



# ***AL1024ULX Series Power Supply/Charger***

## ***Installation Guide***

### ***Models Include:***

- ***AL1024ULX***

- *Single Output*

- ***AL1024ULXPD4***

- *Four (4) Fused Outputs*

- ***AL1024ULXPD4CB***

- *Four (4) PTC Outputs*

- ***AL1024ULXPD8***

- *Eight (8) Fused Outputs*

- ***AL1024ULXPD8CB***

- *Eight (8) PTC Outputs*

- ***AL1024ULXPD16***

- *Sixteen (16) Fused Outputs*

- ***AL1024ULXPD16CB***

- *Sixteen (16) PTC Outputs*

*For a red enclosure add an "R" suffix to the part #, e.g. AL1024ULXPD8R*

**SECURITY  
SIGNALING**



**LISTED**





**LISTED**

## Overview:

The AL1024ULX is a power supply that converts a 115VAC / 60Hz input to a 24VDC regulating output (see specifications below). The AL1024ULX is the base power supply unit for the UL Listed multi-output power supply/charger series: AL1024ULXPD4, AL1024ULXPD4CB, AL1024ULXPD8, AL1024ULXPD8CB, AL1024ULXPD16, AL1024ULXPD16CB (Refer to *AL1024ULX Series Power Supply Configuration Reference Chart* below).

### AL1024ULX Series Power Supply Configuration Reference Chart:

Altronix Model Number	Accessory Power Distribution Module(s)	Number of Output(s)	Class 2 Rated Power-Limited Outputs	Fused Outputs	PTC Outputs (auto-resettable)	Output Rating (A) per Output	Power Supply Output Fuse Rating	Agency Listings	UL Listings and File Numbers
AL1024ULX(R)	-	1	-	-	-	10	15A/ 32V	 NFPA 72 Compliant (Fire-Protective Signaling Service).	UL File # S4707 UL 1481 UL Listed Power Supplies for Fire Protective Signaling Systems.
AL1024ULXPD4	PD4UL	4	-	✓	-	3.5			
AL1024ULXPD4CB	PD4ULCB	4	✓	-	✓	2.5		 NFPA 72 Compliant (Fire-Protective Signaling Service).	UL 294 UL Listed for Access Control System Units.  "Signal Equipment" Evaluated to CSA Standard C22.2 No.205-M1983
AL1024ULXPD8	PD8UL	8	-	✓	-	3.5			
AL1024ULXPD8CB	PD8ULCB	8	✓	-	✓	2.5			
AL1024ULXPD16	Two (2) PD8UL	16	-	✓	-	3.5			
AL1024ULXPD16CB	Two (2) PD8ULCB	16	✓	-	✓	2.5			

Do not exceed total output rating of 10A per unit.

## Specifications:

### Input:

- Input 115VAC / 60Hz, 4.2A.
- Input fuse rated @ 5A/250V.

### Output:

- 24VDC output.
- 8A supply current in non-alarm condition with 10A supply current during alarm for Fire Alarm Applications.
- 10A supply current for Access Control Applications.
- Filtered and electronically regulated outputs.
- Short circuit and thermal overload protection.

### Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Automatic switch over to stand-by battery when AC fails.

### Battery Backup (cont'd.):

- Maximum charge current 3.6A.
- Zero voltage drop when switched over to battery backup.

### Supervision:

- AC fail supervision (form "C" contacts).
- Low battery supervision (form "C" contacts).
- Battery presence supervision (form "C" contacts).

### LED Indicators:

- AC input and DC output LED indicators.

### Additional Features:

- Power supply, enclosure, cam lock, and battery leads
- All models are available in red enclosure (add an "R" suffix to the part #, e.g. AL1024ULXPD8R).

### Stand-by Specifications (total current shown):

Output	15 min. of Stand-by and 5 min. of Alarm	4 hr. of Stand-by and 5 min. of Alarm	24 hr. of Stand-by and 5 min. of Alarm	60 hr. of Stand-by and 5 min. of Alarm
24VDC / 12AH Battery	Stand-By = 8A Alarm = 10A	Stand-By = 1.5A Alarm = 10A	Stand-By = 200mA Alarm = 10A	Stand-By = 100mA Alarm = 10A
Output	15 min. of Stand-by and 5 min. of Alarm	4 hr. of Stand-by and 5 min. of Alarm	24 hr. of Stand-by and 15 min. of Alarm	60 hr. of Stand-by and 15 min. of Alarm
24VDC / 65AH Battery	_____	Stand-By = 8.0A Alarm = 10A	Stand-By = 1.5A Alarm = 10A	Stand-By = 500mA Alarm = 10A

For Access Control applications, battery capacity for 10A supply current - 1 hr. for 24VDC/12AH battery, 6.5 hrs. for 24VDC/65AH battery.

See battery size calculation worksheet for other batteries (Page 7).

## 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.

1. Mount unit in the 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 three 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 enclosure to earth ground.
2. Connect AC power (115VAC / 60 Hz) to the terminals marked [L, N] (*Fig. 1, pg. 3*). Use 14 AWG or larger for all power connections (Battery, DC output, AC input). Use 22 AWG to 18 AWG for power-limited circuits (AC Fail/Low Battery reporting).

**Keep power-limited wiring separate from non power-limited wiring (115VAC / 60Hz Input, Battery Wires). Minimum 0.25" spacing must be provided.**

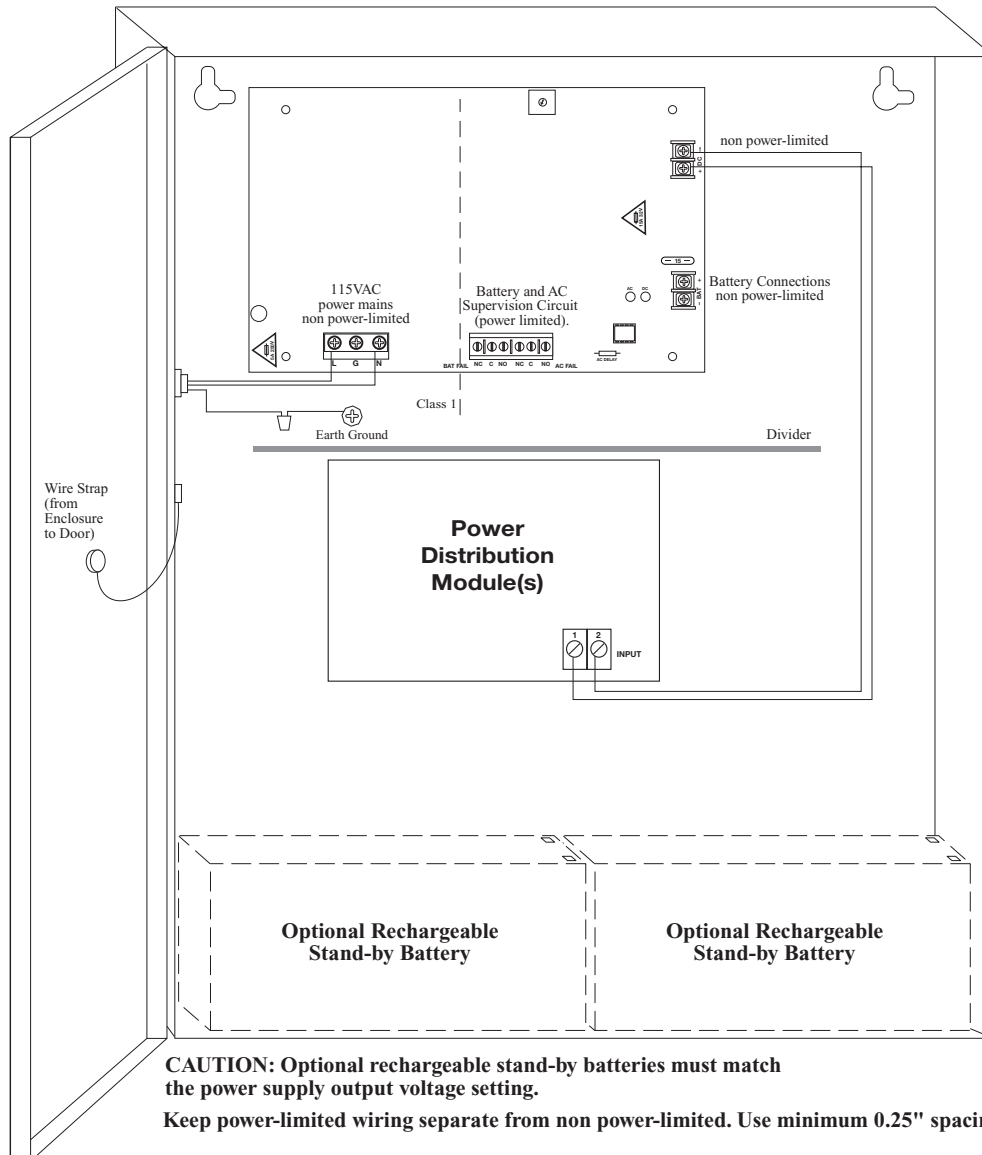
**CAUTION: Do not touch exposed metal parts. Shut branch circuit power before installing or servicing equipment.**

**There are no user serviceable parts inside. Refer installation and servicing to qualified service personnel.**

For Fire Alarm applications the outputs are "Special Applications" only, see list (*refer to Appendix A, pg. 6*).

3. Measure output voltage before connecting device. This helps avoiding potential damage. When servicing the unit AC mains should be removed.

**Fig. 1 CAUTION: De-energize unit prior to servicing. For continued protection against risk of electric shock and fire hazard replace fuses with the same type and rating. Do not expose to rain or moisture.**



**CAUTION: Optional rechargeable stand-by batteries must match the power supply output voltage setting.**

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

4. Connect devices to be powered:
  - a. For AL1024ULX Power Supply: connect devices to the terminals marked [+ DC -] (*Fig. 1, pg. 3*)
  - b. For other Power Distribution Models: connect devices to be powered to terminal pairs 1 to 4 marked [1P & 1N] through [4P & 4N] (*Fig. 2a & 2b, pg. 5*) or 1 to 8 marked [1P & 1N] through [8P & 8N] (*Fig. 3a & 3b, pg. 5*), carefully observing correct polarity.
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.
6. Connect appropriate signaling notification devices to the terminals marked [AC FAIL & BAT FAIL] (*Fig. 1, pg. 3*) supervisory relay outputs.  
**Note:** When used in fire alarm, burglar alarm or access control applications, “AC Fail” relay must be used to provide a visual indication of AC power on.
7. Please ensure that the cover is secured with the provided Key Lock.

### **Wiring:**

Use 14 AWG or larger for all power connections.

**Note:** Take care to keep power-limited circuits separate from non power-limited wiring (115VAC, 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.

**Battery Test:** Under normal load conditions check that the battery is fully charged, check specified voltage both at the 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 3.6A.

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

### **LED Diagnostics:**

#### **AL1024ULXB2 - Power Supply Board**

Red (DC)	Green (AC)	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.

#### **PD4UL/PD4ULCB/PD8UL/PD8ULCB - Power Distribution Module**

Green (AC)	Power Distribution Module Status
ON	Normal operating condition.
OFF	No Power Output.

### **Terminal Identification:**

#### **AL1024ULXB2 - Power Supply Board**

Terminal Legend	Function/Description
L, N	Connect 115VAC 60Hz to these terminals: L to hot, N to neutral. Do not use the [G] terminal.
+ DC -	24VDC @ 8A continuous, 10A in alarm non power-limited output. 10A continuous when batteries are not used
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 @ 28VDC. AC or brownout fail is reported within 1 minute of event. To delay reporting for up to 6 hrs., cut “AC delay” jumper and reset power to unit.
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 @ 28VDC. A removed battery is reported within 5 minutes. Battery reconnection is reported within 1 minute. Low battery threshold: 24VDC output threshold set @ approximately 21VDC.
- BAT +	Stand-by battery connections. Maximum charge current 3.6A.

## Terminal Identification:

### PD4UL/PD4ULCB/PD8UL/PD8ULCB - Power Distribution Module

Terminal Legend		Function/Description
PD4UL/PD4ULCB	PD8UL/PD8ULCB	
1P to 4P	1P to 8P	Positive DC power outputs
1N to 4N	1N to 8N	Negative DC power outputs

### Power Distribution Module(s):

Fig. 2a

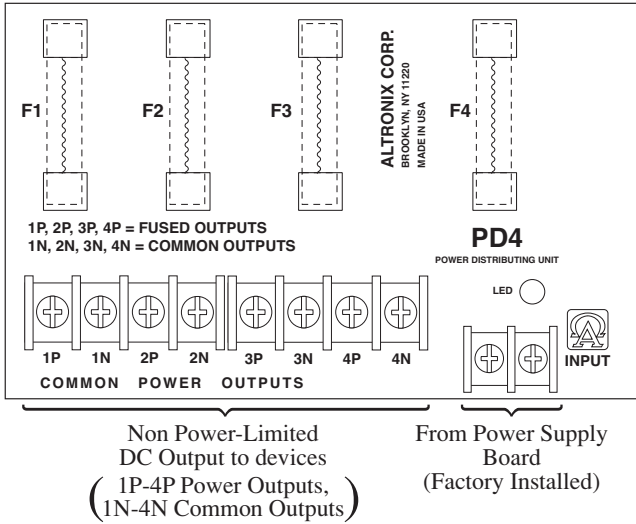


Fig. 2b

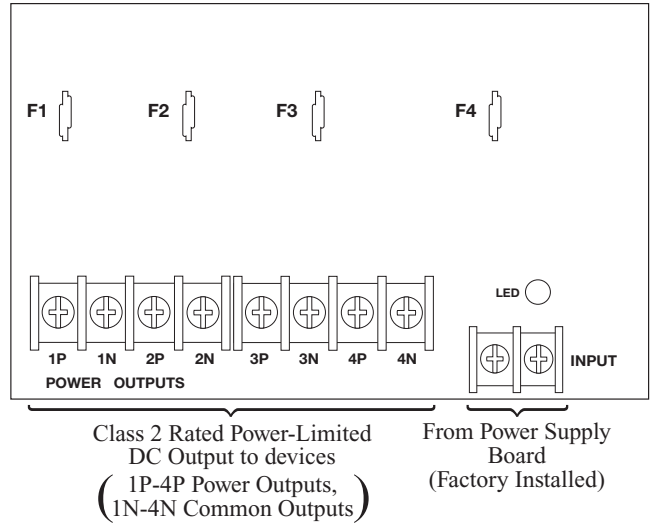


Fig. 3a

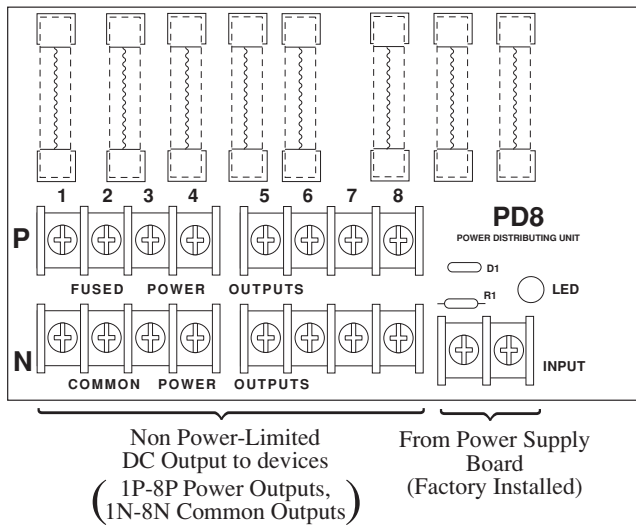
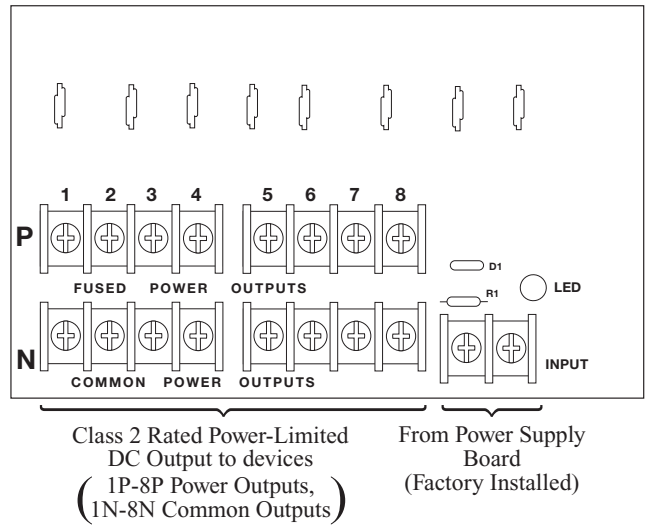


Fig. 3b



## Appendix A - UL Listed Compatible Devices

### A.1 Four (4) Wire Smoke Detectors

Table A-1 below lists four (4) wire smoke detectors compatible with AL1024ULX output.

System Sensor Smoke Detector/Base	Detector Type	Max Stand-by Current (mA)	Alarm Current (mA)
B112LP	Base	0.12	36
B114LP	Base	*	*
B404B	Base	*	*
DH100ACDC	Photoelectric	0.15	0.70
DH100ACDCLP	Photoelectric	0.15	0.70
DH100ACDCLPW	Photoelectric	0.15	0.70
DH400ACDCI	Ionization Duct	25	95
DH400ACDCP	Photoelectric Duct	25	95
1112/24/D	Ionization	0.05	50
1424	Ionization	0.10	41
1451 (w/B402B Base)	Ionization	0.10	39
2112/24ATR	Photoelectric	0.50	60/70
2112/24AITR	Photoelectric	0.50	60/70
2112/24/D	Photoelectric	0.05	50
2112/24T/D	Photoelectric w/135° Thermal	0.05	50
2112/24TSRB	Photoelectric w/135° Thermal Supervisory Relay	15	45
2312/24TB	Photoelectric	0.12	50
2412 (12 volt)	Photoelectric	0.12	77
2424	Photoelectric	0.10	41
2451	Photoelectric	0.10	39
2451TH (with/B402B Base)	Photoelectric	0.10	39
2W-MOD	Loop Test/Maintenance Mod.	30	50
4W-B (12/24 volt)	Photoelectric I <sup>3</sup>	0.05	23
4WT-B (12/24 volt)	Photoelectric I <sup>3</sup> w/Therm	0.05	23
4WTA-B (12/24 volt)	I <sup>3</sup> Photo w/Therm/Sounder	0.05	35
4WTR-B (12/24 volt)	I <sup>3</sup> Photo w/Therm/Relay	0.05	35
4WITAR-B (12/24 volt)	I <sup>3</sup> Photo w/Isolated Therm/Sounder/Relay	0.05	50
2W-MOD2	I <sup>3</sup> Loop Test/Maintenance Mod.	0.05	*
RRS-MOD	I <sup>3</sup> Reversing Relay/Sync Module	0.05	*
6424	Projected Beam	10	28.4
Beam 1224(S)	Projected Beam	17	38.5

\* Contact manufacturer for current draws.

### A.2 Relays

Table A-2 below lists relays compatible with AL1024ULX output.

Manufacturer	Model	Current (mA)	Manufacturer	Model	Current (mA)
System Sensor	PR-1	15	System Sensor	R-20T	40
	PR-2	30		R-24T	40
	PR-3	30		R-10E	23
	EOLR-1	30		R-14E	23
	R-10T	23		R-20E	40
	R-14T	23		R-24E	40

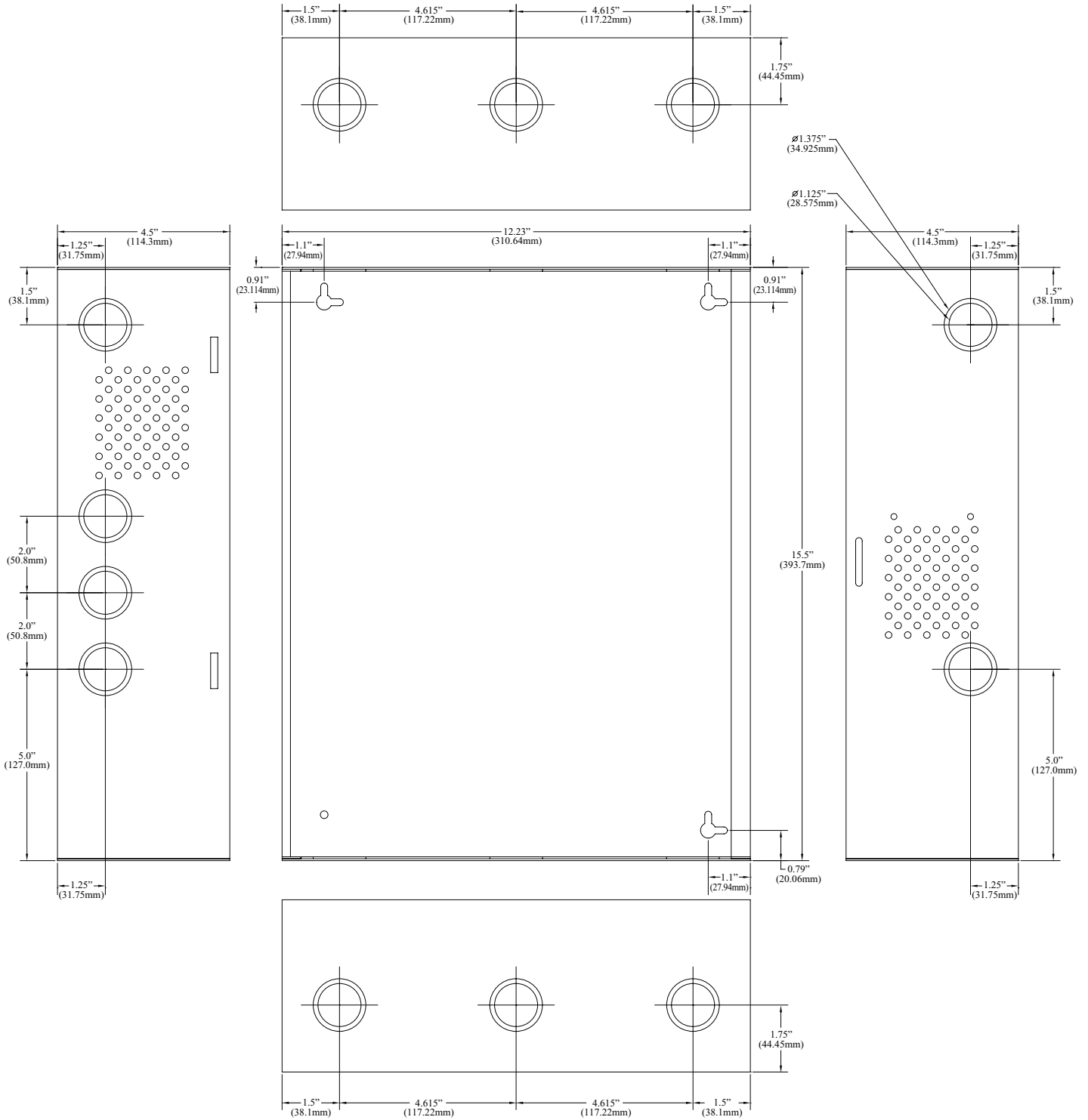
### **Battery Size Calculation Worksheet:**

A.	AL1024ULX series internal current consumption	(stand-by)	_____	0.05 A
B.	Load current consumption	(stand-by)	_____	A
C.	Stand-by time required (hours)		_____	H
D.	Battery capacity required for stand-by	$(A+B)*C$	_____	AH
E.	AL1024ULX series internal power consumption	(Alarm)	_____	0.05 A
F.	Load current consumption	(Alarm)	_____	A
G.	Alarm duration (Hours; 15 Min. = 0.25 Hour)	(Alarm)	_____	H
H.	Battery capacity required for Alarm	$(E+F)*G$	_____	AH
I.	Total calculated battery capacity	$D+H$	_____	AH
J.	Battery capacity required	$I*1.8$ (safety factor)	_____	AH

**Note:** AL1024ULX series power supply is designed to work with batteries up to 65AH. Please note: line [I] must not exceeds 36AH. You have to reduce either stand-by current consumption or stand-by time in order to comply with requirement.

To determine actual battery size please round line [J] to the nearest larger standard battery size (e.g. 3.5 AH = 4.0 AH).

## Enclosure Dimensions (BC400): 15.5" x 12" x 4.5" (393.7mm x 304.8mm x 114.3mm)



Altronix is not responsible for any typographical errors.

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 web site: [www.altronix.com](http://www.altronix.com) | e-mail: [info@altronix.com](mailto:info@altronix.com) | Lifetime Warranty | Made in U.S.A.  
 IIAL1024ULX series E19P