

**Addressable Charger/
Power Supply
ACPS-2406
Manual**

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Fire Alarm System Limitations

While a fire alarm system may lower insurance rates, it is not a substitute for fire insurance!

An automatic fire alarm system—typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control panel with remote notification capability—can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72-1999 (NFPA 72-1999), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol or medication. Please note that:

- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control panel. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

The most common cause of fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of Chapter 7 of NFPA 72-1999 shall be followed. Environments with large amounts of dust, dirt or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly or as required by National and/or local fire codes and should be performed by authorized professional fire alarm installers only. Adequate written records of all inspections should be kept.

Installation Precautions

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

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

CAUTION - System Reacceptance Test after Software Changes. To ensure proper system operation, this product must be tested in accordance with NFPA 72-1999 Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0°C to 49°C (32°F to 120°F) and at a relative humidity (noncondensing) of 85% at 30°C (86°F) per NFPA, and 93% ± 2% at 32°C ± 2°C (89.6°F ± 1.1°F) per ULC. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and all peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

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

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

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

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

Though designed to last many years, system components can fail at any time. This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static-suppressive packaging to protect electronic assemblies removed from the unit.

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

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FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministre des Communications du Canada.

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Section 1 Introduction

The ACPS-2406 is an auxiliary addressable power supply and battery charger with 24 VDC outputs. It operates in FlashScan® or CLIP (Classic Interface Protocol) mode, and has built-in strobe synchronization. It may be configured to drive four Notification Appliance Circuits or, alternately, may be configured to provide four-wire detector power or general purpose power.

1.1 Features

- Addressable by any FlashScan® or CLIP FACP (Fire Alarm Control Panel)
- Strobe/NAC Synchronization with System Sensor SpectrAlert™* Series horns and strobes, or Gentex or Wheelock horns and strobes. (Use only devices from the same manufacturer in each system).
*SpectrAlert is a registered trademark of System Sensor
- NAC synchronization with UZC-256 (Universal Zone Coder)
- Provides four coded or non-coded NACs that share 6.0 A of output power, or, configured differently, will supply 5.0 A of four-wire detector power or general purpose power
- Power-limited outputs
- Charges 7 to 25 AH batteries
- Auxiliary +24 VDC @ 0.5 A output for use within the same cabinet
- Isolated Signaling Line Circuit (SLC) interface
- Brownout detection
- Battery/battery charger supervision
- AC loss detection and AC loss delay reporting
- Selectable Ground Fault Detection
- Occupies between five and 13 addresses on an SLC, depending on configuration
- Canadian Two-stage with Temporal Pattern for Evacuation

1.2 Specifications

- Primary (AC) Power - TB1
- ACPS-2406 - 110-120 VAC 50/60 Hz input, 2.7 A maximum
24 VDC output voltage regulated and power-limited
- Output Circuits - TB4, TB5, TB6
- 2.5 A maximum for any one output circuit
- 5.0 A (continuous), 6.0 A during an alarm (1 hour UL rating)
- **Auxiliary Power Output** - J1 - 24 VDC @ 0.5 A, for use within the same cabinet. When this output is used for an installation, the maximum load current available at Output #4 (TB6-3 and TB6-4) will become 2.0 A maximum.
- **Secondary Power (Battery) Charging Circuit - TB2, TB3** - lead-acid battery charger which will charge 7 to 25 AH batteries. Maximum charger current - 1.1 A
- Wheelock synchronization devices are compatible with ACPS-2406 software greater than #ACPS1.3, together with Revision L or higher of the ACPS-2406 PC board. (Figure 1.1 on page 10 for revision location.)

- Utilizes wire sizes 12-18 AWG (3.25-.75 mm²)
- Average SLC current is 1.0 mA. The maximum resistance of the SLC wiring from any device to the FACP should not exceed 40/50 Ohms (50 Ohms for the LIB-200A and LIB-400). SLC data is transmitted between 24.0 VDC, 5 VDC and 0 VDC at approximately 3.33k baud.
- Battery fuse (F2) 15A, 3AB
- Line Drop: 2.4 VDC max. to last device

1.3 Installation Standards and Codes

The ACPS-2406 complies with the following standards:

NFPA 72 National Fire Alarm Code

Underwriters Laboratories:

- UL 864 Standard for Control Units for Fire Alarm Systems

In addition, the installer should be familiar with the following standards:

- NEC Article 300 Wiring Methods
- NEC Article 760 Fire Protective Signaling Systems
- Applicable Local and State Building Codes
- Requirements of the Local Authority Having Jurisdiction

1.4 Related Documentation

To obtain a complete understanding of specific features of the ACPS-2406, or to become familiar with functions in general, make use of the documentation listed in Table 1.1

Title	Document Number
NFS-3030 Fire Alarm Control Panel	51330, 51344, 51345
NFS-640 Fire Alarm Control Panel	51332, 51333, 51334
AM2020/AFP-1010 Fire Alarm Control Panel	15088
AFP-100 Analog Fire Panel	51010
AFP-200 Analog Fire Panel	15511
AFP-300/AFP-400 Analog Fire Panel	50253, 50259, 50260
AFC-600 Analog Fire Control Panel	51031, 51032, 51033
UZY-256 (Universal Zone Coder) Installation Guide	15216
CAB-3 Series Installation Instructions	15330
CAB-PS1 Cabinet	51400
BB-25 Cabinet Installation Instructions	50898
XPIQ Audio Transponder	51013
SLC Wiring Instruction Manual	51253
Annunciator Control System	15842
ACM-8R Annunciator Control Module	15342
Annunciator Fixed Module	15048
LCD-80 Manual	15037
LDM Series Lamp Driver Annunciator	15885
Voice Alarm System Manual	51252
Device Compatibility Document	15378
UZY-256 Universal Zone Coder	15216
UZY-256 Programming	15976
UDACT Manual (Universal Digital Alarm Communicator)	50050
XP Transponders	15888
XP5 Series Transponders	50786
RM-1 Series Microphone	51138
AFAWS	50705
INA Intelligent Network Annunciator	15092

Table 1.1 Related Documentation

1.5 Board Layout

The ACPS-2406 board layout is illustrated in Figure 1.1. A second figure below the board layout illustrates the positions of the LEDs.

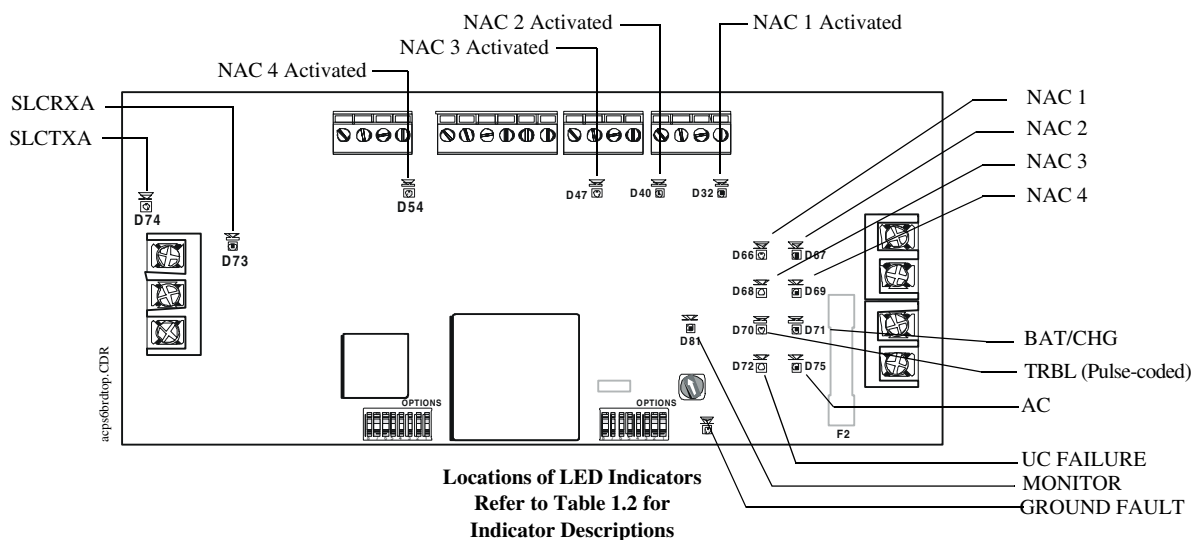
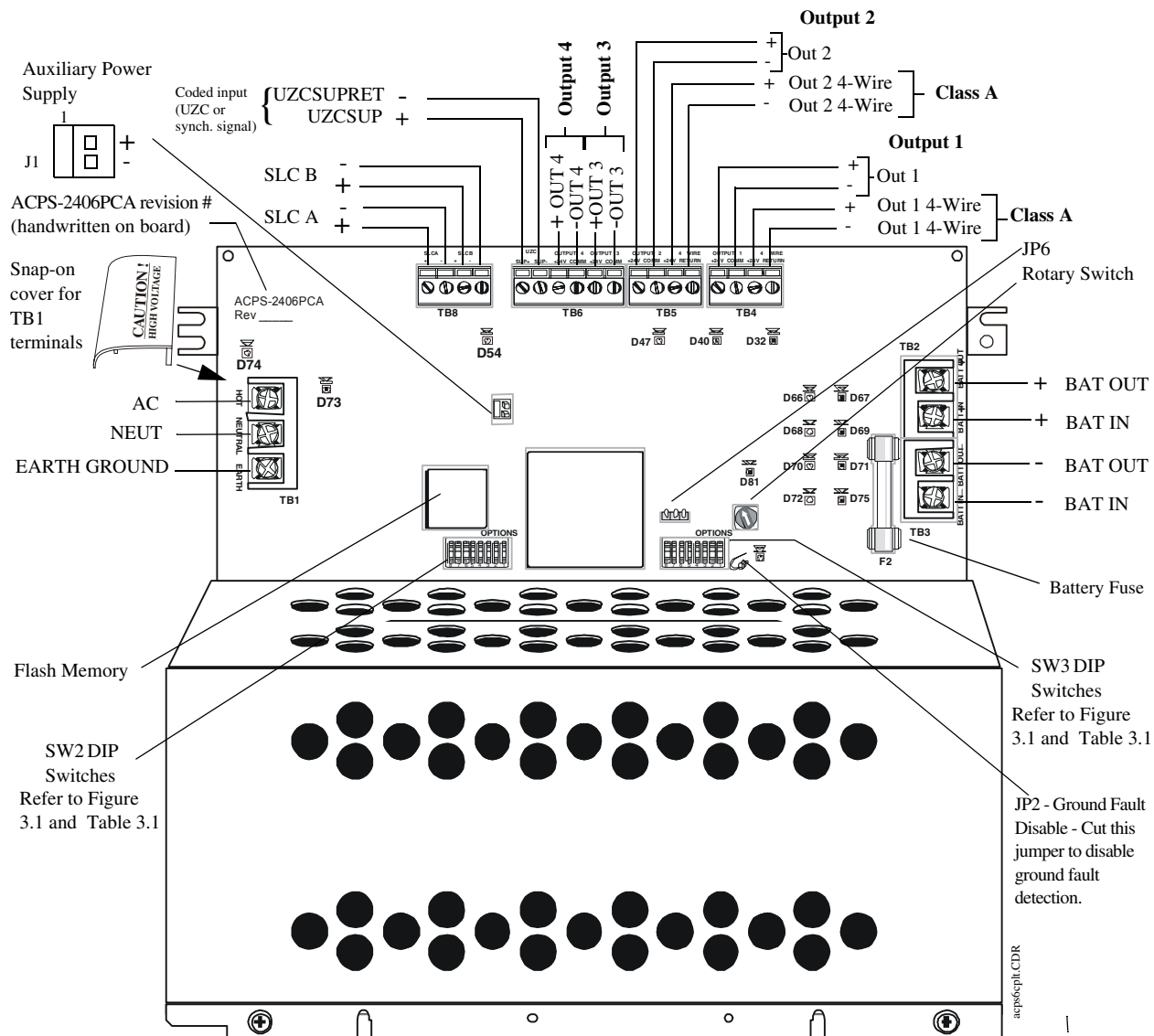


Figure 1.1 The ACPS-2406 Board Layout

1.6 LED Indicators

There are 16 LEDs that indicate various conditions and troubles. The following table lists and describes each.

Reference	LED Name	Color	Description
D19	GND FLT	Yellow	Illuminates when a ground fault is detected on any NAC, battery lead, or 24-volt output.
D32	NAC 1 Activated	Green	Illuminates when NAC 1 is activated.
D40	NAC 2 Activated	Green	Illuminates when NAC 2 is activated.
D47	NAC 3 Activated	Green	Illuminates when NAC 3 is activated.
D54	NAC 4 Activated	Green	Illuminates when NAC 4 is activated.
D81	MONITOR	Green	Blinks steadily during normal polling process. Shuts off when there is a monitor trouble.
D66	NAC 1	Green	Glows steadily when communication is established with the FACP. Blinks steadily during normal polling process.
D67	NAC 2	Green	Glows steadily when communication is established with the FACP. Blinks steadily during normal polling process.
D68	NAC 3	Green	Glows steadily when communication is established with the FACP. Blinks steadily during normal polling process.
D69	NAC 4	Green	Glows steadily when communication is established with the FACP. Blinks steadily during normal polling process.
D70	TRBL	Yellow	Illuminates when one of the following troubles occur: brownout; +38 volt supply supervision; invalid address. Blinks once, pauses, then blinks again, repeating this pattern for brownout trouble. Blinks twice, pauses, then blinks twice again, repeating this pattern for +38 volt supply failure. Blinks three times, pauses, then blinks three times again, repeating this pattern. Panel programming does not match DIP Switch settings.
D71	BAT/CHG	Yellow	Illuminates when there is a battery or charger trouble.
D72	UCFAILURE	Yellow	Illuminates if the microcontroller fails.
D75	AC	Green	Illuminates when there is AC power.
D73	SLCRXA	Green	Illuminates when data is transmitted on the SLC.
D74	SLCTXA	Green	Illuminates when data is received from the SLC.

Table 1.2 LED Indicators

Section 2 Installation



WARNING: High Voltages Present

Use extreme caution when working with the ACPS-2406. High voltage and AC line-connected circuits are present in this power supply. Turn off and remove all power sources. To reduce the risk of electric shock, make sure to properly ground the ACPS-2406.

Install the snap-on cover for TB1 after wiring.

2.1 In a CAB-3 Series Cabinet

The ACPS-2406 mounts in the lower left or lower right of CAB-3 Series enclosure. It will also mount in a CHS-6 chassis, requiring the left two of the three chassis spaces, or in a CHS-PS chassis, where it must be installed in the right half.

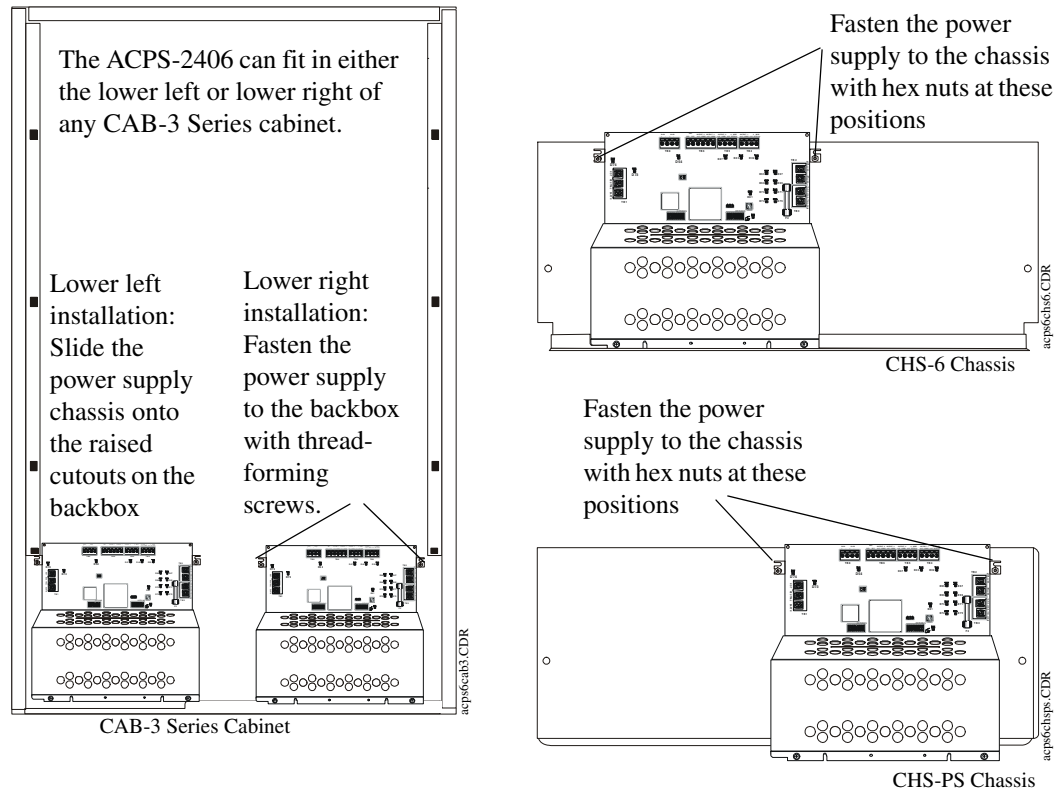


Figure 2.1 Mounting in a CAB-3 Series Cabinet

2.2 In a BB-25 Cabinet

The ACPS-2406 mounts in the left side of a BB-25 cabinet. Two 7 to 25 amp-hour batteries fit into the right side of the cabinet.

Fasten the power supply to the backbox with screws (self-threading) at these positions.

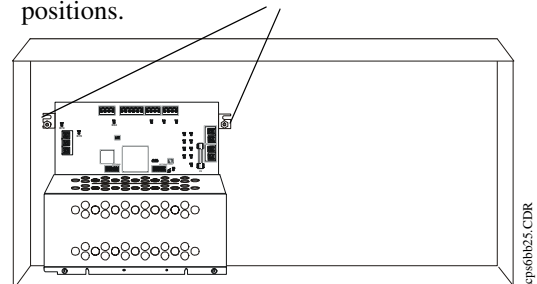


Figure 2.2 Mounting in a BB-25 Cabinet

2.3 In a CAB-PS1 Cabinet

The ACPS-2406 mounts in a CAB-PS1 cabinet. Two seven amp-hour batteries fit into the bottom of this cabinet along with the ACPS-2406. The chassis is fastened to the two top right studs with two hex nuts.

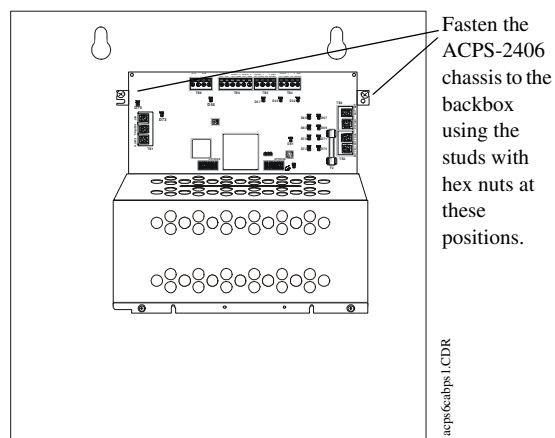


Figure 2.3 CAB-PS1 Mounting

2.4 Wiring

The terminal block and pin connections are illustrated in Figure 1.1.

Power-limited wiring must remain separated from nonpower-limited wiring by at least 0.25 in. (6.4 mm), and must enter an enclosure through different knockouts. Samples for configuring power-limited and nonpower-limited wiring in three different cabinets are shown in Figure 2.4, Figure 2.5, and Figure 2.6.

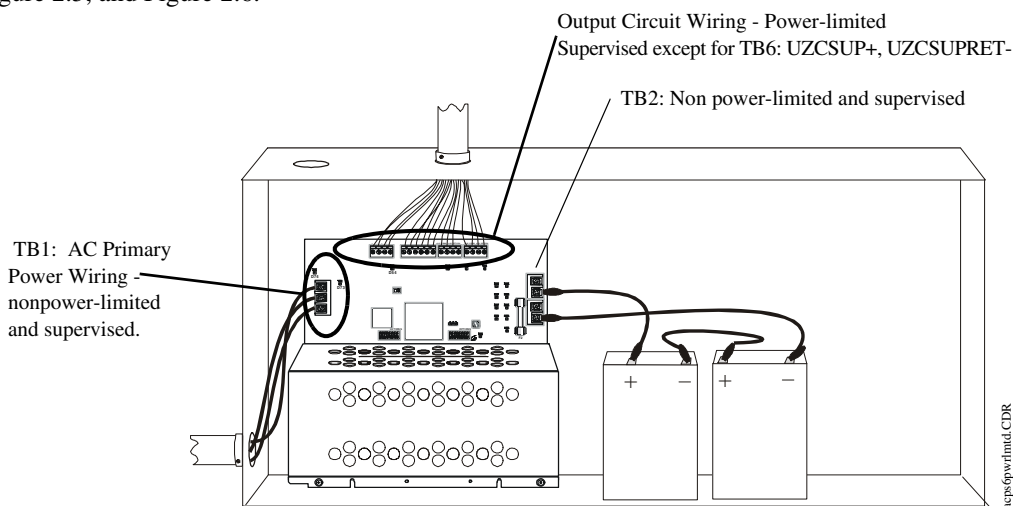


Figure 2.4 BB-25 Cabinet: Power-limited Wiring Example, with Two Battery Wiring

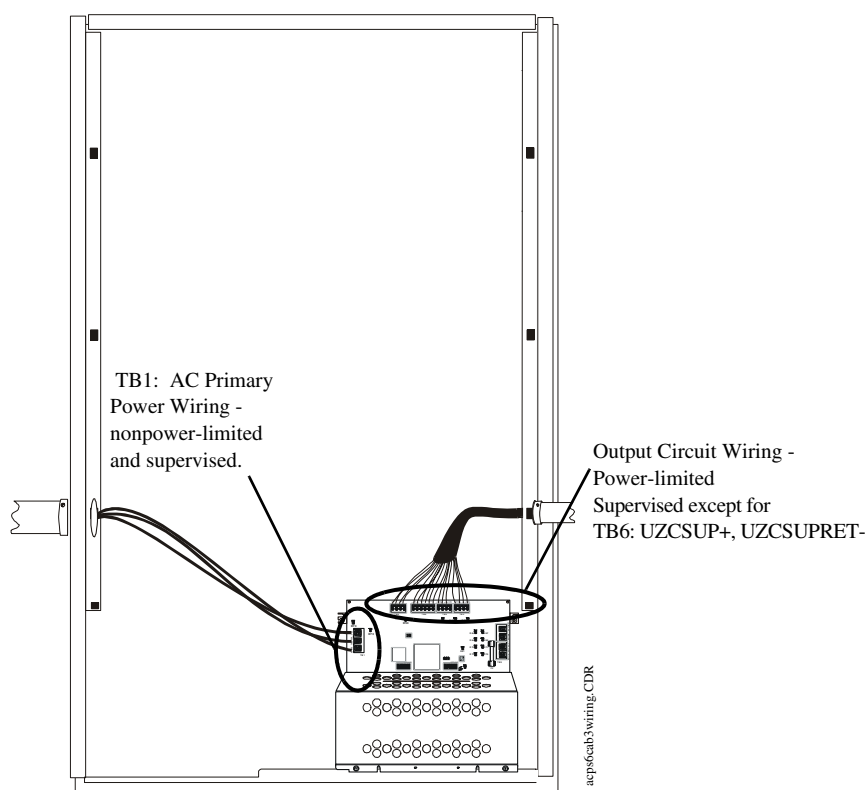


Figure 2.5 CAB-3 Cabinet: Power-limited Wiring Example

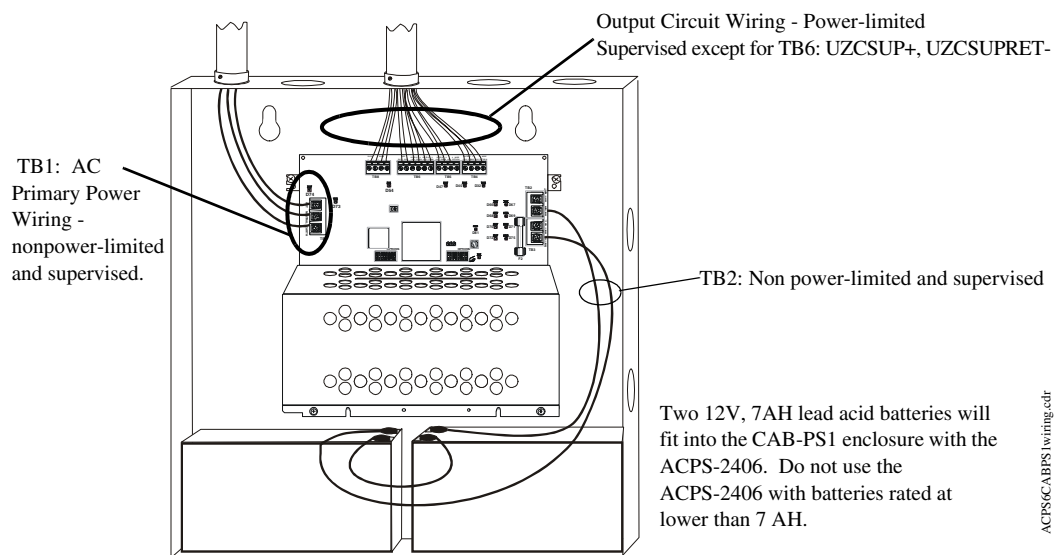
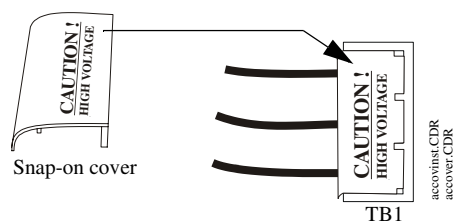


Figure 2.6 CAB-PS1 Cabinet: Power-limited Wiring Example

TB1 - With all power sources off, connect primary AC power to the “AC” and “NEUT” terminals, and ground the ACPS-2406 at the “EARTH GROUND” terminal.



WARNING: Install the snap-on cover for TB1 after wiring. Refer to Figure 2.7 for cover installation



Press fit the snap-on cover over TB1 after AC power has been connected.

Figure 2.7 Installing the TB1 Snap-on Cover

TB2, TB3 - The lead-acid battery charger will charge 7 to 25 AH batteries. Connect two batteries to these terminals as illustrated in Figure 2.4. Leave the battery interconnect cables disconnected until after system power-up.

TB4, TB5, TB6 - Outputs 1 through 4 and UZC-256 connections. With all power sources off, connect wiring. Refer to Section Four of this manual for applications suggestions. Outputs 1 through 4 share 6.0 A of output power when configured as NACs, or 5.0 A of 24VDC detector power or general purpose power.

TB8 - SLC Wiring. Connect to panel Signaling Line Circuit.

J1 - Auxiliary power connection, 0.50A, +24VDC, unsupervised output for connection within the same cabinet. When this output is used for an installation, the maximum load current available at Output #4 (TB6-3 and TB6-4) will be reduced to 2.0 A maximum.

To determine battery requirements, refer to Section 5 of this manual.

Section 3 Configuring the ACPS-2406

3.1 DIP Switch Configuration

Programming at the ACPS-2406 is done by configuring two sets of DIP switches, SW2 and SW3. SW3 is a set of mode selection switches for output circuits one through four, as well as AC Loss, AC Delay, settings for coded NAC patterns, Canadian Trouble Reporting, and Dual Stage operation. SW2 is a set of switches with various mode options for the output circuits, as well as settings for Signal Silence, strobe synchronization type, and battery charger. Setting these 16 switches in different configurations will provide various options as described in Table 3.1.

SW2 and SW3 are horizontally aligned on the ACPS-2406 board just above the metal case which covers the bottom half of the power supply. To place a switch in the OFF position, depress the end of the switch closest to the metal case. To place a switch in the ON position, depress the end of the switch farthest from the metal case. Refer to Figure 3.1 below for an illustration of the OFF and ON positions. Table 3.1 describes the ACPS-2406 DIP Switch settings.

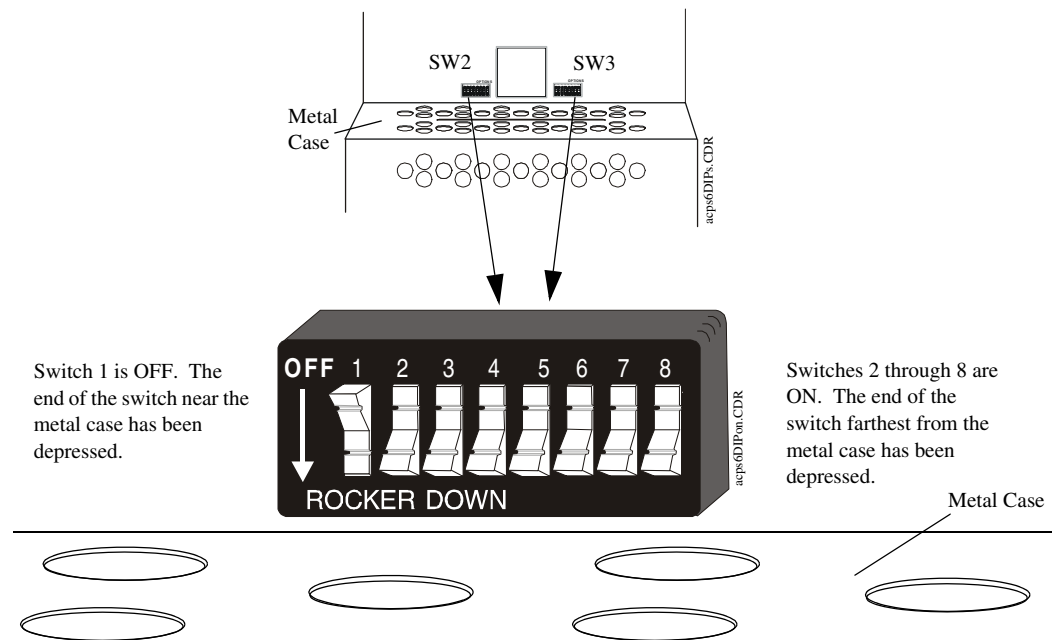


Figure 3.1 Setting a DIP Switch

Note: DIP Switch settings should be changed only while the ACPS-2406 is powered down.

Switch SW3	ON		OFF	
3.1*	Output Circuit 1 = 24 VDC, non-supervised		Output Circuit 1 =NAC	
3.2*	Output Circuit 2 = 24 VDC, non-supervised		Output Circuit 2 = NAC	
3.3*	Output Circuit 3 = 24 VDC, non-supervised		Output Circuit 3 = NAC	
3.4*	Output Circuit 4 = 24 VDC, non-supervised		Output Circuit 4 = NAC	
3.5, 3.6	3.5 OFF, 3.6 OFF = US AC Delay OFF 3.5 OFF, 3.6 ON = US 8 hour AC Delay 3.5 ON, 3.6 OFF = US 16 hour AC Delay 3.5 ON, 3.6 ON = Canadian Trouble Reporting			
3.7, 3.8	3.7	3.8	Below: Coded or Non-coded as defined by SW2.1, 2.2, 2.3, 2.4	
			CODED	NON-CODED
	ON	ON	March Time (120 ppm)	Output will synchronize to a non-coded input at the UZC connections of TB6: or use SW2.6 or 2.7 settings.
	ON	OFF	Dual Stage**	Invalid Condition - When Dual Stage is selected, all outputs are forced to coded.
	OFF	OFF	Temporal Pattern	Output will synchronize to a non-coded input at the UZC connections of TB6: or use SW2.6 or 2.7 settings.
	OFF	ON	Follow the UZC Universal Zone Coder Signal at the UZC connections of TB6	Non-coded outputs will use the protocol selected by SW2.6 and 2.7.***
* Use these switches in conjunction with switches 2.1, 2.2, 2.3, and 2.4 to further define the NAC or 24 VDC circuit. ** Canadian Dual Stage must have DIP Switches 3.5 and 3.6 set to ON (Canadian Trouble Reporting), and Output Circuits 1-4 must be set to NAC. ***CAUTION: FOR NON-CODED MASTER/SLAVE OPERATION: when a non-coded signal is supplied to the UZC connections of TB6, the same protocol must also be programmed at the slave ACPS-2406 (using SW2.6 and SW2.7) as programmed at the master ACPS-2406. This will ensure operation of all non-coded outputs of the slave ACPS-2406 should signal loss occur of the synchronization input (UZC connections) at TB6.				

Switch SW2	ON	OFF
2.1	Output Circuit 1 is: <ul style="list-style-type: none">• coded, if configured as NAC with SW3.1• resettable, if configured as 24VDC power circuit with SW3.1	Output Circuit 1 is: <ul style="list-style-type: none">• noncoded, if configured as NAC with SW3.1• nonresettable, if configured as 24VDC power circuit with SW3.1
2.2	Output Circuit 2 is: <ul style="list-style-type: none">• coded, if configured as NAC with SW3.2• resettable, if configured as 24VDC power circuit with SW3.2	Output Circuit 2 is: <ul style="list-style-type: none">• noncoded, if configured as NAC with SW3.2• nonresettable, if configured as 24VDC power circuit with SW3.2
2.3	Output Circuit 3 is: <ul style="list-style-type: none">• coded, if configured as NAC with SW3.3• resettable, if configured as 24VDC power circuit with SW3.3	Output Circuit 3 is: <ul style="list-style-type: none">• noncoded, if configured as NAC with SW3.3• nonresettable, if configured as 24VDC power circuit with SW3.3
2.4	Output Circuit 4 is: <ul style="list-style-type: none">• coded, if configured as NAC with SW3.4• resettable, if configured as 24VDC power circuit with SW3.4	Output Circuit 4 is: <ul style="list-style-type: none">• noncoded, if configured as NAC with SW3.4• nonresettable, if configured as 24VDC power circuit with SW3.4
2.5	Electronic Signal Silence*	No Electronic Signal Silence
2.6, 2.7	Strobe Synchronization Type** 2.6 ON, 2.7 ON = Wheelock 2.6 ON, 2.7 OFF = Gentex 2.6 OFF, 2.7 ON = System Sensor 2.6 OFF, 2.7 OFF = No synchronization	
2.8	Disable Battery Charger	Enable Battery Charger
*The FACP requires the addition of one virtual address when this option is used. This extra address is specifically for Electronic Signal Silence only and should be configured in the panel as a “silenceable output”, activated by CBE. The Electronic Signal Silence option is an “all or none” option and is used with Gentex, System Sensor and Wheelock synchronized devices; all addressed NACs will silence when this option is activated. When synchronized strobes are used, the horns will mute, but the strobes will remain active.		
**Strobe Synchronization only works with non-coded NACs.		
Note: AM2020/AFP-1010 - Do not use PWRC Type Code for any ACPS-2406 address.		

Table 3.1 DIP Switch Settings

The DIP Switch configurations chosen determine the ACPS-2406 address consumption. Refer to Table 3.2 through Table 3.7 for illustrations of the DIP Switch/address consumption relationship.

3.2 Addressing

The installer must set aside sequential SLC addresses (an address block) equal to the number of addresses that will be consumed by the ACPS-2406. Determining the size of the address block and setting the SLC base address is described in this section.

Determining Address Consumption

An ACPS-2406 can occupy an address block of 5, 6, 8, 9, 12, or 13 addresses on an SLC, depending on the configuration of ACPS-2406 DIP Switches. Table 3.2 through Table 3.7 below detail the DIP Switch/address consumption relationship. Compare the actual DIP Switch settings with the tables: a match will give the total number of SLC addresses necessary for the address block.

Refer to “Setting the Base Address” for information on the SLC Base Address.

DIP Switch	DIP Switch Setting	ACPS-2406 Addresses Selected by DIP Switch Settings at Left	ACPS-2406 Addresses	SLC Address
SW3.1	ON or OFF	✓	1. Monitor General	B*
SW3.2	ON or OFF	✓	2. ACPS-2406 Output #1	B + 1
SW3.3	ON or OFF	✓	3. ACPS-2406 Output #2	B + 2
SW3.4	ON or OFF	✓	4. ACPS-2406 Output #3	B + 3
SW3.5	Any combination except 3.5 ON, 3.6 ON (Canadian Trouble Reporting)	✓	5. ACPS-2406 Output #4	B + 4
SW3.6		Not selected.	6. Signal Silence Address	
SW3.7	Any combination except 3.7 ON, 3.8 OFF (Dual Stage)		7. Monitor AC Fail (Canada only)	
SW3.8			8. Monitor Battery (Canada only)	
			9. Monitor Earth Fault (Canada only)	
SW2.1	ON or OFF		10. Dual Stage Output #1	
SW2.2	ON or OFF		11. Dual Stage Output #2	
SW2.3	ON or OFF		12. Dual Stage Output #3	
SW2.4	ON or OFF		13. Dual Stage Output #4	
SW2.5	OFF	Total: 5 Addresses Assign 5 sequential SLC addresses for this DIP Switch configuration.		*B = SLC Base Address
SW2.6	ON or OFF			
SW2.7	ON or OFF			
SW2.8	ON or OFF			

Table 3.2 DIP Switch Settings Resulting in 5 Addresses Consumed

DIP Switch	DIP Switch Setting	ACPS-2406 Addresses Selected by DIP Switch Settings at Left	ACPS-2406 Addresses	SLC Address
SW3.1	ON or OFF	✓	1. Monitor General	B*
SW3.2	ON or OFF	✓	2. ACPS-2406 Output #1	B + 1
SW3.3	ON or OFF	✓	3. ACPS-2406 Output #2	B + 2
SW3.4	ON or OFF	✓	4. ACPS-2406 Output #3	B + 3
SW3.5	Any combination except 3.5 ON, 3.6 ON (Canadian Trouble Reporting)	✓	5. ACPS-2406 Output #4	B + 4
SW3.6		✓	6. Signal Silence Address	B + 5
SW3.7	Any combination except 3.7 ON, 3.8 OFF (Dual Stage)	Not selected.	7. Monitor AC Fail (Canada only)	
SW3.8			8. Monitor Battery (Canada only)	
			9. Monitor Earth Fault (Canada only)	
SW2.1	ON or OFF		10. Dual Stage Output #1	
SW2.2	ON or OFF		11. Dual Stage Output #2	
SW2.3	ON or OFF		12. Dual Stage Output #3	
SW2.4	ON or OFF		13. Dual Stage Output #4	
SW2.5	ON	Total: 6 Addresses Assign 6 sequential SLC addresses for this DIP Switch configuration.		*B = SLC Base Address
SW2.6	ON or OFF			
SW2.7	ON or OFF			
SW2.8	ON or OFF			

Table 3.3 DIP Switch Settings Resulting in 6 Addresses Consumed

DIP Switch	DIP Switch Setting	ACPS-2406 Addresses Selected by DIP Switch Settings at Left	ACPS-2406 Addresses	SLC Address
SW3.1	ON or OFF	✓	1. Monitor General	B*
SW3.2	ON or OFF	✓	2. ACPS-2406 Output #1	B + 1
SW3.3	ON or OFF	✓	3. ACPS-2406 Output #2	B + 2
SW3.4	ON or OFF	✓	4. ACPS-2406 Output #3	B + 3
SW3.5	3.5 ON, 3.6 ON (Canadian Trouble Reporting)	✓	5. ACPS-2406 Output #4	B + 4
SW3.6	Any combination except 3.7 ON, 3.8 OFF (Dual Stage)	Not selected.	6. Signal Silence Address	
SW3.7		✓	7. Monitor AC Fail (Canada only)	B + 5
SW3.8		✓	8. Monitor Battery (Canada only)	B + 6
		✓	9. Monitor Earth Fault (Canada only)	B + 7
SW2.1	ON or OFF	Not selected.	10. Dual Stage Output #1	
SW2.2	ON or OFF		11. Dual Stage Output #2	
SW2.3	ON or OFF		12. Dual Stage Output #3	
SW2.4	ON or OFF		13. Dual Stage Output #4	
SW2.5	OFF	<u>Total: 8 Addresses</u> Assign 8 sequential SLC addresses for this DIP Switch configuration.		*B = SLC Base Address
SW2.6	ON or OFF			
SW2.7	ON or OFF			
SW2.8	ON or OFF			

Table 3.4 DIP Switch Settings Resulting in 8 Addresses Consumed

DIP Switch	DIP Switch Setting	ACPS-2406 Addresses Selected by DIP Switch Settings at Left	ACPS-2406 Addresses	SLC Address
SW3.1	ON or OFF	✓	1. Monitor General	B*
SW3.2	ON or OFF	✓	2. ACPS-2406 Output #1	B + 1
SW3.3	ON or OFF	✓	3. ACPS-2406 Output #2	B + 2
SW3.4	ON or OFF	✓	4. ACPS-2406 Output #3	B + 3
SW3.5	3.5 ON, 3.6 ON (Canadian Trouble Reporting)	✓	5. ACPS-2406 Output #4	B + 4
SW3.6	Any combination except 3.7 ON, 3.8 OFF (Dual Stage)	✓	6. Signal Silence Address	B + 5
SW3.7		✓	7. Monitor AC Fail (Canada only)	B + 6
SW3.8		✓	8. Monitor Battery (Canada only)	B + 7
		✓	9. Monitor Earth Fault (Canada only)	B + 8
SW2.1	ON or OFF	Not selected.	10. Dual Stage Output #1	
SW2.2	ON or OFF		11. Dual Stage Output #2	
SW2.3	ON or OFF		12. Dual Stage Output #3	
SW2.4	ON or OFF		13. Dual Stage Output #4	
SW2.5	ON	<u>Total: 9 Addresses</u> Assign 9 sequential SLC addresses for this DIP Switch configuration.		*B = SLC Base Address
SW2.6	ON or OFF			
SW2.7	ON or OFF			
SW2.8	ON or OFF			

Table 3.5 DIP Switch Settings Resulting in 9 Addresses Consumed

DIP Switch	DIP Switch Setting	ACPS-2406 Addresses Selected by DIP Switch Settings at Left	ACPS-2406 Addresses	SLC Address
SW3.1	ON or OFF	✓	1. Monitor General	B*
SW3.2	ON or OFF	✓	2. ACPS-2406 Output #1	B + 1
SW3.3	ON or OFF	✓	3. ACPS-2406 Output #2	B + 2
SW3.4	ON or OFF	✓	4. ACPS-2406 Output #3	B + 3
SW3.5	3.5 ON, 3.6 ON (Canadian Trouble Reporting)	✓	5. ACPS-2406 Output #4	B + 4
SW3.6	3.7 ON, 3.8 OFF (Dual Stage)	Not selected.	6. Signal Silence Address	
SW3.7		✓	7. Monitor AC Fail (Canada only)	B + 5
SW3.8		✓	8. Monitor Battery (Canada only)	B + 6
		✓	9. Monitor Earth Fault (Canada only)	B + 7
SW2.1	ON or OFF	✓	10. Dual Stage Output #1	B + 8
SW2.2	ON or OFF	✓	11. Dual Stage Output #2	B + 9
SW2.3	ON or OFF	✓	12. Dual Stage Output #3	B + 10
SW2.4	ON or OFF	✓	13. Dual Stage Output #4	B + 11
SW2.5	OFF	<u>Total: 12 Addresses</u> Assign 12 sequential SLC addresses for this DIP Switch configuration.		*B = SLC Base Address
SW2.6	ON or OFF			
SW2.7	ON or OFF			
SW2.8	ON or OFF			

Table 3.6 DIP Switch Settings Resulting in 12 Addresses Consumed

DIP Switch	DIP Switch Setting	ACPS-2406 Addresses Selected by DIP Switch Settings at Left	ACPS-2406 Addresses	SLC Address
SW3.1	ON or OFF	✓	1. Monitor General	B*
SW3.2	ON or OFF	✓	2. ACPS-2406 Output #1	B + 1
SW3.3	ON or OFF	✓	3. ACPS-2406 Output #2	B + 2
SW3.4	ON or OFF	✓	4. ACPS-2406 Output #3	B + 3
SW3.5	3.5 ON, 3.6 ON (Canadian Trouble Reporting)	✓	5. ACPS-2406 Output #4	B + 4
SW3.6		✓	6. Signal Silence Address	B + 5
SW3.7	3.7 ON, 3.8 OFF (Dual Stage)	✓	7. Monitor AC Fail (Canada only)	B + 6
SW3.8		✓	8. Monitor Battery (Canada only)	B + 7
		✓	9. Monitor Earth Fault (Canada only)	B + 8
SW2.1	ON or OFF	✓	10. Dual Stage Output #1	B + 9
SW2.2	ON or OFF	✓	11. Dual Stage Output #2	B + 10
SW2.3	ON or OFF	✓	12. Dual Stage Output #3	B + 11
SW2.4	ON or OFF	✓	13. Dual Stage Output #4	B + 12
SW2.5	ON			
SW2.6	ON or OFF			
SW2.7	ON or OFF			
SW2.8	ON or OFF			
		<u>Total: 13 Addresses</u> Assign 13 sequential SLC addresses for this DIP Switch configuration.		*B = SLC Base Address

Table 3.7 DIP Switch Settings Resulting in 13 Addresses Consumed

Setting the Base Address

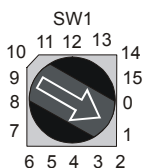
The combined rotary switch (SW1) and address jumper (JP6) settings select the base address, the first address of the block of SLC addresses used. The address block will begin at a number that ends in zero or five depending on the settings, and extend beyond that number to fulfill the ACPS-2406 address requirements. All addresses included in the address block must be programmed points at the FACP whether or not the output points are actually used.

Note: The lowest base address for the ACPS-2406 is 05. Do not set the FACP addresses 00 through 04 for the ACPS-2406.

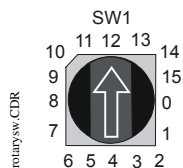
The Rotary Switch

The rotary switch SW1 determines the address decade. Each number on the dial represents the ten addresses of a decade. Turning the arrow until it points at a number selects that number's decade.

For example:



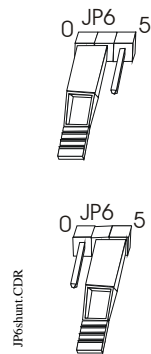
Pointing the arrow at the 1 selects the “one” address decade, beginning at 10.



Pointing the arrow at the 12 selects the “twelve” address decade, beginning at 120.

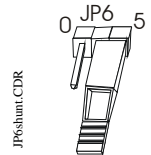
JP6

The three pins of JP6 are used in conjunction with a shunt plug to further define the addresses. They select the number that ends with zero or five in the decade defined by the rotary switch. Placing the shunt plug over the two pins closest to the 0 selects the number with zero at the end as the first address. Placing the shunt plug over the two pins closest to the 5 selects the number with five at the end as the first address.



For example:

Placing the shunt plug over the two pins closest to the 0, as shown in the illustration to the left, selects the number ending in zero as the first address used in the decade defined by the rotary switch. If the rotary switch is pointing at 8, 80 would be the first address in the address block.



Placing the shunt plug over the two pins closest to the 5, as shown in the illustration to the left, selects the number ending in five as the first address in the decade defined by the rotary switch. If the rotary switch is pointing at 8, 85 would be the first address in the address block.

Figure 3.2 below gives two examples of setting the base address with rotary switch and JP6 shunt plug settings. Note that the base address plus the number of addresses in the address block minus one can not exceed the total number of addresses allowed on an SLC.

ROTARY SWITCH SETTING	JP6 SHUNT PLUG POSITION	SLC BASE ADDRESS	SLC Addresses Selected					
			Number of ACPS-2406 Addresses =5	Number of ACPS-2406 Addresses =6	Number of ACPS-2406 Addresses =8	Number of ACPS-2406 Addresses =9	Number of ACPS-2406 Addresses =12	Number of ACPS-2406 Addresses =13
		5	5-9	5-10	5-12	5-13	5-16	5-17
		120	120-124	120-125	120-127	120-128	120-131	120-132

Figure 3.2 SLC Address Selection

3.3 Panel Programming Requirements

Panel Addressing

Program the ACPS-2406 addresses into the FACP in the order given in Figure 3.1. Note that not all of the possible 13 ACPS-2406 addresses may be used; DIP Switch configuration may create an address block of less than 13 addresses.

Note: All addresses included in the address block must be programmed points at the FACP whether or not the output points are actually used. Even though some of the 13 possible ACPS-2406 addresses may be skipped, none of the addresses in the FACP address block may be skipped.

FACP Order of ACPS-2406 Address Assignment*	ACPS-2406 Addresses
1	Monitor General
2	ACPS-2406 Output #1
3	ACPS-2406 Output #2
4	ACPS-2406 Output #3
5	ACPS-2406 Output #4
6	Electronic Signal Silence Address
7	Monitor AC Fail (Canada only)
8	Monitor Battery (Canada only)
9	Monitor Earth Fault (Canada only)
10	Dual Stage Output #1
11	Dual Stage Output #2
12	Dual Stage Output #3
13	Dual Stage Output #4
* The SLC address block may consist of 5, 6, 8, 9, 12, or 13 addresses. These addresses must be assigned in numerical sequence, and the base (first) address in the block must end with zero or five, as explained in the addressing section of this chapter. Note that 05 is the lowest base address for the ACPS-2406. The number of SLC addresses consumed by an ACPS-2406 will vary according to its DIP Switch settings. Refer to Table 3.2 through Table 3.7 for more information.	

Table 3.8 FACP Addressing

Software Type ID Codes

The ACPS-2406 points must be programmed at the FACP with Software Type ID codes. Refer to the panel programming manual for specific Software Type ID codes. Table 3.9 below gives general categories of codes that may be used for the AFP-100, AFP-200, AFP-300/400, AFC-600, AM2020/AFP-1010 FACP.

Point Type	Allowable Software Type ID Codes
Trouble Points	Software Type ID Codes for trouble monitors
NAC Points	Software Type ID Codes for supervised NAC circuits
Releasing Points	Software Type ID Codes for supervised releasing circuits

Table 3.9 Software Type ID Codes, AFP-100, AFP-200, AFP-300/400, AFC-600, AM2020/AFP-1010

Table 3.10 below categorizes codes used with the NFS FACP.

Point Type	Module Type	NFS-3030		NFS-640	VeriFire for NFS-3030 and NFS-640	
		Type Code Label	FlashScan Type	Type Code Label	Type Code Label	FlashScan Type
Trouble Points	Monitor	Power Monitr	PS Mon	Power Monitr	Power Monitr	ACPS Monitor
NAC Points	Control	Control	PS NAC	Control	Control	ACPS Control
+24V Relay	Control	Relay	PS Relay	Relay	Relay	ACPS Relay

Table 3.10 NFS-3030, NFS-640 Software Type Codes

Dual Stage Alert/Evacuation

Dual Stage Alert/Evacuation is a mode option for use in Canada only, with the NFS-3030, NFS-640, or AM2020/AFP1010. In this mode each output circuit operates in one of two stages: alert or evacuation. The alert stage generates a pulsing output of 20 pulses per minute: the evacuation stage generates a pulsing output of the NFPA Temporal Pattern.

Selecting Dual Stage Mode

Dual Stage is selected by setting ACPS-2406 switches SW3.7 to ON and SW3.8 to OFF. ACPS-2406 Dual Stage output circuits must be set to the coded NAC option (See Table 3.1 for settings)

Addressing in Dual Stage Mode

When the ACPS-2406 is set to Dual Stage, each output circuit uses two control addresses, even if the circuit is not configured for Dual Stage (i.e., not a coded NAC). The installer should ascertain that an appropriate block of consecutive FACP addresses is available prior to addressing an ACPS-2406 in Dual Stage. Refer to Table 3.6 and Table 3.7 for information on ACPS-2406 Dual Stage addressing and address consumption.

The first address for each output does one of three things.

1. If the output is a coded NAC, activating the first associated address activates Stage 1 (alert).
2. If the output is a non-coded NAC, activating the first associated address turns the output on.
3. If the output is a +24V relay, activating the first associated address turns off the 24V source for this output.

The second address for each output does the following.

1. If the output is a coded NAC, activating the second associated address activates Stage 2 (evacuation). Note that the first address must also be activated.
2. If the output is a non-coded NAC, activating the second associated address has no effect, but the address must be in communication with the panel.

3. If the output is a +24 V relay, activating the second associated address has no effect, but the address must be in communication with the panel.

Dual Stage Panel Programming

All second stage timing is controlled by the FACP. All addresses must be programmed in the FACP. Null control-by-event (CBE) should be employed for unused second-stage points. Figure 3.3 illustrates the panel CBE programming.

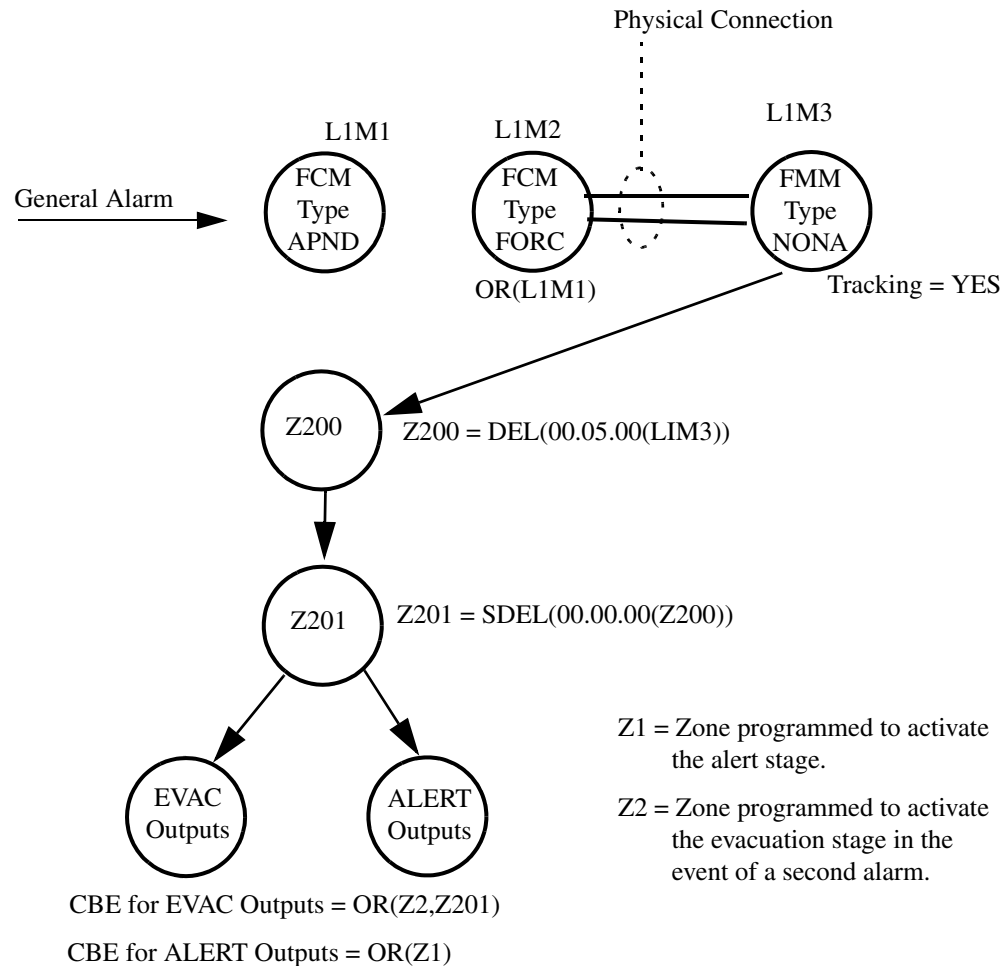


Figure 3.3 Canadian Dual Stage for the AM2020/AFP1010

The sequence of operations is as follows.

- A general alarm activates FCM L1M1 (Type code APND).
- L1M2, which has been programmed via CBE for OR(L1M1), activates. (Type code FORC).
- L1M3 (Type code NONA) physically monitors L1M2 contacts. L1M3 activates.
- Software Zone Z200 (RZON) is programmed to activate after a 5 minute delay with the equation $Z200 = \text{DEL}(00.05.00(\text{LIM3}))$. Z200 will clear (or never activate) if L1M1 is acknowledged or if the system is reset before the 5 minute timer expires.
- Software Zone Z201 (RZON) is programmed to activate after a 0 delay when Z200 activates. Z201 will only clear from a system reset.
- Alert Software Zone Z1 will activate when the Z1 equation is satisfied. $\text{ALERT} = \text{OR}(Z1)$. A CBE (Control-by-event) in this equation refers to any local CBE that is programmed into this point. It could be a CBE that programs four cross-zoned detectors, for example.

- EVAC Software Zone Z2 will activate when the Z2 equation is satisfied. $EVAC = OR(Z2, Z201)$. The CBE in this equation refers to any local CBE that is programmed into this point. It could be a CBE that programs four or more cross-zoned detectors, for example.

Refer to the programming section of the FACP manual for more information on programming.

Section 4 Applications

4.1 NAC Outputs

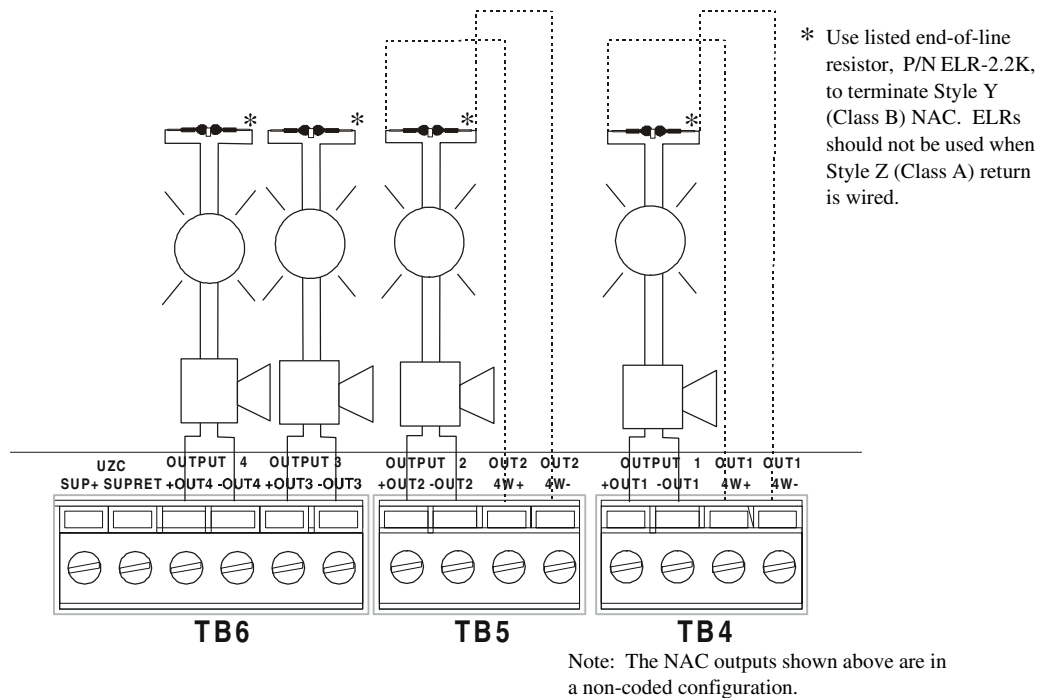


Figure 4.1 Four NAC Outputs

4.2 General Purpose Power

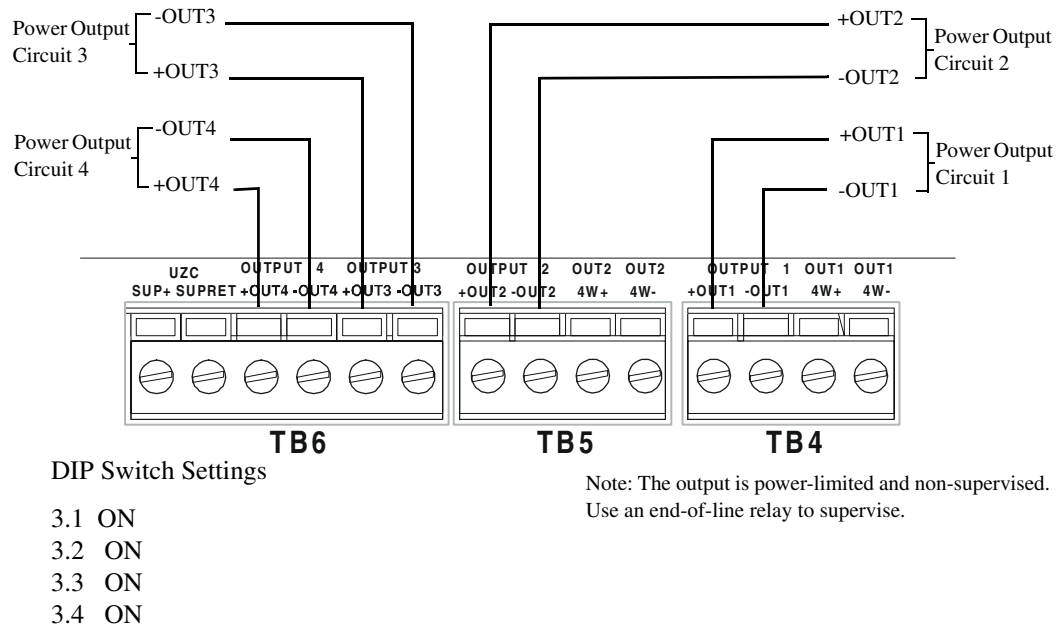


Figure 4.2 General Purpose Power Output

4.3 Style B (Class B) Initiating Device Circuit

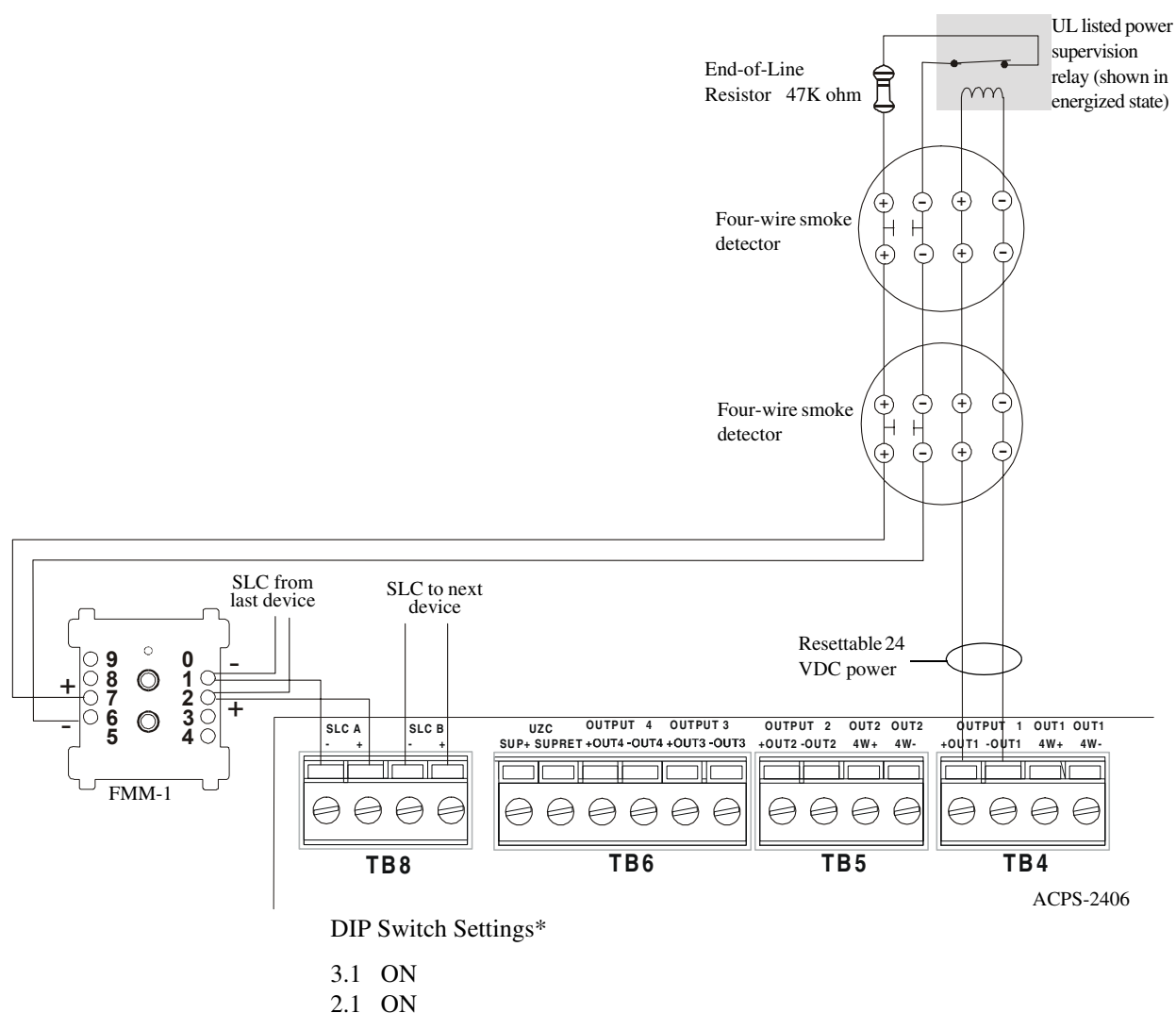


Figure 4.3 Style B (Class B) IDC

4.4 Synchronization

The ACPS-2406 provides synchronization to Gentex, SpectrAlert Series and Wheelock strobes and horns. When the ACPS-2406 is set for synchronization with DIP switches SW2.6 and 2.7, these NAC devices will flash and/or sound together¹.

The ACPS-2406 can also provide synchronization for bells and horns when used with a UZC-256 Universal Zone Coder if the NAC output is configured for coded signals only.

Note:

1. Do not place strobes from any manufacturer onto a coded output. For example SpectrAlert Series horns and strobes can not be synchronized with a UZC-256 or any coded output.

Refer to the following figures for application illustrations.

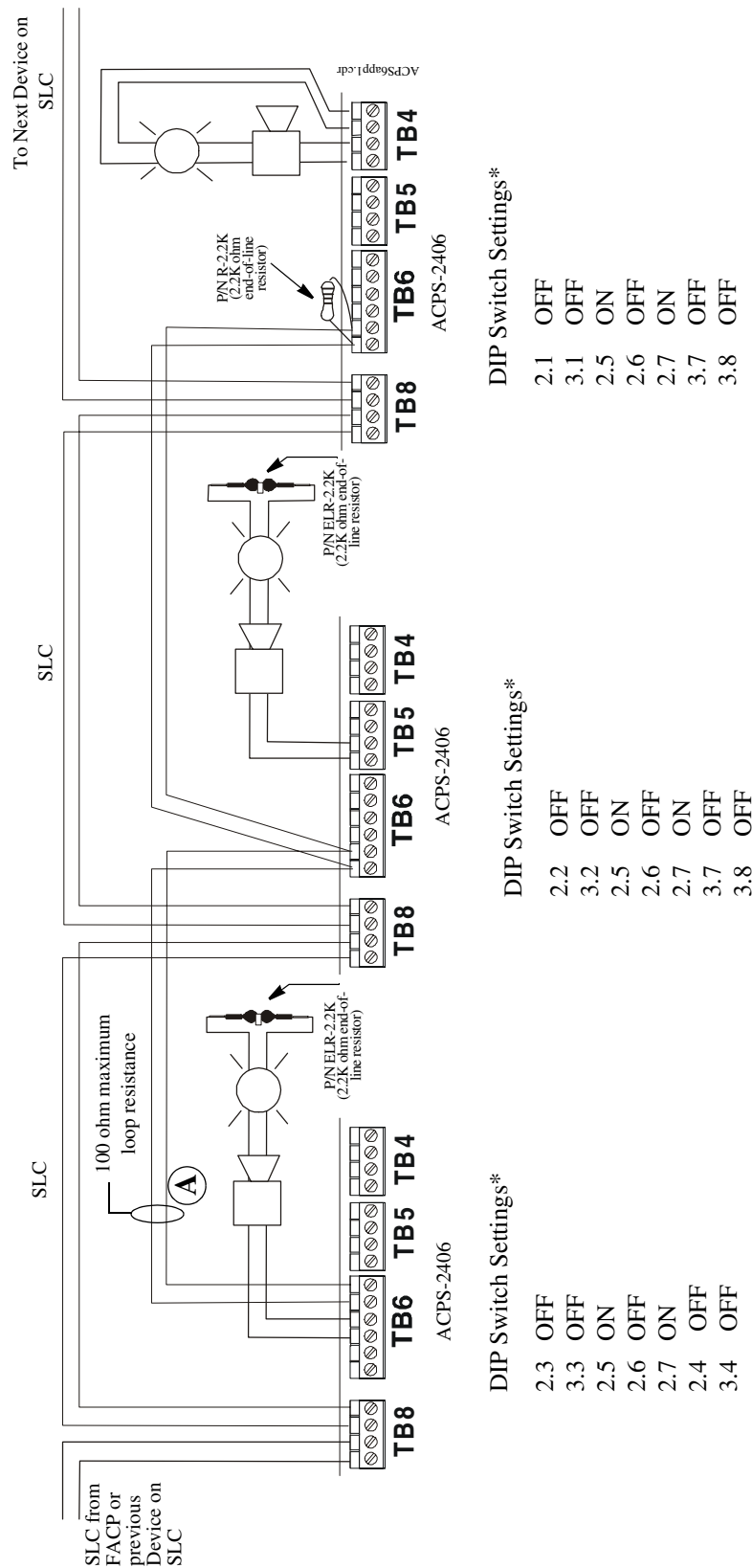


Figure 4.4 Supervised Master/Slave Synchronization Connections (Non-Coded)

* DIP Switches SW 2.8, 3.5, and 3.6 also require setting to determine AC and battery charger information. See Table 3.1

Note:

- Application drawing is typical for System Sensor SpectrAlert Series horns/strobes. This application may be used for Gentex or Wheelock electronically synchronized devices by changing SW 2.6 and 2.7
- Do not "T-tap" synchronizer.
- In this configuration the synchronizing wiring (A) must be connected to the power supplies within 20 feet (6.1 m) in conduit.

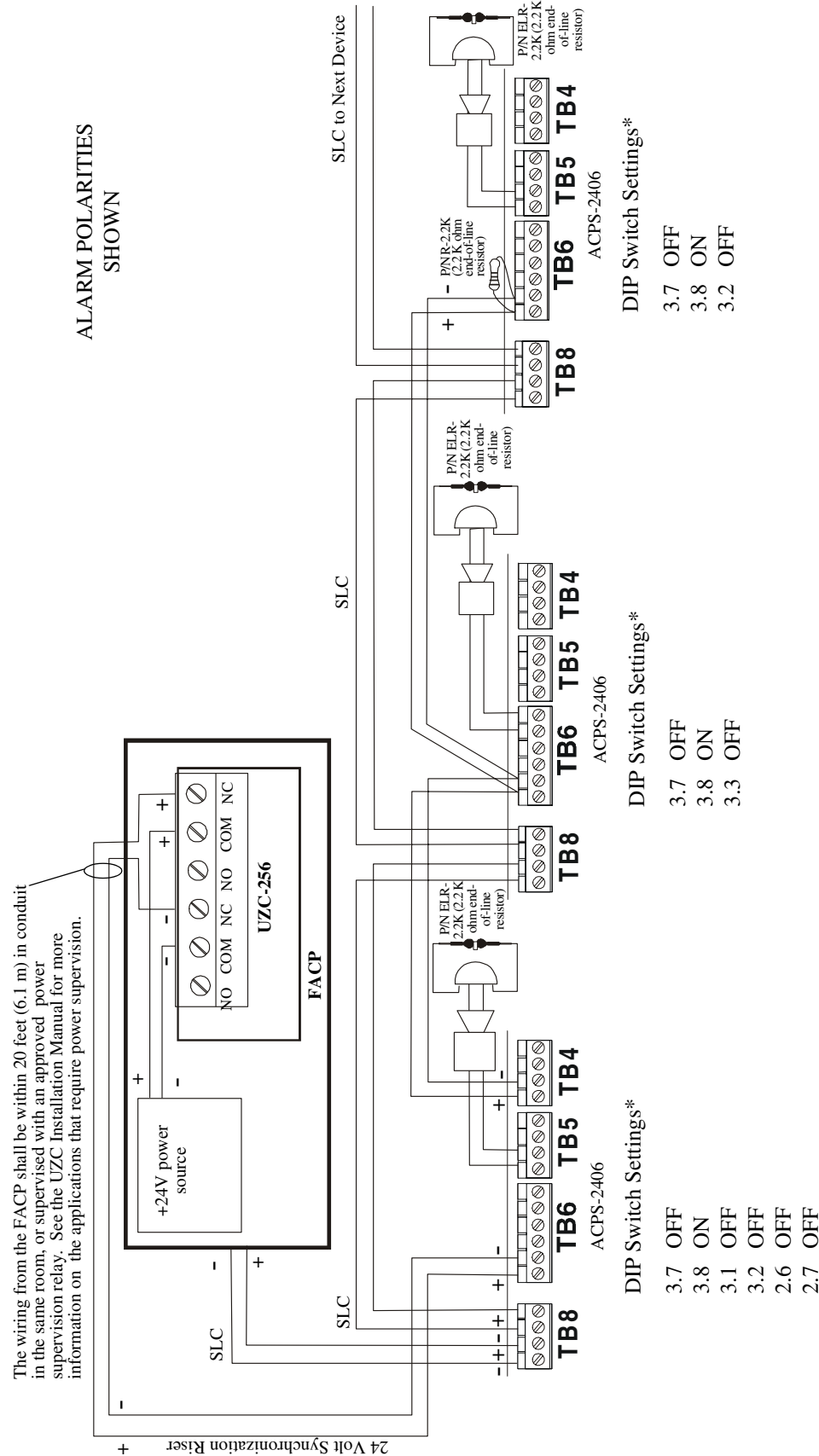
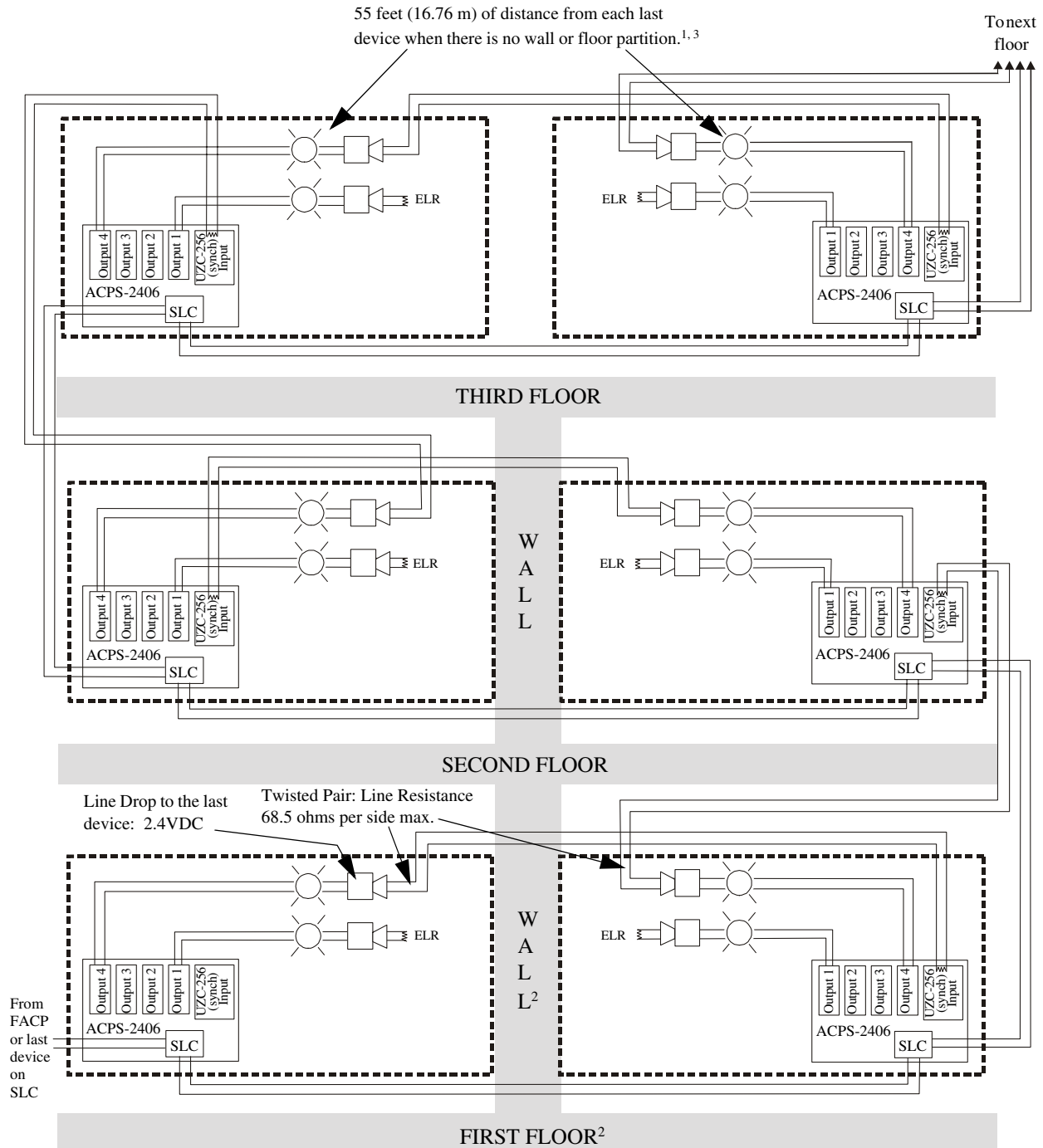


Figure 4.5 Supervised Synchronization Wiring Using UZC-256

* DIP Switches 3.5, 3.6, and 2.8 also require setting to determine AC and battery charger information. See Table 3.1.

Note:

- Strobes or horn/strobes of any manufacturer may not be used on coded buses.
- No NAC devices may be on the synchronization riser. This riser must be in the same cabinet as the FACP or within 20 feet (6.1 m) in conduit, or it must be supervised with an approved power supervision relay.
- The UZC-256 is compatible with Notifier control panels except the AFP-100 and AFP-200. The UZC-256 must be mounted inside the FACP or in conduit within 20 feet (6.1 m) of the panel in the same room.



Notes:

1. Refer To NFPA 72, 1999 Edition, Chapter 4-4, Visible Characteristics, Public Mode.
2. The NAC output devices from one power supply must be partitioned with walls and/or floors from the next power supplies and their NAC output devices.
3. In an open area with no barriers, all strobe devices on the NAC outputs of one power supply must be at least 55 feet (16.76 m) in distance from all strobe devices on the NAC outputs of another power supply.
4. Use only devices from the same manufacturer in each system.
5. A maximum of five slaves are allowable using this configuration.

Figure 4.6 Supervised Daisy Chain Connection (Typical)

Section 5 Power Supply Calculations

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

In the following section, the term “secondary” refers to the ACPS-2406’s backup batteries: the term “primary” is reserved for the ACPS-2406’s primary source of power, 120 VAC 50/60 Hz power. The term “standby” refers to the output current required when no fire alarm is present. The term “alarm” refers to the output current required when a fire alarm is present.

5.1 DC Current Draw Calculations

The ACPS-2406 provides filtered 24VDC power that may be used for operating Notification Appliance Circuits or other external devices. The power for operating external devices is limited. Use Table 5.1 through Table 5.5 to determine if external loading is within the capabilities of the power supply.

1. Enter the current draw values for each output into Table 5.1 through Table 5.4. If the Auxiliary Power Supply (J1) is used, its current draw must be added to the current draw for Output 4 in Table 5.4. Refer to the Device Compatibility document and the device manufacturer’s data sheets packaged with each device to find the standby and alarm current draws to use in these tables.
2. Enter the Standby Current Total and the Alarm Current Total from each of these four tables into Table 5.5, and add the figures in Column A and Column B to determine total DC current draw.

Note: Columns A and B of Table 5.1 through Table 5.5 are not battery calculations. They are current calculations to confirm whether the ACPS-2406 can output enough DC current to support its devices during standby and alarm conditions.

OUTPUT 1						
CATEGORY	COLUMN A STANDBY CURRENT (AMPS)			COLUMN B ALARM CURRENT (AMPS)		
	QTY	X CURRENT DRAW=	TOTAL	QTY	X CURRENT DRAW=	TOTAL
Power Supervision Relays (A77-716B)		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
Annunciators		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Notification Appliances	NOT APPLICABLE				X =	A
Notification Appliances					X =	A
Notification Appliances					X =	A
SUM EACH COLUMN FOR TOTALS		OUTPUT 1 STANDBY CURRENT DRAW TOTAL:	A		OUTPUT 1 ALARM CURRENT DRAW TOTAL:	A
Note: STANDBY CURRENT TOTAL for all outputs together cannot exceed 1.0 A. ALARM CURRENT TOTAL cannot exceed 2.50 A for any single output.						

Table 5.1 DC Current Draw Calculations, ACPS-2406 Output 1

OUTPUT 2						
CATEGORY	COLUMN A STANDBY CURRENT (AMPS)			COLUMN B ALARM CURRENT (AMPS)		
	QTY	X CURRENT DRAW=	TOTAL	QTY	X CURRENT DRAW=	TOTAL
Power Supervision Relays (A77-716B)		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
Annunciators		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Notification Appliances	NOT APPLICABLE				X =	A
Notification Appliances					X =	A
Notification Appliances					X =	A
SUM EACH COLUMN FOR TOTALS		OUTPUT 2 STANDBY CURRENT TOTAL:	A		OUTPUT 2 ALARM CURRENT TOTAL:	A
Note: STANDBY CURRENT TOTAL for all outputs together cannot exceed 1.0 A. ALARM CURRENT TOTAL cannot exceed 2.50 A for any single output.						

Table 5.2 DC Current Draw Calculations, Output 2

OUTPUT 3						
CATEGORY	COLUMN A STANDBY CURRENT (AMPS)			COLUMN B ALARM CURRENT (AMPS)		
	QTY	X CURRENT DRAW=	TOTAL	QTY	X CURRENT DRAW=	TOTAL
Power Supervision Relays (A77-716B)		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
Annunciators		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Notification Appliances	NOT APPLICABLE				X =	A
Notification Appliances					X =	A
Notification Appliances					X =	A
SUM EACH COLUMN FOR TOTALS		OUTPUT 3 STANDBY CURRENT DRAW TOTAL:	A		OUTPUT 3 ALARM CURRENT DRAW TOTAL:	A
Note: STANDBY CURRENT TOTAL for all outputs together cannot exceed 1.0 A. ALARM CURRENT TOTAL cannot exceed 2.50 A for any single output.						

Table 5.3 DC Current Draw Calculations, Output 3

OUTPUT 4						
CATEGORY	COLUMN A STANDBY CURRENT (AMPS)			COLUMN B ALARM CURRENT (AMPS)		
	QTY	X CURRENT DRAW=	TOTAL	QTY	X CURRENT DRAW=	TOTAL
Auxiliary Power Output (J1)*	1	X =	A		X =	A
Power Supervision Relays (A77-716B)		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
4-Wire Smoke Detectors		X =	A		X =	A
Annunciators		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Auxiliary Devices		X =	A		X =	A
Notification Appliances	NOT APPLICABLE				X =	A
Notification Appliances					X =	A
Notification Appliances					X =	A
SUM EACH COLUMN FOR TOTALS		OUTPUT 4 STANDBY CURRENT DRAW TOTAL:	A		OUTPUT 4 ALARM CURRENT DRAW TOTAL:	A
*If a load is put on the Auxiliary Power Output (J1), enter the current draw in this row. Note: STANDBY CURRENT TOTAL for all outputs together cannot exceed 1.0 A. ALARM CURRENT TOTAL cannot exceed 2.50 A for any single output.						

Table 5.4 DC Current Draw Calculations, Output 4

	COLUMN A STANDBY CURRENT (AMPS)		COLUMN B ALARM CURRENT (AMPS)
Main PC Board without AC Fail Report Delay Enabled	0.090 A		0.090 A
Output 1 (Enter Totals from Table 5.1)	A		A
Output 2 (Enter Totals from Table 5.2)	A		A
Output 3 (Enter Totals from Table 5.3)	A		A
Output 4 (Enter Totals from Table 5.4)	A		A
SUM EACH COLUMN FOR TOTALS	STANDBY CURRENT DRAW TOTAL:	A	ALARM CURRENT DRAW TOTAL:
Note: STANDBY CURRENT TOTAL cannot exceed 1.0 A. ALARM CURRENT TOTAL cannot exceed 6.0 A.			

Table 5.5 Total ACPS-2406 DC Current Draw Calculations

5.2 Battery Calculations

Table 5.6 sums the standby and alarm loads to arrive at the battery size, in Ampere Hours (AH), required to support the ACPS-2406. The ACPS-2406 can charge batteries from 7 to 25 AH. Select batteries that meet or exceed the total AH calculated in Table 5.6.

LOAD TOTALS		MULTIPLY BY	TIME		EQUALS	SECONDARY AMP HOUR TOTALS
Enter Standby Current (Amps) Total from Column A , Table 5.5		X	Enter Required Secondary Standby Time in Hours		=	(1) Secondary Standby Amp Hour Requirement
Enter Alarm Current (Amps) Total from Column B , Table 5.5		X	Enter Required Fire Alarm Time in Decimal Form*		=	(2) Secondary Fire Alarm Amp Hour Requirement
Add (1) and (2) Secondary Standby and Alarm Totals						
Multiply by the Derating Factor of 1.2						X 1.2
						Total Ampere Hours (AH) Required
* Following are decimal conversions for standard numbers of minutes:						
5 minutes	0.084					
10 minutes	0.167					
15 minutes	0.250					
60 minutes	1.0					
120 minutes	2.0					

Table 5.6 Ampere Hour Calculations



Note:

1. Battery size is limited to 7.0 AH minimum to 25.00 AH maximum using the internal ACPS-2406 battery charger.
2. For battery sizes greater than 25.0 AH, disable internal charger by setting SW3.7 to OFF and use an external battery charger.

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- 2.2K ohm end-of-line resistor 28
- 24VDC 15, 31
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- 47K ohm end-of-line resistor 27
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NOTES:

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