do this, you will lose the original programming report information.
- The panel configuration file has a .fpcf file extension.

Audit Errors

The Audit Error - Save anyway? dialog box displays if programming errors are encountered when saving the configuration file. You may choose to save the file with errors; however, you cannot download the data until all errors have been corrected.

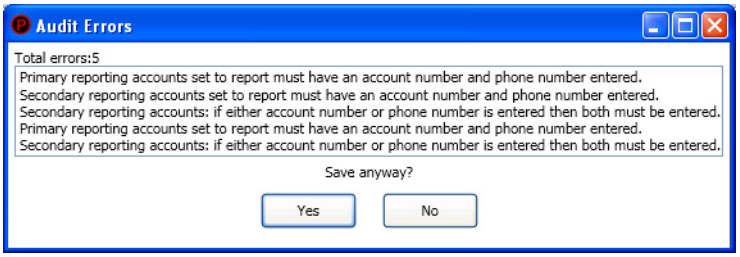


Figure 40. Example of the "Save anyway?" Dialog Box

Downloading a Configuration File

To download the configuration file:

1. Click the **Download Configuration File to Panel** icon  or right-click from the Transfers region, then click **Add**.

   The Transfer dialog box displays.

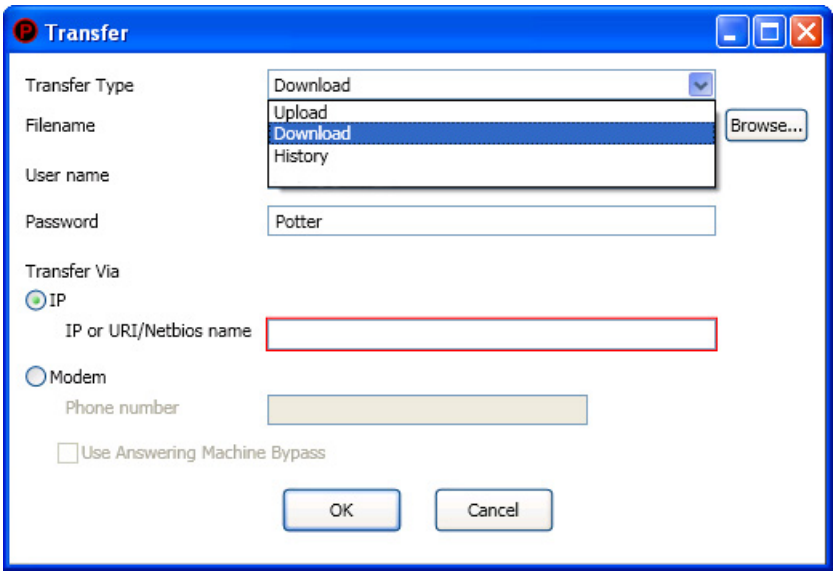


Figure 41. Example of Transfer – Download Dialog Box

2. Verify that **Download** is selected in the Transfer Type field.
3. Enter the file name in the Filename field or click the **Browse** button to select the file name.
4. Enter the IP address in the IP field (under Transfer Via).

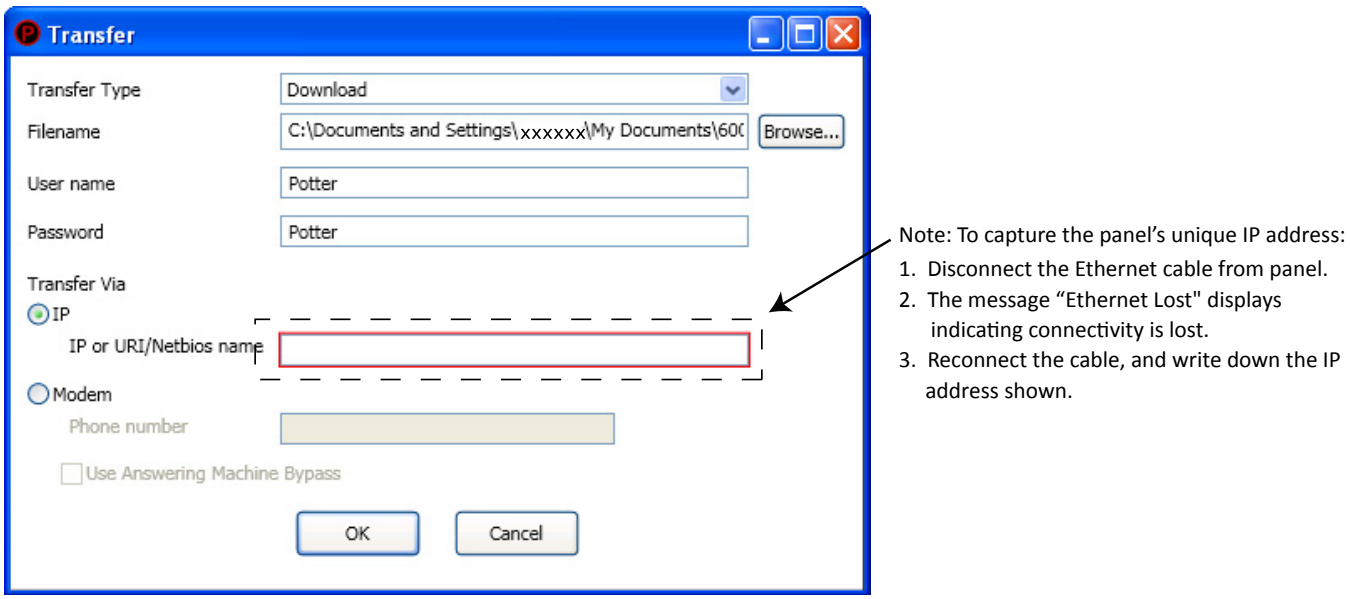


Figure 42. Transfer—Download Dialog Box

5. Click **OK**. The Transfers window displays the transfer progress.

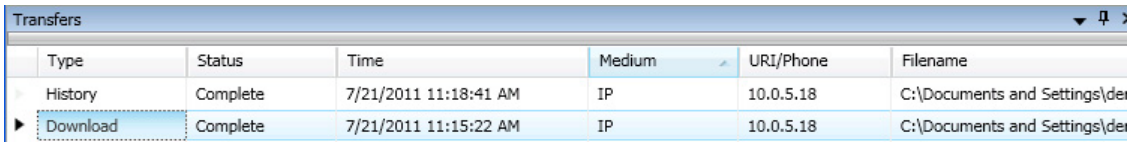


Figure 43. Example of Transfers Window Showing Download Completed

Uploading History Events Status Reports

The **Upload History File to Computer** icon allows you to view valuable information that can be essential when analyzing system operations. You may choose to print the History reports by using the **Print** icon; reports can be scheduled to be automatically sent to authorized e-mail addresses. Refer to "System E-mail Functions" on page 86 for details on programming this e-mail reporting option.

History Reports

The **Event History** transfer option creates a report of all events held in the panel's buffer. Up to 1,000 events are held in the buffer at one time. This information may be used to troubleshoot errors or to assess ways to improve the system configuration.

To transfer event history information:

1. Click the **Upload History File to Computer** icon  or right-click from the Transfers area, and click **Add**. The Transfer dialog box displays.
2. Verify that **History** is selected in the Transfer Type field, and click **OK** to display the results.

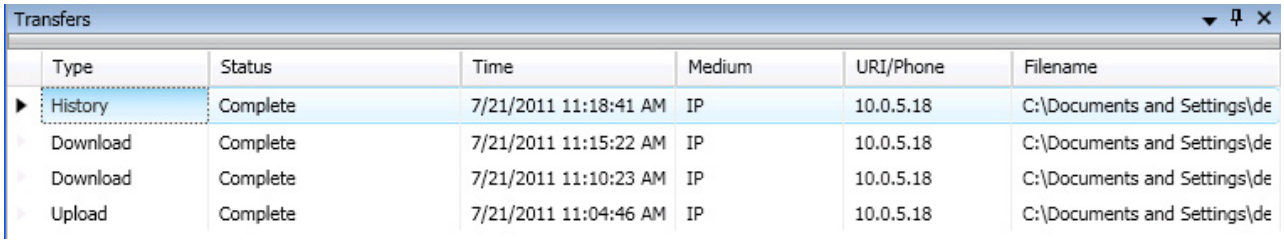


Figure 44. Transfer Window Results

3. Double-click file to view results.

Date/Time	Event
08/01/2011 02:00:00 AM	System Auto Test Normal
07/31/2011 02:00:00 AM	System Auto Test Normal
07/30/2011 02:00:00 AM	System Auto Test Normal
07/29/2011 02:00:00 AM	System Auto Test Normal
07/28/2011 02:00:00 AM	System Auto Test Normal
07/27/2011 02:00:00 AM	System Auto Test Normal

Figure 45. Example of Transfer Results Window

Note: Click the **Print**  icon to print a copy of the report. Refer to "" on page 78 for more details.

4. Click the c**lose** button to close the report.

Note: Refer to "Receiving E-mail Status Reports" on page 92 for a sample of a History Events Report sent via e-mail.

Printing Reports

The **Print** icon allows you to print History reports. Double-click the History file listed in the Transfer window prior to clicking the **Print** icon. An example of the Report window, which displays a History report, is shown below:

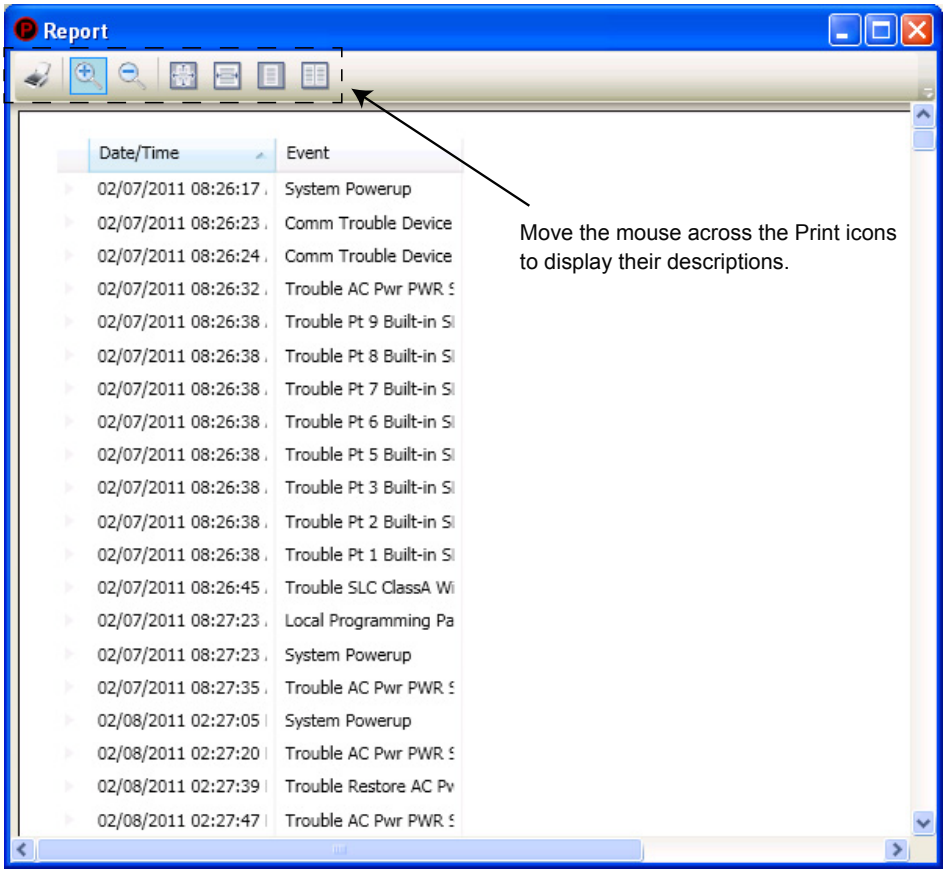


Figure 46. Example of the History Report (Print) Window

To print a History Report:

1. Double-click the History report listed in the Transfers window to display the report.
2. Adjust the width of the Event column to display the entire descriptions; otherwise, the Event information will be truncated on the printed report.

Tip: Double-click on the Event column's border to automatically expand the width to accommodate the longest description. Refer to the example below.

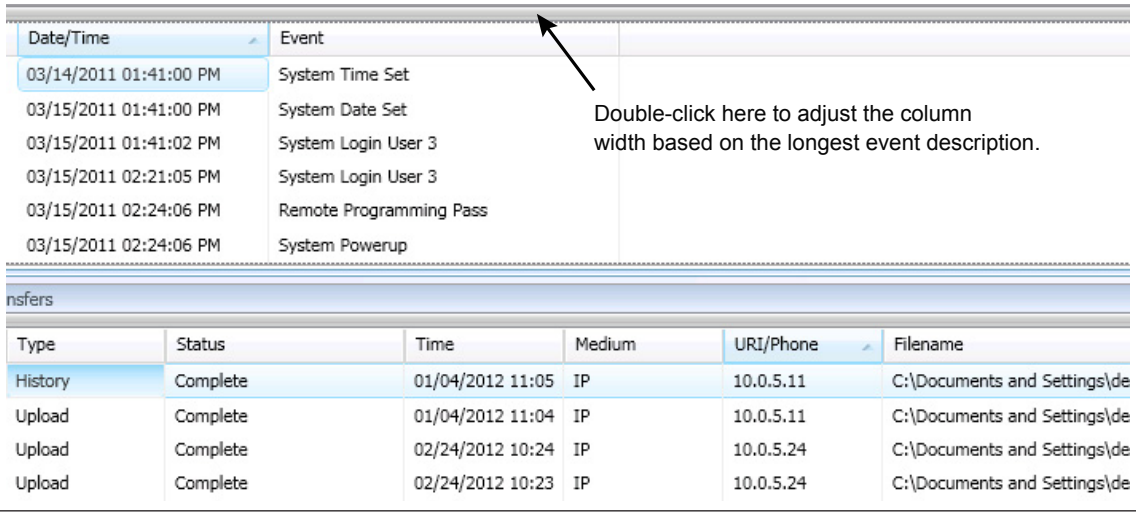


Figure 47. Example of the History Report

3. Click the **Print** icon, then click the **Report Print** icon or **CTRL P** to open the Print dialog box.
4. Click the **Print** button.

Panel Software Overview

This section gives you an overview of the Panel Configuration Software. It addresses navigating through the program windows, understanding the purpose of icons and program features, and using Window's conventional editing techniques and other program shortcuts to efficiently configure your system.

Window Regions / Areas

When you select a function from the Panel window, the related information displays on the right. Additionally, the selected function is highlighted, which helps direct your eye to the function's related screen information. For example, when **Remote Access Code** is selected, the remote user name and password displays. Please refer to the examples shown in Figure 48 and Figure 49.



Figure 48. Panel Menu Options

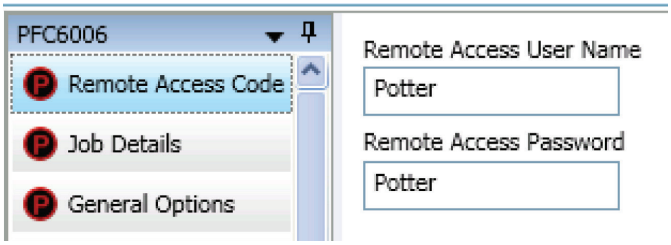


Figure 49. Example of Remote Access Code

Program Icons

The panel software uses several standard Windows icons, such as the close button and scroll bars. There are others that are unique to the panel software, such as auto hide and window position which are summarized in the table below:

Table 20: Panel Configuration Icons

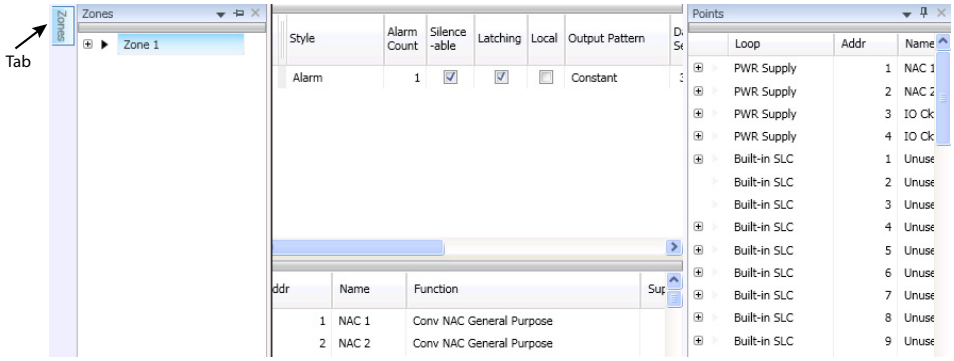
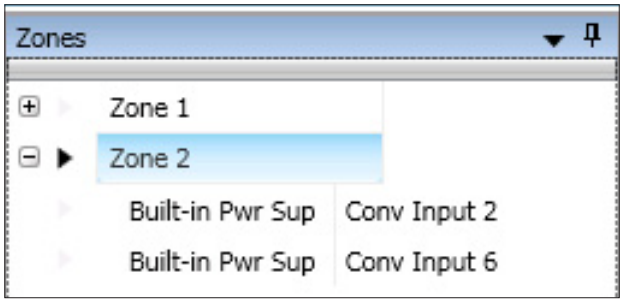
Name	Icon	Description/Function
Window Position		Located in the upper right region of some windows. Click the icon to choose an option: • **Floating** – Window floats over other windows; right-click title bar to reselect dockable. • **Dockable** – *Default* window position; window is "locked" in place. • **Auto Hide** – Window is hidden when cursor is moved and "tab" displays as window placeholder; point to window "tab" to redisplay (window tab is explained below).
Auto-Hide		Shortcut to hide a window. • Click  to hide window. • Icon changes to  (insert window autohide if window is hidden. • Click  to unhide and dock window.
Window "Tab"		Displays if window is hidden; available for specific windows only. **Note:** "Tab" name is specific to the hidden window. • Point to "tab" to display window. • Point or click in another window to hide. 

Table 20: Panel Configuration Icons		
Name	**Icon**	**Description/Function**
Expand/Collapse	⊞	Available in Zones and Points windows only. • Click the "plus" sign to expand. • Click the "minus" sign to collapse. 

Programming Functions Overview

The table below gives you a snapshot of the menu order along with a brief description of each. Details for these options are provided on the following pages.

Table 21: Programming Menu Overview	
Menu Option	**Description**
Remote Access Code	Displays remote access *"User Name"* and *"Password"*.
Job Details	Allows site-specific information to be entered.
General Options	Allows software's general panel settings to be customized.
Zones	Define and configure zone's characteristics and mapping points.
Points	Define and view all addressable and non-addressable points.
Email Reporting	Schedule e-mail reports by day and time, set up e-mail addresses, and select type of report(s) to send to each e-mail addressee.
Email Reminders	Create and schedule customized daily, weekly, monthly, or yearly reminder emails.
Users	Create up to ten user codes and passwords, and set access rights.
LAN Settings	Configure Ethernet connectivity options.
Dialer	Configure the on-board DACT reporting accounts and phone options.
Annunciators	Add or remove remote annunciators.
IP Reporting	Configure IP reporting options for primary and secondary accounts.

Remote Access Code

The Panel Configuration window displays the remote access user name and password on the right section of the screen (refer to the example shown below).

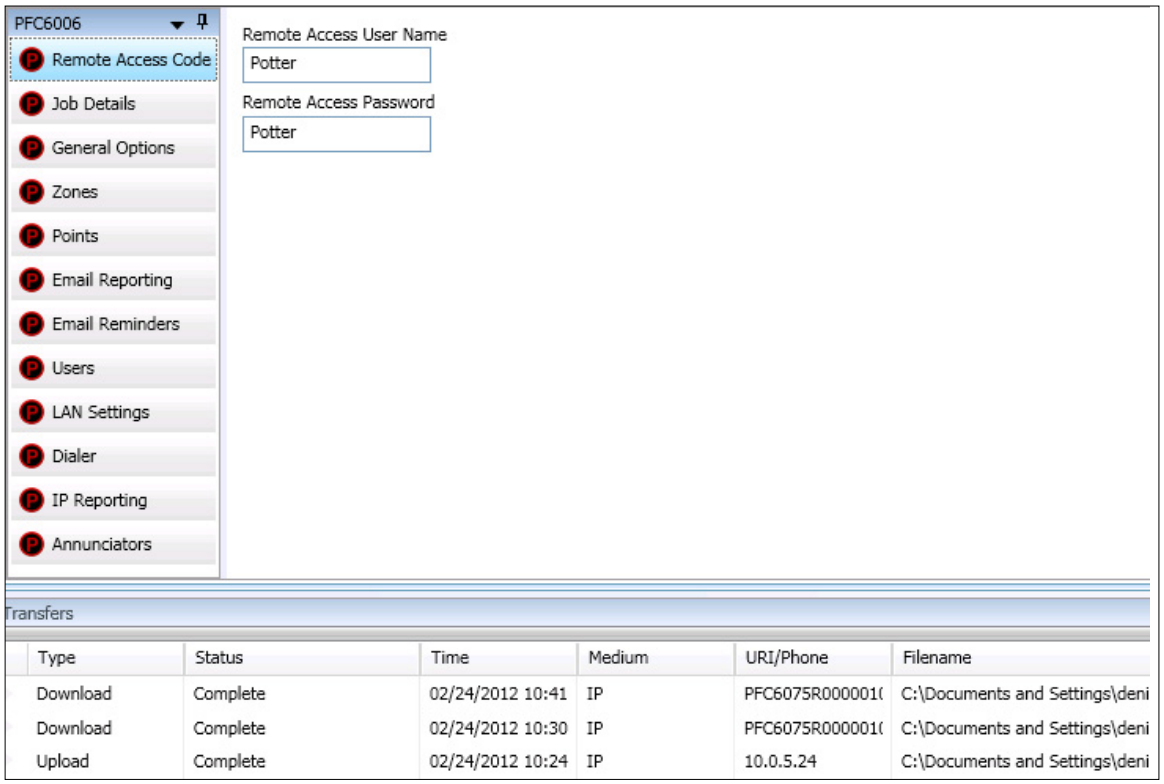


Figure 50. Example of the Panel Configuration Screen

User Name / Password

The default user name and password is `Potter` as shown below; they can be changed to ensure that only authorized personnel can transfer data to and from the panel.

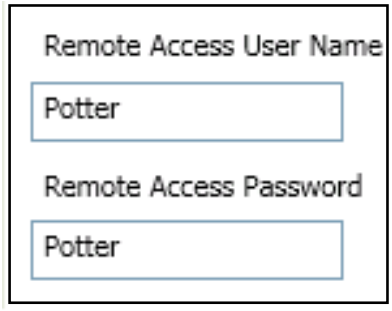


Figure 51. Remote Access Code Screen

Notes:

- The remote access user name and password may be changed to increase security on the system.
- The remote user name and password *must match* the panel's user name and password.

General System Functions

Job Details

Site-specific information, such as company name, address, and phone numbers, may be entered in this window. This information is stored in the panel and is used to identify the panel when using e-mail reporting options. Please refer to the figure shown below.

To enter site information:

1. Click the **Job Details** program option. The Job Details window displays.

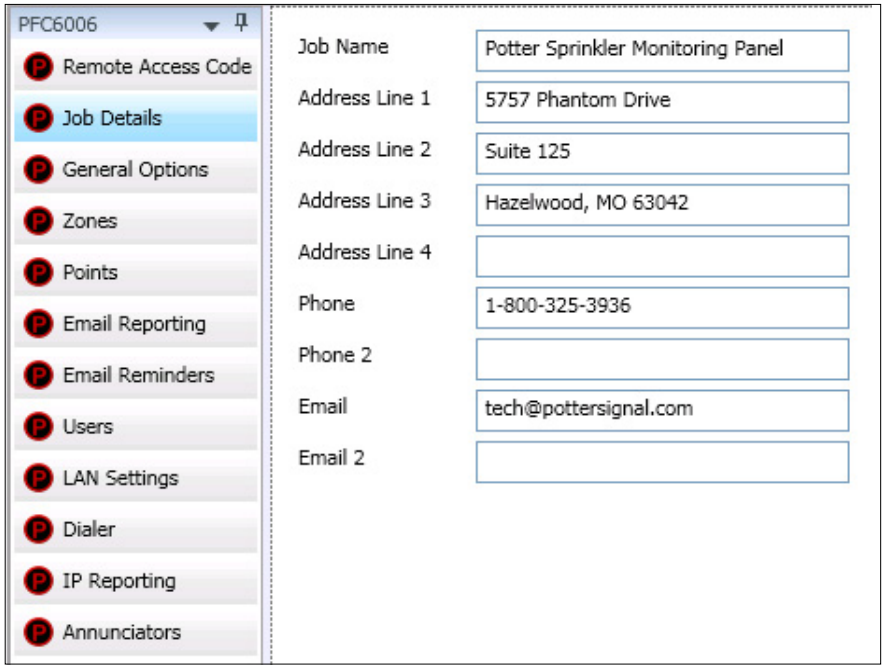


Figure 52. Job Details Window

2. Click in each applicable field to enter information.

> **Note:** You may also press the **Tab** key to move to the next field.

NOTICE

System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

System E-mail Functions

The PFC-6006 comes with built-in e-mail capabilities. The panel automatically sends status e-mails, including Alarms, Troubles, Supervisory, and Test events, to the e-mail addresses designated on the E-mail Reporting window as shown below.

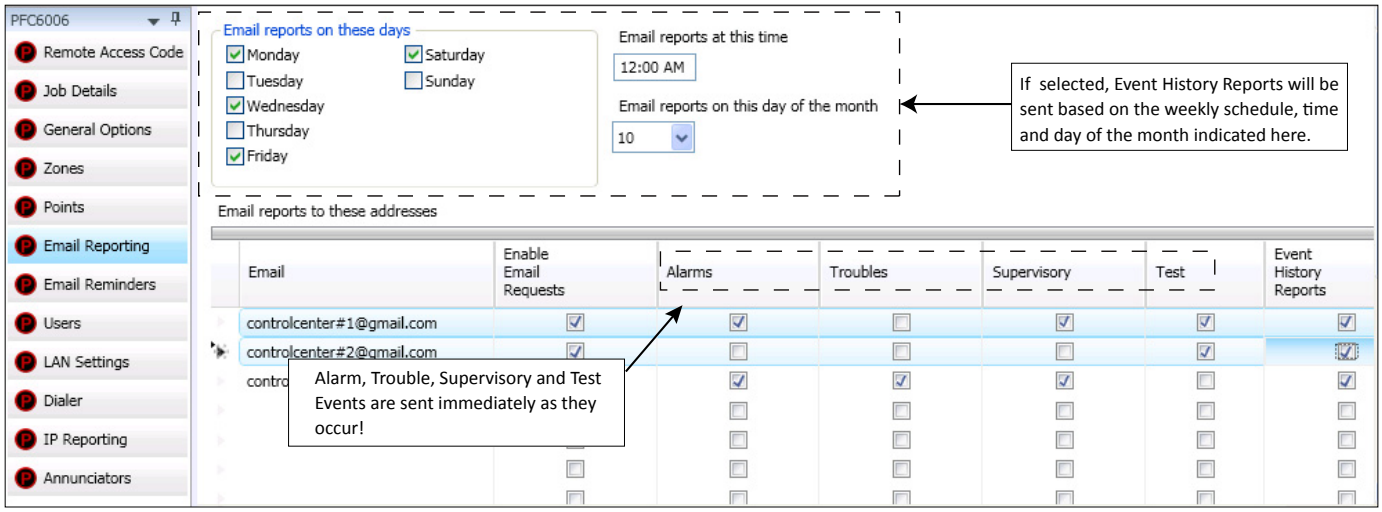


Figure 53. E-mail Reporting Window

Event History reports may be scheduled to be sent on specific days of the week, time, or day of the month. Up to 20 e-mail addresses may be programmed on this screen. After the E-mail Reporting section is completed and downloaded into the panel, the panel will start sending e-mails according to programming.

The panel is capable of sending automatic and on-demand reports because it has a designated outgoing e-mail address comprised of its model and serial numbers. On-demand reports can be requested directly from the panel's Data Transfer function or remotely from a PC, if the user has a valid e-mail address programmed on the E-mail Reporting window.

The panel address is structured as `PFC6XXXXXXXXXXX@potterlink.com`, where `PFC6XXXXXXXXXXX` refers to the panel serial number**.** The serial number is the same as the NetBIOS name, and is located on the panel as shown below.

Note: Outgoing panel e-mails are routed through a dedicated Potter server. You must make a notation of your panel's outgoing e-mail address in order to send e-mail requests remotely.

NOTICE

System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

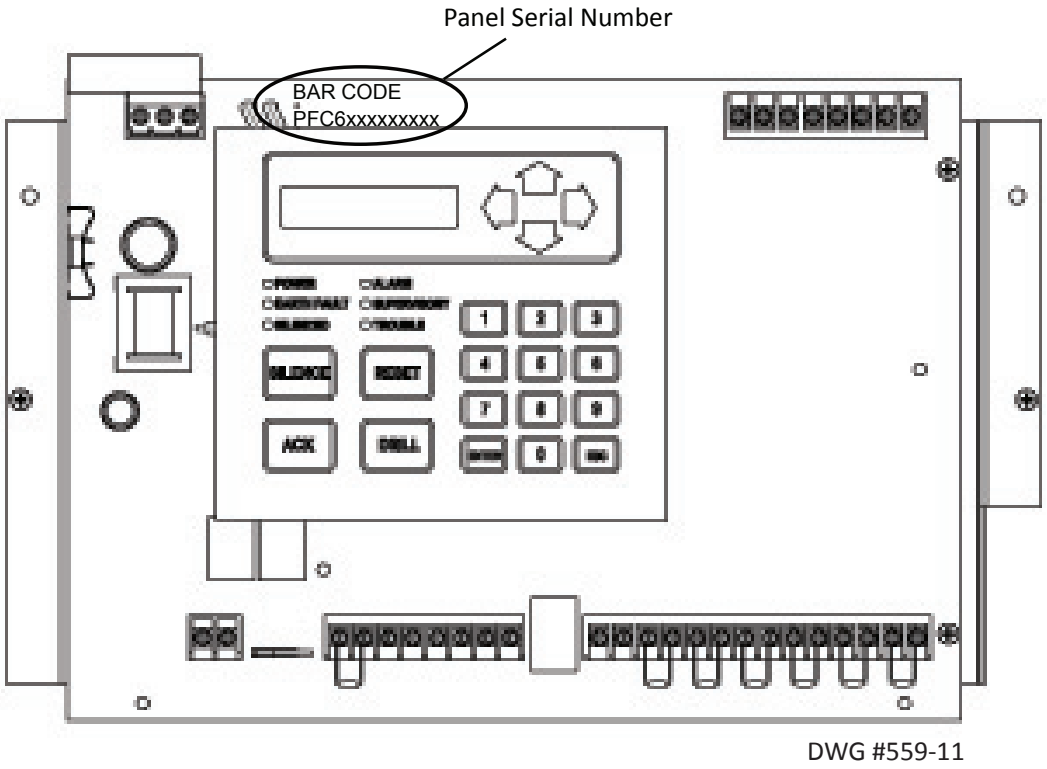


Figure 54. Panel Serial Number Location

P-Link E-mail Notification Requirements

The following table lists the necessary hardware and Internet connectivity requirements to use P-Link functions, such as e-mail notification.

Table 22: P-Link E-mail Notification Requirements

Item	Requirement
Hardware	10/100 Mbps Ethernet Network
IP Address Protocol	DHCP or Static IP (factory default is DHCP)
Outbound Connectivity	Must have outbound access to Internet (mail server connections only). Port 10025 for SMTP Port 110 for POP3
Inbound Connectivity	None required or utilized.

NOTICE
System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

Connecting the Panel to a Network

In order to use the e-mail feature, the panel must be connected to a network with Internet connectivity. This is usually accomplished by installing an Ethernet drop near the panel. The IP address can be set one of two ways:

- The panel has a built in DHCP (Dynamic Host Configuration Protocol) and will ask for an IP address from the host computer.
- The installer or the Network Administrator may set the IP address using the software's Static IP function.

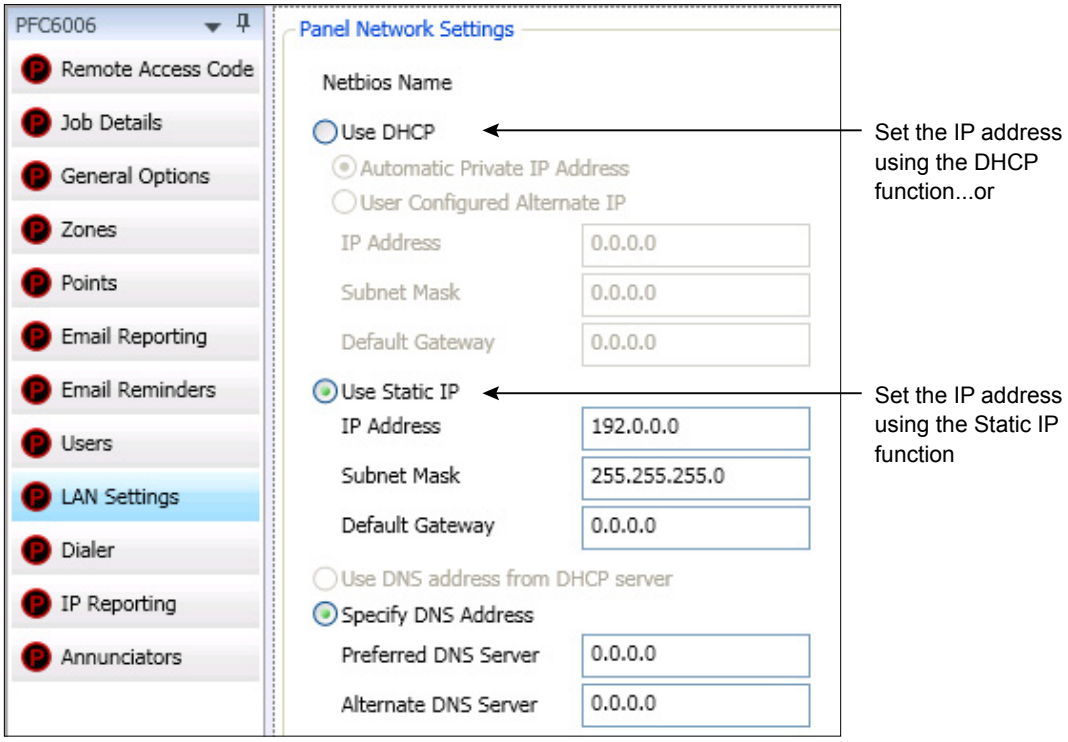


Figure 55. Setting the IP Address

E-mail Report Programming

To set up History reports schedule:

1. Click on the **E-mail Reporting** option. The E-mail Reporting window displays.
2. Click in the **Email reports on these days** selection box to choose the days that the History report(s) will be sent.
3. Adjust *time*, if necessary.

Select a *day of the month* if you wish reports to be sent on a specific day of each month.

Note: Be sure to select each report type in the next E-mail section for each recipient you wish to send these reports.

NOTICE
System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

To set up addresses and select events and/or reports:

1. In the E-mail address section, as shown below, enter up to 20 e-mail addresses, if needed.
2. Select the **Enable E-mail Requests** option if the e-mail addressee may request reports from the panel.

> **Note:** If **Enable E-mail Requests** is not selected, the panel will ignore e-mail request for an on-demand report.

3. Select each type of event(s) and/or report(s) you wish to send to the applicable e-mail address.
4. A checkmark " ✔ " displays in each selected report type.

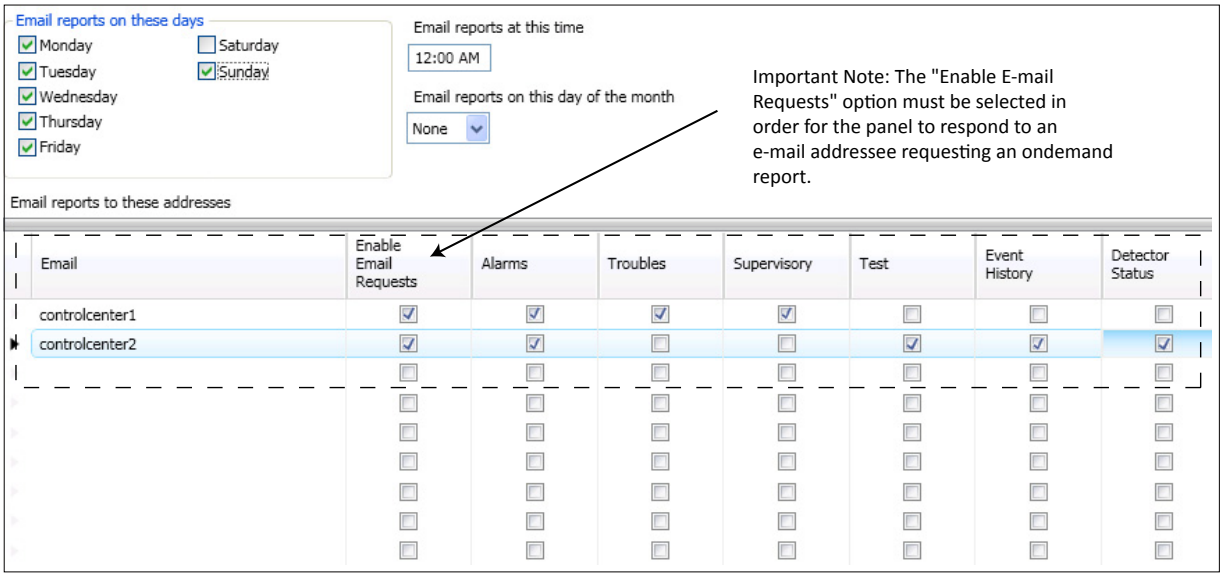


Figure 56. E-mail Reporting showing Enable E-mail Request

E-mail Sent from Panel

To send a report from the panel:

1. Select **Data Transfer** (Menu Option 7) on the panel menu.
2. Select one of the transfer options as described below:

Table 23: Data Transfer Options

Option	Description
1=Remote Access	Used to enable remote access
2=E-mail History	Allows user to e-mail a history file
3=E-mail Config	Allows user to e-mail a panel configuration file (.fpcf)
4=E-mail Test	Allows user to send a test e-mail
5=Server Status	Allows e-mail server status to be verified

NOTICE
System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

3. Select one or more e-mail addresses using one of the following options:
   - Choose **Use Default** to select the address entered in **General Options** (as shown below).
   - Choose **Browse List** to scroll through and select one or more e-mail addresses entered in **E-mail Reporting**.
   - Choose **Specify New** to enter additional e-mail addresses, if needed.

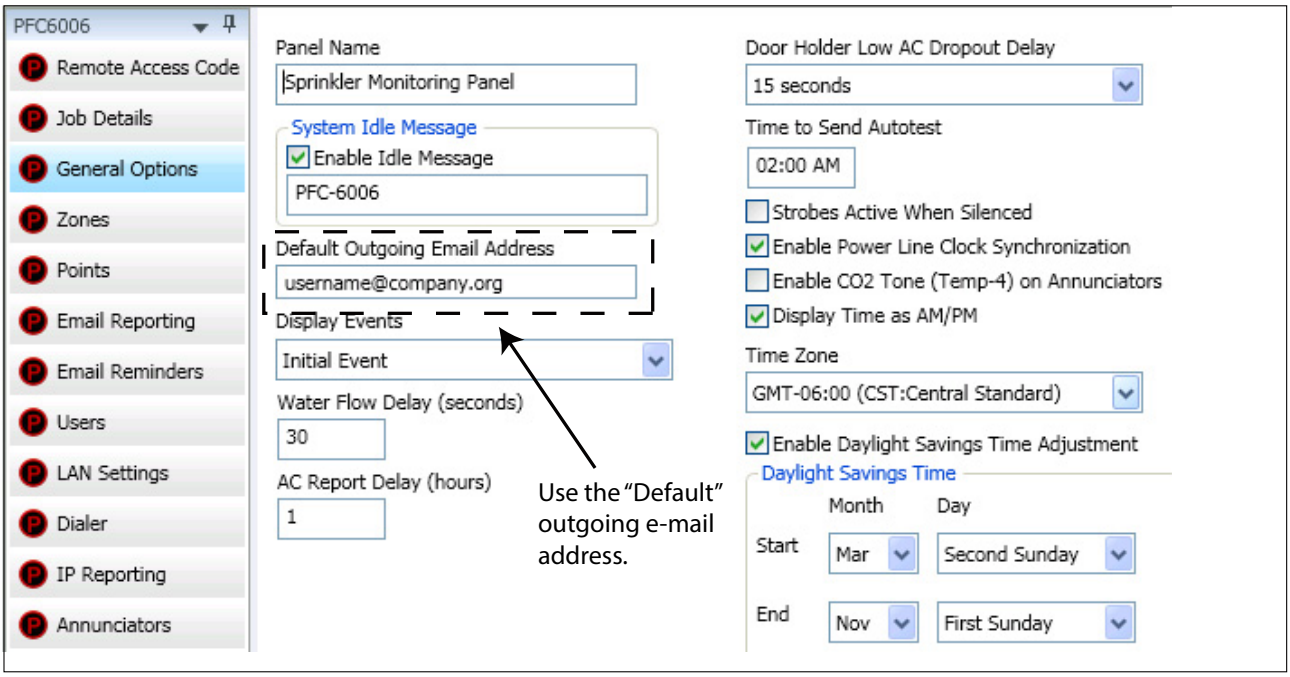


Figure 57. Example of the General Options Window - Default Outgoing E-mail Address

E-mail Report Requested from PC

To request a report from a remote PC:

1. Open or create a new e-mail.
2. In the To field, enter the panel's e-mail address as shown in Figure 58. (Refer also to 87"Figure 54. Panel Serial Number Location" on page 87.)

NOTICE
System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

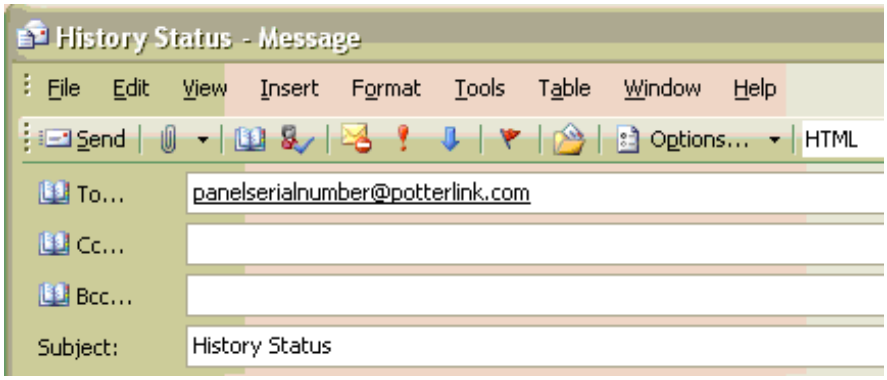


Figure 58. Example of Keywords in E-mail Subject Field

3. In the Subject field, enter one or more of the following keywords:
   - `History` to send a current event history report back to sender.
   - `Configuration` to send a current configuration file back to sender.
   - `Unsubscribe` to stop the current e-mail settings for the sender until panel is reset or that e-mail address sends a "*Subscribe*" to the panel.
   - `Subscribe` to activate e-mail settings for the sender.

Note: Keywords are NOT case sensitive, and more than one can be entered in the subject line of the e-mail.

4. There are no restrictions on contents entered into the body of the e-mail.

Important! The person sending the e-mail *must* be added to the e-mail list in the **E-mail Reporting** *section* of the software as shown below. If the sender is not in the list, the panel will not respond.

NOTICE

System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

- The Enable E-mail Requests option must also be checked for the sender to receive e-mails when requested from the panel or a remote PC.

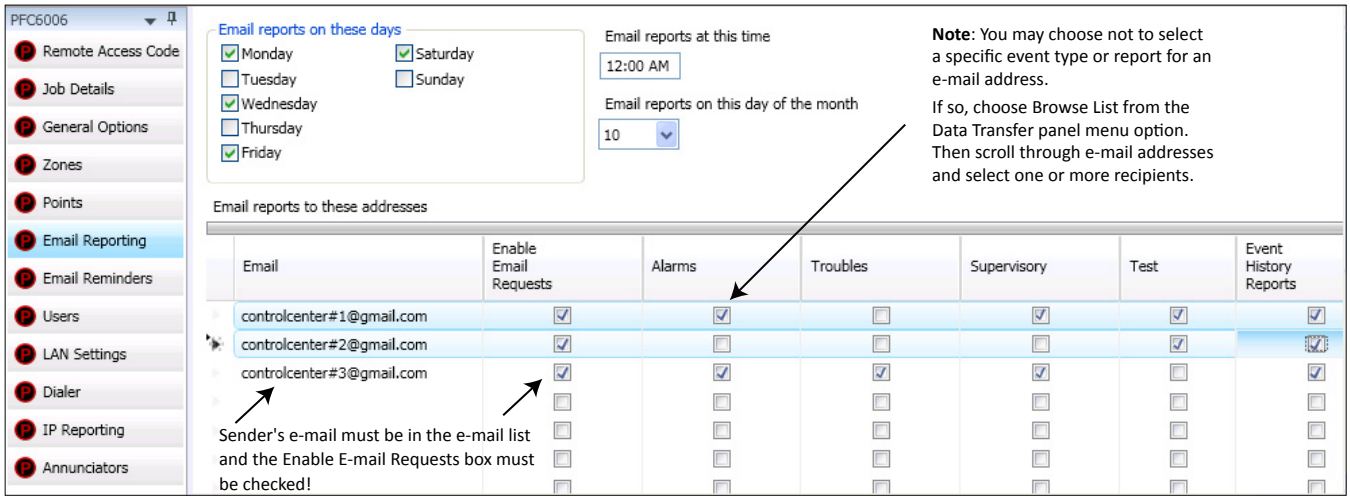


Figure 59. E-mail Reporting Window

Receiving E-mail Status Reports

When a system status (*Alarm, Supervisory, Trouble events*) e-mail is received, the body of the e-mail contains the information entered in the **Job Details** section of the software (as shown below). If nothing is entered in the software, the body of the e-mail will indicate only the events that occurred. The events are listed after the **Job Details** information. They are formatted with a date/time stamp showing when the event occurred, event type, and the event description or the point information.

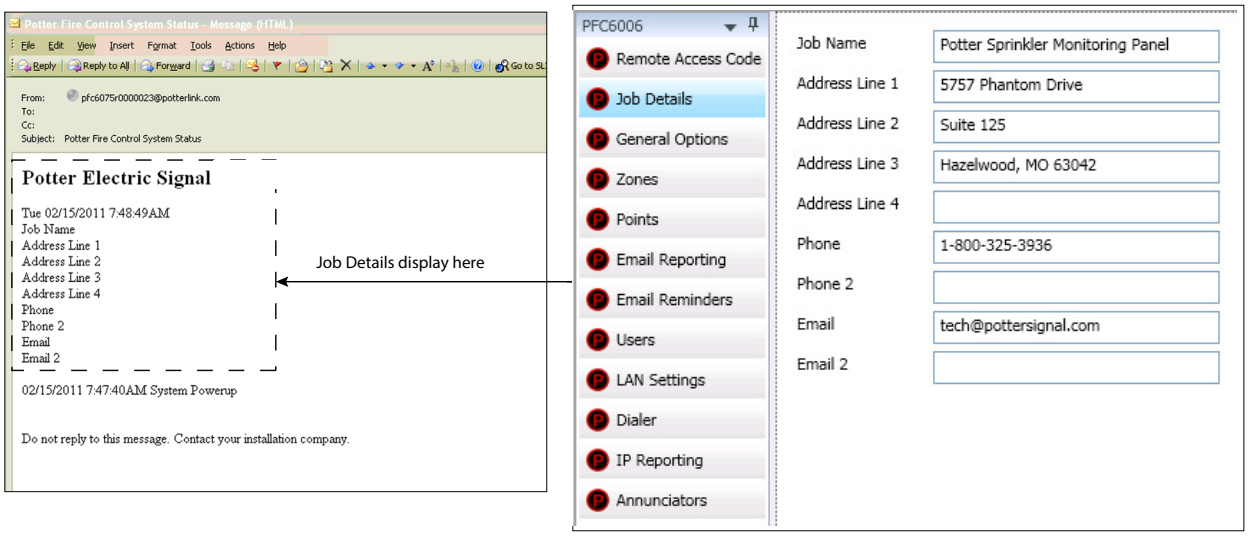


Figure 60. Example of Job Details in System Status E-mail

NOTICE

System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

When a history status e-mail is received it contains two attachments:

- A text file (.txt)
- A comma separated values (.csv) file

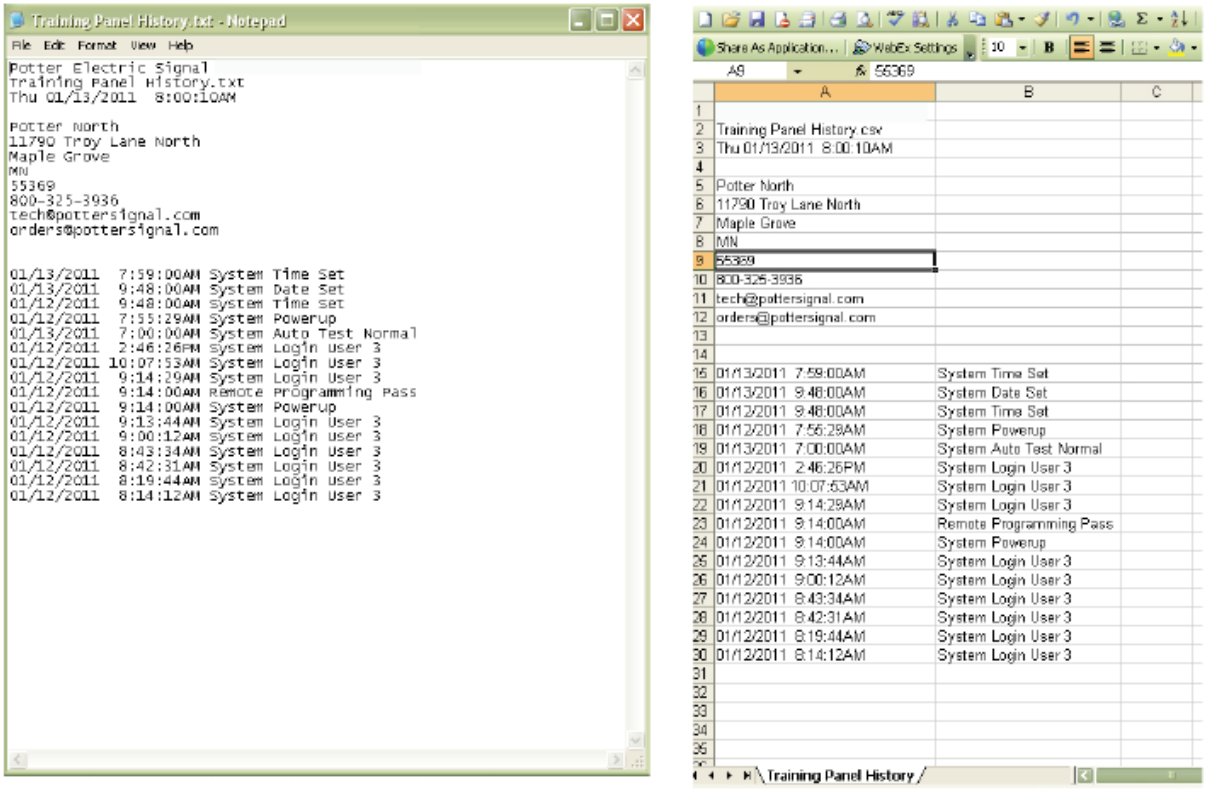


Figure 61. Examples of a History text file (.txt) & History Comma Separated Value file

NOTICE
System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

Creating E-mail Reminders

E-mail reminders are fully customizable e-mail messages that may be sent based on a predefined schedule. The e-mail subject and body are defined by the installer, and they may choose to attach the *History reports*. Up to eight separate e-mail reminders can be created to be sent on a daily, weekly, monthly, or yearly schedule.

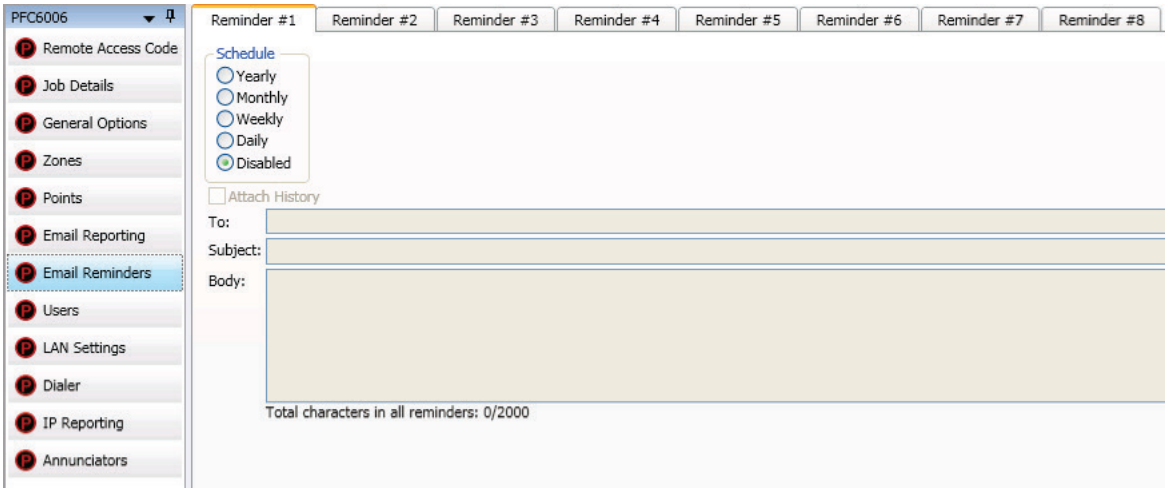


Figure 62. Example of the Email Reminder Window

To create Reminder emails:

1. Select the **Email Reminders** option on the panel menu.
2. Click a Schedule option, i.e., Yearly, Monthly, Weekly, or Daily.
3. Select the specific scheduling frequency, i.e., "days to send" for a weekly reminder or "time" for a daily reminder.
4. Click the Attach History selection box, if needed.
5. Complete the following information:
   - In the To field, enter up to 20 addressees.
   - In the Subject field, enter an applicable subject.
   - In the Body field, enter up to 2000 characters, if needed.

NOTICE

System e-mail communications and functions are intended for informational reporting purposes only. They are intended to be used as a convenience function. E-mail communications should NOT be used as a primary means of reporting emergency information.

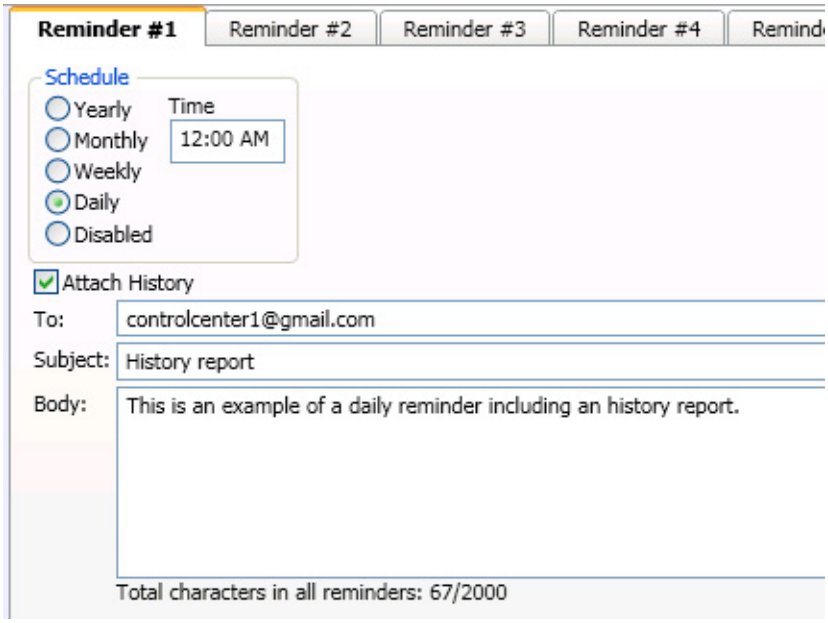


Figure 63. Example of Creating a Daily Reminder

6. Continue setting up additional reminders if needed.

System Programming

System programming involves defining the function of points and their relationships to each other, referred to as "*mapping*." You can define behavior characteristics of individual or groups of points, map points into zones, and further customize your system using the panel configuration software from a computer.

The panel configuration software features include:

- Easy-to-use Windows-based editing techniques, including drag and drop between windows.
- Flexibility in configuring points into multiple zones, promoting sophisticated mapping relationships.
- Simple sorting and grouping by select fields enhances viewing and analysis of data.
- Options to view points by type, address, and function or description.

Mapping Zones Overview

Mapping is creating relationships between points, modules, and sensors and their behavior between each other. Whereas, the “zone” is the framework in which you group the points. These terms and other related mapping concepts are provided in this section.

Single Zones

The LEARN feature creates or maps a basic, one-to-one relationship where all points are automatically grouped into *one zone*. When all points are in the same zone, and an input device is activated, all output points will activate. An example of a one-to-one device relationship is shown in Figure 64:

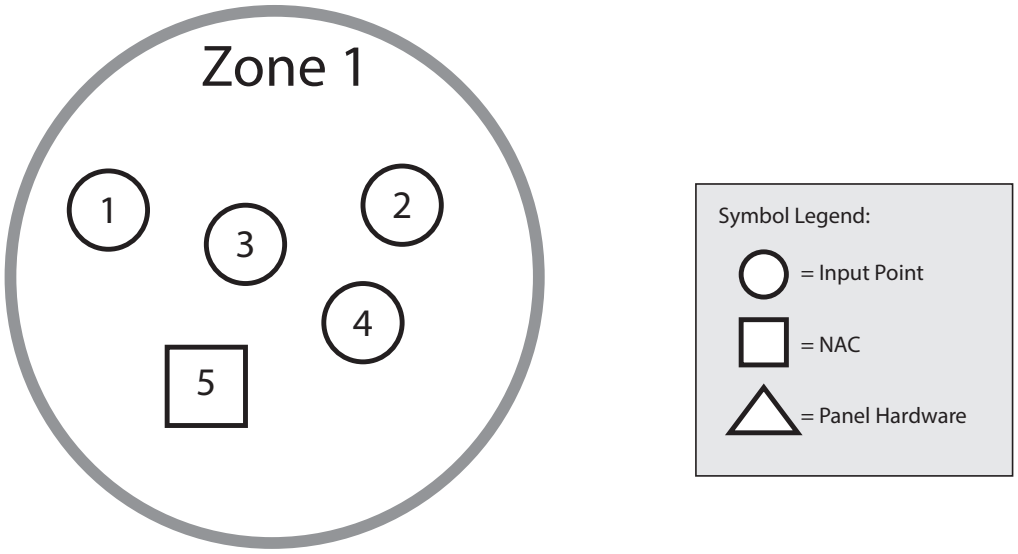


Figure 64. Mapping all Points to One Zone

Multiple Zones

The panel configuration software allows you to customize the operational mode behavior of points by grouping them into a maximum of 30 different zones. All input points, including the one on-board NAC circuit (NAC 1), may be configured to behave in a specific manner. This flexibility enables you to configure system points to maximize protection throughout your site.

By organizing points into different zones, you can create unique relationships between points for specific outputs or events. The panel configuration software allows you to efficiently group points to follow a sequence of events producing the same combination of outputs into different zones. This section addresses how to accomplish these tasks.

Mapping Terminology

The table below provides mapping terms that may be helpful to you in understanding the mapping concept:

Table 24: Mapping Terminology

Term	Definition
Mapping	Creating relationships between points, modules, and sensors and defining their behavior.
Zone	A group of points. • Zones may represent a group of points located in a specific *physical* area at the site. *Example:* Zone 1 comprised of all alarm devices for a sprinkler system [i.e., pull station #1, one water flow device, and one strobe-NAC]. • Zones may represent a set of points configured for a specific function; their location may be scattered throughout the site. This group is a logical grouping or zone. *Example*: Zone 2 comprised of all points in Zone 1 as described above, *plus* a second pull station located at the end of a hallway and two additional smoke detectors. **Notes:** • If all input/output points are grouped into one zone, when any input is activated, all outputs activate. • A device or point may be mapped into more than one zone.
Point	Any specific initiating device circuit (IDC) or appliance connected to the panel.
Latching	Device *will not* automatically reset; device must be reset at the keypad to remove condition.
Non-Latching	Device *will* automatically reset when trouble and supervisory condition is no longer present.

Zone Types / Styles

You may define or configure each zone to serve a specific purpose or to create specific output results. For procedures on how to select Zone styles, refer to the *"Configuring Zones"* section of this manual. The following zone styles are available:

Table 25: Zone Styles

Zone	Description
Alarm	Default zone type; sets system into an Alarm condition when any input is activated.
Supervisory	Used for all Supervisory inputs.
Auxiliary	Used for all "Aux" inputs.
Fire Drill	Comprised of input / output points that will activate when running a Fire Drill.
System Alarm	Used for outputs that will be activated upon any alarm.
System Supervisory	Used for outputs that will be activated upon any supervisory.
System Trouble	Used for outputs that will be activated upon any trouble.

Zone Attributes

Zone attributes are the settings that control the overall behavior of points within the zone. The zone may be configured as latching or non-latching, silenceable or non-silenceable, among other attributes.

Tip: Double-click in a field to modify an applicable field, i.e., zone name or alarm count. Click in fields with a selection box to select or deselect the option, i.e., silenceable or latching.

All zones default to an "*Alarm*" style or type when first created. The figure shown below is an example of the default attributes of an "*Alarm*" zone.

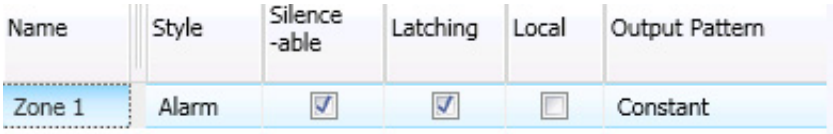


Figure 65. Example of Zone Attributes (Fields 1–5)

Refer to Table 26 for a brief explanation of zone attributes:

Table 26: Zone Attributes

Attribute	Description
Zone Name Default = Zone "x" (where "x" is a sequential number)	• Zone name may be up to 16 alphanumeric characters.
Latching / Non-Latching Default = Latching	• Available for one-count zones only. • Latching zone requires operator to press **Reset**. • Non-latching zone will automatically turn off outputs when condition clears.
Local / Non-Local *Default = Non-Local*	• Used only for the **Report by Zone** option. • Allows a zone to be specified as a non-reporting zone.
Output Pattern Default = Constant	• Defines the output pattern of general-purpose NAC circuit in the zone that occurs during alarm conditions. • Click on the drop-down arrow to display and select an option: Constant — 24 VDC ANSI Temp 3 — .5 sec on, .5 sec off, .5 sec on, .5 sec off, 5 sec on, 1.5 sec off March Code — 60 signals per minute Double Time — 120 signals per minute
Auto-Silence Timer Default = 0 minutes Range = 0 – 360 minutes	Defines the amount of time before silenceable NAC is automatically shut down.

Table 26: Zone Attributes	
Attribute	**Description**
Auto-Unsilence Timer *Default = 0 minutes* Range = 0 – 60 minutes	Defines the amount of time before any silenced NAC is reactivated; output only reactivate if panel is still in alarm.
Silence-Inhibit Timer *Default = 0 minutes* Range = 0 – 60 minutes	Defines the amount of time you may *not* silence an output when in alarm.
Restore Delay *Default = 0 seconds* Range = 0 – 300 seconds	Defines the amount of time before deactivating an output when the panel is reset.

Creating Zones

When creating zones, you may create one or more at a time. This section explains this process and includes examples for your convenience.

To create a zone:

1. In the Zones window, right-click on any zone name. The shortcut menu displays.
2. Click **Add Zones**. The Add Multiple Zones dialog box displays.

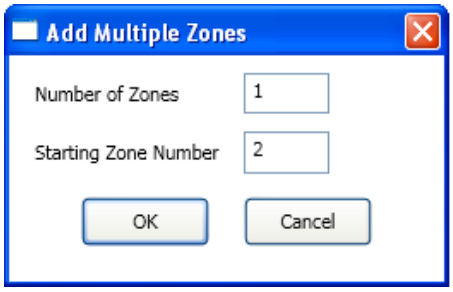


Figure 66. Examples of Adding Multiple Zones Dialog Box

3. In Number of Zones field, enter the number of zones to create.

Note: You may enter up to 30 zones.

4. In the Starting Zone Number field, enter the zone number to begin numbering zones, if different from default.

5. Click **OK** or **Cancel** to exit the dialog box. The zones window lists all new zones.

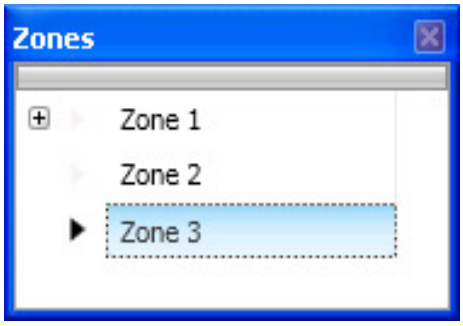


Figure 67. Zones Window

6. Go to the Zone Configuration window to view all available zones.

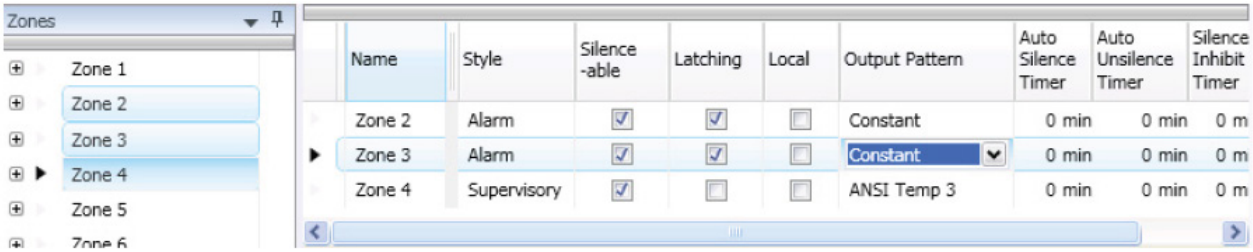


Figure 68. Example of Configuring Multiple Zones

Configuring Zones

The next step is to customize a zone's attributes, which includes changing the name, selecting type of zone, and other characteristics (i.e., constant, double time output pattern, latching or non-latching, silenceable, auto-silence timer, etc.).

To configure a zone:

1. Double-click in the zone's Name field to modify the default name.

> **Note:** Up to 16 alphanumeric characters may be entered. For example: `Sprinkler Flow` or `Valve Tamper`.

2. Click in the Style field. Click the drop-down arrow to display the zone styles.



3. Choose the applicable zone style (refer to Table 25 on page 97 for descriptions of zone styles).
4. Continue editing the zone's fields (refer to Table 26 on page 98 for field descriptions).

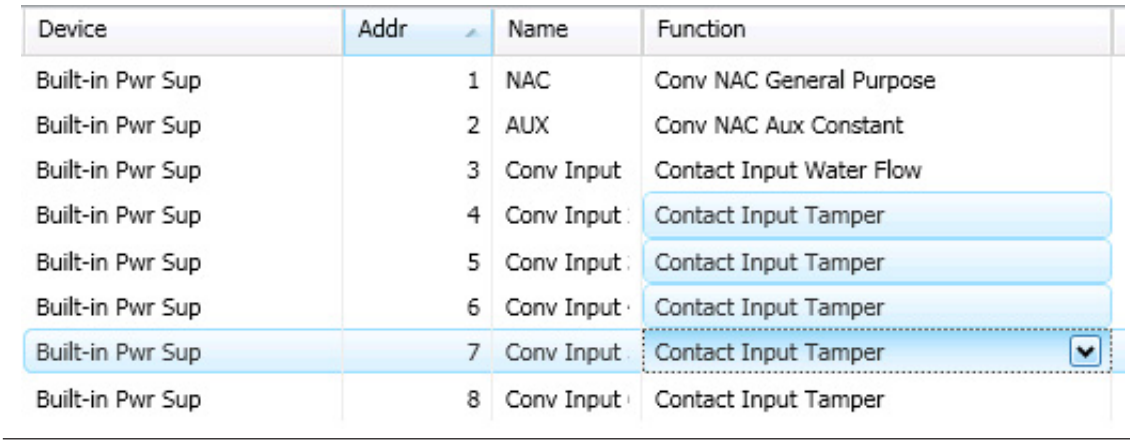
Configuring Points

This section addresses how to define or configure points through the **Points** function. Each device may have a unique function in relation to the zone as well as the entire system. The user determines the Point's role, specific behavior characteristics, and customizes its name, if desired.

Notes:

- The list of available functions is associated with the device type.
- Points may be configured from either the **Zones** or **Points** functions; however, for purposes of this manual, points are configured in the **Points** function.
- Points can be configured individually, or by groups or ranges of points.

An example of the Points window is shown below.



Device	Addr	Name	Function
Built-in Pwr Sup	1	NAC	Conv NAC General Purpose
Built-in Pwr Sup	2	AUX	Conv NAC Aux Constant
Built-in Pwr Sup	3	Conv Input	Contact Input Water Flow
Built-in Pwr Sup	4	Conv Input	Contact Input Tamper
Built-in Pwr Sup	5	Conv Input	Contact Input Tamper
Built-in Pwr Sup	6	Conv Input	Contact Input Tamper
Built-in Pwr Sup	7	Conv Input	Contact Input Tamper
Built-in Pwr Sup	8	Conv Input	Contact Input Tamper

Figure 69. Example of Points Window

Input Circuit Functions

The IDC's ("Conventional Inputs") default to specific functions as shown in Table 28; however, they may be reconfigured and renamed, based on the following configuration functions:

Table 27: Input Circuit Functions

Function	Description
Contact Input Pull Station	Pull station input.
Contact Input Water Flow	Water flow input obeys water flow delay as defined in **General Options.**
Contact Input Supervisory	Supervisory input.
Contact Input Tamper	Tamper input reports as supervisory.
Contact Input Fire Drill	Fire drill input activates a fire drill.
Contact Input Trouble Monitor	Trouble input creates a trouble condition.
Contact Input Aux	Aux input reports as un-typed alarm.

The six Input or Initiating Device Circuits (IDC) automatically default as follows:

Table 28: Input Circuit's Default Configuration	
Input Circuit	**Default Function**
Input 1	Water Flow
Input 2	Smoke Detector
Input 3	Manual Pull
Inputs 4 and 5	Supervisory
Input 6	Valve Tamper

NAC Functions

The on-board NAC circuit (NAC 1) is automatically configured as “Conv NAC General Purpose," but may be reconfigured to other functions, as described in Table 29.

Table 29: NAC Circuit Configuration Functions	
Function	**Description**
General Purpose	General purpose NAC; obeys zone “output pattern” programming, and is the default.
Potter Sync	Drives Potter synchronized horns/strobes.
Gentex Sync	Drives Gentex synchronized horns/strobes.
System Sensor Sync	Drives System Sensor synchronized horns/strobes.
Wheelock Sync	Drives Wheelock synchronized horns/strobes.

AUX Functions

The on-board AUX circuit in the 7706-ULF Integrated Fire Monitoring System is configured to “Conv NAC Aux Constant." and cannot be changed. The AUX power circuit is unavailable for external accessory use. Refer to System Size Specifications section.

Table 30: AUX Circuit Configuration Functions	
Function	**Description**
Conv NAC Aux Constant	Constant DC power; this is the default configuration for the 7706-ULF Integrated Fire Monitoring System and cannot be changed.

To configure a single point:

1. Click on the **Points** function to display the Points Configuration window.

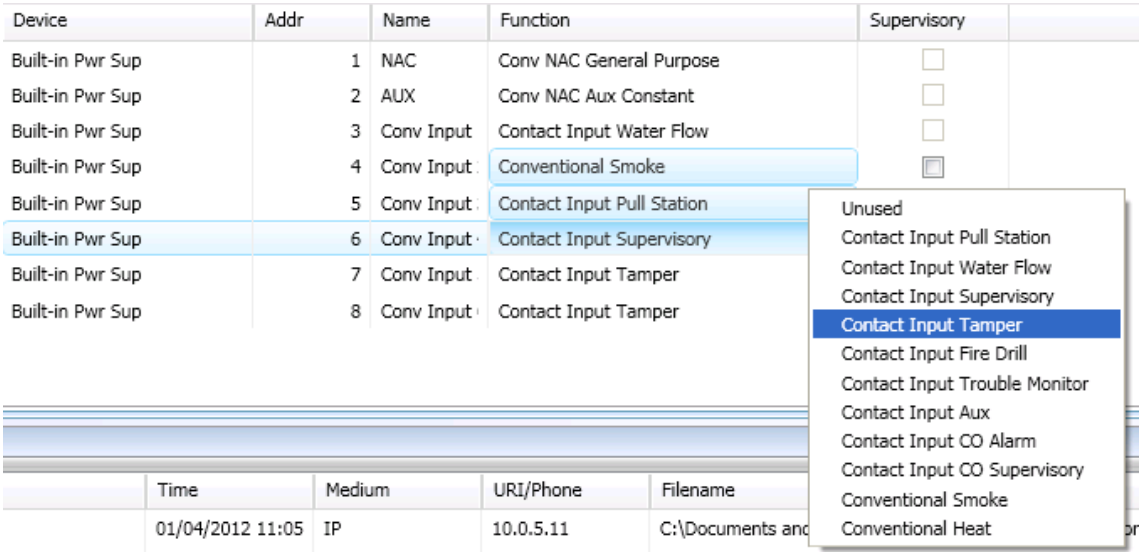


Figure 70. Example of a Configuration Window Showing Conventional Input Functions

Notes:

- Points are listed by device addresses automatically. You may sort points by clicking on the column or field name, i.e., Name, Function, or Supervisory.

  Example: Click the Function field to sort points alphabetically by device function.

- The list of available functions varies according to type of device(s) selected.
- If you click the Supervisory field selection box, this designates that the contact will be a supervisory input versus an alarm input.

2. Click anywhere on the point you wish to configure.

Tip: The selected point is highlighted in blue and is also designated with an arrow symbol at the beginning of the point's line, as shown below.



3. Double-click in the Name field to enter a descriptive name, if wanted.
   - Enter up to 16 alphanumeric characters.

4. Click the drop-down arrow at the end of the Function field to display the list of options.

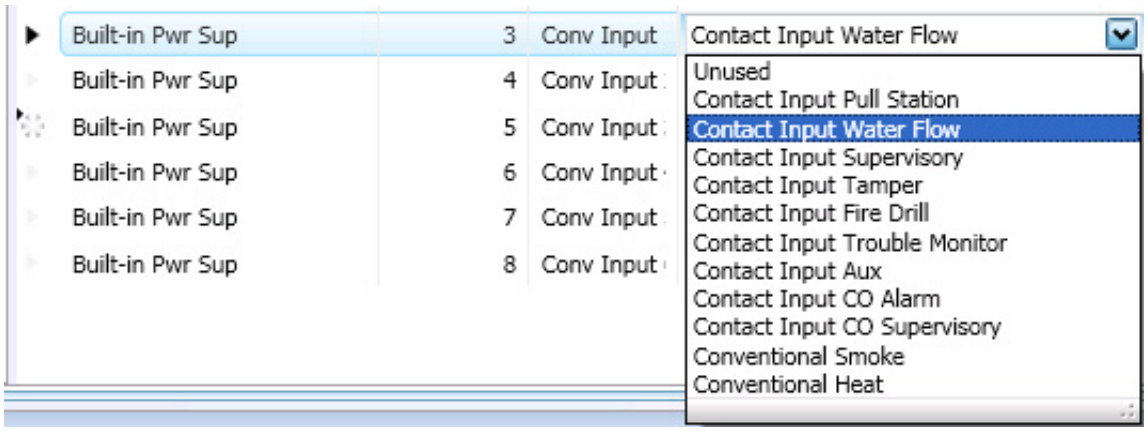


Figure 71. Example of Configuring a Single Point

5. Continue configuring other points, as needed.

To configure a range of points:

1. Click the first point to configure from the Function field.
2. Press and hold the **SHIFT** key, then click in the Function field of the last point.

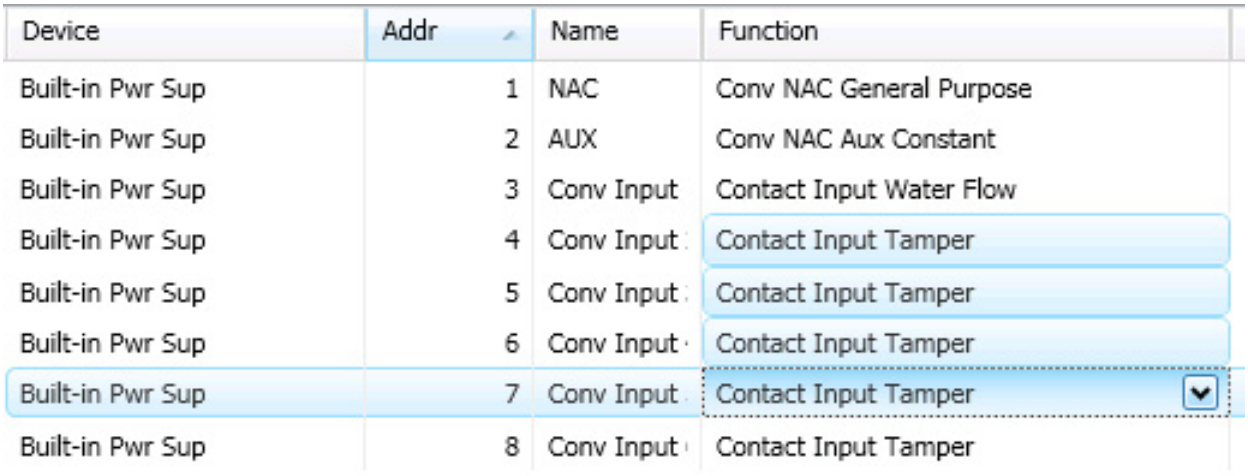


Figure 72. Example of Configuring a "Range" of Points

3. Right-click from the Function field to display the configuration options.

Notes:

- If you right-click outside of the Function field, the range is deselected, and only one point will be configured.
- You may alternatively use the **CTRL** key to select multiple, non-adjacent points.

4. Click on device function from the shortcut menu.
5. Continue configuring other points, as needed.

Adding Points to Zones

This section provides procedures and examples of adding points to one or more zones. Points can be moved and deleted from zones through the Zones panel by dragging and dropping. The examples shown in Figure 73, Figure 74, and Figure 75 illustrate how to use shortcuts to expedite configuring zones and to also reinforce the interaction between the Zones and Points windows.

To move one or more points into <u>one</u> zone:

1. Open the Zones configuration window and adjust the Points window to display full function name(s).

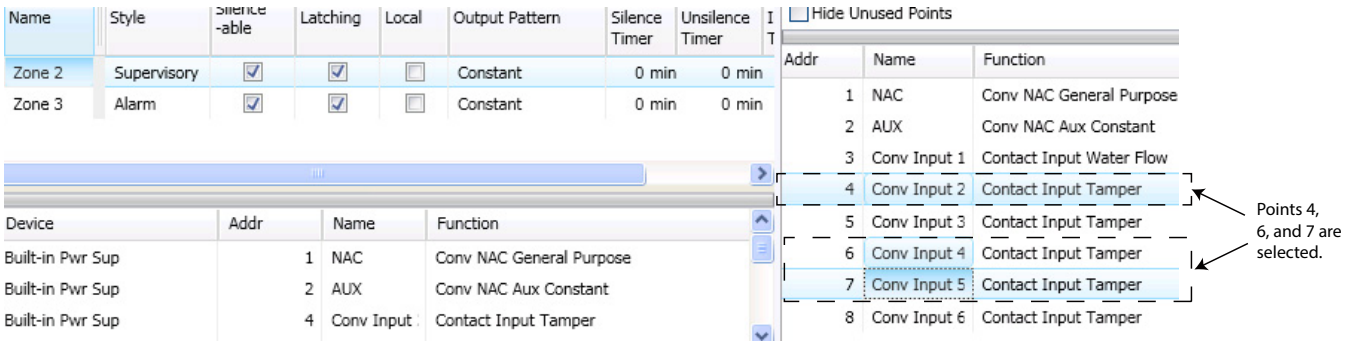


Figure 73. Example of Resizing Points Window From Zone Screen

2. Click one or more points to select; use the **SHIFT** or **CTRL** keys to select a range or group of points.
3. Drag and drop the selected points from the Points window to the Device window. The selected points display in the Device window, as shown below.

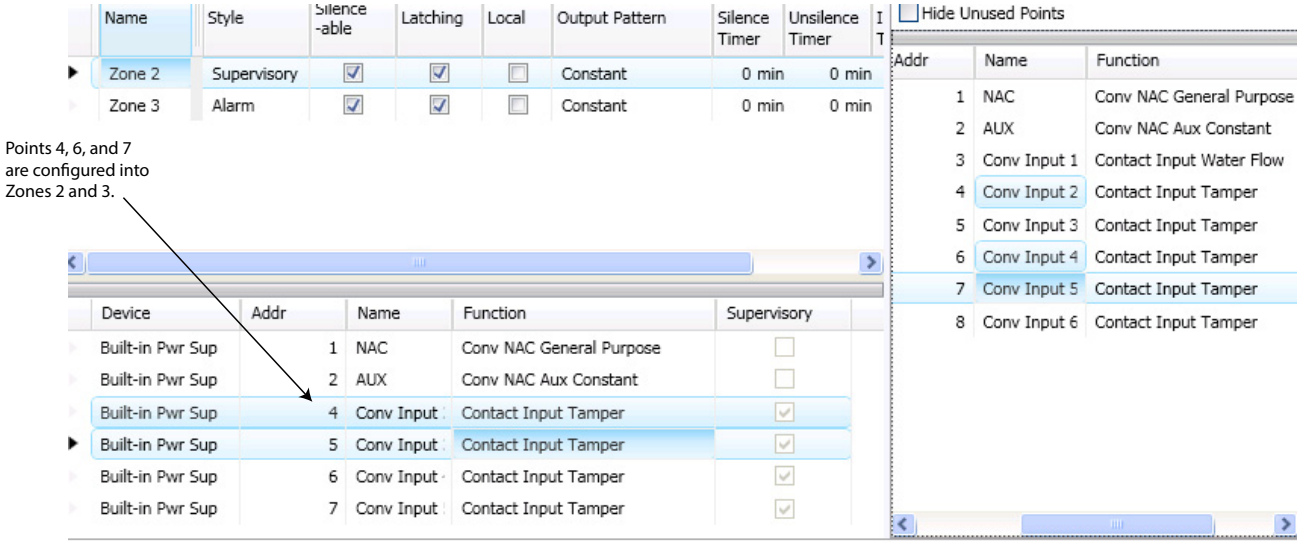


Figure 74. Example of Configuring Multiple Points into Multiple Zones

4. Click "+" in the Points window to display point assignment by zone(s).

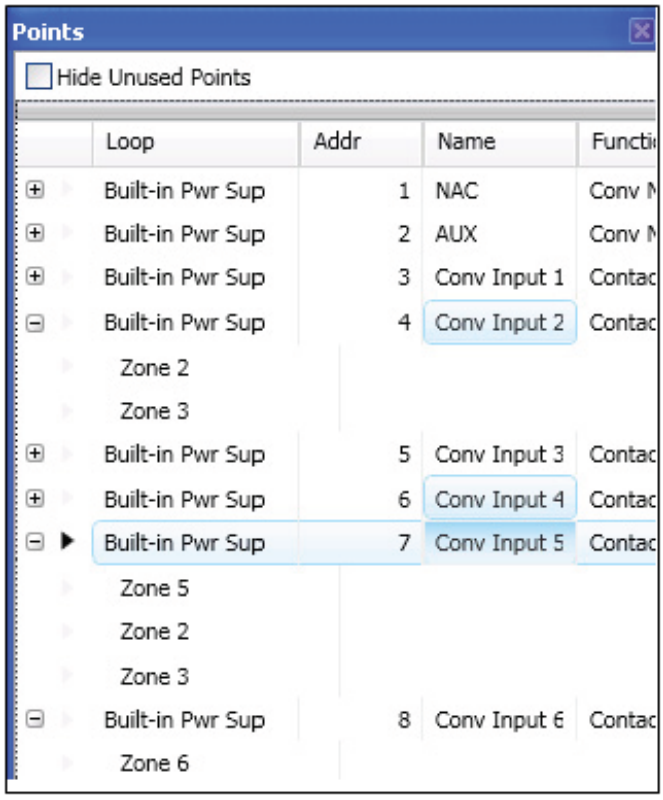


Figure 75. Example of Expanding Point's Zone Assignment(s)

Note: Click "–" to collapse point assignments.

Group by Area

You may group information by different fields in many of the program windows. This flexibility is helpful when configuring or viewing a large amount of information, such as all points, zones, or remote annunciators. Examples are included for illustration purposes only.

To group by area (field):

1. Click on the Group bar located at the top of the window, if available.

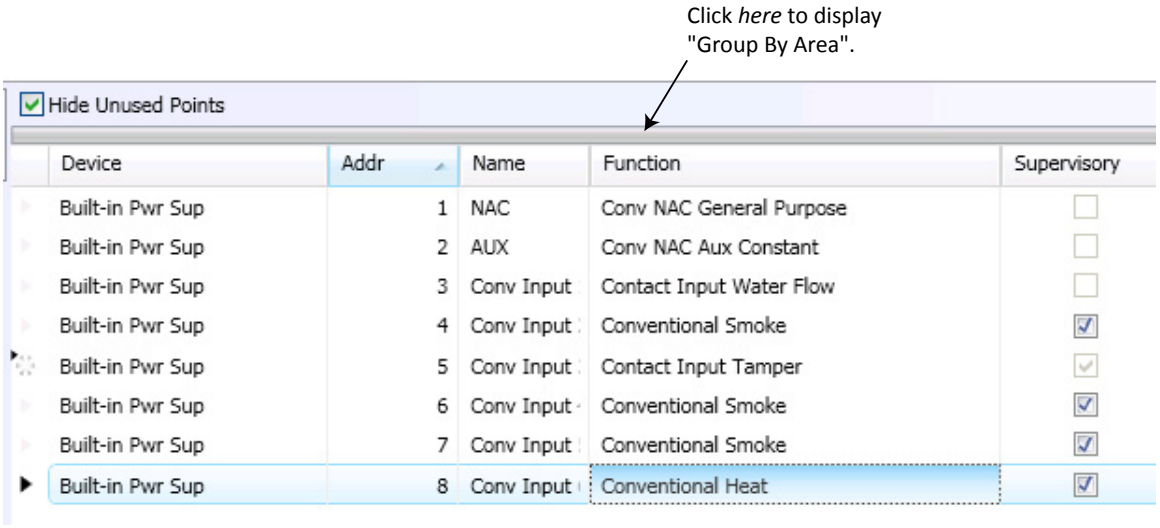


Figure 76. Example of Points Window

The “group by area” prompt displays, as shown in Figure 77.

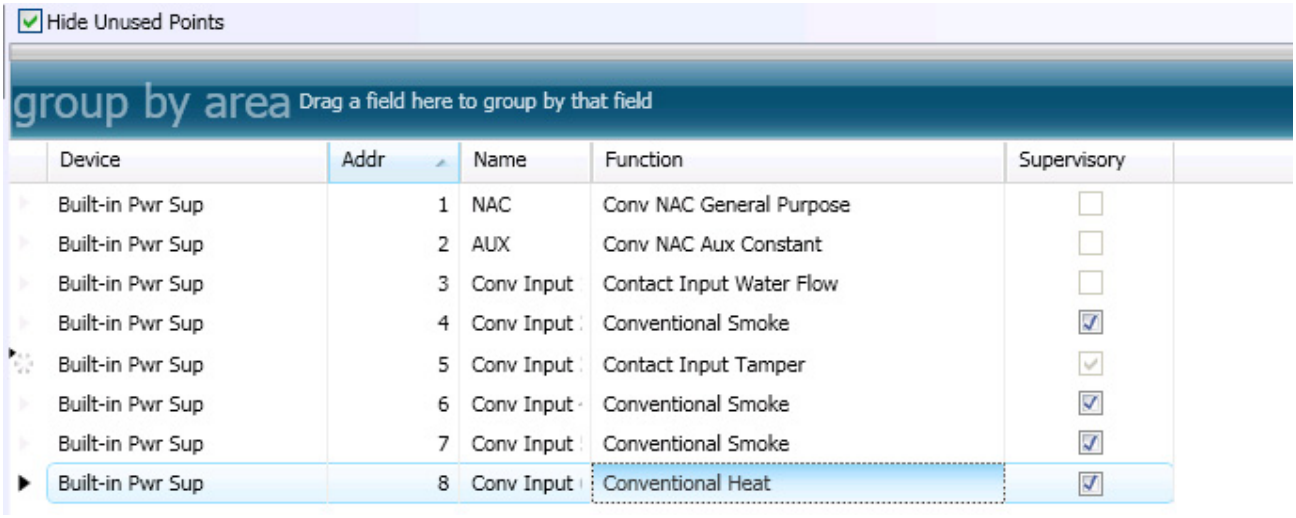


Figure 77. "Group by Area" Prompt

Note: Click the “group by area" bar at any time to collapse region.

2. Drag and drop *one field* into the "group by area" region. The information is displayed according to the selected field.

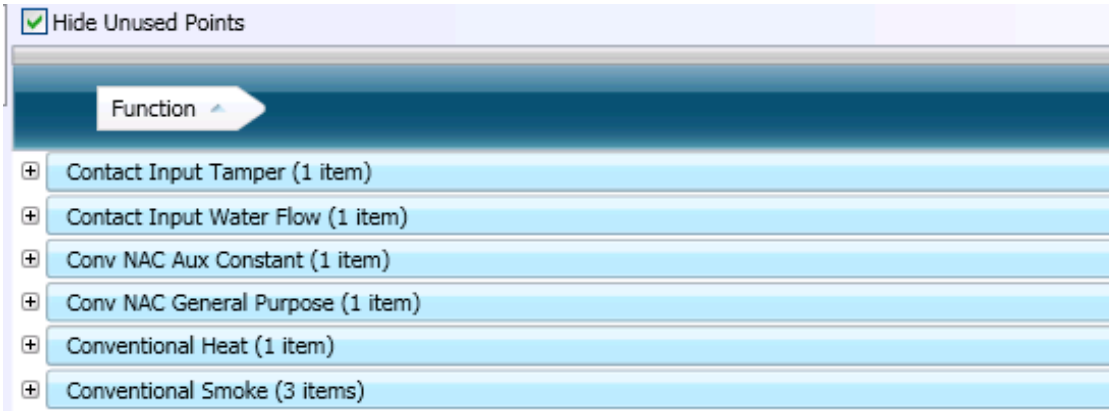


Figure 78. Example of Points Grouped by Function

Note: Click **"+"** next to the function to view a complete list of points. Click **"-"** to collapse the list of points, as needed.

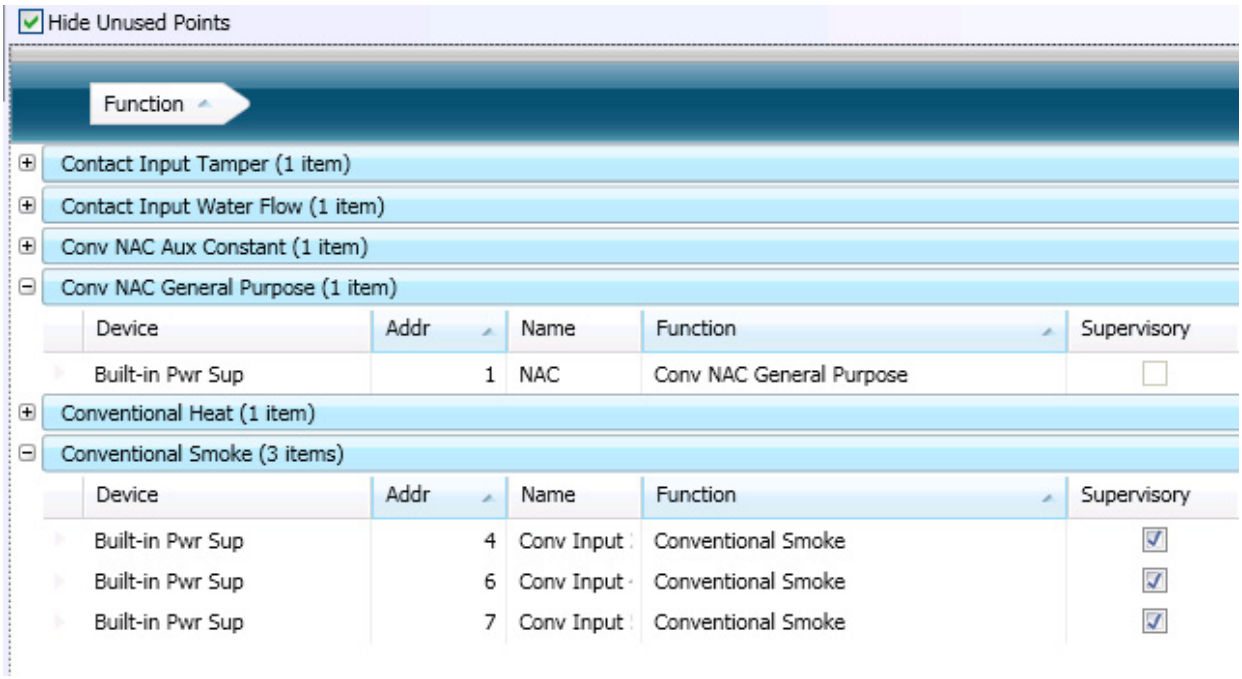


Figure 79. Example of Expanded List of Grouped Points

Note: Click "–" to collapse point assignments.

3. Drag the field out of the "group by area" region to redisplay items in original order.

Programming Points and Appliances

This section addresses how to program the P-Link appliances and points, including the on-board DACT and the RA-6075 annunciator.

On-Board DACT

Each system has a built-in DACT (Digital Alarm Communicator Transmitter). The DACT provides notification to a remote monitoring company when alarms, troubles, and supervisory conditions occur.

Programming options allow you to select separate accounts for test events and alarm, trouble, and supervisory conditions. You may set up telephone parameters, such as number of rings, when and where to send reports by specifying phone numbers, and other report output options. An example of the Add – Dialer window is shown.

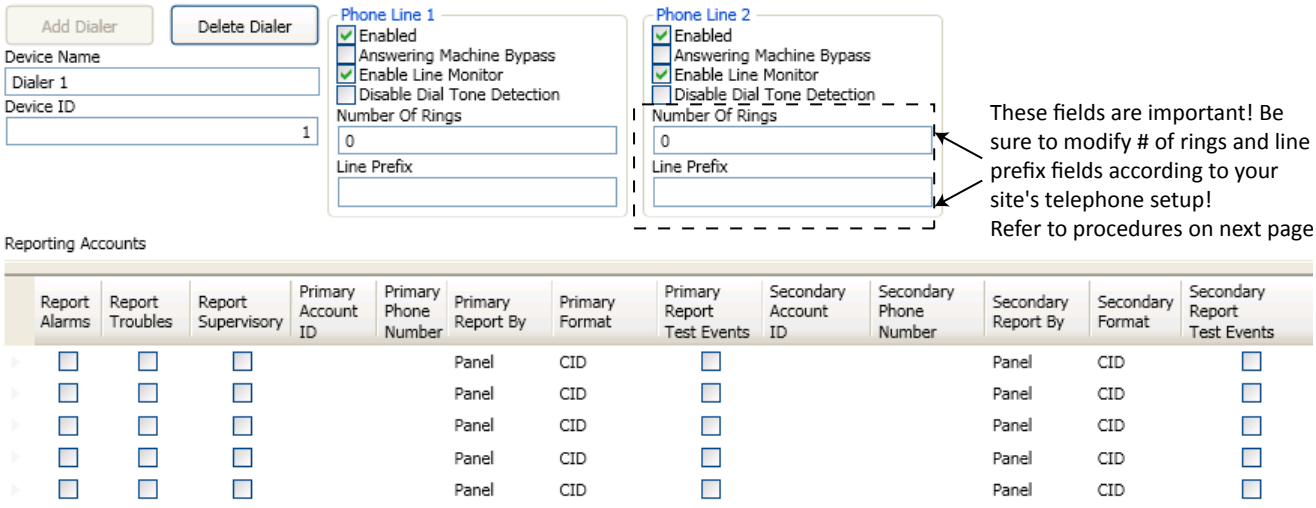


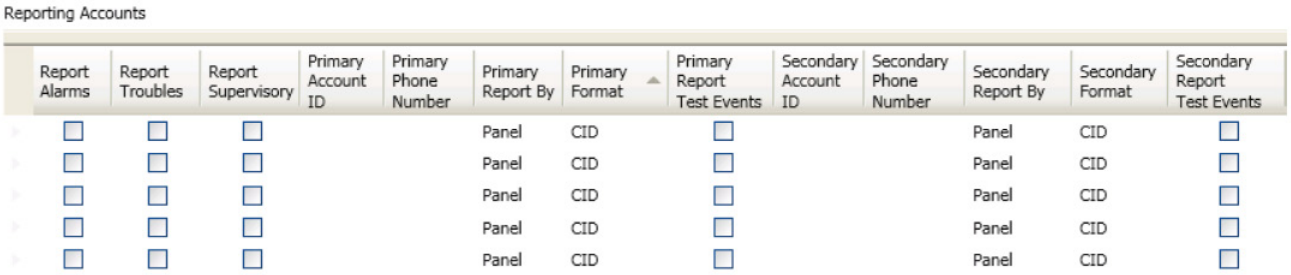
Figure 80. Example of DACT Add-Dialer Window

Notes:

- A daily test is automatically sent to a remote monitoring location; the test time may be programmed through the General Options program window – "Time to Send Autotest" field.
- Once the panel has been programmed to use a dialer, and two phone lines are used, the DACT will alternate between lines on each daily call.
- If the IP Communicator is programmed, the daily test call can be sent to both reporting accounts. (Please refer to the IP Communicator Section for more information.)

Reporting Accounts

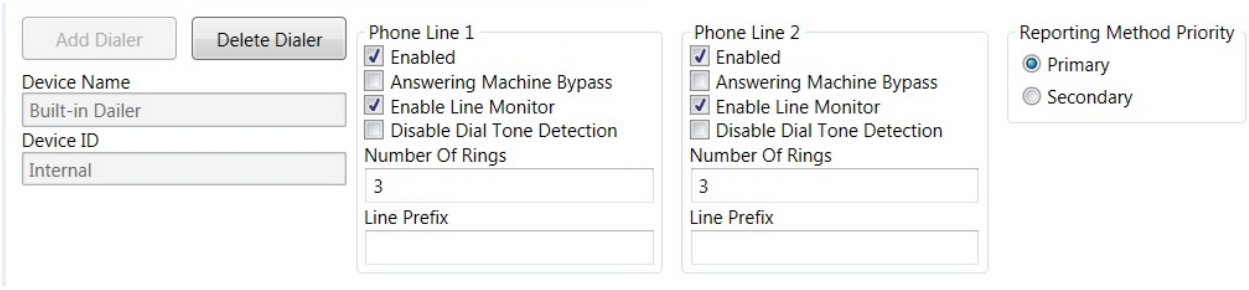
The "Reporting Accounts" section is used to program DACT operations and to customize the format of the reporting accounts. You may choose different settings for Alarms, Troubles, and Supervisory conditions. Up to five (5) primary and secondary reporting accounts may be configured.



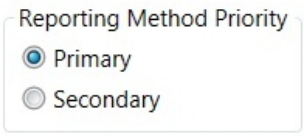
To add and configure a DACT Dialer:

1. Select **Dialer** from the system panel, and click the **Add Dialer** button.

   The Dialer window displays:



2. In the **Reporting Method Priority** field, set the applicable priority:



- **Primary** – The Dialer Reporting account and the AES mesh network are both used for communication to the remote monitoring station.
- **Secondary** – If the AES mesh network is unavailable, the Dialer Reporting account communicates with the remote monitoring station**.**
- **No Selection** – The Dailer Reporting account feature is not used.

Remote Annunciators

The 7706-ULF supports one RA-6075 remote annunciator.

To add and configure a remote annunciator:

1. Select **Annunciators** from the system panel.
2. Click the **Add Device** button to display the Add Device window.

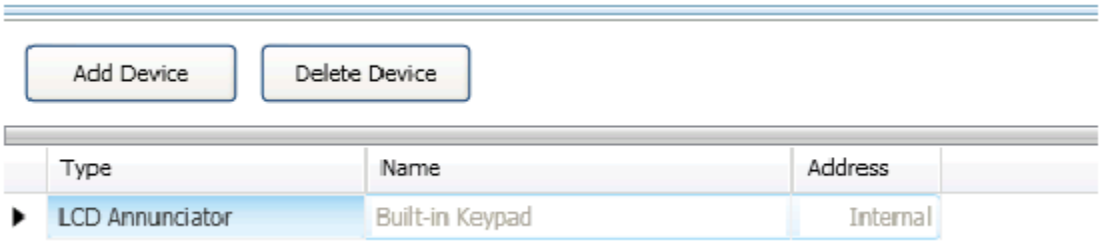


Figure 81. Example of Add Device Window

3. Double-click in the Name field to customize the name.
4. Double-click in the Address field to adjust the address, if needed.

Note: Only one annunciator may be connected to the system.

Verify Input and Output Points

The 7706-ULF System input and output points can be verified using the keypad and LCD display after panel installation and configuration. Use the following instructions to access and view key information.

1. At the 7706 –ULF Main menu screen, press **5**, then press **ENTER**.

```
7706-ULF
11/10  8:33:03AM
```

   The program access screen appears.

```
Enter Code
```

2. Press **1111** as the access code. A series of *****'s display for each number pressed.

```
Enter Code
****
```

3. From the Tools menu, press **1** for Point Control.

```
Tools Menu
1=Point Control
```

4. From the Select Device screen, press **ENTER**.

```
Select Device
Internal PWR
```

5. Press **ENTER** at the Ckt (Circuit) screen (circuit 1 has been identified as the default point to examine).

```
Enter Ckt: 1
```

   The point detail appears for selection 1, which is shown configured for a NAC.

```
NAC:GEN PURPOSE
001 NORMAL
```

6. Press **ESC** to return to the Enter Ckt screen, and enter the next point number to examine using the keypad. If no more points need examination, press **ESC** again to return to the Tools menu.

Examine Firmware Versions

Firmware versions used in the 7706-ULF System are visible through the LCD on the keypad.

LCD Control Firmware

The LCD control firmware drives the LCD display on the keypad. To view the firmware version of the LCD control, power on the panel. The firmware version is visible on the first screen displayed after power-up self-test is complete:

5670048 VX.XX where X.XX is the firmware version

7788F Subscriber Firmware

To view the 7788F Subscriber firmware version:

1. From the Main Menu display, press **5,** then press **Enter** to access the System Tools menu. The `Enter Code` prompt displays.
2. Enter the user access code (`1111`).
3. At the System Tools menu, press **8** to select **PIC Status**. You are now in the PIC Menu.
4. Press **1** to select **PIC Status**. The screen displays the firmware for the 7788F Subscriber:

   Type: SUB
   XX.XXXX 7788F where XX.XXXX is the firmware version

Mainboard and 7764 PIC Firmware

To view the mainboard and 7764 PIC firmware version:

1. From the Main menu display, press **5**, then press **ENTER** to access the System Tools menu. The `Enter Code` prompt displays.
2. Enter the user access code (`1111`).
3. At the System Tools menu, press **7.**
4. The screen displays the firmware version for the mainboard:

   Control
   5670069 VX.XX where VX.XX is the mainboard firmware version
5. Press the **DOWN ARROW**. The screen displays the firmware version for the AES 7764 PIC.

   AES PIC
   5670066 VX.XX where VX.XX is the AES 7764 PIC firmware version

Section 9. IP Communication

The system's built-in, on-board IP Communicator provides notification to a remote monitoring company when alarms, troubles, and supervisory conditions occur. The IP Communicator is used with an IP capable Sur-Gard receiver by means of the Fibro protocol.

Programming options allow you to select accounts for test events, as well as alarm, trouble, and supervisory conditions. You may set up IP parameters, such as when and where to send reports, by specifying IP addresses and other report output options. An example of the IP Reporting window is shown below:

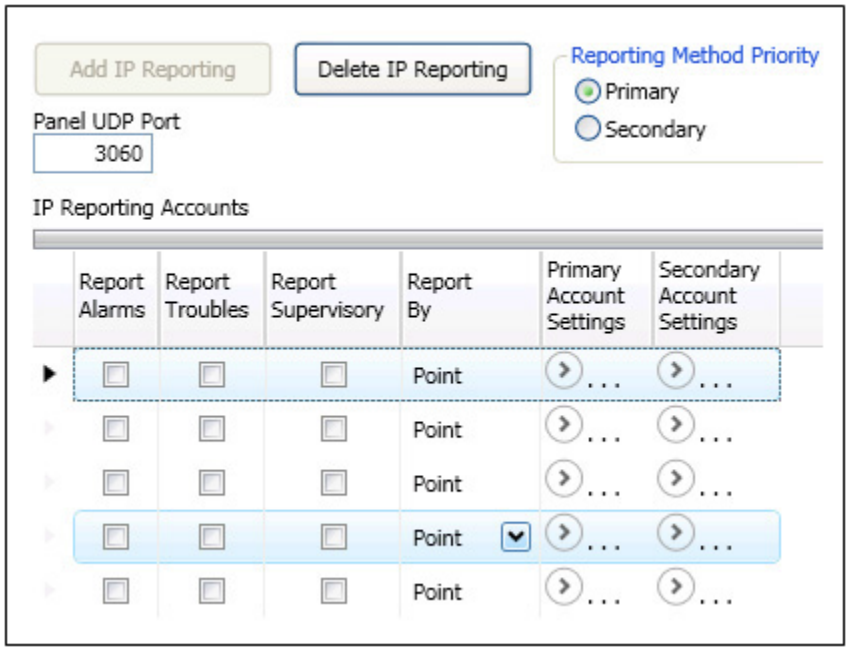


Figure 82. Example of the IP Reporting Window

Notes:

- A daily test can automatically be sent to a remote monitoring location; the test time may be programmed through the **Time to Send Autotest** field, located in the General Options program window.
- Where the fire alarm transmitter is sharing on-premises communications equipment, the shared equipment shall be UL listed.
- Secondary power shall be provided for all equipment necessary for the transmission and reception of alarm, supervisory, and trouble signals at the protected premises.
- Secondary power shall be provided for all equipment necessary for the transmission and reception of alarm, supervisory, and trouble signals at the supervising station.

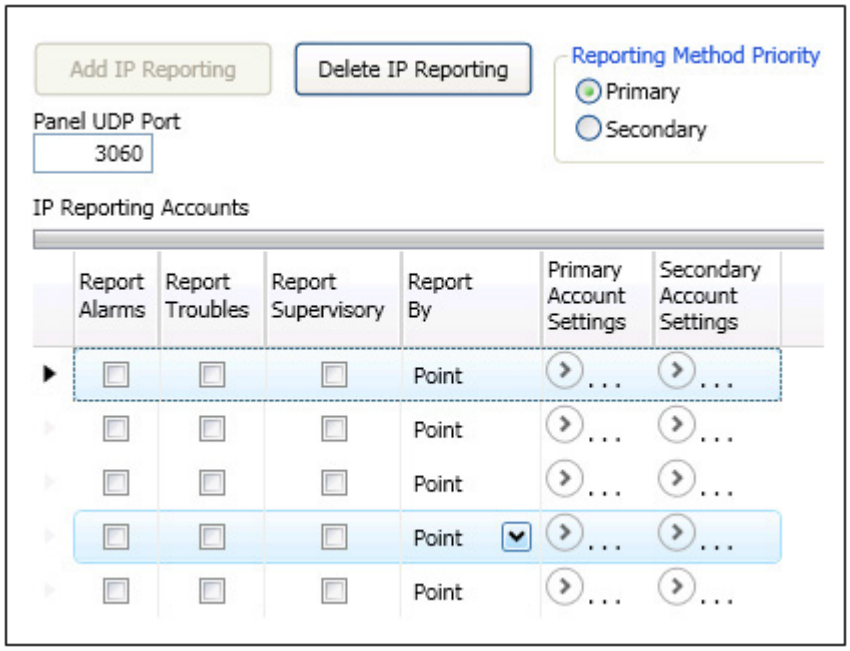
IP Reporting Accounts

This section describes how to program the IP Communicator operations, as well as how to customize the format of the reporting accounts. You may choose different settings for Alarms, Troubles, and Supervisory conditions. Up to five primary or secondary accounts may be configured.

To add and configure an IP Dialer:

1. Select **IP Dialer** from the system panel, and click the **Add IP Reporting** button.

   The IP Reporting window displays:



2. In the **Reporting Method Priority** field, set the applicable priority:



   - **Primary** – The IP Reporting account and the AES mesh network are both used for communication to the remote monitoring station.
   - **Secondary** – If the AES mesh network is unavailable, the IP Reporting account communicates with the remote monitoring station**.**
   - **No Selection** – The IP Reporting account feature is not used.

3. In the **Panel UDP Port** field, click to enter an incoming and outgoing UDP port. The UDP or User Data Protocol is the pathway for which data is sent and received between the panel and the remote monitoring station.

Note: The default UDP port is 3060; however, an alternate port number may be used. Check with your network administrator to determine if an alternate port number for FACP IP Reporting should be assigned.

4. In the **IP Reporting Accounts**, make the necessary selections for the primary and secondary reporting accounts:
   - Select the report type(s): **Alarms**, **Troubles**, **Supervisory**
   - Click on the **Report By** drop-down arrow to choose an option: **Panel**, **Zone** or **Point**
   - Click on the **Primary**/**Secondary Account Settings** expand ellipsis icon to display additional setup options, as shown below:

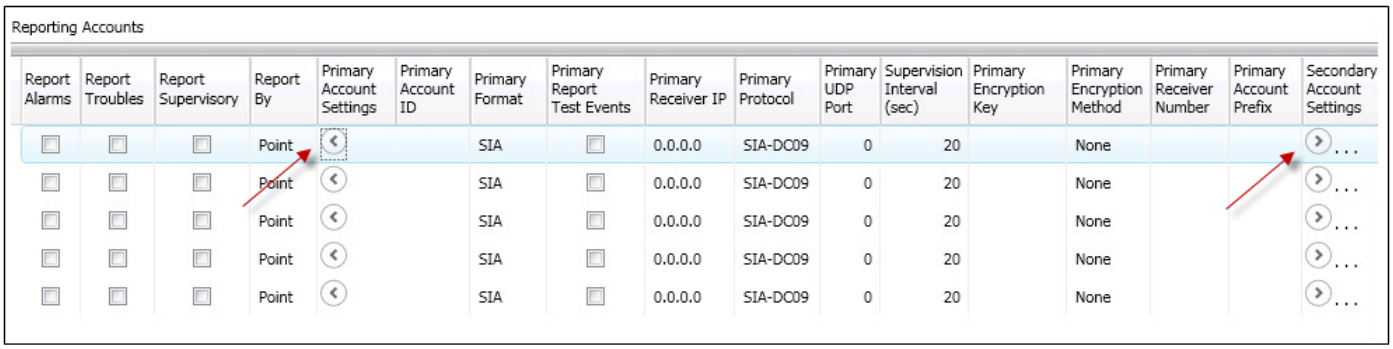


Figure 83. Example of the IP Reporting Window

Notes:
- Use the scroll bar to display additional fields if not shown on right.
- Click the collapse icon at any time to hide the account setting fields.

- Enter the Account ID.
- Select the applicable **Primary Format** option: **CID**/**SIA**
- Click in the **Report Test Events** selection box to send test signals to this account.
- Double-click in the **Receiver IP** field, and enter the IP address provided by the remote monitoring station.
- Click on the **Protocol** drop-down arrow to select **Fibro**.

Note: Fibro communications is used with the Sur-Gard receiver.

- Double-click in the **UDP Port** field to enter the Primary/Secondary port number as provided by the remote monitoring station.

Note: The UDP port number is the pathway for data that the receiver receives from the system panel and sends to the system panel.

- Double-click in the **Supervision Interval** field to adjust the amount of time (in seconds) that the panel's IP Communicator will send a supervision signal to the remote monitoring receiver.
  - Default setting is 20 seconds.
  - Contact the remote monitoring station to verify the correct setting. The receiver is programmed with a specific window of time to "see" the supervision signal. If the supervision signal is not seen within the programmed time, the receiver generates a trouble signal after six failed communication attempts.
- Double-click in the **Encryption Key** field to enter an applicable number as provided by the remote monitoring station.

- Click on the **Encryption Method** drop-down arrow to select **128** bit, if applicable.

Note: If **Encryption Method** is set to **None**, then an encryption key is not needed.

5. Click on the collapse icon to hide the account setting field when finished.

Reminder: Click the expand ellipsis icon to review or modify the account settings at any time.

6. Repeat steps for each Primary/Secondary reporting account or to edit an account.

Appendix A. Basic Operating Instructions

These instructions must be framed and displayed next to the 7706-ULF panel in accordance with NFPA-72 fire code for Local Protected Fire Alarm Systems. Test the system in accordance with NFPA-72.

Table A-1: Control Panel Function Keys

Description	Function Keys
ACKNOWLEDGE	
ARROW KEYS	
FIRE DRILL	
ESC	
RESET	
SIGNAL SILENCE	

Table A-2: Operating Instructions

Operation	Task
Silence Alarms, Troubles	Press the **SIGNAL SILENCE** key**.**
Acknowledge Alarms, Troubles	Press the **ACKNOWLEDGE** key after scrolling down to new event.
Reset Alarms	Press the **RESET** key.
View Alarms, Troubles	Press the arrow key(s) to view alarms/troubles.
Conduct a Fire Drill	Press the **FIRE DRILL** key**;** press the **RESET** key to exit Drill mode.
View Point's Status	• Press **ENTER** to display the Main Menu. • Press **5** – **System Tools**; enter the panel's code. • Press **1** – **Point Control**. • Press **ENTER** to select **Point.** • Enter **Addr/Ckt No.** and press **ENTER**. • Press **Up/Down** to view previous/next points.

Table A-2: Operating Instructions	
Operation	**Task**
Set Date/Time	• Press **ENTER** – Main Menu. • Press **3** – **Set Date/Time**. • Use the keypad to enter correct date; use right-arrow key to move through the date field and to display the time field. • Press **ENTER** to save changes.
Enable/Disable Point	• Press **ENTER** – Main Menu. • Press **2** – **Enable/Disable**; enter panel's code. • Press **1** – **By Point.** • Enter **Addr/Ckt No.** and press **ENTER.** • Press **Up/Down** to scroll. • Point's current status displays Normal (if enabled) or Disabled. • Press **ENTER** to change status; press **ENTER** to save or **ESC** to exit without saving.
View Event History	• Press **ENTER** – Main Menu. • Press **1** – **View History**. • Press left/right arrow keys to view next/previous events. • Press the up/down arrow keys for a list of events**.** • Press **ESC** to exit.
For Service Call:	

Appendix B. System Maintenance and Testing

Acceptance Test

The control panel is required to be installed in accordance with local and state building codes and NFPA-72 (*National Fire Alarm Code*). At the conclusion of each original installation or modification of this system, the control panel and related system is required to be inspected and tested in accordance with NFPA-72 to verify compliance with the applicable standards.

Testing should be conducted by trained fire alarm technician(s) from Potter factory in the presence of a representative of the Authority Having Jurisdiction (AHJ) and the building owners representative. Refer to NFPA-72 *(National Fire Alarm Code*), Inspection Testing and Maintenance code.

Periodic Testing and Service

Periodic testing and maintenance of the control panel, all initiating points, all notification appliances, and any other associated equipment is essential for ensuring that the system will operate as designed in emergency situations. Service and test the control panel according to the schedules and procedures outlined in the following documents:

- NFPA-72, Inspection, Testing, and Maintenance.
- All test and maintenance should be performed in accordance with any requirements of the local authority having jurisdiction.
- Service manuals and instructions for any and all peripheral points installed in the system. It is very important that any and all trouble conditions (or faults) be corrected immediately.

Operational Checks

During interim periods between formal testing and at regular intervals, the control system should be subjected to the following operational performance checks. The Authority Having Jurisdiction (AHJ) should be consulted for requirements on frequency of system testing.

- Check that the green AC power LED is lit.
- Check that all amber LEDs are off.
- Using the system menus, perform a Lamp Test function. Verify that all LEDs and LCD segments operate.
- Before proceeding, (1) notify the fire department and the central alarm receiving station if transmitting alarm status conditions, (2) notify facility personnel of the test so that alarm-indicating points are disregarded during the test period, and (3) when necessary, bypass activation of alarm notification appliances and speakers (if installed) to prevent sounding of evacuation signals.
- Activate an input device (i.e., manual station, heat, or smoke detector), and check that all notification appliances function.
- Notify Fire Department, central alarm receiving station, and /or building personnel when finished with testing the system.
- The test of ground fault must be measured below a 10-kohm impedance.

AC Fuse

The control panel has one fuse on the board for the AC power over current protection. The AC fuse is rated at 1.6A to 250 VAC time lag and screened onto the mainboard as F2.

Battery Fuse

The battery fuse is rated at 2.5A to 250 VAC time lag and screened onto the mainboard as F1.

Battery Maintenance

The system has been designed to use maintenance-free sealed lead acid batteries. These sealed lead acid batteries do not require any additional water or electrolytes. The system will keep all batteries fully charged by the system's power supply modules float charger. A typical discharged battery will recharge at 0.5A and reaches the voltage of 27.3 VDC within 48 hours. The battery is to remain in the cabinet with nothing on or around the batteries.

Replacement and Testing Recommendations

The batteries are to be replaced at least once every four years, or more frequently if specified by local AHJ and manufacturer recommendations. Batteries should be dated at the installation. Minimal replacement battery capacity displays on the control panel marking label. The batteries are required to be UL-recognized batteries with a date of manufacture permanently marked on the battery. The battery is to be tested at least annually and if the battery is showing signs of failure, it should be replaced. Immediately replace a damaged or leaking battery, and always replace batteries in pairs.

Proper Handling/First Aid Procedures

- In the event a battery leaks and contact is made with the sulfuric acid, immediately wash skin with water for at least 15 minutes. Water and household baking soda provide a good neutralizing solution for sulfuric acid.
- If sulfuric acid makes contact with eyes, flush with water for 15 minutes and 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 surfaces, tools, jewelry, and coins.
- If a battery is shorted, the battery and any connected equipment may be damaged. Additionally, a short may injure personnel.

Appendix C. Device Compatibilities

This section provides a listing of all NAC appliances, two-wire smoke detectors, and remote annunciator device compatibilities.

Module/Device	Compatibilities
NAC Appliances	Refer to Potter document: *5403592 NAC Compatibility Document*
Two-Wire Smoke Detectors	Refer to "Appendix D. Compatible Smoke Detectors Table" for a complete listing of two-wire smoke detectors.
On Board DACT	DACT – The on-board DACT transmits in Ademco Contact ID and Security Industries Association's Digital Communication Standards (SIA-DCS). Each account may be configured for Contact ID or SIA-DCS independent of the other account's setting. Therefore, some account(s) could be Contact ID, and others could be SIA-DCS or vice versa. Similarly, accounts could be the same reporting type.
Receivers	• AES Model 7705i and AES Model 7170 (AES RF Mesh Network) • Silent Knight Model 9500/9800 (Ademco MX8000) • Sur-Gard System III – SG-DRL3 (POTS Line Card)
RS-485 Points	Limited to a single RA-6075 LCD remote annunciator
IP Reporting	Sur-Gard System III – SG-DRL3-IPCA (Network Line Card) **Notes:** 1. Where the fire alarm transmitter is sharing on-premises communications equipment, the shared equipment shall be listed. 2. Secondary power shall be provided for all equipment necessary for the transmission and reception of alarm, supervisory, and trouble signals at the protected premises. 3. Secondary power shall be provided for all equipment necessary for the transmission and reception of alarm, supervisory, and trouble signals at the supervising stations. 4. The connection between the FACP and on-premises communications equipment shall be limited to 20 feet and enclosed in conduit or equivalently protected against mechanical injury.

Appendix D. Compatible Smoke Detectors Table

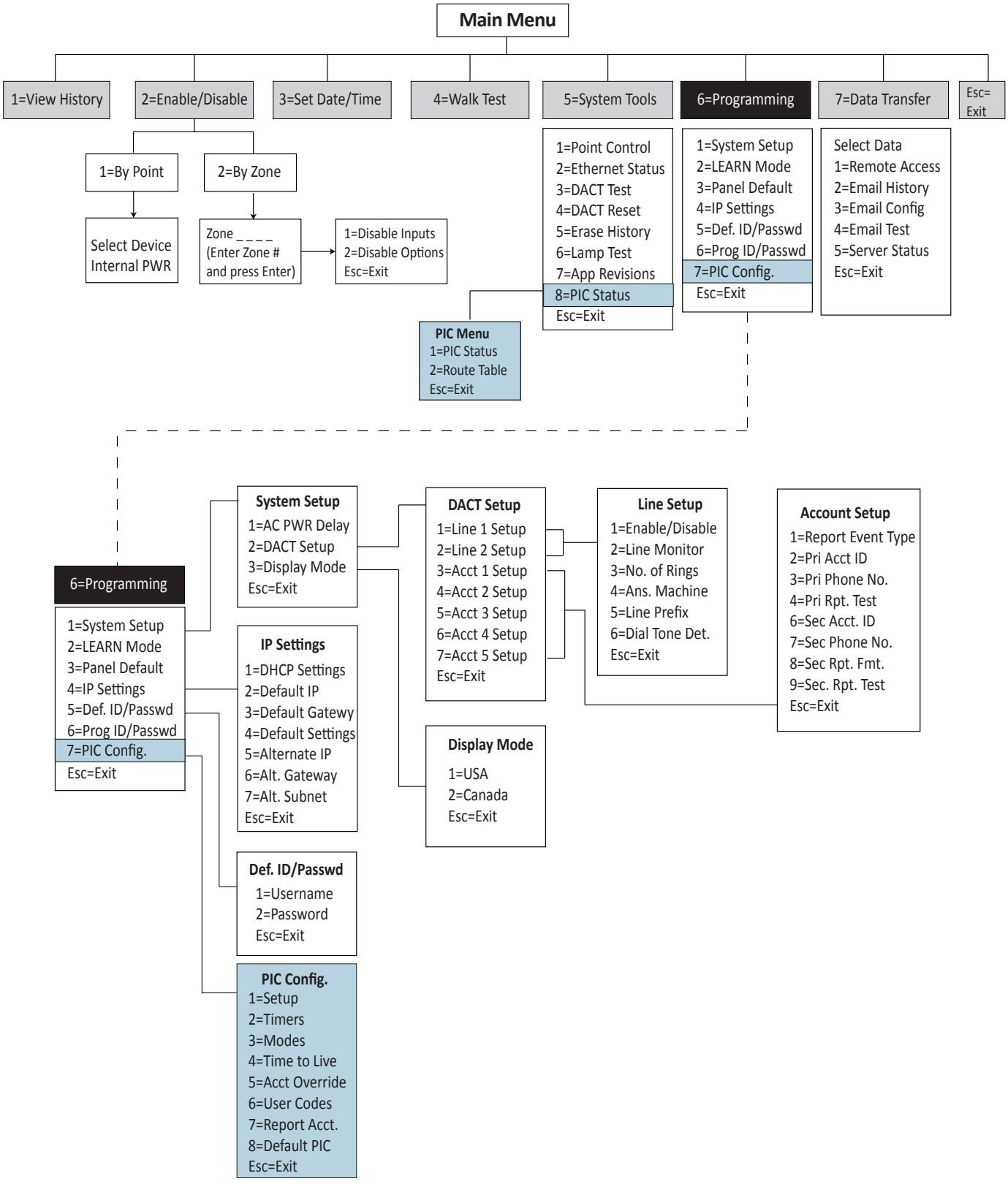
Detector Model	Identifier	Base Model	Identifier
System Sensor (Brk) (Max. No. of Detectors Per Zone is 20)			
1400*	A	N/A	N/A
2400*	A	N/A	N/A
2400TH*	A	N/A	N/A
2W-B	A	N/A	N/A
2WT-B	A	N/A	N/A
Detection System (Max. No. of Detectors Per Zone is 25)			
DS250	A	MB2W/MB2WL	A
DS250TH	A	MB2W/MB2WL	A
ESL (Max. No. of Detectors Per Zone is 25)			
611U	S10	601U	S00
611UD	S10	601U	S00
611UT	S10	601U	S00
612U	S10	601U	S00
612UD	S10	601U	S00
613U5	S10	601U	S00
611UD	S10	609U10	S00
612UD	S10	609U10	S00
425C	S10	N/A	N/A
425CT	S10	N/A	N/A
Hochiki (Max. No. of Detectors Per Zone is 25)			
SLR-24*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
		NS6-221	
		NS4-221	
		NS6-220	HB-3
SLR-24H*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
		NS6-221	
		NS4-221	
SIJ-24*	HD-3	HSC-221R	HB-71
		HSB-221	HB-54
		HSB-221N	HB-54
		NS6-221	
		NS4-221	

Detector Model	Identifier	Base Model	Identifier
Fenwal (Max. No. of Detectors Per Zone is 25)			
CPD-7051*	I51FE1	2-WIRE	FE51A
PSD-7155*	P55FE1	2WRLT	FE52A
PSD-7156*	P56FE1	2WRB	FE55A
All of the above Fenwal detectors and bases can be used in any combination. Retrofit Base Adaptor 70-501000-003, Identifier MAFE1 (for series 70-201000 Bases, Models -001, -002, -003, and -005). Duct Housing with Detector Base DH-51, Identifier DH22FE5 (for CPD-7051 and PSD-7155 detectors only).			
Potter (Max. No. of Detectors Per Zone is 25)			
PS-24*	HD-3 (HOCHIKI)	SB-46	HB-71(HOCHIKI)
			HB-54 (HOCHIKI)
		SB-93	HB-3 (HOCHIKI)
PS-24H	HD-3 (HOCHIKI)	SB-46	HB-71 (HOCHIKI)
			HB-54 (HOCHIKI)
IS-24*	HD-3 (HOCHIKI)	SB-46	HB-71 (HOCHIKI)
			HB-54 (HOCHIKI)
*UL listed. **Note:** If using a mix of System Sensor and other smoke detectors, a maximum of 20 detectors shall be permitted.			

Appendix E. Compatible Auxiliary Circuit Devices

Model	Description
Flow Switches (UL listed devices by Potter Electric Signal Company, LLC)	
1116102	VSR-AT 2-inch Auto Test
1116103	VSR-AT 3-inch Auto Test
1116104	VSR-AT 4-inch Auto Test
1116105	VSR-AT 5-inch Auto Test
1116106	VSR-AT 6-inch Auto Test
1116108	VSR-AT 8-inch Auto Test
1116125	VSR-AT 2 1/2 inch Auto Test
1116135	VSR-AT 3 1/2 inch Auto Test

Appendix F. Control Panel Menu



Appendix G. Verifying 7764 PIC Operation and Troubleshooting Steps

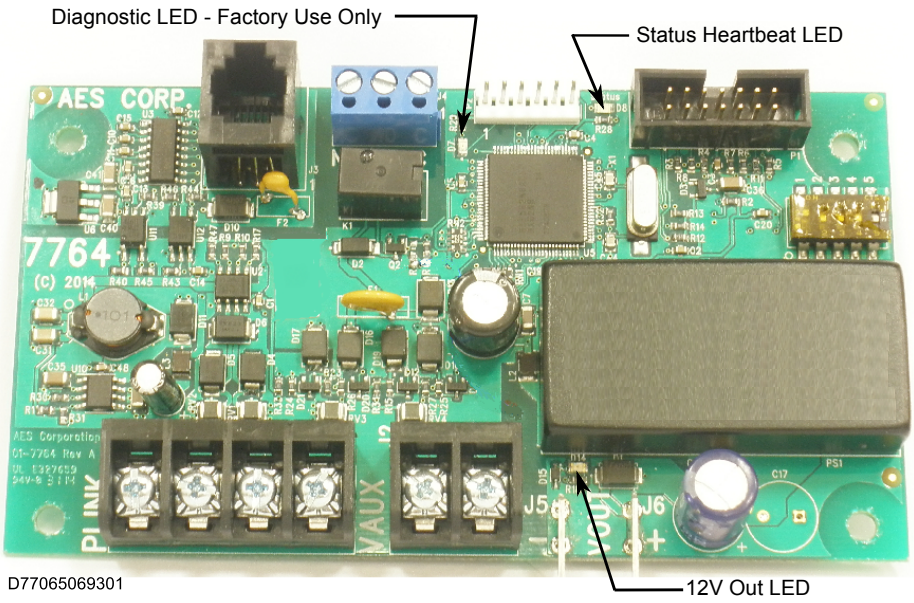
Verifying 7764 PIC Operation and Troubleshooting Steps

The 7764 PIC is operating normally when:

- No error message is on the LCD after the power-up self-test of the panel.
- The green Status heartbeat LED is blinking on and off. There is a short flash followed by approximately 2 seconds off before repeating.
- The green 12V Out LED is on continuously.

A third diagnostic LED located on the board is for factory use only.

See figure below for LED locations.



Troubleshooting

If the following error message appears on the two-line LCD display

`Trb-AES COM [1]` alternating with `AES PIC 1` , use the steps that follow to isolate the problem.

To Isolate the Problem

1. Check the wiring between mainboard AUX (-) and (+) terminals and 7764 VAUX terminals (refer to "Table 9: Interconnections" for correct AUX wiring). Verify that there is DC voltage at the 7764 VAUX terminals.
2. Verify that the 7764 **12V Out** LED is on. If the LED is not on and the VAUX terminals have DC voltage, then the 7764 requires service. Contact AES Technical Support for instructions.
3. Check wiring between PLINK on the 7764 and the mainboard (refer to "Table 9: Interconnections") for the correct PLINK wiring instructions). If the wiring is correct, perform a power reset by disconnecting the battery, removing and then reapplying AC power to the 7706-ULF. If the trouble error message still appears, the 7764 requires service. Contact AES Technical Support for instructions.

Appendix H. PFC-6006 NAC Compatibility List

Model * = Not to be used for evacuation	Type	Maximum No.
AMSECO		
H-1224	Horn	5
HP-25T	Horn	18
SL-1224	Strobe	8
SL-1224-WP	Strobe	3
CSL-1224W *	Strobe	3
SL-24H	Strobe	3
SL-24H-WP	Strobe	3
SL24C-3075110	Strobe	4
SL24C-177	Strobe	1
CSL-24C *	Strobe	3
SH-1224	Strobe/Horn	6
SH-1224-WP	Strobe/Horn	3
CSH-1224-W *	Strobe/Horn	3
SH-24H	Strobe/Horn	2
SH-24H-WP	Strobe/Horn	2
SH24C-3075110	Strobe/Horn	1
SH24C-177	Strobe/Horn	1
CM24C	Chime	12
SCM24-3075110	Strobe/Chime	3
SB24-1530	Strobe	7
SB-75110	Strobe	3
SC24-30750110	Strobe	7
SLB24-75	Strobe	3
CSLB24 *	Strobe	3
SHB24-75	Strobe	2
CSHB24 *	Strobe	2
MBA Bell	Bell	8
SMD10-3A	Sync Module	1
GENTEX		
GES3-24	Strobe	6
GEC3-24	Strobe/Horn	4
GCS	Strobe	4

Model * = Not to be used for evacuation	Type	Maximum No.
GCC	Strobe/Horn	3
GCS Colored Strobe *	Strobe	4
GCC Colored Combo *	Strobe/Horn	3
GEC	Strobe/Horn	4
GEC Colored Lens *	Strobe/Horn	4
GES	Strobe	6
GES Colored Lens *	Strobe	6
GEH	Horn	17
GX93	Horn	27
WGES24	Strobe	2
WGEC24	Strobe/Horn	2
WGES24 Colored Lens *	Strobe	2
WGEC24 Colored Lens *	Strobe/Horn	2
EATON/COOPER/WHEELOCK		
HN	Horn	10
HNC	Horn	10
HS-24	Horn	18
NH-12/24	Horn	11
AH-24	Horn	23
AH-24WP	Horn	23
MIZ-24S	Horn	19
AMT-12/24	Horn	12
HS	Strobe/Horn	7
HSC	Strobe/Horn	7
AS-24MCW	Strobe/Horn	7
AS-24MCWH	Strobe/Horn	1
AS-241575W	Strobe/Horn	5
AS-24MCC	Strobe/Horn	6
AS-24MCCH	Strobe/Horn	1
ASWP-2475W	Strobe/Horn	3
HS4-241575W	Strobe/Horn	3
HS4-24MCW	Strobe/Horn	5
HS4-24MCC	Strobe/Horn	5
HS4-24MCWH	Strobe/Horn	1
NS-241575W	Strobe/Horn	5

Model * = Not to be used for evacuation	Type	Maximum No.
NS-24MCW	Strobe/Horn	7
NS-24MCC	Strobe/Horn	7
NS-24MCCH	Strobe/Horn	6
ST	Strobe	8
STC	Strobe	8
RSS-241575W	Strobe	5
RSS-24MCW	Strobe	8
RSS-24MCC	Strobe	7
RSS-24MCWH	Strobe	1
RSS-24MCCH	Strobe	1
RSSP-241575W	Strobe	5
RSSP-24MCW	Strobe	8
RSSP-24MCWH	Strobe	1
RSSWP-2475W	Strobe	3
AMT-241575W	Strobe/Horn	4
AMT-24MCW	Strobe/Horn	6
AMT4-241575W-NYC	Strobe/Horn	4
MT-241575W	Strobe/Horn	4
MT-24MCW	Strobe/Horn	5
MTWP-2475W	Strobe/Horn	3
AMT-12/24-NYC	Horn	12
MT-12/24	Horn	20
MT4-12/24	Horn	12
SYSTEM SENSOR		
HR/HW	Horn	9
HRK/HWK	Horn	9
MH	Horn	35
CHR/CHW	Chime	14
SR/SW	Strobe	7
SRH/SWH	Strobe	2
SRK/SWK	Strobe	7
SRH/SHW	Strobe	2
SRHK/SWHK	Strobe	2
SCR/SCW	Strobe	7
SCRH/SCWH	Strobe	2

Model * = Not to be used for evacuation	Type	Maximum No.
SCRHK/SCWHK	Strobe	2
P2R/P2W	Strobe/Horn	7
P2RH/P2WH	Strobe/Horn	2
P2RK/P2WK	Strobe/Horn	7
P2RHK/P2WHK	Strobe/Horn	2
PC2R/PC2W	Strobe/Horn	7
PC2RK/PC2WK	Strobe/Horn	7
PC2RH/PC2WH	Strobe/Horn	2
PC2RHK/PC2WHK	Strobe/Horn	2
P4R/P4W	Strobe/Horn*	7
P4RH/P4WH	Strobe/Horn*	2
PC4R/PC4W	Strobe/Horn*	2
PC4RH	Strobe/Horn*	2
CHSR/CHSW	Strobe/Chime	7
MDL3R/MDL3W	Sync Module	1

AES CORPORATION IntelliNet

7706-ULF
Integrated Fire Monitoring System
Operating Instructions

Normal Standby The green AC POWER LED will be illuminated, and the user-defined message on the LCD will be displayed. If the AC power is removed for more than 5 seconds, the green AC power LED will extinguish.

Acknowledging Off normal events are acknowledged by pressing the **ACK** key after scrolling down to new event. After all events have been acknowledged, the buzzer will deactivate and the associated LED will stop flashing and remain on continuously.

Alarm Condition The red ALARM LED will be flashing until it is acknowledged and will then display steady red anytime an alarm is occurring in the system. The LCD will display the number of inputs in alarm, and the buzzer will be activated. The buzzer will remain active until all alarms are acknowledged, or until the **Silence** key is pressed.

Silencing Alarm When the system is in Alarm, the notification circuits (strobes and horns) can be shut off by pushing the **SILENCE** key. The Silence LED will change status from flashing to steady. A programmable Automatic Silence will also shut off notification circuits. The Silence LED will remain flashing until the event is acknowledged.

Resetting Alarm After the condition that caused the alarm has been identified and corrected, the system may be reset to the Normal Standby by pressing the **RESET** key.

Supervisory Condition When a supervisory condition is detected, the amber SUPERVISOR LED will illuminate and the buzzer will sound. The LCD display will indicate the number of supervisory events that are active. The local buzzer will sound until all supervisory events have been acknowledged.

Restoring Supervisory Condition If the Supervisory condition is non-latching, once the device is restored to the normal condition, the supervisory event will clear. If the supervisory condition is latching, the device that was activated must be restored and the **RESET** key pressed.

Trouble Condition When a fault condition occurs, the amber TROUBLE LED will illuminate and the local buzzer will sound until the fault is removed or the **ACK** key is pressed acknowledging the trouble condition. If the buzzer is acknowledged and the fault is not removed within 24 hours, the buzzer will resound.

Silencing Trouble(s) When a trouble is occurring, the local buzzer will sound until either all troubles have been acknowledged or the **SILENCE** key is pressed.

Ground Fault When a conductor contacts an earth ground, the amber EARTH FAULT LED will illuminate and the LCD display will provide further information of where the fault is located.

Testing and Maintenance Test this system monthly or more frequently as required by the AHJ. Before conducting any testing, contact the building personnel and the monitoring facility as applicable. When testing a system configured for releasing, activate the releasing disconnect switch to prevent accidental discharge of a suppression system. Test the circuits as outlined in the Installation Manual. Test in accordance with NFPA-72 and any local requirements. The batteries should be marked with the date of installation and replaced every four years or sooner if battery trouble occurs. Batteries should be checked with a tester acceptable to the AHJ such as a Stone Technologies model STC612A or equivalent. In case of a fuse replacement, refer to the Installation Manual for the proper rating. Contact the agency below for service or operational questions.

For service, contact:

Name: _____

Company: _____

Address: _____

Telephone: _____

Frame and display instructions adjacent to the fire alarm panel.

40-7706-PI REV 1 7/14/2015