

Special Projects Group

SP-1000X
Panic Device Power Controller
Installation Guide



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Overview:

SP-1000X will operate up to two (2) 24VDC panic hardware devices simultaneously. It is designed to handle the high current surge panic hardware locking devices demand. Each lock output has an adjustable relock delay timer. It will control a pair of doors simultaneously or independently control two individual doors. It has a follower relay for each output to trigger external relays, ADA push plate switches, etc. Delayed follower relays control automatic door operators for doors that are always locked or for doors that are unlocked during the business day. In addition, two un-switched auxiliary voltage outputs are provided for powering card readers, keypads, REX PIRs, electronic timers, relays, etc. A configurable FACP interface will either provide power or remove power to the lock outputs when activated. LED status indicators are provided to monitor AC power, FACP status and for lock output wiring supervision. Intelligent logic provides protection against accidental shorting of lock outputs.

Specifications:

Agency Approval:

- UL 294 - Access Control Unit Power Supply.
- ULC-S319 - Access Control Unit Power Supply. Class 1.
- CSFM - California State Fire Marshal Approved.

Input:

- Input 115VAC 60Hz, 6.3 amp.
- Two (2) NO trigger inputs.
- Input fuse rating: 6.3 amp.

Outputs:

- Power options:
 - Two (2) 20VDC to 26.4VDC individually controlled lock outputs for applications with battery back-up. 24VDC for applications without battery back-up (US applications only). Current rating 15 amp for 300ms, 0.75 amp continuous supply current.
 - 5V holding voltage with 20VDC to 26.4VDC initial 100ms pulse.
Maximum total 5V holding current of both outputs is 0.74 amp.
- One (1) 20VDC to 26.4VDC for applications with battery back-up, 24VDC for applications in US not requiring battery back-up. Auxiliary output rated @ 0.75 amp continuous supply current (Not affected by FACP trigger).
- One (1) 12VDC filtered regulated auxiliary output rated @ 0.5 amp (Not affected by FACP trigger).
- Two (2) follower form "A" SPST relay outputs rated @ 0.6 amp/28VDC. Relays energize while input is closed.
- Two (2) delayed follower Normally Open relay outputs rated @ 0.6 amp/28VDC. Delay time is selectable 0.5 seconds or 1 second. Energized duration is 1 second.
- Trouble relay output indicating low DC output voltage.

Battery Backup:

- Battery fuse rating: 25A/32V.
- Maximum charge current 650mA.
- Built-in charger for sealed lead acid or gel type batteries.
- Automatic switch over to stand-by battery when AC fails.
- When 7AH batteries are used, battery capacity for emergency stand-by is 30 minutes.

Visual Indicators:

- Green AC Power LED indicates 115VAC present.
- Red trigger input LEDs indicate panic device status /trouble (activated, short or open circuit).
- Green Fire Alarm Interface (FAI) LED indicates FACP disconnect is activated.
- Red Battery LED indicates low battery during AC failure and manual test.
- Green AC LED indicates loss of AC trouble (not active during manual test sequence).

Fire Alarm Interface:

- Normally Closed FACP trigger input.
- Configurable Fire Alarm Disconnect options:
 - Removes power to outputs and disables delayed follower relays.
 - Connects power to lock outputs and enables delayed follower relays.

Additional Features:

- Manual testing to allow to tests battery conditions.
- Adjustable panic release from 1 sec. to 30 secs.
Note: Follower and Delay relay turns off when the potentiometer selected time elapses after release of the input trigger.
- Cam lock included.

Enclosure Dimensions (H x W x D approx.):

13" x 12.5" x 3.25" (342.9mm x 330.2mm x 82.55mm)

SP-1000X Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/NFPA 72/ANSI, and with all local codes and authorities having jurisdiction. Product is intended for indoor use only. For Canadian installations - shielded wiring of appropriate gauge must be used. Unit is to be serviced by authorized personnel and de-energized prior to opening.

1. Mount unit in desired location within protected premises (*Maximum Wiring Distance, pg. 6*). Mark and predrill holes in the wall to line up with the top two keyholes in the enclosure. Install two upper fasteners and screws in the wall with the screw heads protruding. Place the enclosure's upper keyholes over the two upper screws, level and secure. Mark the position of the lower two holes. Remove the enclosure. Drill the lower holes and install the two fasteners. Place the enclosure's upper keyholes over the two upper screws. Install the two lower screws and make sure to tighten all screws (*Enclosure Dimensions, pg. 8*). Secure cabinet to earth ground.
2. Hard wire unit: Connect unswitched AC power (115VAC 60Hz) to terminals marked [L, N]. Use 14 AWG or larger for all power connections. Secure green wire lead to earth ground. Keep power-limited wiring separate from non power-limited wiring (115VAC 60Hz Input, Battery Wires). Minimum 0.25" spacing must be provided (*Fig. 4, pg. 8*). Connect earth ground to a ground lug or ground lead. Do not connect to a receptacle controlled by a switch. Unit is intended for permanent connection using metal enclosed system. A fixed product shall be connected with one of the applicable wiring systems in accordance with CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations.

Note: SP-1000X is intended to be permanently connected.

To install 3-wire line cord with integral strain relief (supplied) refer to page 9.

3. Measure aux. output voltage before connecting devices. This helps avoid potential damage.
4. For ULC applications, all interconnecting devices must be ULC Listed.
Connect panic hardware device # 1 to terminals marked [+ OUT1 -], connect panic hardware device # 2 to terminals marked [+ OUT2 -] (Fig. 1, pg. 5). Be sure to observe polarity. For devices requiring 24VDC holding voltage, set dip switch [SW2] to OFF, for 5VDC holding voltage, set dip switch [SW2] to ON (Fig. 3b, pg. 7). Maximum wire resistance for each output is 0.25 ohm (see wiring gauge and distance chart, pg. 6). The panic hardware device operating voltage specifications must cover 20VDC to 26.4VDC range.
Note: Refer to compatible panic hardware device list, pg. 5.
5. Set lock output release time by adjusting [OUT1] and [OUT2] potentiometers. Turn potentiometer clockwise to increase time or counter-clockwise to decrease time. Timing range is 300ms. to 30 seconds, (unit is factory set @ 300ms.) (Fig. 3a, pg. 7).
Note: When external control of door unlock time is desired, i.e., card reader, set time to minimum (completely counter-clockwise).
6. Connect Normally Open (NO) Dry Contacts from actuating devices such as an Access Control Panel, REX PIR, Keypad, etc. to terminals marked [GND, IN1] and [GND, IN2] (Fig. 1, pg. 5).
Note: When triggering both Input 1 and Input 2 from a single actuating device, set dip switch [SW1] to ON for sequential mode (100 ohm line resistance maximum).
7. Connect auxiliary devices to be powered (Keypads, REX motion detectors, electronic timers, external relays) to the appropriate auxiliary power output terminals. For 12VDC devices, use terminals marked [+ 12VDC -]. For 24VDC devices, use terminals marked [- 24VDC +] (Fig. 1, pg. 5).
Note: Operating voltage range of device should be 20VDC to 26.4VDC or wider.
8. Connect devices to be controlled to terminals marked [DELAYED1, DELAYED2] and/or [FOLLOWER1, FOLLOWER2] (Dry form "A" contacts are rated @ 600mA/28VDC) (Fig. 1, pg. 5). Adjust delay time using dip switch [SW3] (Fig. 3b, pg. 7) (0.5 seconds with SW3 in the OFF position, one (1) second with [SW3] in the ON position), (unit is factory set for 0.5 seconds delay).
Note: For UL/ULC applications, all interconnecting devices must be UL/ULC Listed respectively.
9. To hookup the Fire Alarm Interface feature, wire the normally closed (NC) dry contact output from a Fire Alarm Control Panel to the terminals marked [FACP] and [GND] of SP-1000X.
The "FA Select" dip switch [SW4] provides two (2) modes of operation (Fig. 3b, pg. 7):
 - a) With dip switch [SW4] in the ON position, the application of a FACP trigger input (open circuit) while Input 1 and Input 2 are triggered will cause the unlocked (energized) panic hardware devices to relock (de-energize). Follower relays will release (de-energize).
 - b) With dip switch [SW4] in the OFF position, the application of a FACP trigger input (open circuit) while Input 1 and Input 2 are not triggered will cause the locked (de-energized) panic hardware devices to unlock (energize). Follower relays will activate (energize). Delayed relays will energize momentarily.
Note: With SW4 in the OFF position, the application of a FACP trigger input (open circuit) while Input 1 and Input 2 are triggered will have no affect on the operation of Output 1 or Output 2 and their corresponding Follower or Delayed relays.
10. When using stand-by batteries, they must be lead acid or gel type. 7AH batteries will provide 30 minutes of backup time. Connect two (2) 12VDC batteries wired in series to the terminals marked [+ BAT -].
For Access Control applications in the U.S. batteries are optional, for Canadian applications batteries are required. When batteries are not used loss of AC will result in the loss of output voltage.
11. Mount UL Listed tamper switch (Sentrol model 3012 or equivalent) at the top of the enclosure. Slide the tamper switch bracket onto the edge of the enclosure approximately 2" from the right side (Fig. 3, pg. 7). Connect tamper switch wiring to the Access Control Panel input or the appropriate UL Listed reporting device. To activate alarm signal open the door of the enclosure.
Note: Do not exceed voltage and current ratings of tamper switch. Please refer to tamper switch installation instructions.
12. Upon completion of wiring secure enclosure door with screws or cam lock (supplied).

SP-1000X LED Diagnostics:

LED	LED Status	Panic Device Power Controller Status
Power - Green (AC)	On	Normal operating condition.
	Off	Loss of AC.
INP1 - Red Trigger Input 1	On	Output 1 - Energized.
	Slow Blink	Output 1 - Open Circuit.
	Rapid Blink	Output 1 - Short Circuit.
	Off	Output 1 - De-energized.

SP-1000X LED Diagnostics (cont'd):

INP2 - Red Trigger Input 2	On	Output 2 - Energized.
	Slow Blink	Output 2 - Open Circuit.
	Rapid Blink	Output 2 - Short Circuit.
	Off	Output 2 - De-energized.
FAI - Green	On	FACP Input triggered (alarm condition).
	Off	FACP normal (non-alarm condition).
BAT Trouble Red	Off	Normal condition.
	On	Manual test initiated.
	Slow Blink	Battery low or missing, active during manual test or AC failure.
AC Trouble Green	Off	AC normal.
	Slow blink	AC low or missing.

Maintenance:

Unit should be tested at least once a year for the proper operation as follows:

FACP Supervision: To ensure proper connection and operation of the Fire Alarm Interface, remove wire from the terminal marked [FACP] on SP-1000X. With the dip switch [SW4] in ON position, unlocked Panic Hardware Devices will re-lock. With dip switch [SW4] in the OFF position (*Fig. 3b, pg. 7*), locked Panic Hardware Devices will unlock.

Output Voltage Test: Under normal load conditions the DC output voltage should be checked for proper voltage level.

Battery Test: Under normal load conditions check that the battery is fully charged, check specified voltage both at battery terminal and at the board terminals marked [+ BAT -] to insure there is no break in the battery connection wires. Press Manual test button. The battery LED should be illuminated during the selftest (approximately 15 seconds).

When the battery LED blinks slowly this indicates that the battery is low or missing and may need to be replaced or serviced.

Note: Maximum charging current under discharge is 650mA.

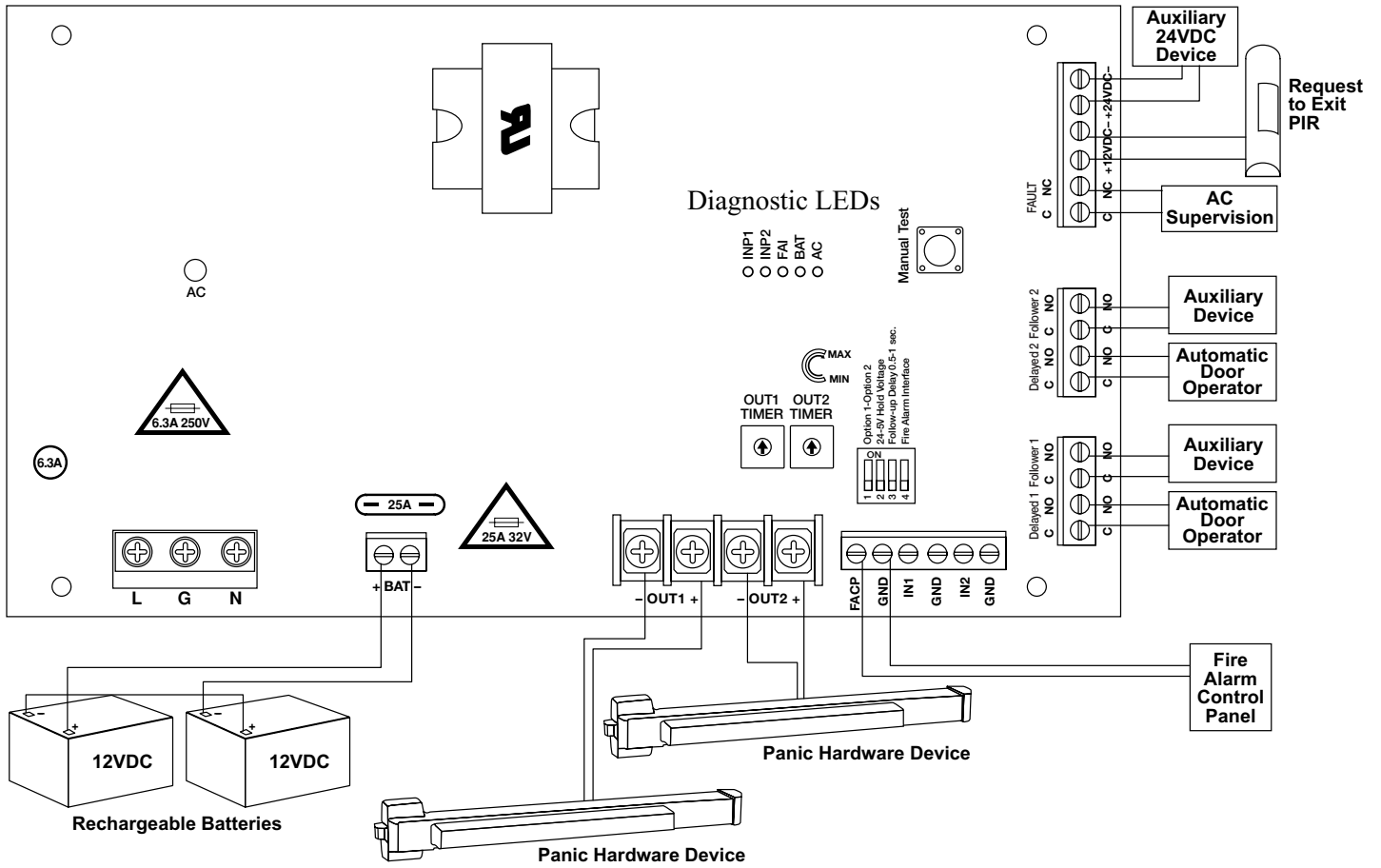
Note: Expected battery life is 5 years, however it is recommended changing batteries in 4 years or less if needed.

Caution: For continuous protection against risk of electric shock and fire hazard, replace input fuse with the same type and rating: 6.3 amp/250V. Do not expose to rain or moisture; indoor use only.

SP-1000X Terminal Identification:

Terminal Legend	Function/Description
+ 12VDC –	12VDC Auxiliary Output @ 0.5 amp.
+ 24VDC –	24VDC Auxiliary Output @ 0.75 amp. 20VDC to 26.4VDC for applications with battery back-up.
+ BAT –	24VDC Stand-by Battery Connection (Two (2) 12VDC batteries wired in series).
– OUT 1 +	Connect 24VDC Panic Hardware Device #1 <i>(See compatibility chart for other UL Listed devices operating range of the device must cover 20VDC to 26.4VDC range 0.25 ohm maximum wiring resistance).</i>
– OUT 2 +	Connect 24VDC Panic Hardware Device #2. <i>(See compatibility chart for other UL Listed devices operating range of the device must cover 20VDC to 26.4VDC range 0.25 ohm maximum wiring resistance).</i>
FACP / GND	Normally Closed Dry Contact from Fire Alarm Control <i>(100 ohm maximum wiring resistance).</i>
IN1 / GND	Normally Open Trigger input controls Output 1. May be held closed for extended unlocking <i>(100 ohm maximum wiring resistance).</i>
IN2 / GND	Normally Open Trigger input controls Output 2. May be held closed for extended unlocking <i>(100 ohm maximum wiring resistance).</i>
Delayed 1	Dry form “A” contacts provide a 1 second momentary pulse after a preset delay. With dip switch [SW3] in the OFF position, the delay is 0.5 seconds. With dip switch [SW3] in the ON position, the delay is 1 second (<i>Fig. 3b, pg. 7</i>). This permits the Panic Hardware Device to fully unlock before signaling auto operator to swing door.
Delayed 2	Dry form “A” contacts provide a 1 second momentary pulse after a preset delay. With dip switch [SW3] in the OFF position, the delay is 0.5 seconds. With dip switch [SW3] in the ON position, the delay is 1 second (<i>Fig. 3b, pg. 7</i>). This permits the Panic Hardware Device to fully unlock before signaling auto operator to swing door.
Follower 1	Dry form “A” contact. Energizes while output 1 is energized. Enables outside ADA switch plate to actuate auto operator while door is unlocked. De-activates outside ADA actuator while door is locked.
Follower 2	Dry form “A” contact. Energizes while output 2 is energized. Enables outside ADA switch plate to actuate auto operator while door is unlocked. De-activates outside ADA actuator while door is locked.
Supervision	Indicates low DC output voltage condition. It may be caused by an AC brownout and low battery occurring simultaneously. Manual self test needs to be conducted to determine battery condition.

Fig. 1
 Fault C, NC dry relay contact. Open when DC output supplied by AC or Battery is normal.
 The contacts will close when the DC output voltage is low.

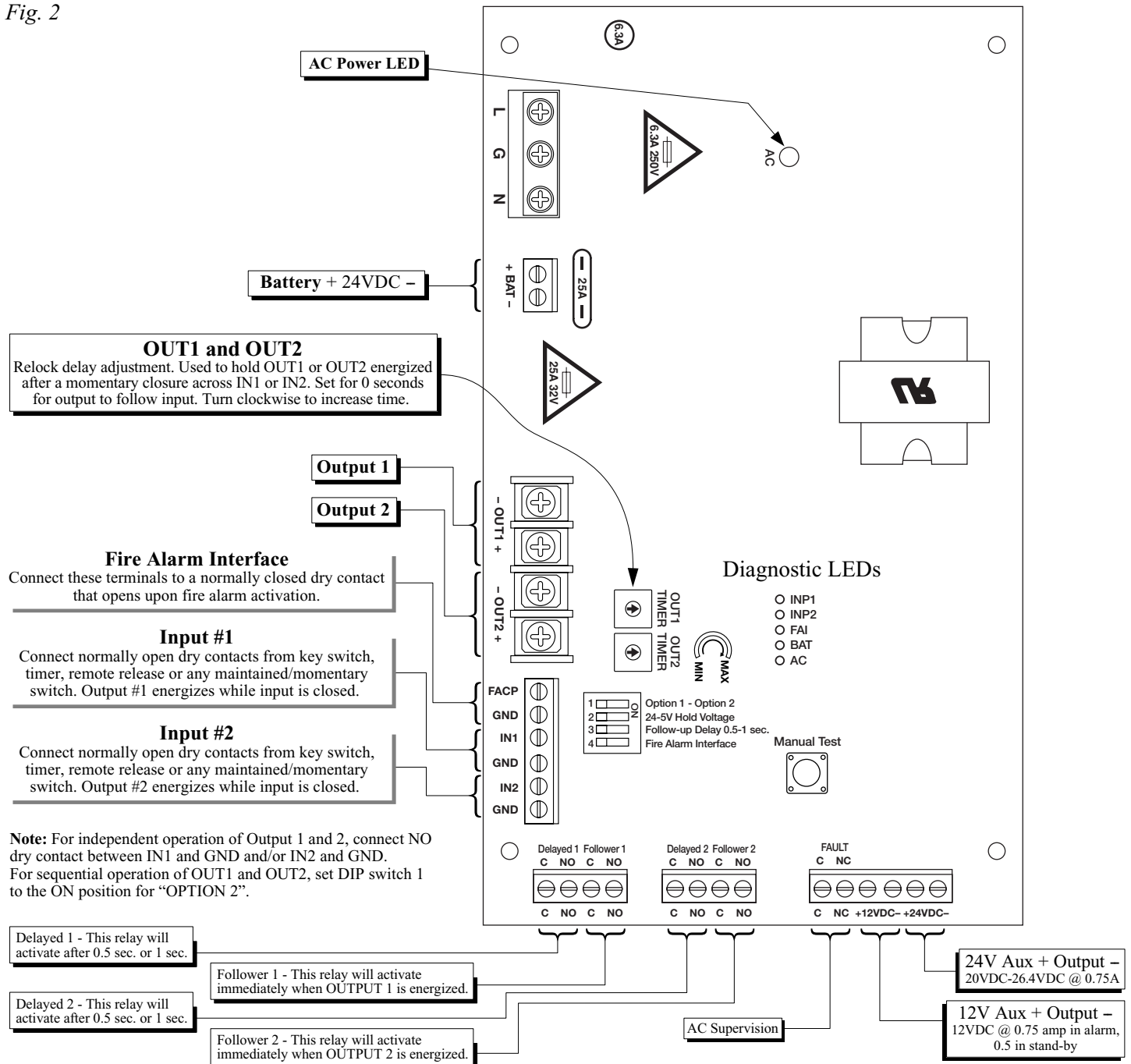


Compatible Panic Hardware Devices:

Manufacturer	Model Number
First Choice	3600 - Concealed Vertical Rod Exit Device 3700 - Rim Latching Exit Device
Kawneer	EL Paneline Exit Device

Note: Contact Special Projects Group, Inc. for complete list of compatible hardware.

Fig. 2



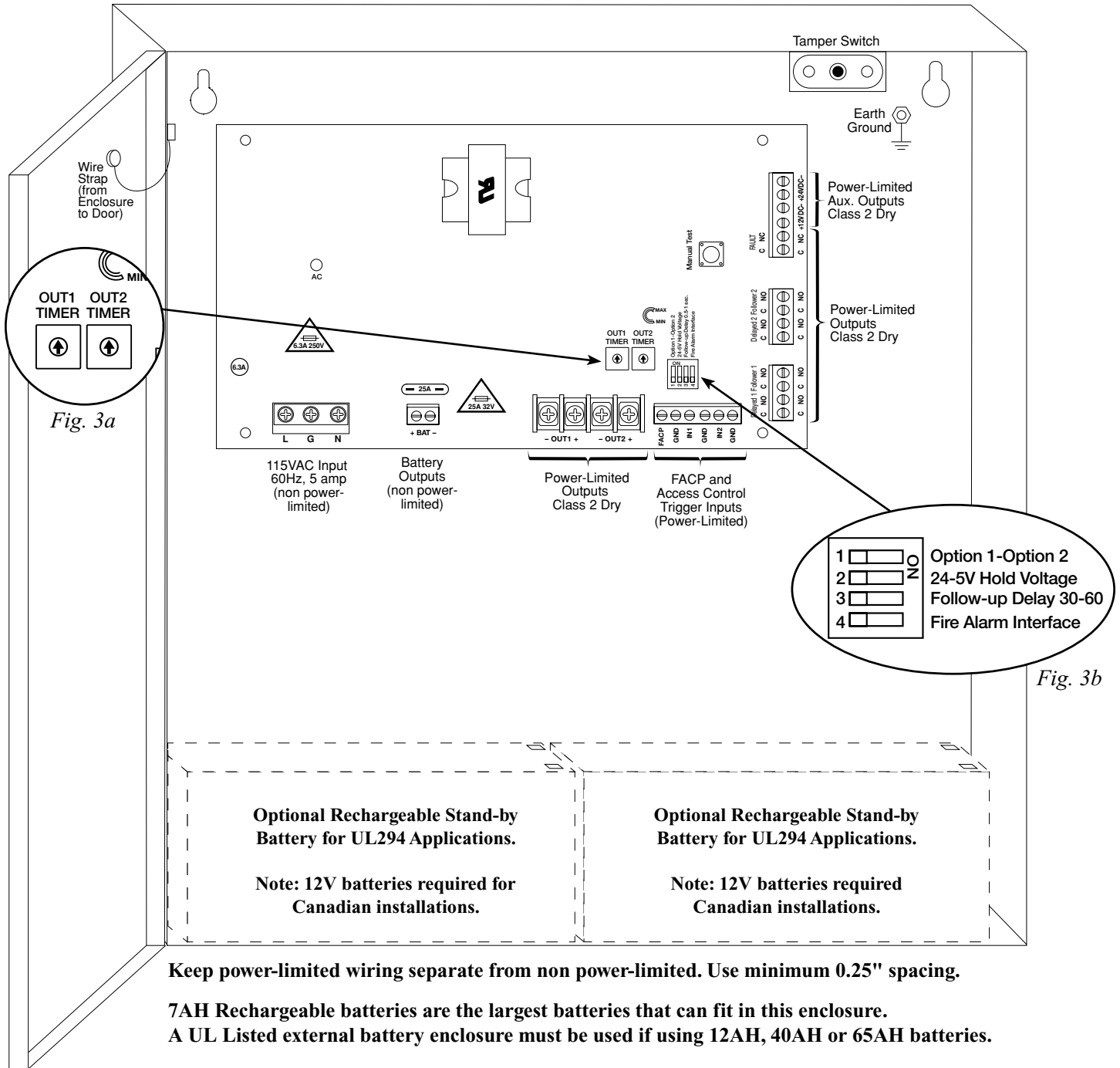
Wiring Distance Table:

For 15 amp high in-rush panic devices maximum 0.25 ohm resistance of connecting wires is acceptable, see chart below for wire gauge and distances.

Wire Gauge	Distance
14 AWG Stranded	40 ft.
12 AWG Stranded	60 ft.
10 AWG Stranded	100 ft.

Fig. 3

WARNING: To reduce the risk of fire or electric shock, do not expose the unit to rain or moisture. Replace fuse with the same type and rating: Input Fuse is rated at 6.3A/250V, Battery Fuse rated at 25A/32V.



Note: Contact Special Projects Group, Inc. for a complete list of compatible hardware.

NEC Power-Limited Wiring Requirements for SP-1000X Model:

Power-limited and non power-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25" away from any non power-limited circuit wiring. Furthermore, all power-limited circuit wiring and non power-limited circuit wiring must enter and exit the cabinet through different conduits. One such example of this is shown below. Your specific application may require different conduit knockouts to be used. Any conduit knockouts may be used. For power-limited applications, use of conduit is optional. All field wiring connections must be made employing suitable gauge CM or FPL jacketed wire (or equivalent substitute).

Note: Refer to wire handling drawing below for the proper way to install the CM or FPL jacketed wire (Fig. 4a).

Fig. 4

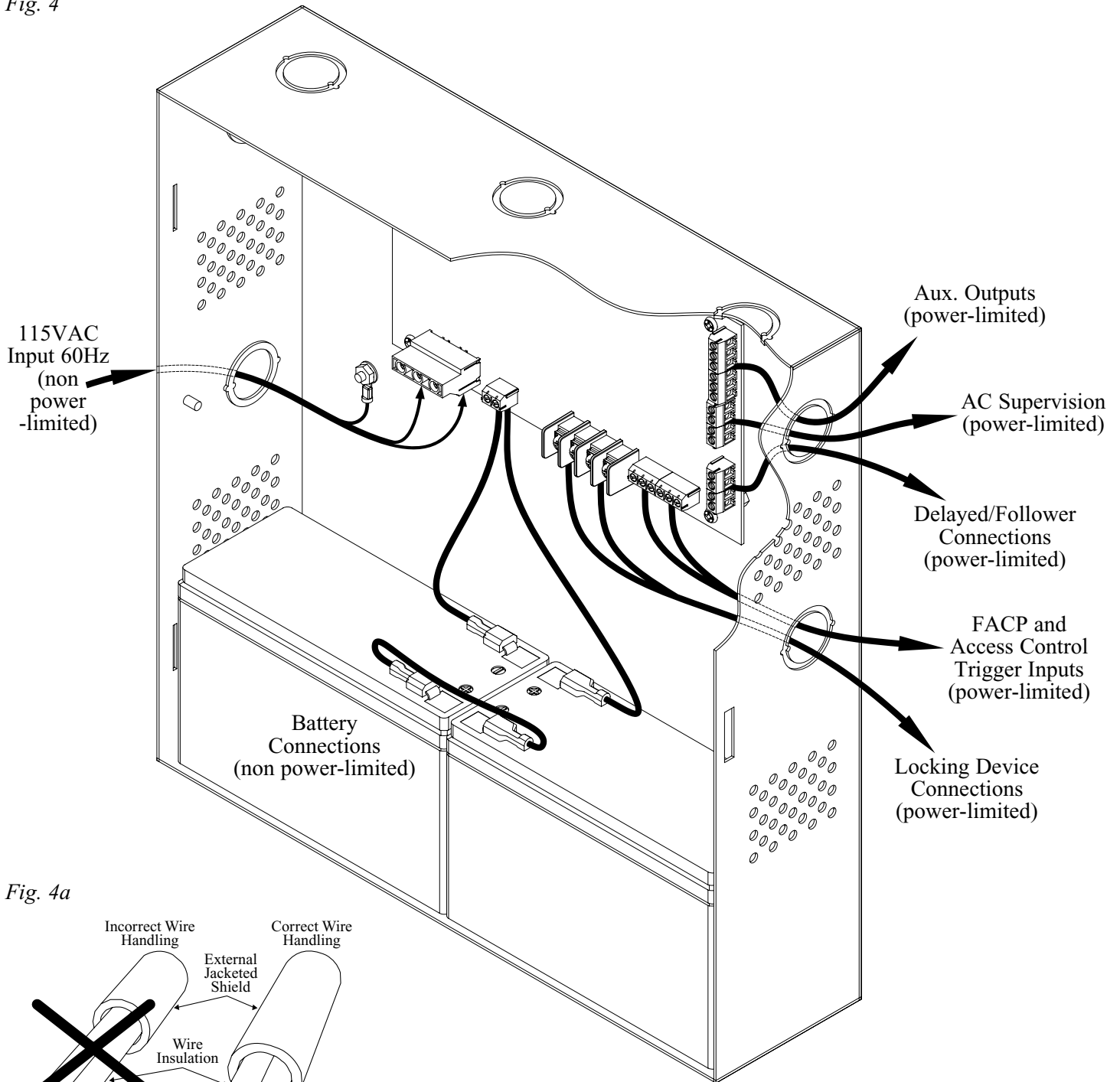
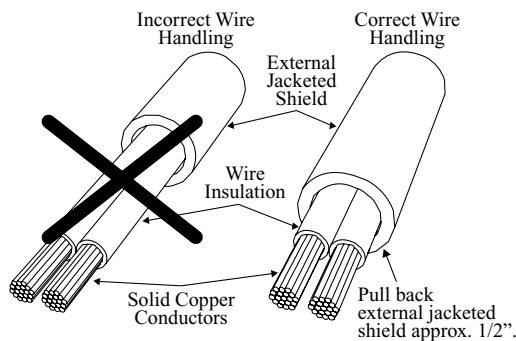
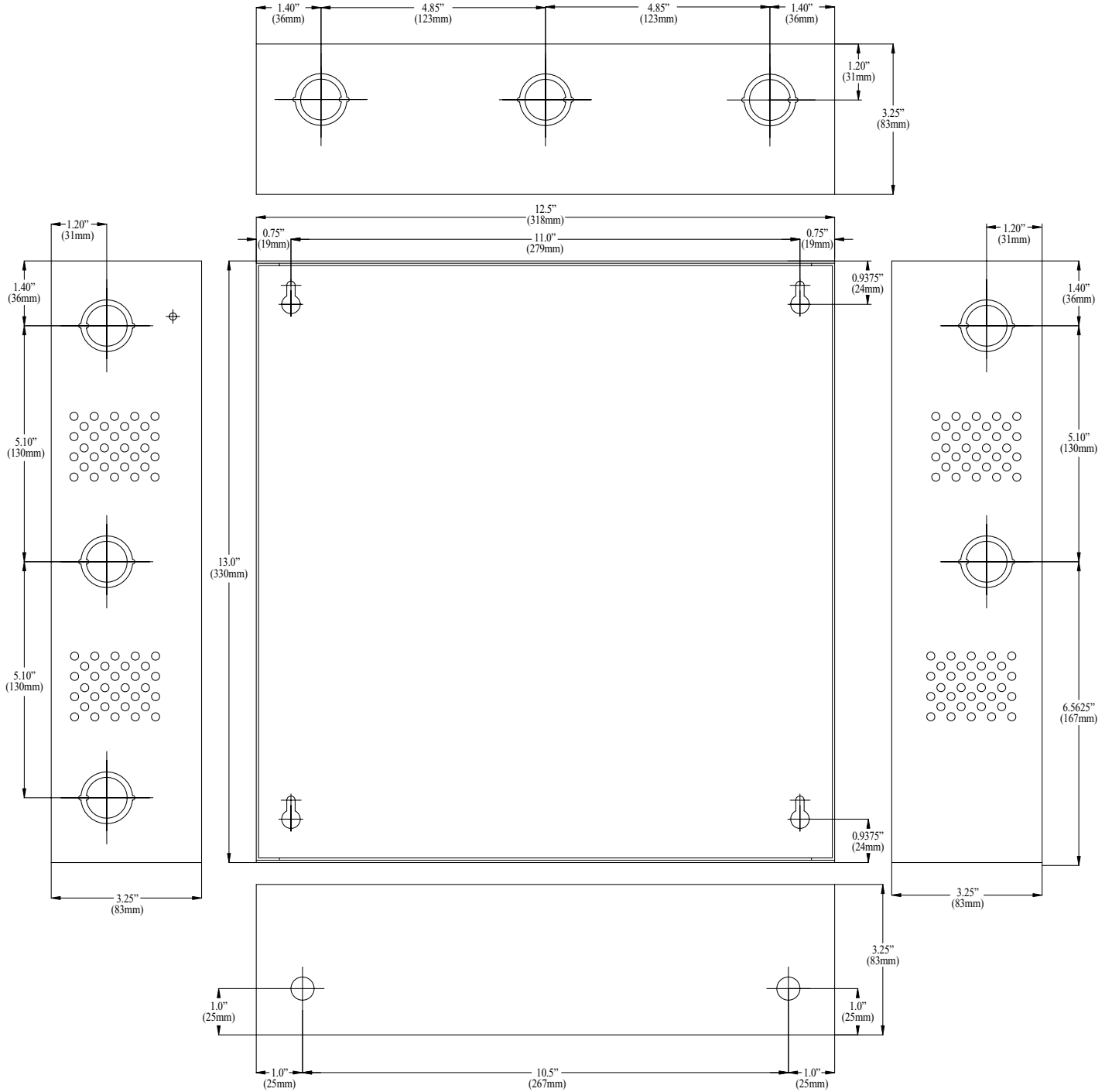


Fig. 4a



Enclosure Dimensions (H x W x D) (approximate):
 13" x 12.5" x 3.25" (330.2mm x 317.5mm x 82.55mm)



Notes:

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Notes:

Special Projects Group is not responsible for any typographical errors. Product specifications are subject to change without notice.

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