



**DORTRONICS SYSTEMS, INC.**

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# ***Power Supply/Charger***

## ***Installation Guide***

***Model***

***4204NX***

***- 4A @ 12VDC or 24VDC UL 294 Class 2 Power-Limited Output***



***UL File BP9749***

***State of California Fire Marshall Listing 7315-2290:0500***

Rev. 1.29.19

Installing Company: \_\_\_\_\_ Service Rep. Name: \_\_\_\_\_

Address: \_\_\_\_\_ Phone #: \_\_\_\_\_

### Overview:

The 4204NX power supply/charger converts a 120VAC / 60Hz input to a 12VDC or 24VDC nominal output (see *Power Supply Configuration Reference Chart and Specifications*).

### 4204NX Series Power Supply Configuration Reference Chart:

| Model Number | Nominal DC Outputs     |                        |                        |                        | Maximum Supply Current for Main and Aux. Outputs(A) | Power-Limited Output | Input Rating: 120VAC, 60Hz | Input Fuse Rating | Battery Fuse Rating | Ripple Voltage (mV) Under low battery condition |  | Number of Outputs | Accommodates up to 7AH Batteries |
|--------------|------------------------|------------------------|------------------------|------------------------|---|----------------------|----------------------------|-------------------|---------------------|---|--|-------------------|----------------------------------|
|              | [DC]                   |                        | [AUX]                  |                        |   |                      |                            |                   |                     |   |  |                   |                                  |
|              | 12VDC Output Range (V) | 24VDC Output Range (V) | 12VDC Output Range (V) | 24VDC Output Range (V) |   |                      |                            |                   |                     |   |  |                   |                                  |
| 4204NX       | 13.2                   | 26.4                   | 13.2                   | 26.4                   | 4A  | ✓                    | 3.5A                       | 5A/250V           | 5A/32V              | 730   |  | 1                 | 2                                |

These units are:

UL Listed, File BP9749 for Access Control Systems (UL294) and classified as Class 2 Power-Limited stand alone power supplies with stand-by battery and they are suitable to power: sensors, switches, LED's, electro-mechanical devices (e.g. Electromagnetic locks, electric door strikes) defined in the National Electrical Code.

Compliant with NFPA72 Fire Protecting Signaling Service

Canadian Electrical Code, Part 1. compliant

State of California Fire Marshall, Approved, Category: "Power Units" Listing No. 7315-2290:0500

### Stand-by Specifications:

| Battery | Burg. Applications<br>4 hr. Stand-by/<br>15 min. Alarm | Fire Applications<br>24 hr. Stand-by/<br>5 min. Alarm | Access Control Applications<br>Stand-by |
|---------|--|---|---|
| 7AH     | 0.4A/4A  | N/A   | 15 Mins./4A                             |
| 12AH    | 1A/4A  | 0.3A/4A   | 35 Mins./4A                             |
|         |  |   |   |

## Specifications:

### Input:

- 120VAC, 60Hz.

### Output:

- For output voltage and supply current refer to *4204NX series Power Supply Configuration Reference Chart, pg. 2.*
- Auxiliary Class 2 power-limited output rated @ 1A (unswitched).
- Overvoltage Protection.

### Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Maximum charge current 1.54A.
- Automatic switch over to stand-by battery when AC fails. Transfer to stand-by battery power is instantaneous with no interruption.

### Fire Alarm Disconnect:

- Supervised Fire Alarm disconnect (latching or non-latching) 10K EOL resistor. Operates on a normally open (NO) or normally closed (NC) trigger.

### Supervision:

- AC fail supervision (form “C” contacts).

### Supervision (cont'd):

- Battery fail and presence supervision (form “C” contacts).
- Low power shutdown. Shuts down DC output terminals if battery voltage drops below 71-73% for 12V units and 70-75% for 24V units. Prevents deep battery discharge.

### Fuse Ratings:

- Refer to *4204NX Series Power Supply Configuration Reference Chart, pg. 2.*

### Visual Indicators:

- Green AC Power LED indicates 120VAC present.
- AC input and DC output LED indicators.

### Additional Features:

- Short circuit and overload protection.
- Unit is complete with power supply, enclosure, battery leads, and cam lock.

### Enclosure Dimensions (approximate H x W x D):

4204NX,  
15.5” x 12.25” x 4.5” (393.7mm x 304.8mm x 114.3mm)

## Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/NFPA 72/ANSI, The Canadian Electrical Code, Part 1, and with all local codes and authorities having jurisdiction. The product must be located indoors within the protected premises.

1. Mount unit in desired location. 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. 10*). Secure enclosure to earth ground.
2. Set desired DC output voltage by setting SW1 to the appropriate position on the power supply board (*Fig. 1i, pg. 5*).
3. Connect unswitched AC power (120VAC 60Hz) to terminals marked [L, N] (*Fig. 1a, pg. 5*). 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 (120VAC 60Hz 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.**

4. Measure output voltage before connecting devices. This helps avoid potential damage.
5. Connect devices to be powered:  
For 4204NX connect devices to terminals marked [- DC +] (*Fig. 1h, pg. 3*).
6. For auxiliary device connection this output will not be affected by Low Power Disconnect or Fire Alarm Interface. Connect device to terminals marked [+ AUX -] (*Fig. 1f, pg. 5*).  
For Access Control applications batteries are optional. When batteries are not used, a loss of AC will result in the loss of output voltage. When the use of stand-by batteries is desired, they must be lead acid or gel type.  
Connect battery to terminals marked [-- BAT +] (*Fig. 1g, pg. 5*). Use two (2) 12VDC batteries connected in series for 24VDC operation (battery leads included). Use UL recognized BAZR2 batteries of an appropriate rating.
7. Connect appropriate signaling notification devices to AC FAIL & BAT FAIL (*Fig. 1b, pg. 5*) supervisory relay outputs.
8. To delay AC reporting for 2 hrs. set dip switch [AC Delay] to OFF position (*Fig. 1c, pg. 5*).  
To delay AC reporting for 1 min. set dip switch [AC Delay] to ON position (*Fig. 1c, pg. 5*).  
**Note:** Must be set to ON position for Burglar Alarm Applications.
9. To enable Fire Alarm Disconnect set dip switch [Shutdown] to ON position (*Fig. 1c, pg. 5*).  
To disable Fire Alarm Disconnect set dip switch [Shutdown] to OFF position (*Fig. 1c, pg. 5*).

10. Fire Alarm trigger to drop power is a supervised circuit. Terminate with 10k ohms end of line resistor supplied for either Normally Closed (in series) or Normally Open (in parallel) trigger circuit. Opening or shorting trigger terminals will cause [DC] output to shutdown (*Fig. 1d, pg. 5*).
11. Place a jumper on RESET terminals for auto-reset from FACP. With no jumper on these terminals manual reset is required (*Fig. 1e, pg. 5*).
12. For Access Control Applications: mount UL Listed tamper switch (Sentrol model 3012 or equivalent) at the top of the enclosure. Slide tamper switch bracket onto the edge of the enclosure approx. 2" from the right side (*Fig. 4, pg. 7 or Fig. 6, pg. 9*). Connect tamper switch wiring to the Access Control Panel input or the appropriate UL Listed reporting device.

### **Wiring:**

Use 18 AWG or larger for all low voltage power connections.

**Note:** Take care to keep power-limited circuits separate from non power-limited wiring (120VAC, Battery).

### **Maintenance:**

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

**Output Voltage Test:** Under normal load conditions the DC output voltage should be checked for proper voltage level 4204NX: 12VDC or 24VDC nominal rated @ 4A max.

**Battery Test:** Under normal load conditions check that the battery is fully charged, check specified voltage (12VDC @ 13.2 or 24VDC @ 26.4) both at battery terminal and at the board terminals marked [- BAT + ] to ensure that there is no break in the battery connection wires.

**Note:** Maximum charging current under discharges is 1.54A.

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

### **LED Diagnostics:**

#### **Power Supply/Charger**

| Red (DC) | Green (AC/AC1) | Power Supply Status  |
|----------|----------------|--|
| ON       | ON             | Normal operating condition.                                  |
| ON       | OFF            | Loss of AC. Stand-by battery supplying power.                |
| OFF      | ON             | No DC output.  |
| OFF      | OFF            | Loss of AC. Discharged or no stand-by battery. No DC output. |

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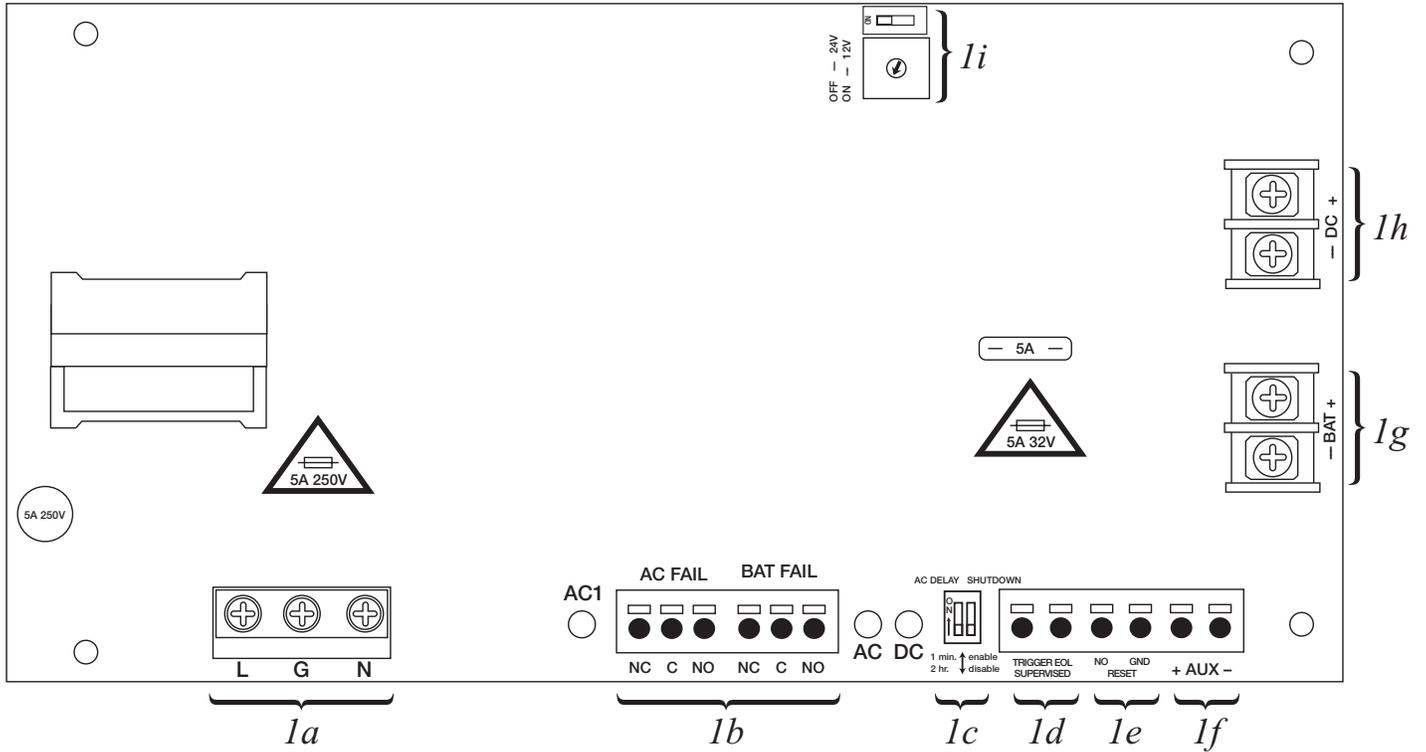
### **Terminal Identification:**

#### **Power Supply/Charger**

| Terminal Legend        | Function/Description  |
|------------------------|---|
| L, N                   | Connect 120VAC 60Hz to these terminals: L to hot, N to neutral (non power-limited) ( <i>Fig. 1a, pg.5</i> ).  |
| - DC +                 | 12VDC or 24VDC nominal @ 4A continuous output (power-limited output) ( <i>Fig. 1h, pg. 5</i> ).   |
| Trigger EOL Supervised | Fire Alarm Interface trigger input from a short or FACP. Trigger inputs can be normally open or normally closed from a FACP output circuit (power-limited input) ( <i>Fig. 1d, pg. 5</i> ).   |
| NO, GND RESET          | FACP interface latching or non-latching (power-limited) ( <i>Fig. 1e, pg. 5</i> ).  |
| + AUX -                | Auxiliary Power-Limited output rated @ 1A (unswitched) (power-limited output) ( <i>Fig. 1f, pg. 5</i> ).  |
| AC Fail NC, C, NO      | Indicates loss of AC power, e.g. connect to audible device or alarm panel. Relay normally energized when AC power is present. Contact rating 1A @ 30VDC (power-limited) ( <i>Fig. 1b, pg. 5</i> ).  |
| Bat Fail NC, C, NO     | Indicates low battery condition, e.g. connect to alarm panel. Relay normally energized when DC power is present. Contact rating 1A @ 30VDC. A removed battery is reported within 5 minutes. Battery reconnection is reported within 1 minute (power-limited) ( <i>Fig. 1b, pg. 5</i> ). |
| -BAT +                 | Stand-by battery connections. Maximum charge current 1.54A (non power-limited) ( <i>Fig. 1g, pg. 5</i> ).   |

## Terminal Identification:

Fig. 1 - 4204NX Board configuration



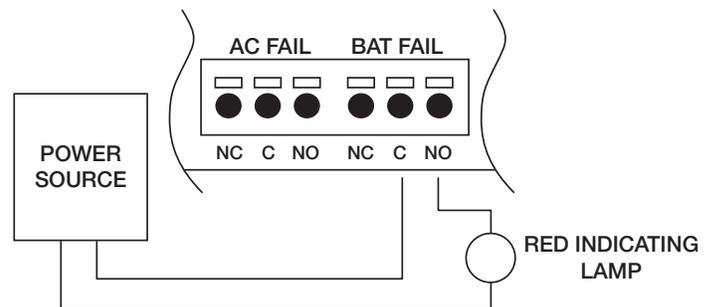
### **Trouble/Time Limited Warning of Stand-by Batteries:**

For compliance with ULC S318-96, the Time Limited Warning circuit must be connected for local or remote annunciation with an Amber or Red LED to indicate DC Trouble (low battery, loss of battery or when 95% of the stand-by battery has been depleted). Connect the circuit to the Batt Fail relay contacts to an appropriate input of a UL Listed Burglar Alarm or Access Control Panel. The following figure shows the circuitry needed for local annunciation.

### **Fig. 2 - Battery trouble indication -**

For Canadian use, a red indicating lamp must be visible from the exterior of this enclosure.

Wire one leg of a UL Listed, power-limited power source to the indicating lamp. Wire the second leg of the power source to the indicating lamp in series with the battery fail relay contact terminals marked [BAT FAIL - C, NO] (Fig. 2, pg. 5).



### NEC Power-Limited Wiring Requirements for 4204NX Models:

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).

Optional UL Listed battery enclosure must be mounted adjacent to the power supply via Class 1 wiring methods.

For Canadian installations use shielded wiring for all connections.

**Note:** Refer to wire handling drawing below for the proper way to install the CM or FPL jacketed wire (Fig. 5a).

Fig. 5

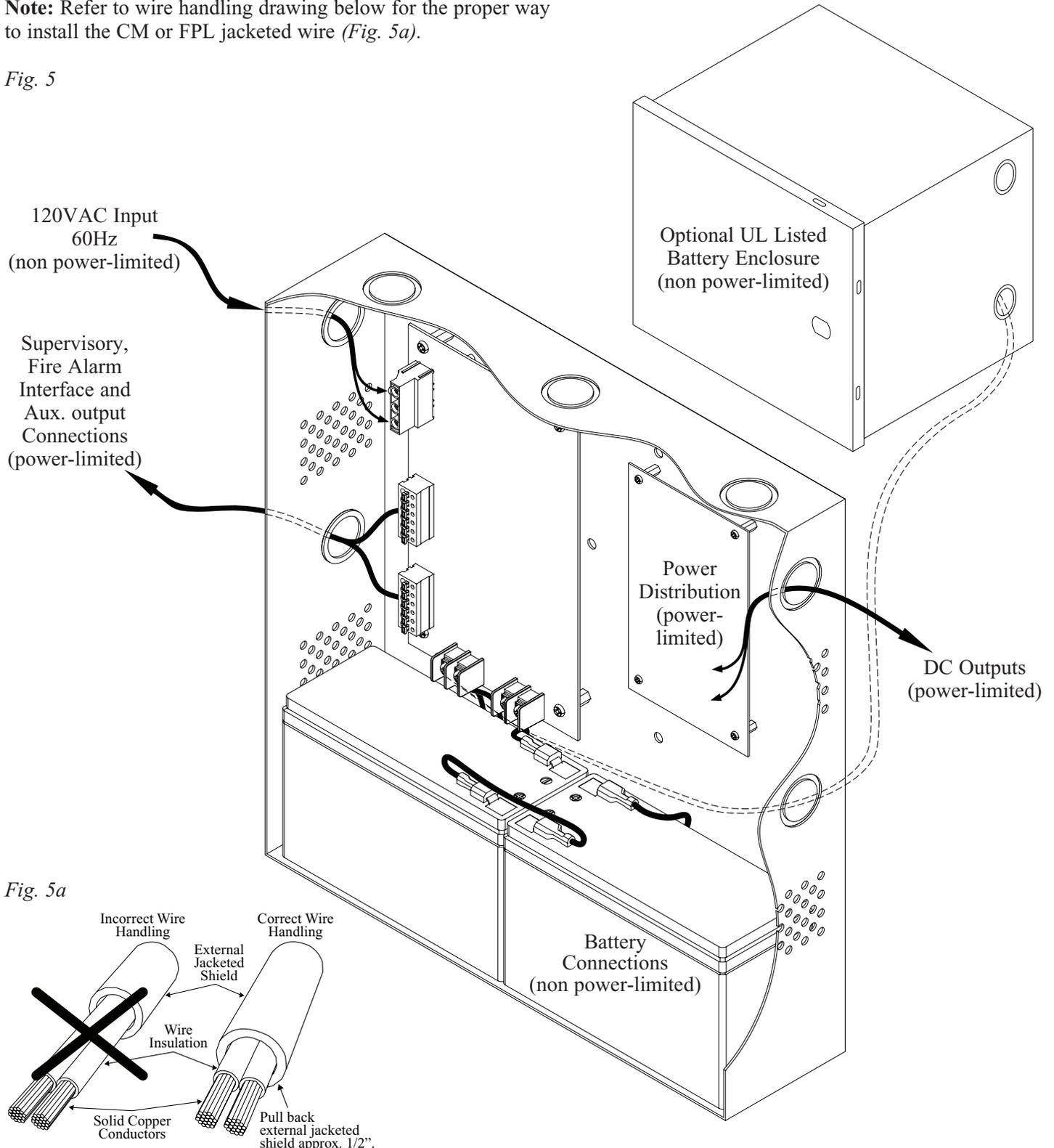


Fig. 5a

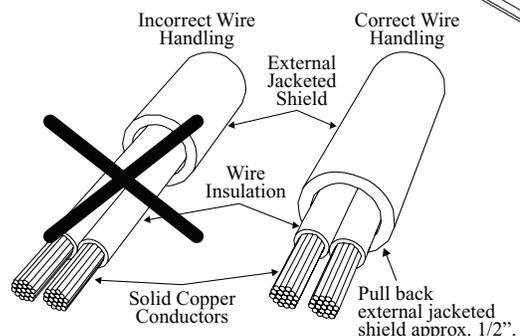
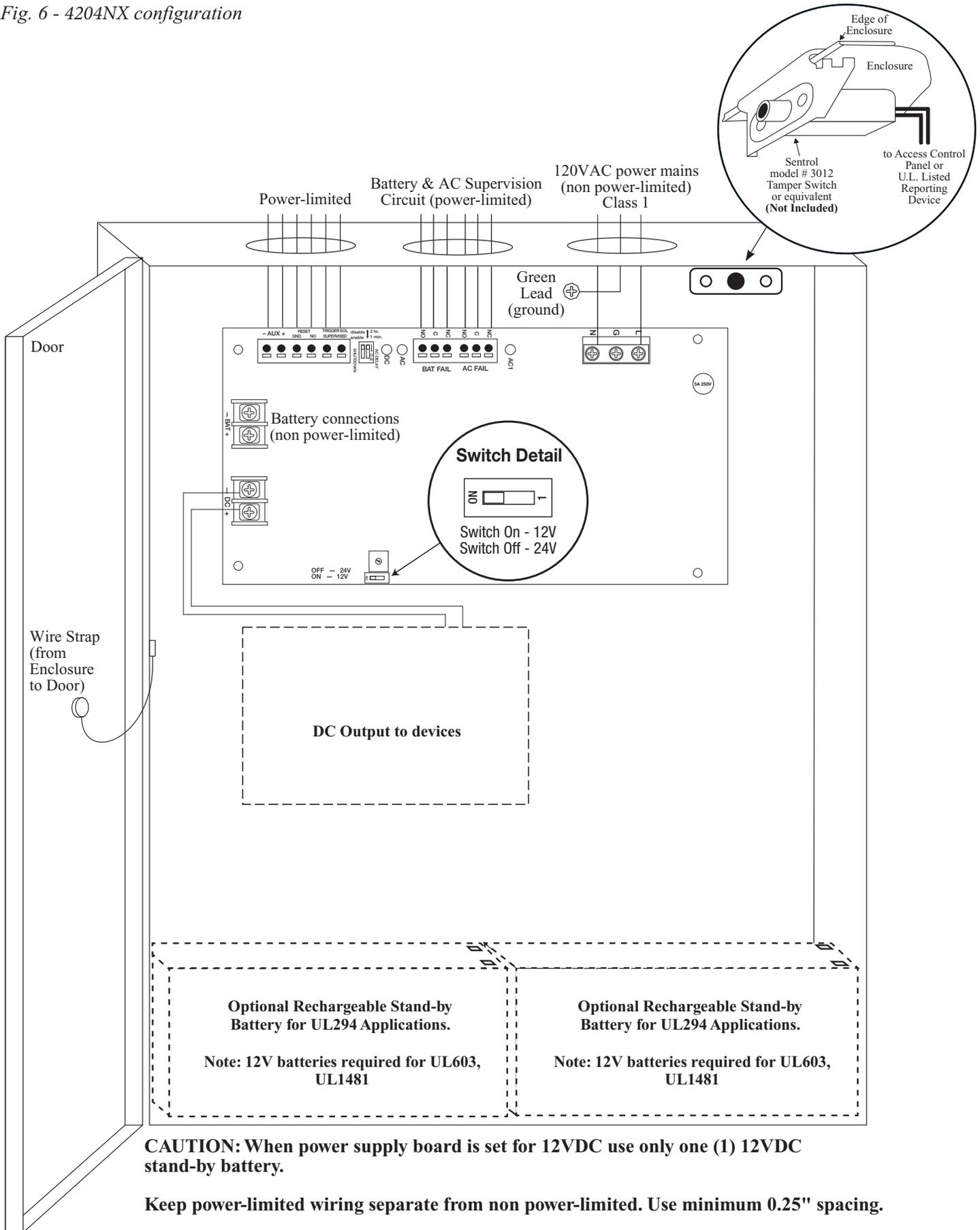


Fig. 6 - 4204NX configuration

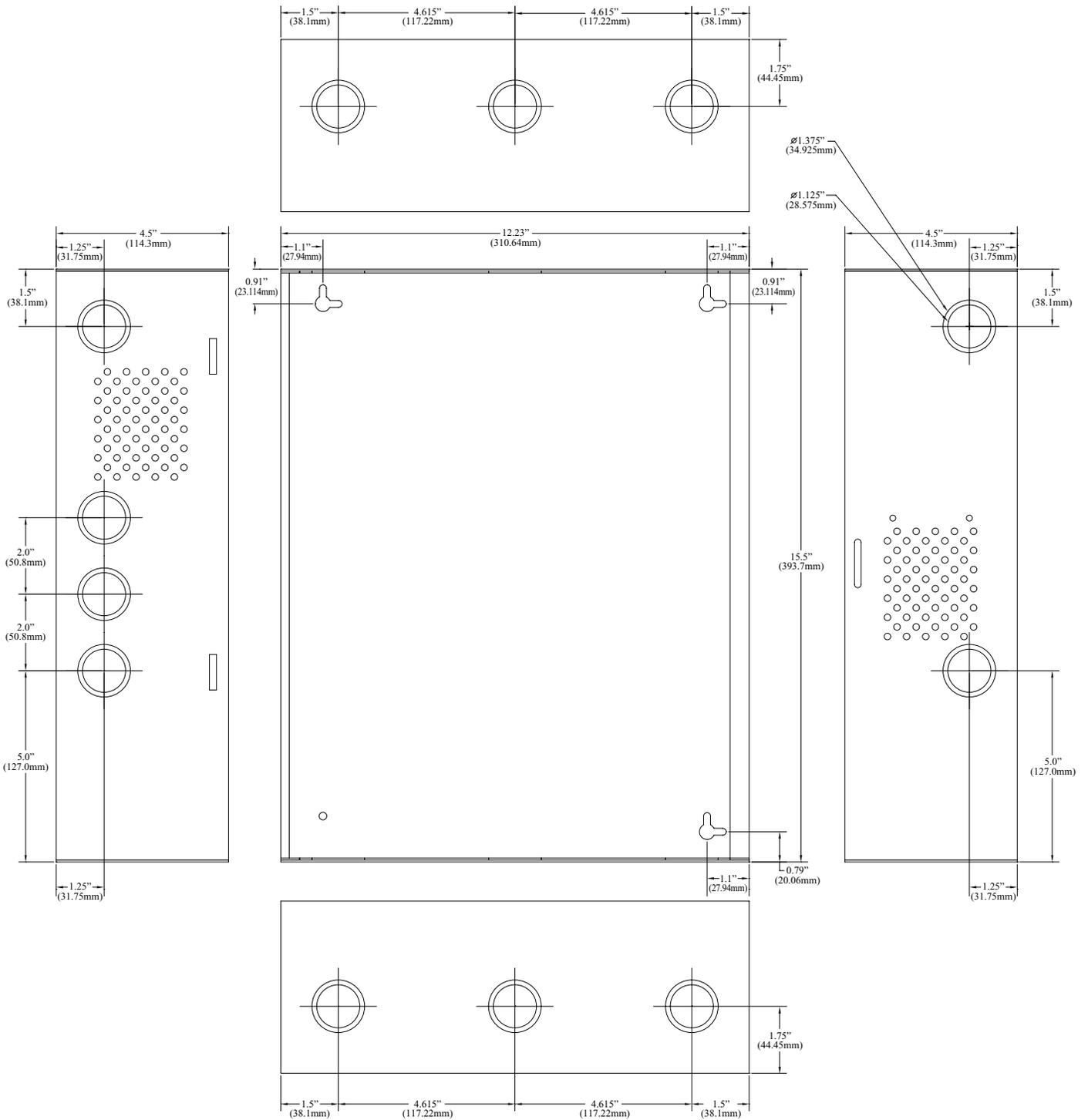


**CAUTION:** When power supply board is set for 12VDC use only one (1) 12VDC stand-by battery.

**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. A UL Listed external battery enclosure must be used if using 12 AH, 40AH or 65AH batteries.**

**Enclosure Dimensions (approximate H x W x D): 4204NX**  
 15.5" x 12-1/4" x 4.5" (393.7mm x 304.8mm x 114.3mm)



# Power Supply/Chargers Operating Guide

## Models Include:

| Model  | Input<br>120VAC, 60Hz | Output |       | Power-Limited | Auxiliary Power-Limited Output (unswitched) | Ripple Voltage |
|--------|-----------------------|--------|-------|---------------|---|----------------|
|        |                       | 12VDC  | 24VDC |               |   |                |
| 4204NX | 3.5A                  | 4A     | 4A    | ✓             | 1A  | 730mV          |

## Overview:

The 4204NX series power supply/chargers convert a 120VAC, 60Hz input to a 12VDC or 24VDC output.

## Stand-by Specifications:

| Battery | Burg. Applications<br>4 hr. Stand-by/<br>15 min. Alarm | Fire Applications<br>24 hr. Stand-by/<br>5 min. Alarm | Access Control Applications<br>Stand-by |
|---------|--|---|---|
| 7AH     | 0.4A/4A  | N/A   | 15 Mins./4A                             |
| 12AH    | 1A/4A  | 0.3A/4A   | 35 Mins./4A                             |
|         |  |   |   |

## Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Maximum charge current 1.54A.
- Automatic switch over to stand-by battery when AC fails. Transfer to stand-by battery power is instantaneous with no interruption.

## LED Diagnostics:

| Red (DC) | Green (AC/AC1) | Power Supply Status  |
|----------|----------------|--|
| ON       | ON             | Normal operating condition.                                  |
| ON       | OFF            | Loss of AC. Stand-by battery supplying power.                |
| OFF      | ON             | No DC output.  |
| OFF      | OFF            | Loss of AC. Discharged or no stand-by battery. No DC output. |

Installing Company: \_\_\_\_\_ Service Rep. Name: \_\_\_\_\_

Address: \_\_\_\_\_ Phone #: \_\_\_\_\_

Refer to the 4204NX Power Supply/Chargers Installation Guide: 4204NX Series, Rev. 1.2.19 for complete instructions. This sheet is to be removed, framed and posted next to the unit.

Rev. 1.2.19



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