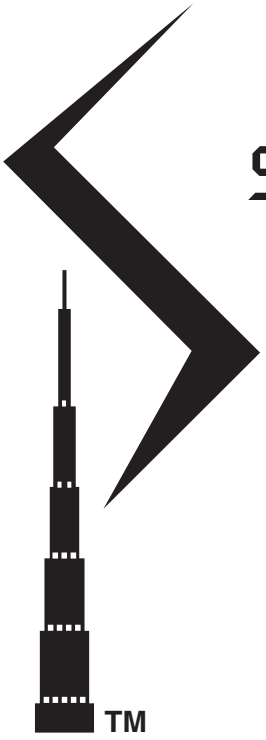


Special Projects Group

SP-2000

Low Current Locking Device Power Controller

Installation Guide

Rev. 111717

Overview:

Special Projects Group SP-2000 will operate up to two (2) low current lock hardware devices simultaneously. It is designed to operate motorized electric latch retraction exit devices, electric strikes, mag-locks, electric mortise and cylindrical locksets, etc. Each lock output has an adjustable re-lock delay timer. It will control a pair of doors simultaneously, or independently control two single door leafs. SP-2000 has integrated output relays which trigger automatic door operators and control ADA activation push plates/accessories. In addition, one (1) 12VDC and one (1) 24VDC unswitched auxiliary voltage outputs are provided for powering ancillary devices. A configurable FACP interface will either remove or apply power from the lock outputs when activated. LED status indicators are provided to monitor input status, battery condition, AC power loss, and FACP status. Intelligent logic provides protection against accidental shorting of lock outputs.

Specifications:

Agency Approval:

- UL 294 - Access Control Unit Power Supply.
  Evaluated to the following levels of UL 294 6th Ed:
  Destructive Attack - I, Line Security - I
  Endurance - IV, Stand-by Power - II.
- ULC-S319 - Access Control Unit Power Supply. Class 1.

Input:

- Input 115VAC, 60Hz, 2.5A or 230VAC, 50Hz, 1.5A.
- Two (2) Normally Open (N.O.) trigger inputs (Input 1 and Input 2).
- FACP Normally Closed (N.C.) input.
- Two normally open ADA inputs for special mode of interfacing with automatic door operators.

Outputs:

- Two (2) 19.8VDC-26.4VDC rated individually controlled lock outputs configurable for fail-secure or fail-safe electronic locking hardware for applications with battery back-up. 24VDC-26.4VDC rated for applications without battery back-up (US applications only). Current rating 2A combined.
- One (1) 19.8VDC-26.4VDC @ 0.8A rated filtered regulated auxiliary output for applications with battery back-up, 24VDC-26.4VDC @ 0.8A rated for applications in US not requiring battery back-up. Not affected by FACP trigger.
- One (1) 12VDC filtered regulated auxiliary output rated 0.5A. Not affected by FACP trigger.
- Two (2) follower Normally Open relay outputs for controlling ADA actuators/accessories.

Outputs *(cont'd)*:

- Two momentary door operator activation relay outputs.
- Trouble relay output indicating low AC voltage trouble and battery trouble.

Battery Backup:

- Requires two (2) 12V batteries to be wired in series for 24V operation.
- When 7AH batteries are used, battery capacity for emergency stand-by is 30 minutes.
- Built-in charger for sealed lead acid batteries.
- Maximum charge current 650mA.
- Automatic switch over to stand-by battery when AC fails.
- Battery PTC rating: 6A.
- Battery leads included.

Visual Indicators:

- Green AC Power LED indicates AC presence.
- Red trigger output LEDs indicate panic device status / opened (activated, short circuit).
- Green Fire Alarm Interface (FAI) LED indicates FACP interface is activated.
- Red Battery LED indicates low battery during AC failure and battery test.
- Green AC status LED indicates loss of AC power.

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

13" x 12.5" x 3.25" (330.2mm x 317.5mm x 82.6mm)

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. 5)*. 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. Hardwire unit: Connect unswitched AC power (115VAC, 60Hz or 230VAC, 50Hz) 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 or 230VAC, 50Hz Input, Battery Wires). Minimum 0.25" spacing must be provided.
   CAUTION: Do not touch exposed metal parts. Shut branch circuit power before installing or servicing equipment. There are no user serviceable parts inside. Refer installation and servicing to qualified service personnel.
   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-2000 is intended to be permanently connected.
3. Measure aux. output voltage before connecting devices. This helps avoiding potential damage.
4. For ULC applications all interconnecting devices must be ULC Listed. Connect locking hardware device # 1 to terminals marked [+ OUT1 –], connect locking hardware device # 2 to terminals marked [+ OUT2 –] *(Fig. 1, pg. 5)*. Be sure to observe polarity. The locking hardware device operating voltage specifications must cover 19.8VDC to 26.4VDC range.
5. Set locking device type Fail Safe DIP Switch # 1 ON, Fail Secure DIP Switch # 1 OFF.

6. 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 1 second to 60 seconds.
   Note: When external control of door unlock time is desired (i.e. card reader) set time to minimum (completely counter-clockwise).
7. Set up simultaneous operation by turning DIP Switch # 2 to ON position. Input 1 will trigger both OUT1 and OUT2
8. Connect auxiliary devices to be powered (Keypads, REX motion detectors, electronic timers, external relays) to the appropriate auxiliary power output terminals *(Fig. 1, pg. 5)*.
   Note: Operating voltage range of device should be 19.8VDC- 26.4VDC or wider for applicators with battery backup and 24VDC-26.4VDC for applications not requiring battery backup.
9. Connect Automatic Door Operators to terminals marked [OPER-1], [OPER-2]. Please note, those momentary outputs will be engaged only if [ADA-IN1] and [ADA-IN2] inputs are used for triggering. Duration of the pulse is selected by DIP Switch # 3: OFF: 0.5 seconds; ON: 1 second. Follower 1 and Follower 2 relay operation follows the Outputs 1 and 2.
   Note: For UL/ULC applications all interconnecting devices must be UL/ULC Listed respectively.
10. To hookup the Fire Alarm Disconnect feature, wire the normally closed (NC) dry contact output from a Fire Alarm Control Panel to the terminals marked [FACP] and [GND] of SP-2000. The DIP Switch # 4 is used to configure Output state when Fire Alarm is engaged. In the OFF position outputs will be de-energized when FACP is activated, in the ON position outputs will be energized.
11. For ULC applications batteries must be connected. Stand-by batteries must be lead acid. 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.
12. 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. 2, pg. 6)*. 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.
13. Upon completion of wiring secure enclosure door with screws or cam lock (supplied).

LED Diagnostics:

LED	LED Status	Panic Device Power Controller Status
Power - Green (AC)	On	Normal operating condition.
	Off	Loss of AC.
OUT1 - Red	On	Output 1 - Energized.
	Rapid Blink	Output 1 - Short circuit or over-current.
	Slow Blink	Output 1 - Open circuit
	Off	Output 1 - De-energized.
OUT2 - Red	On	Output 2 - Energized.
	Rapid Blink	Output 2 - Short circuit or over-current.
	Slow Blink	Output 2 - Open circuit
	Off	Output 2 - De-energized.
FAI - Green	On	FACP Input triggered (alarm condition).
	Off	FACP normal (non-alarm condition).
BAT Trouble Red	Off	Battery normal
	Slow Blink	Bad battery or no battery.
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 disconnect hookup, remove wire from the terminal marked [FACP] on SP-2000. The fire alarm interface is configurable to either apply 24VDC or disconnect 24VDC from the lock outputs upon activation. Set as required per application.
With DIP Switch #4 in the OFF position, 24VDC will be disconnected from lock outputs (DIS mode).
With DIP Switch #4 in the ON position, 24VDC will be applied to the lock outputs (24V Mode).

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

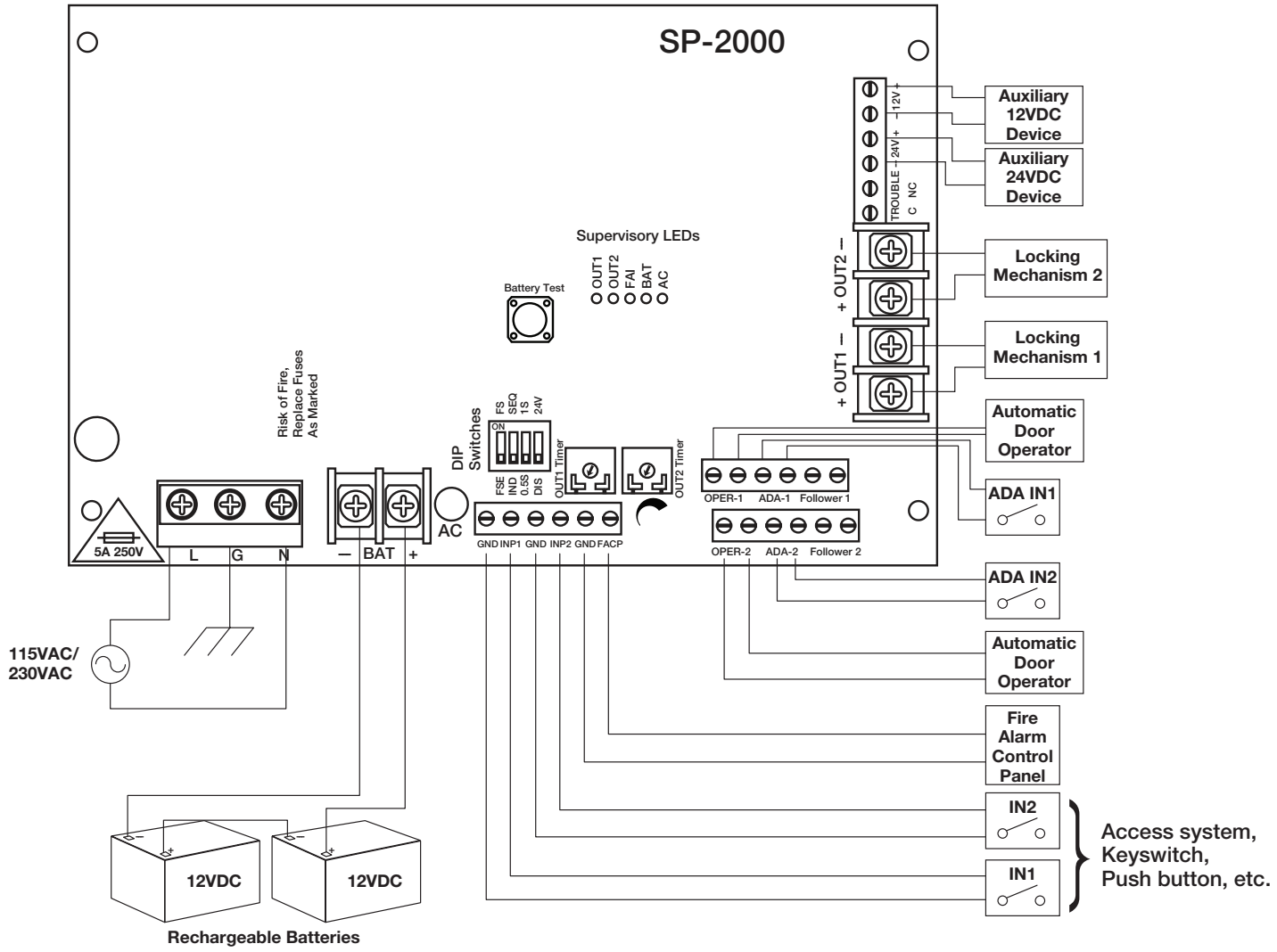
Battery Test: Under normal load conditions check that the battery is fully charged, check specified voltage both at battery terminal and at the board terminals marked [–BAT +] to ensure that there is no break in the battery connection wires.
Depress [Battery Test] button for 5 seconds. If battery is low or missing, the battery LED will start blinking slowly. It will extinguish when [Battery Test] button is depressed again with good battery connected or when all power is re-cycled.
Note: Maximum charging current under discharge is 650mA.
Note: Battery life expectancy will vary based on manufacturer and quality of battery.
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: 5A/250V. Do not expose to rain or moisture. Indoor use only.

Terminal Identification:

Terminal Legend	Function/Description
– 24V +	24VDC Auxiliary Output @ 0.8A. 19.8-26.4VDC for applications with battery back-up.
– 12V +	12VDC Auxiliary Output @ 0.5A.
– BAT +	24VDC Stand-by Battery Connection (Two (2) 12VDC batteries wired in series).
+ OUT 1 –	Connect 24VDC Low Current Lock Device # 1. **Note:** Load connected not to exceed 1A.
+ OUT 2 –	Connect 24VDC Low Current Lock Device # 2. **Note:** Load connected not to exceed 1A.
FACP / GND	Normally Closed Dry Contact from Fire Alarm Control *(100 Ohm maximum wiring resistance)*.
INP1 / GND	Normally Open Trigger input controls Output 1. May be held closed for extended unlocking *(100 Ohm maximum wiring resistance)*.
INP2 / GND	Normally Open Trigger input controls Output 2. May be held closed for extended unlocking *(100 Ohm maximum wiring resistance)*.
ADA IN1	Normally open trigger input for automatic door operator interface mode. Works similar to INP1, but also causes OPER-1 relay to trigger momentarily (0.5 or 1 second, depending on the position of DIP Switch # 3).
ADA IN2	Normally open trigger input for automatic door operator interface mode. Works similar to INP2, but also causes OPER-2 relay to trigger momentarily (0.5 or 1 second, depending on the position of DIP Switch # 3).
Trouble C, NC	Indicates AC or battery trouble condition. Normally closed.
Follower 1 Follower 2	Normally open dry contacts following the operation of Output 1 and Output 2. For Fail Safe devices - Relay closes when input is triggered and lock output power is disconnected. For Fail Secure devices - Relay closes when input is triggered and lock output power is applied. **Note:** Intended application for controlling ADA actuators/accessories.
Oper 1 Oper 2	Momentary normally open dry contacts following inputs [ADA IN1] and [ADA IN2], OPER relays will activate following engagement of [ADA IN1] and [ADA IN2] inputs. Adjust delay time for 0.5 seconds or 1 second to allow for lock hardware to fully activate by using DIP Switch #3. **Note:** Intended application for automatic operator activation.

Fig. 1

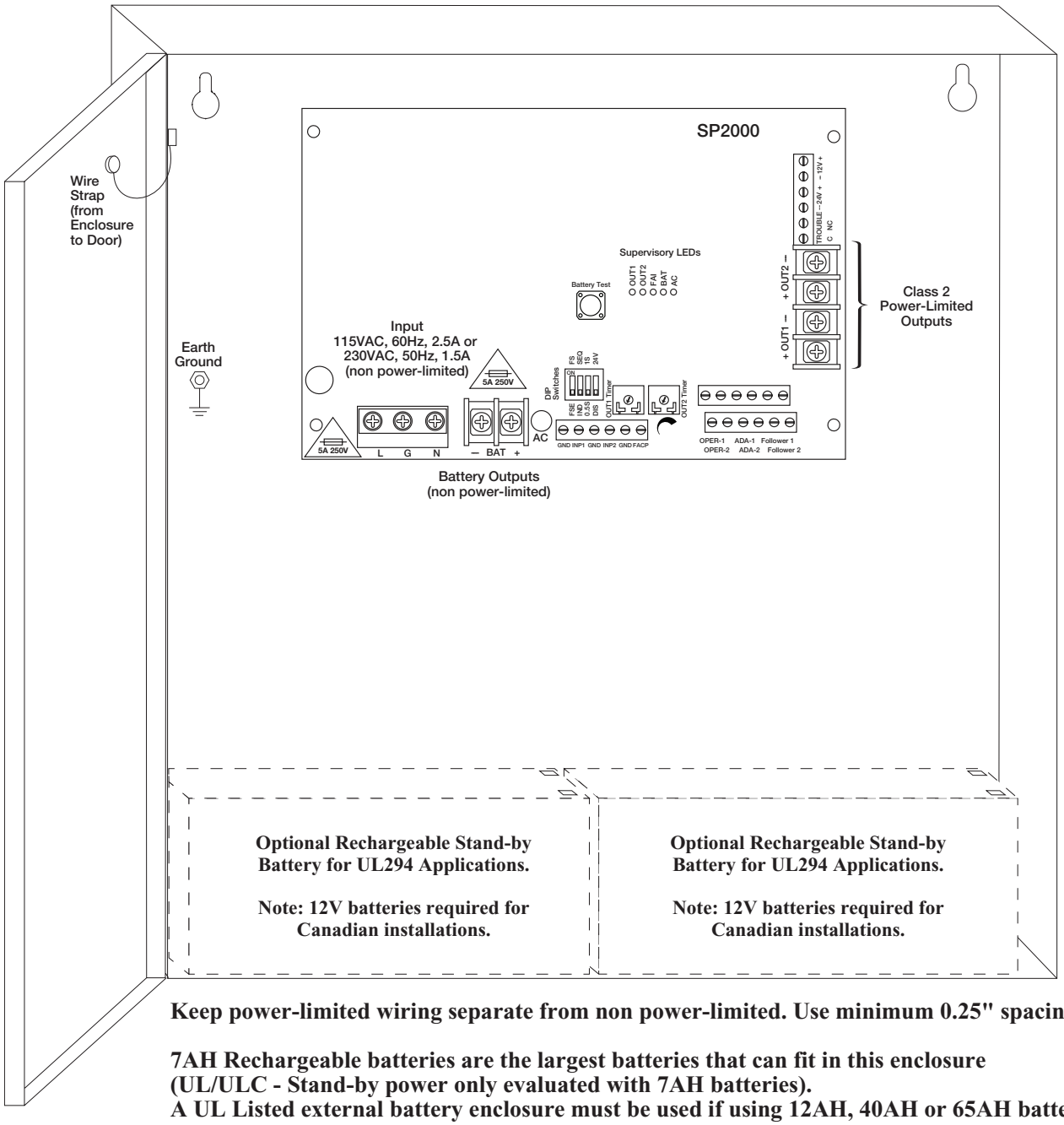


Wiring Distance Table *(based on 1A max. load locking hardware)*:

Wire Gauge	Distance
18 AWG Stranded	180 ft.
16 AWG Stranded	280 ft.
14 AWG Stranded	450 ft.
12 AWG Stranded	720 ft.

Fig. 2 - SP-2000

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 5A/250V, Battery PTC rated at 6A.



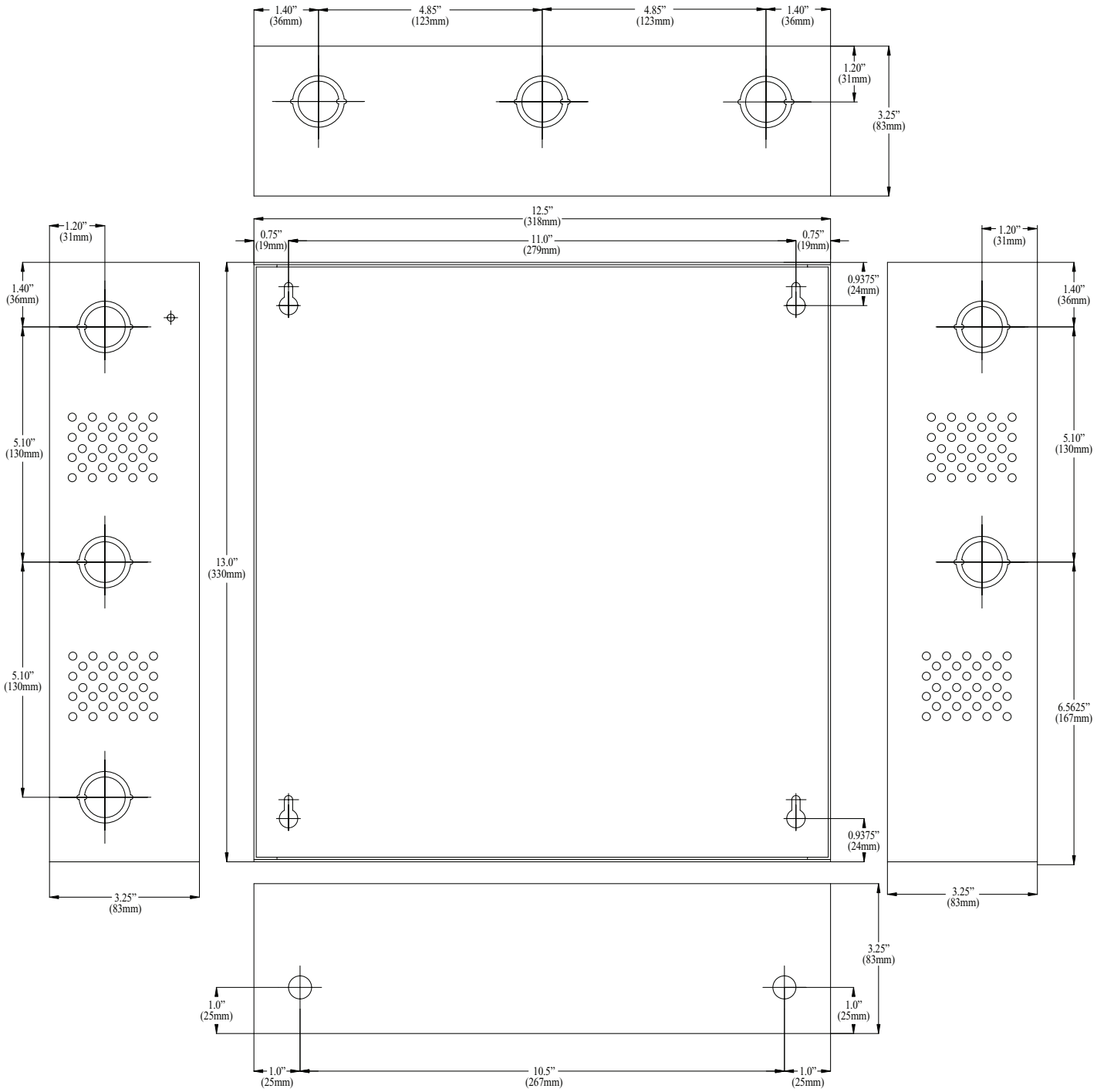
Keep power-limited wiring separate from non power-limited. Use minimum 0.25" spacing.

7AH Rechargeable batteries are the largest batteries that can fit in this enclosure (UL/ULC - Stand-by power only evaluated with 7AH batteries).
A UL Listed external battery enclosure must be used if using 12AH, 40AH or 65AH batteries.

Notes:

SP-2000 Enclosure Dimensions *(H x W x D approximate)*:

13” x 12.5” x 3.25” (330.2mm x 317.5mm x 82.6mm)



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