



M Series Multi-Output Power Supply Chargers

Installation Guide

Models Include:









- ***AL300ULM***
 - 2.5 amp @ 12VDC or 24VDC.
- ***AL600ULM***
 - 6 amp @ 12VDC or 24VDC.
- ***AL1024ULM***
 - 10 amp @ 24VDC.
- ***AL400ULM***
 - 4 amp @ 12VDC
or 3 amp @ 24VDC.
- ***AL1012ULM***
 - 10 amp @ 12VDC.

***For a red enclosure, add an "R" suffix to the part #, e.g. AL300ULMR
Models AL300ULM, AL400ULM and AL600ULM can be built in a larger enclosure.
Add an "X" suffix to the part #, e.g. AL400ULMX***

Overview:

These multi-output access control power supply/chargers are specifically designed for use with access control systems and accessories. These units convert a 115VAC, 60Hz input into five (5) individually protected 12VDC or 24VDC outputs (see specifications). Each output will route power to a variety of access control hardware devices including Mag Locks, Electric Strikes, Magnetic Door Holders, etc. These outputs will operate in both Fail-Safe and Fail-Secure modes. Controlled trigger input is achieved through normally open [NO] or normally closed [NC] supervised input or the polarity reversal from an FACP (Fire Alarm Control Panel). A form "C" dry output relay enables HVAC Shutdown, Elevator Recall or may be used to trigger auxiliary devices.

M Series Power Supply Configuration Reference Chart:

| Altronix Model Number | 12VDC Total Output Current (amp) | 24VDC Total Output Current (amp) | Outputs | Class 2 Rated Power Limited | 115VAC 60Hz Input (current draw/amp) | Power Supply Board Input Fuse Rating | Power Supply Board Output Fuse Rating | Agency Listings | UL Listings and File Numbers |
|-----------------------|----------------------------------|----------------------------------|---------|-----------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---|--|
| AL300ULM | 2.5 | 2.5 | 5 | Yes | 3.5 amp | 5A/250V | 15A/32V |    | UL 1481 - UL Listed for Power Supplies for Fire Protective Signaling Systems UL 294 - UL Listed Access Control System Unit. UL 603 - UL Listed for Burglar Alarms Systems. UL 1069 - UL Listed Hospital Signaling and Nurse Call Equipment. |
| AL400ULM | 4 | 3 | 5 | Yes | 3.5 amp | 5A/250V | 15A/32V | | |
| AL600ULM | 6 | 6 | 5 | Yes | 3.5 amp | 5A/250V | — | | |
| AL1012ULM | 10 | — | 5 | Yes | 2.6 amp | 5A/250V | 15A/32V |   | UL File # BP617 UL 294 - UL Listed Access Control System Unit. "Signal Equipment" Evaluated to CSA 22.2 N205-M1983 |
| AL1024ULM | — | 10 | 5 | Yes | 4.2 amp | 5A/250V | 15A/32V |    | UL 1481 - UL Listed for Power Supplies for Fire Protective Signaling Systems UL 294 - UL Listed Access Control System Unit. "Signal Equipment" Evaluated to CSA 22.2 N205-M1983 |

Specifications:

Input:

- Power input 115VAC 60Hz (see reference chart above).
- Fire Alarm Panel or Access Control System trigger inputs. [NO] or [NC] supervised trigger input and polarity reversal trigger input (4mA draw from FACP).

Output:

- Five (5) individual power-limited class 2 outputs.
- Current limit is 2 amp @ 12VDC or 24VDC per output (12VDC only for AL1012ULM, 24VDC only for AL1024ULM).
Burglar Alarm Applications (UL 603)
AL300ULM and AL400ULM only:
12VDC = 10VDC-13.2VDC.
24VDC = 20VDC-26.4VDC.
- Filtered and electronically regulated outputs.
- Thermal and short circuit protection with auto reset.
- Overload protection.
- Output relay energizes when unit is triggered (form "C" contact rated 1 amp @ 28VDC).

Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Automatic switch over to stand-by battery when AC fails.
- Zero voltage drop when switching over to battery backup.
- AL300ULM, AL400ULM, AL600ULM and AL1012ULM (Power Supply Board) maximum charge current 0.7 amp.
AL1024ULM (Power Supply Board) maximum charge current 3.6 amp.
- AL300ULM, AL400ULM and AL600ULM enclosures accommodate up to two (2) 12VDC/7AH batteries.
- AL1012ULM should be fitted with one (1) 12VDC/12AH battery.
- AL1024ULM should be fitted with two (2) 12VDC/12AH batteries.

Visual Indicators:

- DC output LED indicator.
- LEDs indicate condition of power outputs.
- Power and input trigger LEDs.

Specifications:

Supervision:

- AC fail supervision (form “C” contact).
- Low battery supervision (form “C” contact).
- Battery presence supervision (form “C” contact).

Supervision (cont'd):

- Power fail supervision relay (form “C” contact rated 1 amp @ 28VDC).

Additional Features:

- Power supply is complete with enclosure, cam lock, transformer and battery leads.

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. 15, 16*). Secure enclosure to earth ground. It is recommended to first review the following tables for screw terminals, switch selection and LED status indications. This will greatly facilitate installation hook-up.

Carefully review:

| | | | |
|---|----------------|--------------------------------------|---------------------------|
| Output Voltage & Stand-by Specifications | (pg. 4) | Terminal Identification Table | (pg. 10) |
| LED Diagnostics | (pg. 9) | Typical Application Diagrams | (pgs. 11 & 12) |

2. Set output voltage:

AL300ULM, AL400ULM (*Fig. 1c, pg. 5*) and AL600ULM (*Fig. 2b, pg. 6*) set desired DC output voltage by setting switch SW1 to the appropriate position on the power supply board. AL1012ULM is 12VDC only. AL1024ULM is 24VDC only. (*Output Voltage and Stand-by Specification Charts, pg. 4*).

3. Secure green lead to earth ground. Connect AC power (115VAC, 60Hz) to the terminals marked [L, G, N] on power supply board (*Fig. 1, pg. 5; Fig. 2, pg. 6; Fig. 3, pg. 7; Fig. 4, pg. 8*).

Use 18 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).

4. Measure output voltage before connecting devices. This helps avoiding potential damage.

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. 13*).

5. Connect Fail-Secure type locking hardware (e.g. door strikes and electronic dead bolts) positive leads to terminals marked [1 through 5 POS. (+) DC OUTPUT (ALARM)] on MOM5 board and the negative leads to terminals marked [NEG 1 through NEG 5] on MOM5 board (*Fig. 1, pg. 5; Fig. 2, pg. 6; Fig. 3, pg. 7; Fig. 4, pg. 8*).
6. Connect Fail-Safe type locking hardware (e.g. mag locks, door strikes and door holders) positive leads to terminals marked [6 through 10 POS. (+) DC OUTPUT (STAND-BY)] on MOM5 board and negative leads to terminals marked [NEG 1 through NEG 5] on MOM5 board (*Fig. 1, pg. 5; Fig. 2, pg. 6; Fig. 3, pg. 7; Fig. 4, pg. 8*).
7. To trigger the unit from a FACP connect signaling circuit of FACP to terminals marked [- INPUT +] on MOM5 board (*Fig. 1, pg. 5; Fig. 2, pg. 6; Fig. 3, pg. 7; Fig. 4, pg. 8*). Polarity is shown in alarm condition. For latching fire alarm interface (*Fig. 7, pg. 11; Figs. 8 & 9, pg. 12*).

Note: A 2.2K EOL must be installed across terminals marked [TRIGGER] on MOM5 board or the unit will remain in an alarm condition.

8. To trigger the unit using a supervised dry contact connect the 2.2K resistor in series for a NC trigger input and in parallel for [NO] trigger input (*Fig. 5, pg. 11*).
9. Connect auxiliary devices triggered by the unit to the terminals marked [DRY OUTPUT NO & C] on MOM5 board for normally open output or terminals marked [DRY OUTPUT NC & C] on MOM5 board for normally closed output (*Fig. 1, pg. 5; Fig. 2, pg. 6; Fig. 3, pg. 7; Fig. 4, pg. 8*).

Note: This relay will energize when the unit is triggered.

10. For Access Control applications batteries are optional. When batteries are not used, a loss of AC will result in the loss of output voltage. Batteries must be lead acid or gel type if used. Connect one (1) 12VDC battery to terminals marked [+ BAT-] on power supply board for 12VDC operation (*Fig. 1, pg. 5; Fig. 2, pg. 6; Fig. 3, pg. 7; Fig. 4, pg. 8*). Use two (2) 12VDC batteries connected in series for 24VDC operation. (Battery leads included).

11. Connect supervisory trouble reporting devices to outputs marked [AC FAIL, LOW BAT] and [Power Fail] supervisory relay outputs marked [NO, C, NC] on power supply board (*Fig. 1a, pg. 5; Fig. 2a, pg. 6; Fig. 3a, pg. 7; Fig. 4, pg. 8*). Use 22 AWG to 18 AWG for AC Fail & Low Battery reporting.

Note: When used in fire alarm, burglar alarm or access control applications, “AC Fail” relay should be utilized to visually indicate that AC power is on. To delay report for 6 hours cut “AC Delay” jumper (*Fig. 1b, pg. 3*).

12. Please ensure that the cover is secured with the provided Key Lock.

Output Voltage and Stand-by Specification Charts:

AL300ULM

| Output | Switch Position | 4 hr. of Stand-by & 5 Minutes of Alarm | 24 hr. of Stand-by & 5 Minutes of Alarm | 60 hr. of Stand-by & 5 Minutes of Alarm |
|--------------------|-----------------|--|---|---|
| 12VDC/40AH Battery | Closed | Stand-by = 2.5 amp Alarm = 2.5 amp | Stand-by = 1.0 amp Alarm = 2.5 amp | Stand-by = 300mA Alarm = 2.5 amp |
| 24VDC/12AH Battery | Open | ————— | Stand-by = 200mA Alarm = 2.5 amp | ————— |
| 24VDC/40AH Battery | Open | Stand-by = 2.5 amp Alarm = 2.5 amp | Stand-by = 1.0 amp Alarm = 2.5 amp | Stand-by = 300mA Alarm = 2.5 amp |

AL400ULM

| Output | Switch Position | 4 hr. of Stand-by & 5 Minutes of Alarm | 24 hr. of Stand-by & 5 Minutes of Alarm | 60 hr. of Stand-by & 5 Minutes of Alarm |
|--------------------|-----------------|--|---|---|
| 12VDC/40AH Battery | Closed | Stand-by = 4.0 amp Alarm = 4.0 amp | Stand-by = 1.0 amp Alarm = 4.0 amp | Stand-by = 300mA Alarm = 4.0 amp |
| 24VDC/12AH Battery | Open | ————— | Stand-by = 200mA Alarm = 3.0 amp | ————— |
| 24VDC/40AH Battery | Open | Stand-by = 3.0 amp Alarm = 3.0 amp | Stand-by = 1.0 amp Alarm = 3.0 amp | Stand-by = 300mA Alarm = 3.0 amp |

AL600ULM

| Output | Switch Position | 4 hr. of Stand-by & 5 Minutes of Alarm | 24 hr. of Stand-by & 5 Minutes of Alarm | 60 hr. of Stand-by & 5 Minutes of Alarm |
|--------------------|-----------------|--|---|---|
| 12VDC/40AH Battery | Closed | Stand-by = 6.0 amp Alarm = 6.0 amp | Stand-by = 1.0 amp Alarm = 6.0 amp | Stand-by = 300mA Alarm = 6.0 amp |
| 24VDC/12AH Battery | Open | ————— | Stand-by = 200mA Alarm = 3.0 amp | ————— |
| 24VDC/40AH Battery | Open | Stand-by = 6.0 amp Alarm = 6.0 amp | Stand-by = 1.0 amp Alarm = 6.0 amp | Stand-by = 300mA Alarm = 6.0 amp |

AL1012ULM

| Output | |
|--------------------|---------------------------------|
| 12VDC/12AH Battery | 15 Minutes of Stand-by @ 10 amp |

AL1024ULM

| Output | 15 min. of Stand-by & 5 min. of Alarm | 4 hr. of Stand-by & 5 min. of Alarm | 24 hr. of Stand-by & 5 min. of Alarm | 60 hr. of Stand-by & 5 min. of Alarm |
|----------------------|---------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| 24VDC / 12AH Battery | Stand-By = 8 amp Alarm = 10 amp | Stand-By = 1.5 amp Alarm = 10 amp | Stand-By = 130mA Alarm = 10 amp | Stand-By = 30mA Alarm = 10 amp |
| Output | 15 min. of Stand-by & 5 min. of Alarm | 4 hr. of Stand-by & 5 min. of Alarm | 24 hr. of Stand-by & 15 min. of Alarm | 60 hr. of Stand-by & 15 min. of Alarm |
| 24VDC / 65AH Battery | ————— | Stand-By = 7.9 amp Alarm = 10 amp | Stand-By = 1.4 amp Alarm = 10 amp | Stand-By = 430mA Alarm = 10 amp |

For Access Control use - 24V, 8 amp [including 0.07 amp MOM5_S module current draw and 0.05 amp AL1024ULXB2 power supply module current draw].

Fig. 1 - AL300ULM, AL400ULM

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 (see marking on the board). Do not expose to rain or moisture.

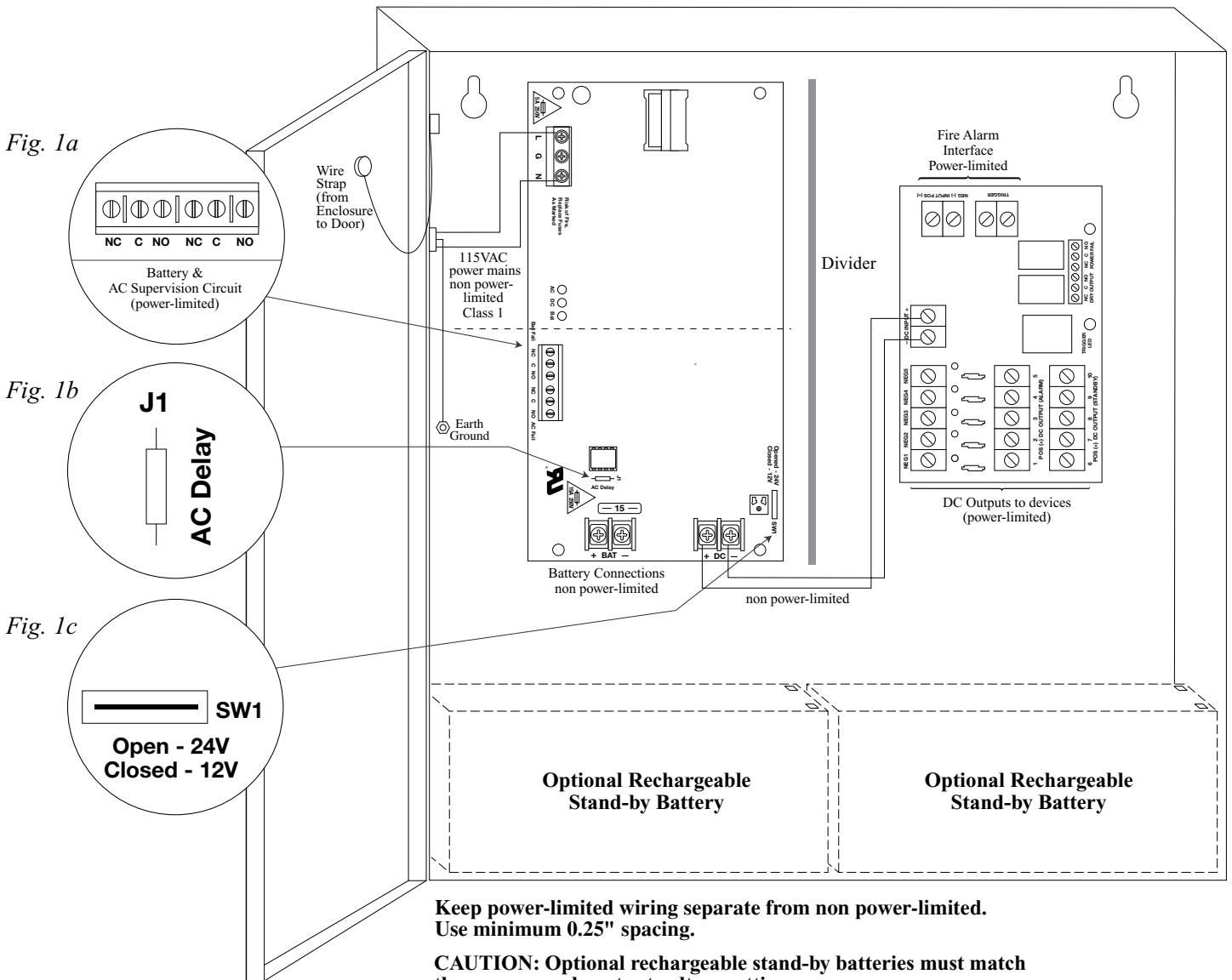
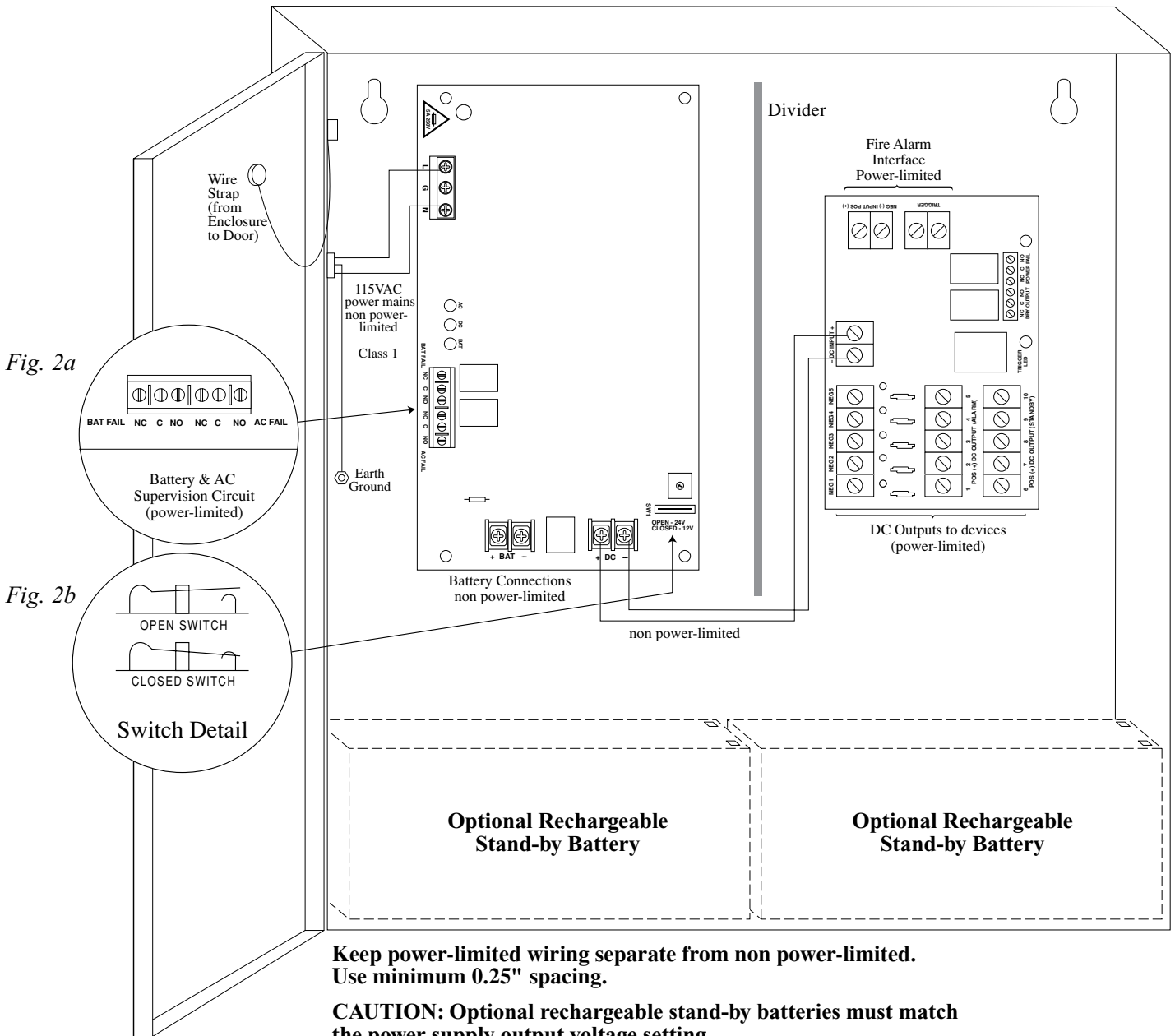


Fig. 2 - AL600ULM

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

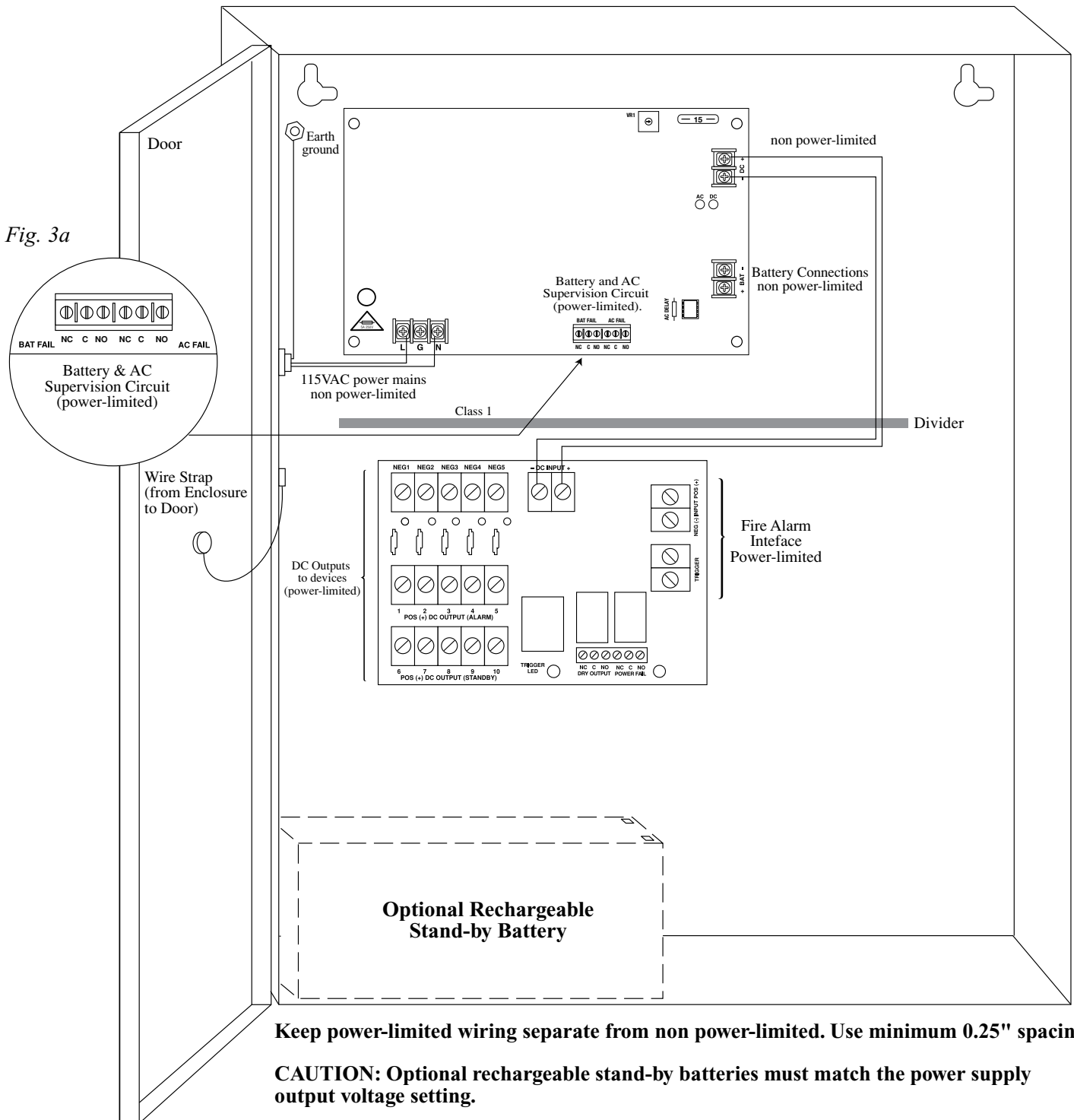


Keep power-limited wiring separate from non power-limited. Use minimum 0.25" spacing.

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

Fig. 3 - AL1012ULM

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.

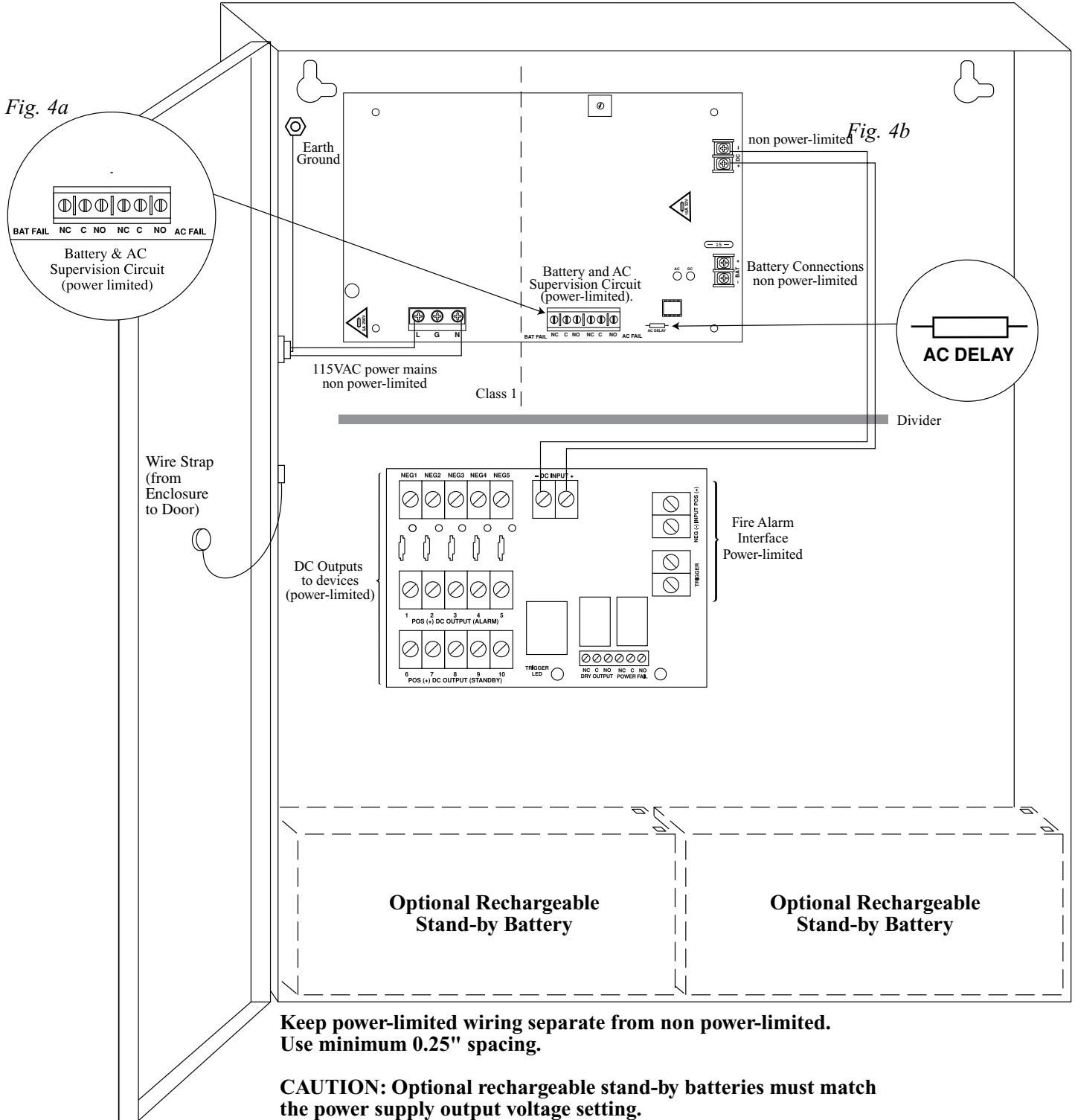


Keep power-limited wiring separate from non power-limited. Use minimum 0.25" spacing.

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

Fig. 4 - AL1024ULM

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 (see marking on the board). Do not expose to rain or moisture.



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

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

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 (*Output Voltage and Stand-by Specification Charts, pg. 4*).

Battery Test: Under normal load conditions check that the battery is fully charged, check specified voltage at the battery terminals and at the board terminals marked [+ BAT -] to ensure that there is no break in the battery connection wires.

Note: AL300ULXB2, AL400ULXB2, AL600ULXB and AL1012ULXB (Power Supply Board) maximum charge current is 0.7 amp. AL1024ULXB2 (Power Supply Board) maximum charge current is 3.6 amp.

Expected battery life is 5 years; however, it is recommended to change batteries within 4 years or less if necessary.

LED Diagnostics:

Power Supply Board

| LED | | Power Supply Status |
|-----------------|-------------------|--|
| Red (DC) | Green (AC) | |
| ON | ON | Normal operating condition. |
| ON | OFF | Loss of AC. Stand-by battery supplying power. |
| OFF | ON | No DC output. Short circuit or thermal overload condition. |
| OFF | OFF | No DC output. Loss of AC. Discharged battery. |

| Red (Bat) | Battery Status |
|------------------|-----------------------------|
| ON | Normal operating condition. |
| OFF | Battery fail/low battery. |

MOM5 - Output Module

| LED | ON | OFF |
|-----------------|--|---|
| Power (Green) | Normal operating condition. | Power failure. |
| Trigger (Green) | Input is triggered (alarm condition). | No input trigger (non-alarm condition). |
| Outputs (Red) | Output tripped due to a short circuit or overload condition. | Normal operation. |

Terminal Identification Tables:

Power Supply Board

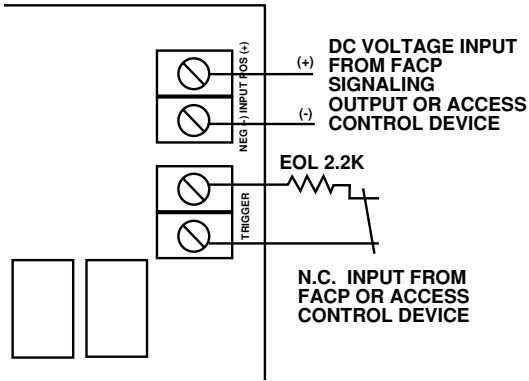
| Terminal Legend | Function/Description |
|-----------------------|--|
| L, G, N | Connect 115VAC 60Hz to these terminals: L to hot, N to neutral. |
| + DC – | AL300ULM - 12VDC/24VDC @ 2.5 amp to MOM5 board (power-limited). AL400ULM - 12VDC @ 4 amp or 24VDC @ 3 amp to MOM5 board (power-limited). AL600ULM - 12VDC/24VDC @ 6 amp to MOM5 board (power-limited). AL1012ULM - 12VDC @ 10 amp to MOM5 board (power-limited). AL1024ULM - 24VDC @ 10 amp to MOM5 board (power-limited). |
| 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 1 amp @ 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 the 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 1 amp @ 28VDC. A removed battery is reported within 5 minutes. Battery reconnection is reported within 1 minute. Low battery threshold: 12VDC output threshold set @ approximately 10.5VDC. 24VDC output threshold set @ approximately 21VDC. |
| + BAT – | Stand-by battery connections. AL300ULXB2, AL400ULXB2, AL600ULXB and AL1012ULXB (Power Supply Board) maximum charge current is 0.7 amp. AL1024ULXB2 maximum charge current is 3.6 amp. |

MOM5 - Output Module

| Terminal Legend | Function/Description |
|---------------------------------------|---|
| - DC INPUT + | 12VDC or 24VDC from power supply. |
| TRIGGER | Dry normally open [NO] or normally closed [NC] supervised (2.2K EOL resistor) input trigger. A short or open circuit will transfer power from terminals marked [POS. (+) DC OUTPUT (STAND-BY)] to terminals marked [POS (+) DC OUTPUT (ALARM)]. |
| - INPUT + | Wet (5-30VDC) input trigger. Applying voltage to these terminals in the polarity shown will transfer power from terminals marked [POS. (+) DC OUTPUT (STAND-BY)] to terminals marked [POS. (+) DC OUTPUT (ALARM)] (e.g. fire alarm control panel indications circuit). |
| NEG. 1 THRU NEG. 5 | Supplies constant negative (-) voltage. |
| POS. (+) DC OUTPUT (ALARM) 1-5 | Supplies positive (+) voltage when dry trigger input or fire alarm wet trigger input is applied. |
| POS. (+) DC OUTPUT (STAND-BY) 6-10 | Supplies positive (+) voltage in normal condition. Power is removed when dry trigger input or fire alarm wet trigger input is applied. |
| NC, C, NO DRY OUTPUT | When the MOM5 is triggered the terminals marked [C and NO] will open and the terminals marked [C and NC] will close. This output is used to trigger auxiliary devices. (e.g. HVAC Shutdown, Elevator Recall etc.) Contact rating 1 amp @ 28VDC. |
| NC, C, NO POWER FAIL | Form “C” contacts used for reporting no voltage is present at [- DC INPUT +] terminals. Under normal conditions, terminals marked [NO and C] are open, [NC and C] are closed. A loss of power causes terminals marked [NO and C] to close and [NC and C] to open. Contact rating 1 amp @ 28VDC. |

Typical Application Diagrams:

Fig. 5 MOM5 module shown with wet and/or dry normally closed trigger inputs (Non-Latching):



MOM5 module shown with wet and/or dry normally open trigger inputs (Non-Latching):

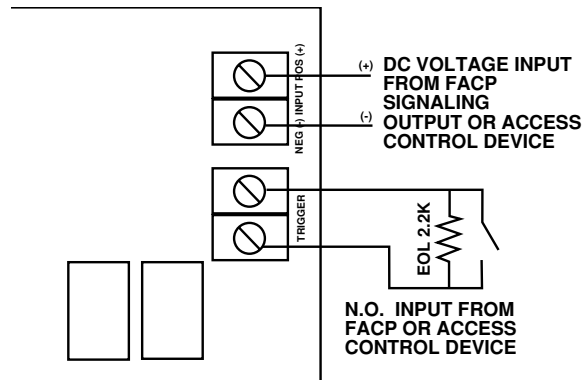


Fig. 6 - Two (2) or more MOM5 modules shown with wet and/or dry normally closed trigger inputs (Non-Latching):

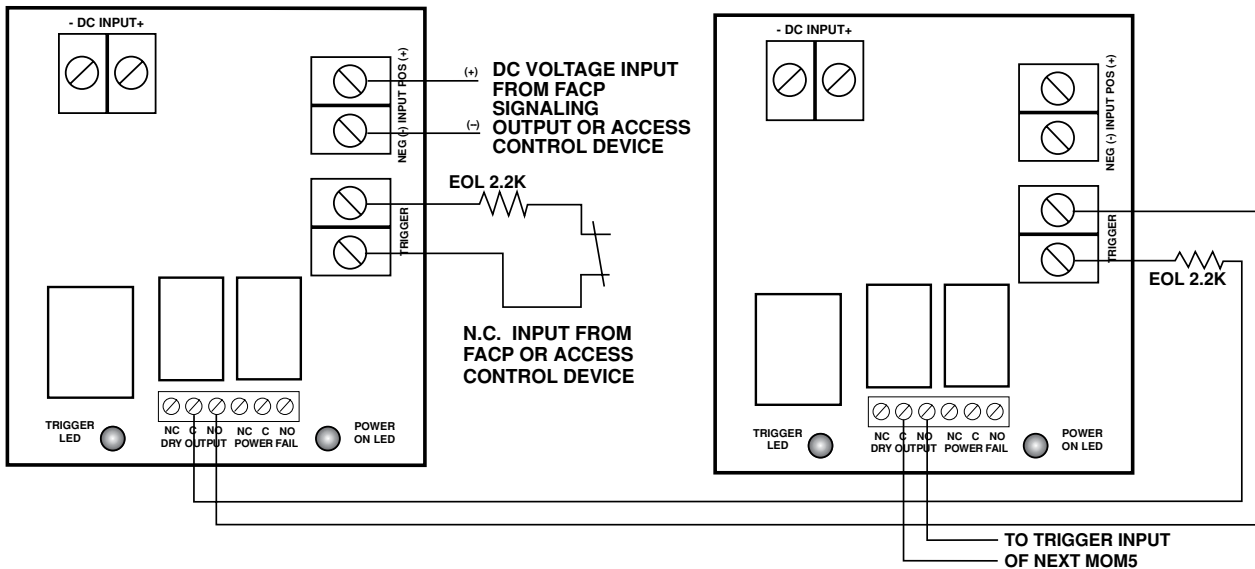
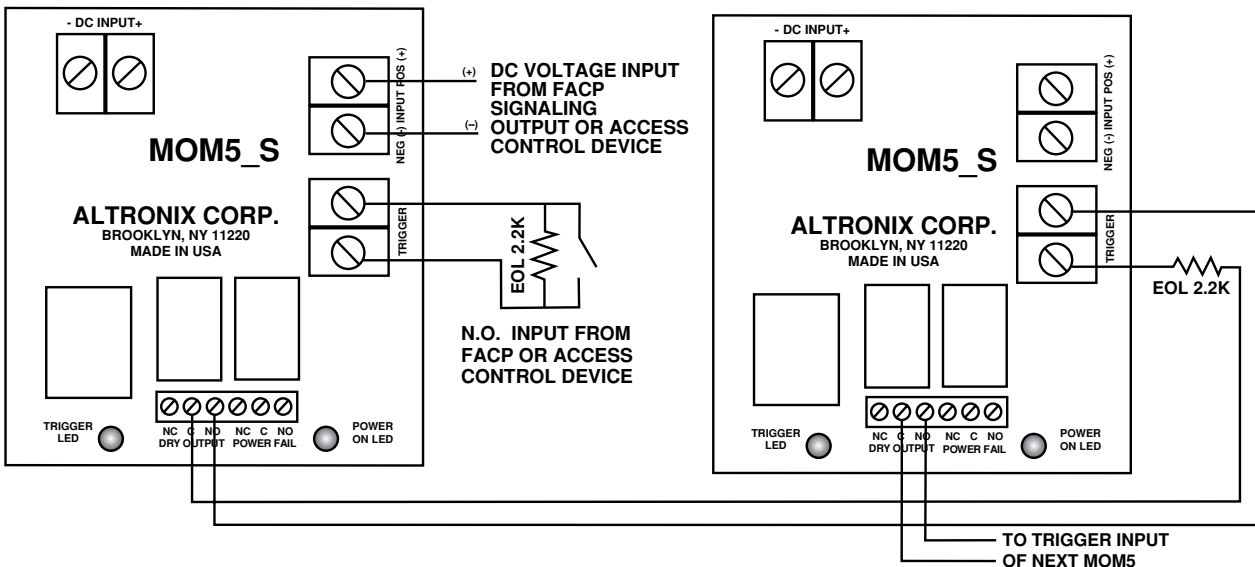
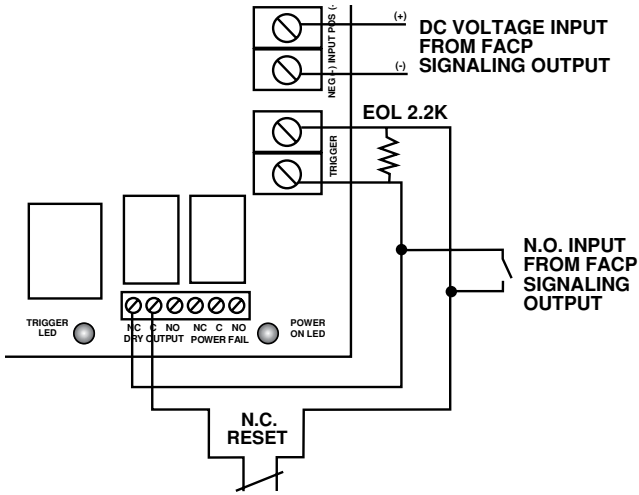


Fig. 7 - Two (2) or more MOM5 modules shown with wet and/or dry normally open trigger inputs (Non-Latching):



Typical Application Diagrams (cont'd.):

Fig. 8 MOM5 module shown with with wet and/or dry normally open fire alarm trigger inputs
(Latching with Manual Reset):



MOM5 module shown with with wet and/or dry normally closed fire alarm trigger inputs
(Latching with Manual Reset):

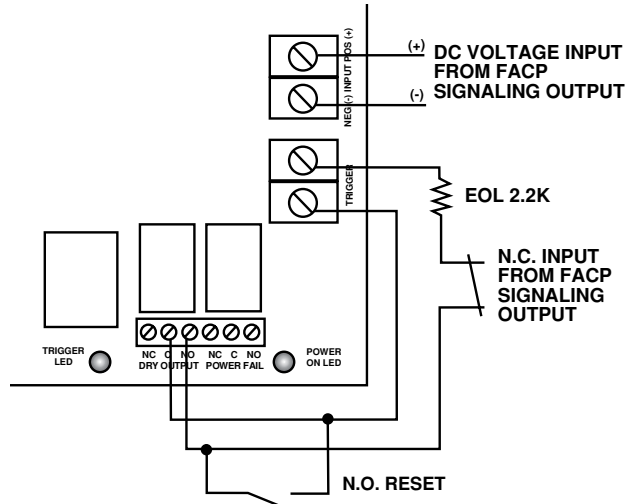


Fig. 9 - Two (2) MOM5 modules shown with wet and/or dry normally closed fire alarm trigger inputs
(Latching with Manual Reset):

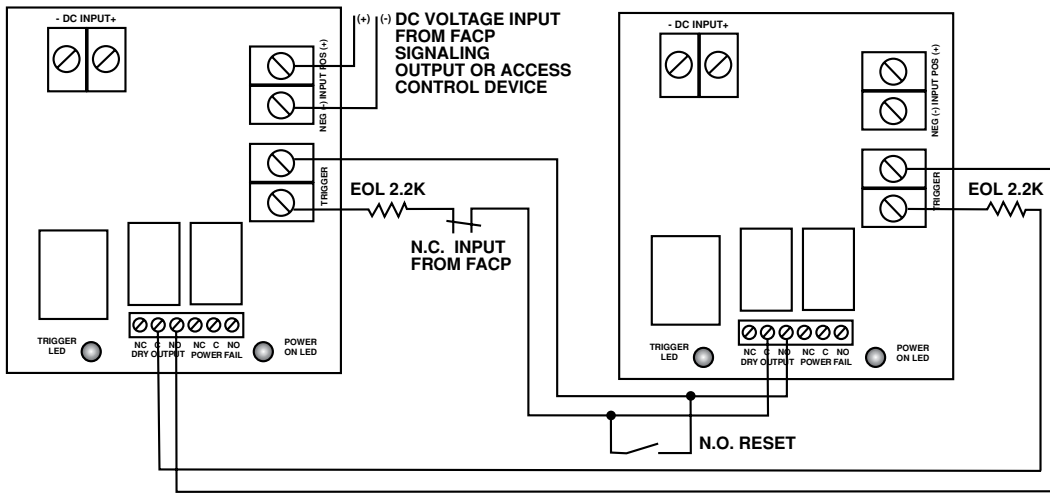
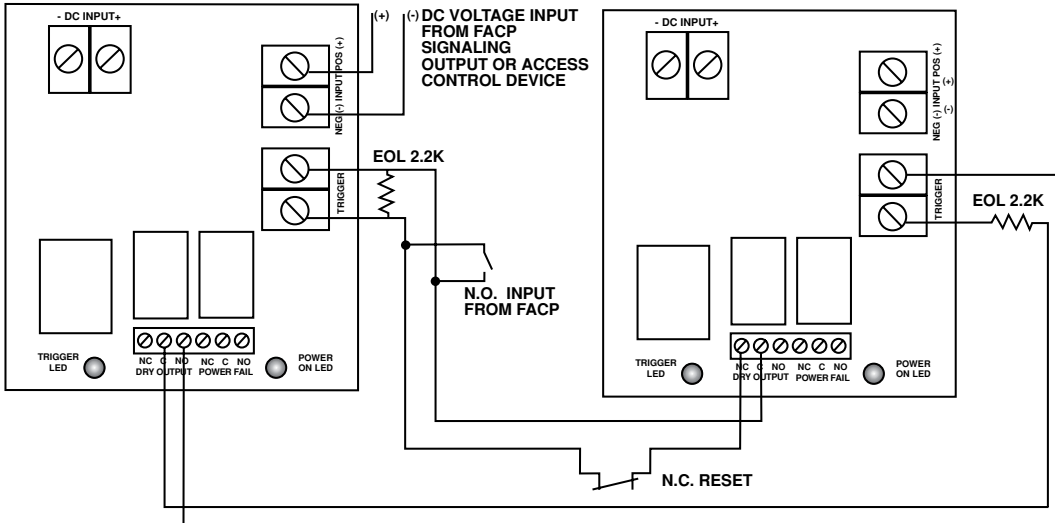


Fig. 10 - Two (2) MOM5 modules shown with wet and/or dry normally open fire alarm trigger inputs
(Latching with Manual Reset):



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 *AL300ULM*, *AL400ULM*, *AL600ULM*, *AL1012ULM* & *AL1024ULM* 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 ³ | .05 | 23 |
| 4WT-B (12/24 volt) | Photoelectric I ³ w/Therm | .05 | 23 |
| 4WTA-B (12/24 volt) | I ³ Photo w/Therm/Sounder | .05 | 35 |
| 4WTR-B (12/24 volt) | I ³ Photo w/Therm/Relay | .05 | 35 |
| 4WITAR-B (12/24 volt) | I ³ Photo w/Isolated Therm/Sounder/Relay | .05 | 50 |
| 2W-MOD2 | I ³ Loop Test/Maintenance Mod. | .05 | * |
| RRS-MOD | I ³ Reversing Relay/Sync Module | .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 *AL300ULM*, *AL400ULM*, *AL600ULM*, *AL1012ULM* & *AL1024ULM* 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 |

AL1024ULM Battery size calculation worksheet.

| | | | | |
|----|--|-------------------------|-------|--------|
| A. | AL1024ULM internal current consumption | (stand-by) | _____ | 0.13 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. | AL1024ULM internal power consumption | (Alarm) | _____ | 0.13 A |
| F. | Load current consumption | (Alarm) | _____ | A |
| G. | Alarm duration (Hours, example:15 Min = 0.25 Hour) | (Alarm) | _____ | H |
| H. | Battery capacity required for Alarm | $(E+F)*G$ | _____ | AH0 |
| I. | Total calculated battery capacity | $D+H$ | _____ | AH |
| J. | Battery capacity required | $I*1.8$ (safety factor) | _____ | AH |

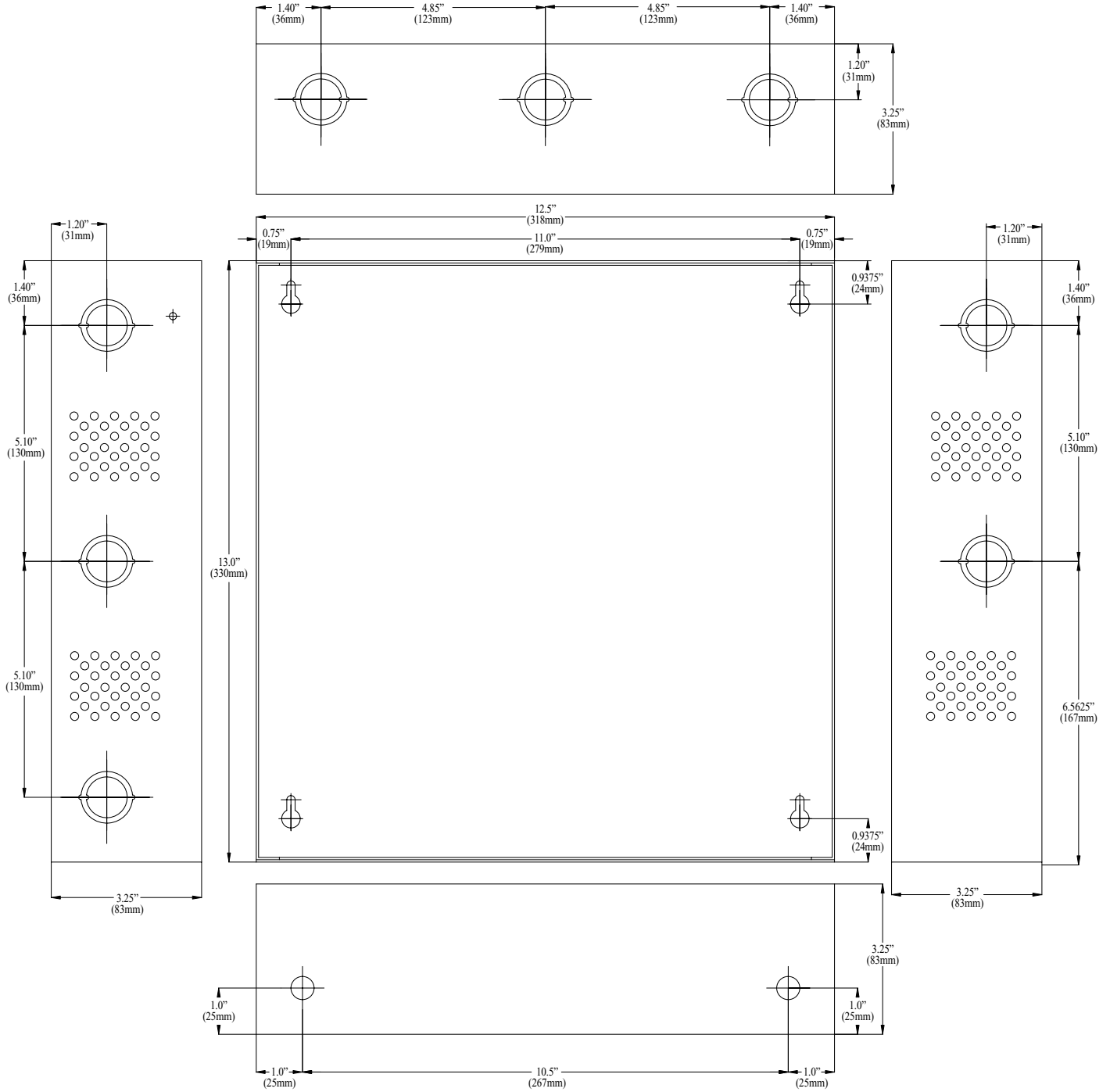
Note: AL1024ULM power supply is designed to work with batteries up to 65AH. Please note, line [I] must not exceeds 36AH. You have to reduce either standby current consumption or standby time in order to comply with requirement.

To determine actual battery size please round line [J] to the nearest larger standard battery size.

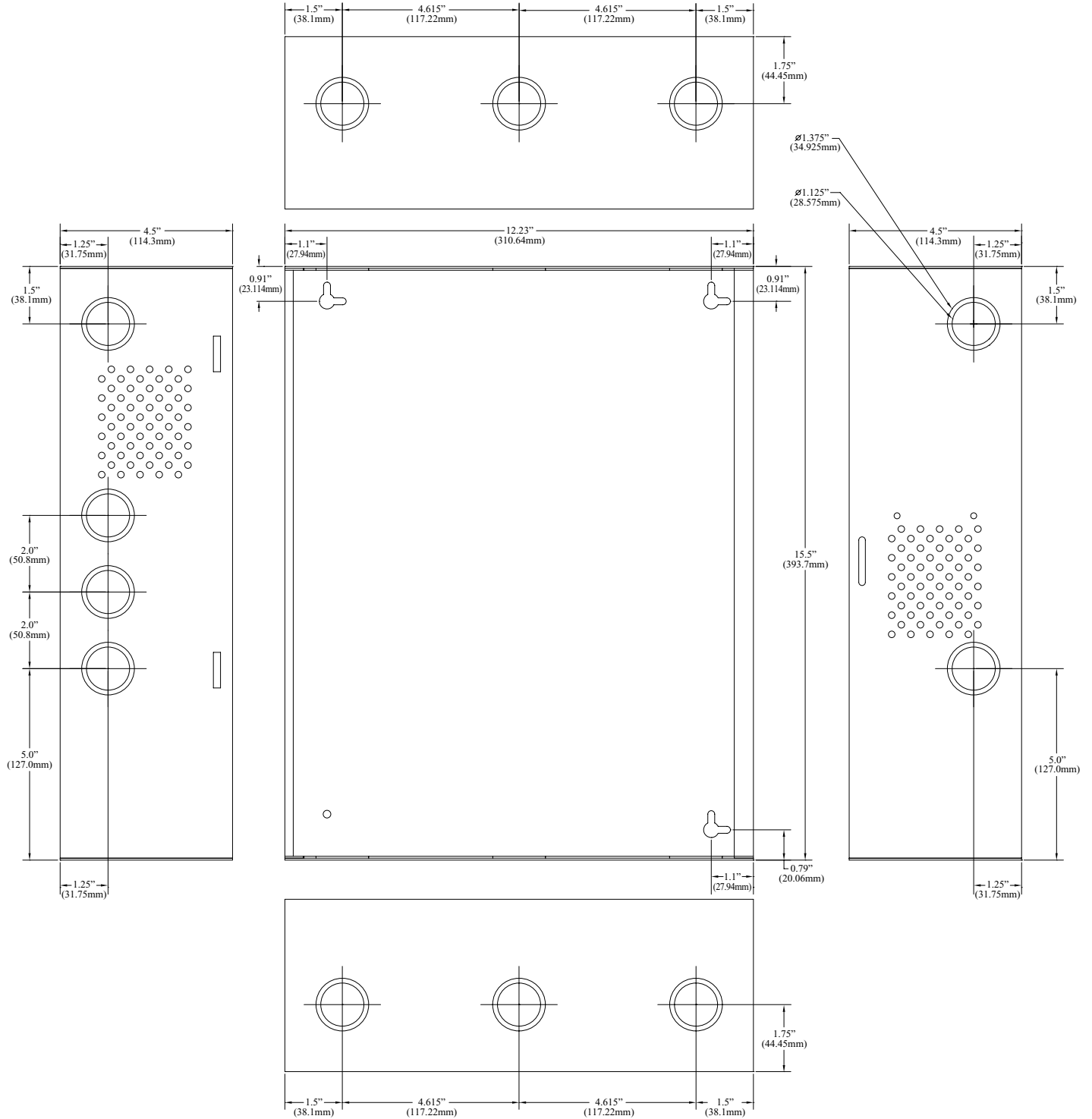
Enclosure Dimensions (BC300):

AL300ULM, AL400ULM, AL600ULM

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



Enclosure Dimensions (BC400):
AL300ULMX, AL400ULMX, AL600ULMX, AL1012ULM, AL1024ULM
 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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