



# Maximal E Series

## Expandable Power Systems

### Models Include:

#### Maximal11E

- Power Supply 1: 12VDC @ 4A or 24VDC @ 3A.
- Power Supply 2: 12VDC @ 4A or 24VDC @ 3A.

#### Maximal13E

- Power Supply 1: 12VDC or 24VDC @ 6A.
- Power Supply 2: 12VDC @ 4A or 24VDC @ 3A.

#### Maximal33E

- Power Supply 1: 12VDC or 24VDC @ 6A.
- Power Supply 2: 12VDC or 24VDC @ 6A.

#### Maximal35E

- Power Supply 1: 12VDC or 24VDC @ 6A.
- Power Supply 2: 12VDC @ 10A.

#### Maximal37E

- Power Supply 1: 24VDC @ 10A.
- Power Supply 2: 12VDC or 24VDC @ 6A.

#### Maximal55E

- Power Supply 1: 12VDC @ 10A.
- Power Supply 2: 12VDC @ 10A.

#### Maximal75E

- Power Supply 1: 24VDC @ 10A.
- Power Supply 2: 12VDC @ 10A.

#### Maximal77E

- Power Supply 1: 24VDC @ 10A.
- Power Supply 2: 24VDC @ 10A.

## Installation Guide



Rev. ME052119

More than just power.™

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

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










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## Maximal E Overview:

Maximal Expandable Power System provide system designers and installers with maximum power choices and the highest levels of versatility. They provide 12VDC, 24VDC, or 12VDC and 24VDC simultaneously via two (2) single output power supply/chargers. Includes AC fail, low battery and battery presence monitoring. Custom enclosure facilitates up to four (4) 12VDC/12AH batteries. All interconnecting equipment must be UL Listed.

## Maximal E Series Configuration Chart:

Altronix Model Number	Output Voltage Options		Non Power-Limited Outputs Class 2 Rated	Power-Limited Outputs	115VAC 60Hz Input Current	Power Supply Board Input Fuse Rating	Power Supply Board Battery Fuse Rating	Agency Listings and File Numbers
	Power Supply 1	Power Supply 2						
Maximal11E	AL400ULXB2	AL400ULXB2	-	2	7.0A	5A/250V	15A/32V	 UL File # BP6714 UL 294* UL Listed for Access Control System Units.
	12VDC @ 4A	12VDC @ 4A						
	12VDC @ 4A	24VDC @ 3A						
	24VDC @ 3A	24VDC @ 3A						
Maximal13E	AL600ULXB	AL400ULXB2	1	1	7.0A	5A/250V	15A/32V	 General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	12VDC @ 6A	12VDC @ 4A						
	24VDC @ 6A	12VDC @ 4A						
	12VDC @ 6A	24VDC @ 3A						
Maximal33E	AL600ULXB	AL600ULXB	2	-	7.0A	5A/250V	-	General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	12VDC @ 6A	12VDC @ 6A						
	12VDC @ 6A	24VDC @ 6A						
	24VDC @ 6A	24VDC @ 6A						
Maximal35E	AL1012ULXB	AL600ULXB	2	-	6.1A	5A/250V	15A/32V (AL1012ULXB)	General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	12VDC @ 10A	12VDC @ 6A						
	12VDC @ 10A	24VDC @ 6A						
Maximal37E	AL1024ULXB2	AL600ULXB	2	-	7.9A	5A/250V	15A/32V (AL1024ULXB2)	General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	24VDC @ 10A	12VDC @ 6A						
	24VDC @ 10A	24VDC @ 6A						
Maximal55E	AL1012ULXB	AL1012ULXB	2	-	5.2A	5A/250V	15A/32V	General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	12VDC @ 10A	12VDC @ 10A						
Maximal75E	AL1024ULXB2	AL1012ULXB	2	-	7.0A	5A/250V	15A/32V	General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	24VDC @ 10A	12VDC @ 10A						
Maximal77E	AL1024ULXB2	AL1024ULXB2	2	-	8.8A	5A/250V	15A/32V	General Signaling Equipment Evaluated to CSA Standard C22.2 No.205-M1983  California State Fire Marshal Approved
	24VDC @ 10A	24VDC @ 10A						

**\*ANSI/UL 294 7th Ed. Access Control Performance Levels:**

Destructive Attack - I; Endurance - I; Line Security - I; Stand-by Power - I, IV.

## Maximal E Features:

### Output:

- Filtered and electronically regulated outputs (built-in power supply).
- Short circuit and thermal overload protection with auto reset.

### Battery Backup:

- Built-in charger for sealed lead acid or gel type batteries.
- Maximum charge current:  
**AL400ULXB2, AL600ULXB, AL1012ULXB** (Power Supply Board): **0.7A**  
**AL1024ULXB2** (Power Supply Board): **3.6A**
- Automatic switch over to stand-by battery when AC fails.

### Battery Backup (cont'd):

- Zero voltage drop when unit switches over to battery backup (AC failure condition).

### Supervision:

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

### Visual Indicators:

- AC input and DC output LED indicators.

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

- 26" x 19" x 6.25" (660.4mm x 482.6mm x 158.8mm)
- Enclosure accommodates up to four (4) 12VDC/12AH batteries.

## Maximal E Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/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 three keyholes in the enclosure. Install three upper fasteners and screws in the wall with the screw heads protruding. Place the enclosure's upper keyholes over the three upper screws, level and secure. Mark the position of the lower three holes. Remove the enclosure. Drill the lower holes and install the three fasteners. Place the enclosure's upper keyholes over the three upper screws. Install the three lower screws and make sure to tighten all screws (*Enclosure Dimensions, pg. 12*).
2. The power supply is pre-wired to the ground (chassis). Connect main incoming ground to the provided green grounding conductor lead. Connect unswitched AC power (115VAC, 60Hz) to the terminals marked [L, N] on both power supply boards. Use 14 AWG or larger for all power connections. (*Fig. 2, pg. 6*).

Green "AC" LED on power supply board will turn on.

This light can be seen through the LED lens on the door of the enclosure.

**Keep power-limited wiring separate from non power-limited wiring.**

**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.**

3. Select desired DC output voltage by setting SW1 to the appropriate position, (Maximal11E, Maximal13E, Maximal33E, Maximal35E and Maximal37E) (*Fig. 1, pg. 5*). Maximal55E power supplies are factory set at 12VDC. Maximal77E power supplies are factory set at 24VDC. Maximal75E power supplies are factory set at 12VDC and 24VDC (*Power Supply Board Stand-by Battery Specifications, pg. 5*).
4. Measure the output voltage of the unit before connecting any devices to ensure proper operation. Improper or high voltage will damage these devices.
5. Connect devices to be powered to the terminals marked [+ DC -] (*Fig. 2, pg. 6*).
6. 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 the terminals marked [+ BAT -] (*Figs. 2-7, pgs. 6-11*). Use two (2) 12VDC batteries connected in series for 24VDC operation (battery leads included).
7. Battery and AC Supervision outputs: It is required to connect supervisory trouble reporting devices to outputs marked [AC FAIL, BAT FAIL] supervisory relay outputs marked [NC, C, NO] to appropriate visual notification devices. Use 22 AWG to 18 AWG for AC Fail & Low/No Battery reporting (*Fig. 2a, pg. 6*).
8. Mount UL Listed tamper switch (not included) (Altronix model TS112 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. 2b, 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.
9. Please ensure that the cover is secured with the provided key lock.

## 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 (*Power Supply Stand-by Battery Specifications, pg. 5*).

**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:** AL400ULXB2, AL600ULXB and AL1012ULXB (Power Supply Board) maximum charge current is 0.7A.

AL1024ULXB2 (Power Supply Board) maximum charge current is 3.6A.

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

## Power Supply Board LED Diagnostics:

LED		Power Supply Status
Red (DC)	Green (AC)	
ON	ON	Normal operating condition.
ON	OFF	Loss of AC. Stand-by battery is 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.

## Power Supply Board Terminal Identification:

Terminal Legend	Function/Description
L, G, N	Connect 115VAC 60Hz to these terminals: L to hot, N to neutral.
+ DC -	Refer to Maximal Series Configuration Chart, pg. 3.
AC FAIL NC, C, NO	Indicates loss of AC power. To meet with UL requirements it is mandatory to connect visual notification devices, connecting audible notification devices is optional. Relay normally energized when AC power is present. Contact rating 1A @ 28VDC. AC or brownout fail is reported within 1 minute of event.
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: 12VDC output threshold set @ approximately 10.5VDC. 24VDC output threshold set @ approximately 21VDC.
+ BAT -	Stand-by battery connections. AL400ULXB2, AL600ULXB, and AL1012ULXB (Power Supply Board) maximum charge current is 0.7A. AL1024ULXB2 (Power Supply Board) maximum charge current is 3.6A.

## Power Supply Board Stand-by Battery Specifications

Altronix Model	Power Supply Board	Battery	20 min. of Backup	4 hr. of Backup	24 hr. of Backup	60 hr. of Backup
Maximal11E Maximal13E	AL400ULXB2 <i>(Refer to Fig. 1a, 1b on pg. 5 for Switch [SW1] location and position)</i>	12VDC/40AH*	N/A	4A	1A	300mA
		24VDC/12AH	N/A	200mA	N/A	N/A
		24VDC/40AH*	N/A	3A	1A	300mA
Maximal13E Maximal33E Maximal35E Maximal37E	AL600ULXB <i>(Refer to Fig. 1a, 1b on pg. 5 for Switch [SW1] location and position)</i>	12VDC/40AH*	N/A	6A	1A	300mA
		24VDC/12AH	N/A	200mA	N/A	N/A
		24VDC/40AH*	N/A	6A	1A	300mA
Maximal35E Maximal55E Maximal75E	AL1012ULXB <i>(Factory set at 12VDC)</i>	12VDC/12AH	10A	Battery capacity for emergency stand-by at least 20 mins.	N/A	N/A
Maximal37E Maximal75E Maximal77E	AL1024ULXB2 <i>(Factory set at 24VDC)</i>	24VDC/12AH	8A	1.5A	200mA	100mA
		24VDC/65AH*	N/A	8A	1.5A	500mA

\* Note: Additional battery enclosure required (Figs. 3-7, pgs. 7-11).

## Power Supply Board Output Voltage Settings:

Fig. 1

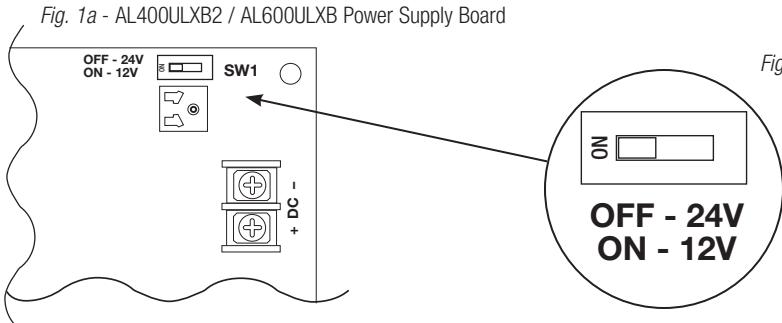
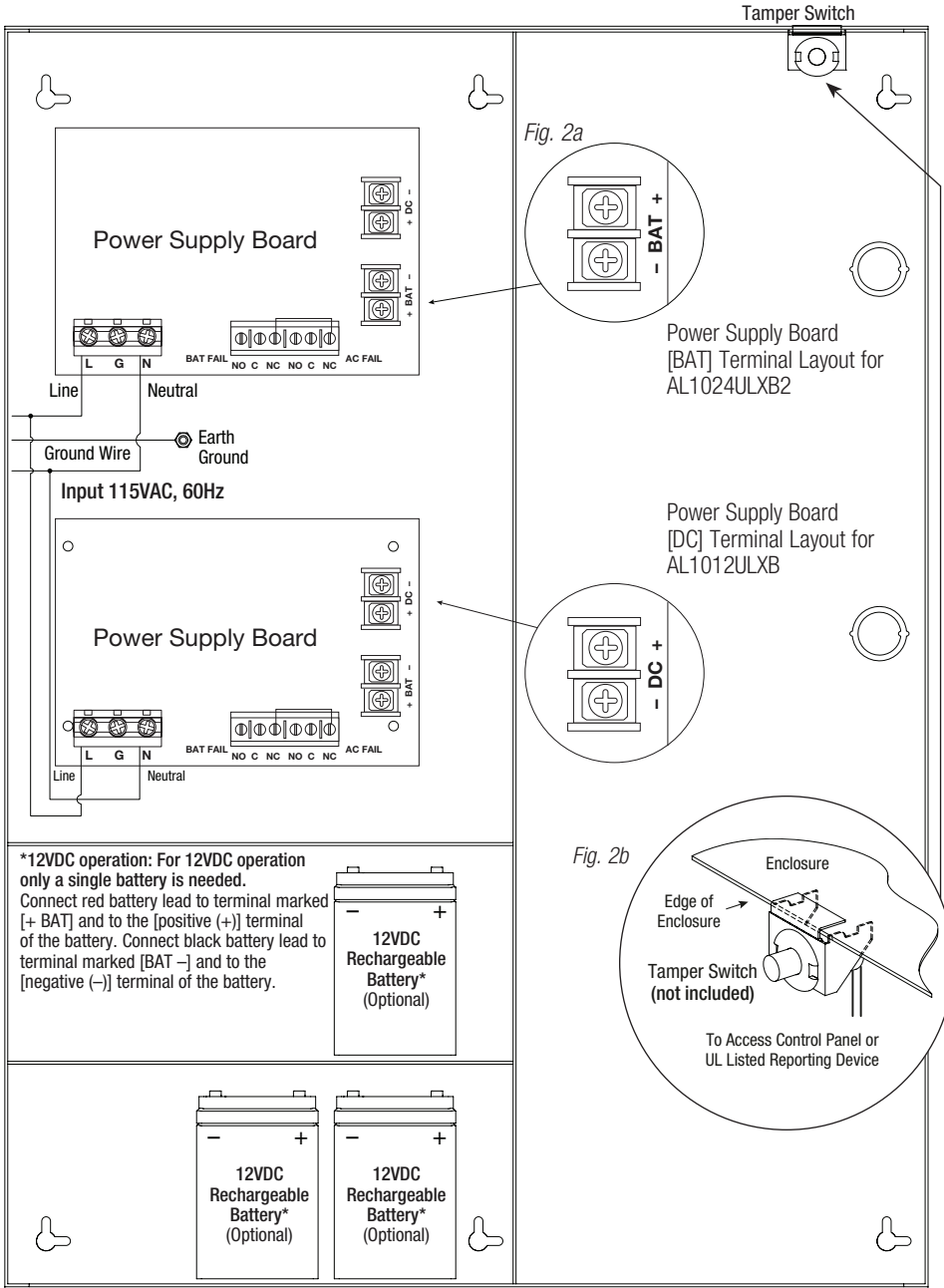


Fig. 2



## NEC Power-Limited Wiring Requirements for Maximal11E:

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. 3a).

Fig. 3

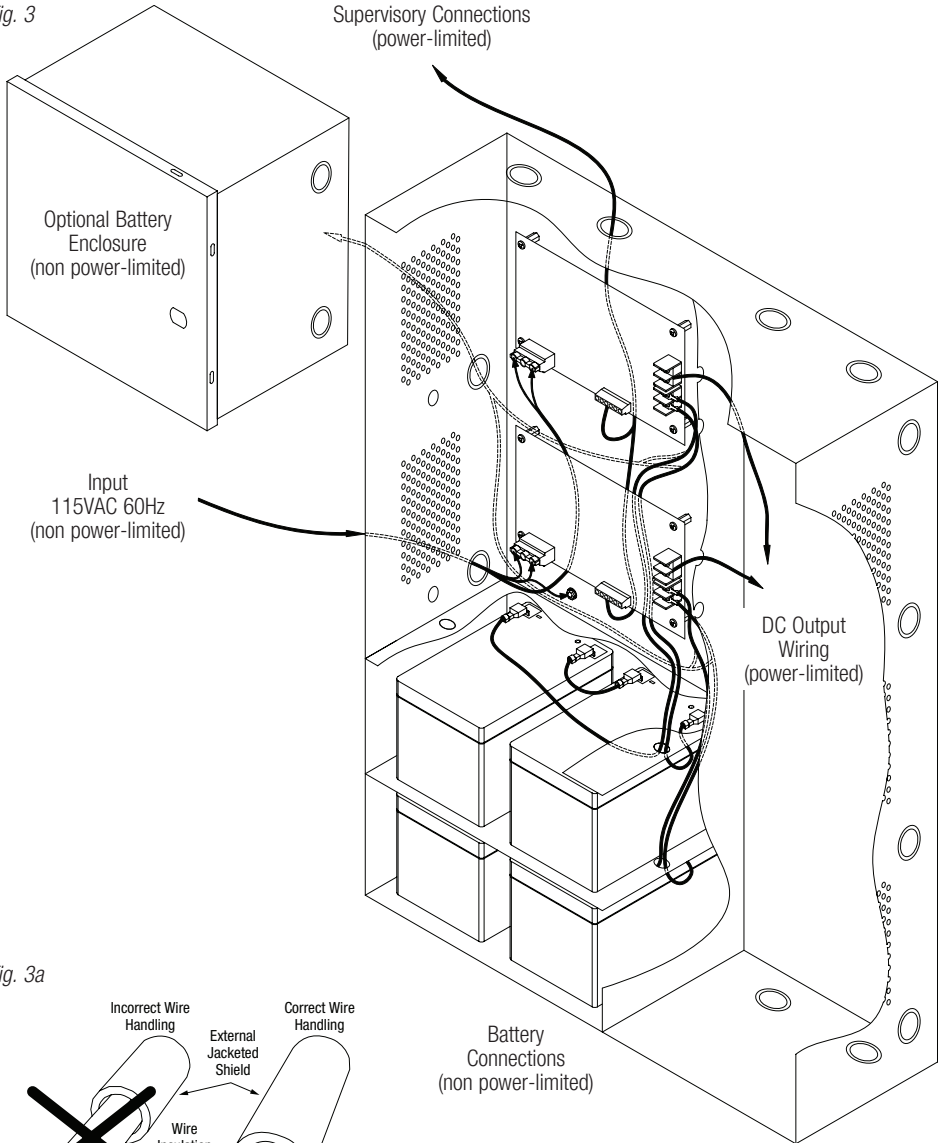
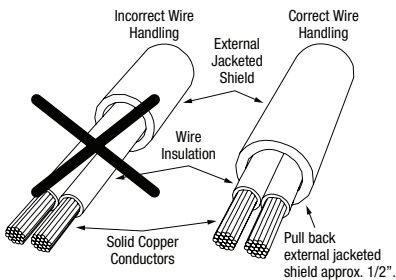


Fig. 3a



## NEC Power-Limited Wiring Requirements for Maximal13E:

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).

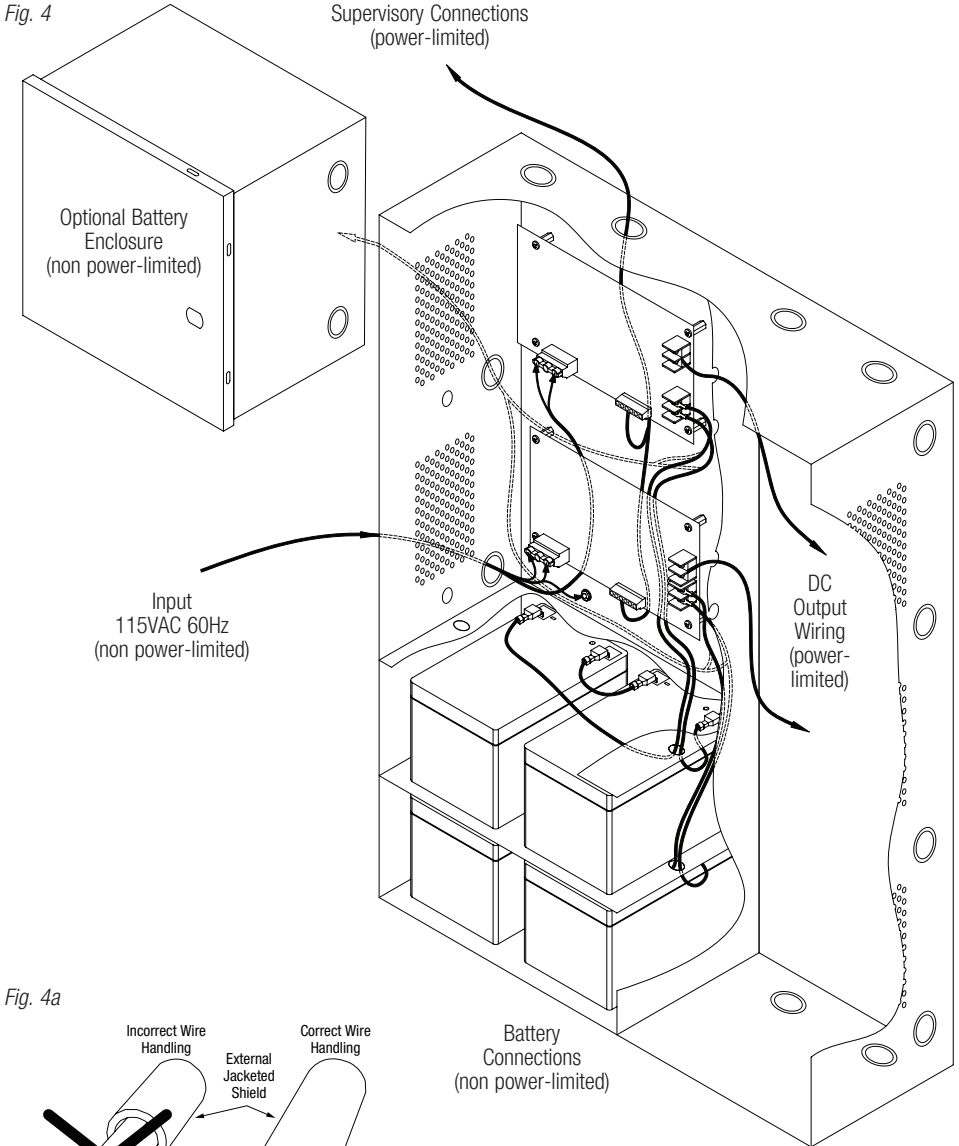
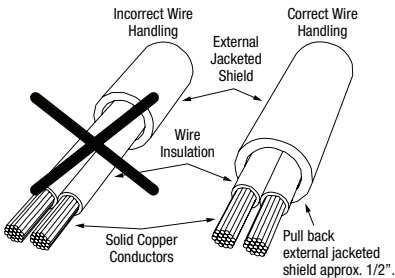


Fig. 4a





## NEC Power-Limited Wiring Requirements for Maximal33E, Maximal35E, and Maximal55E:

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. 5a).

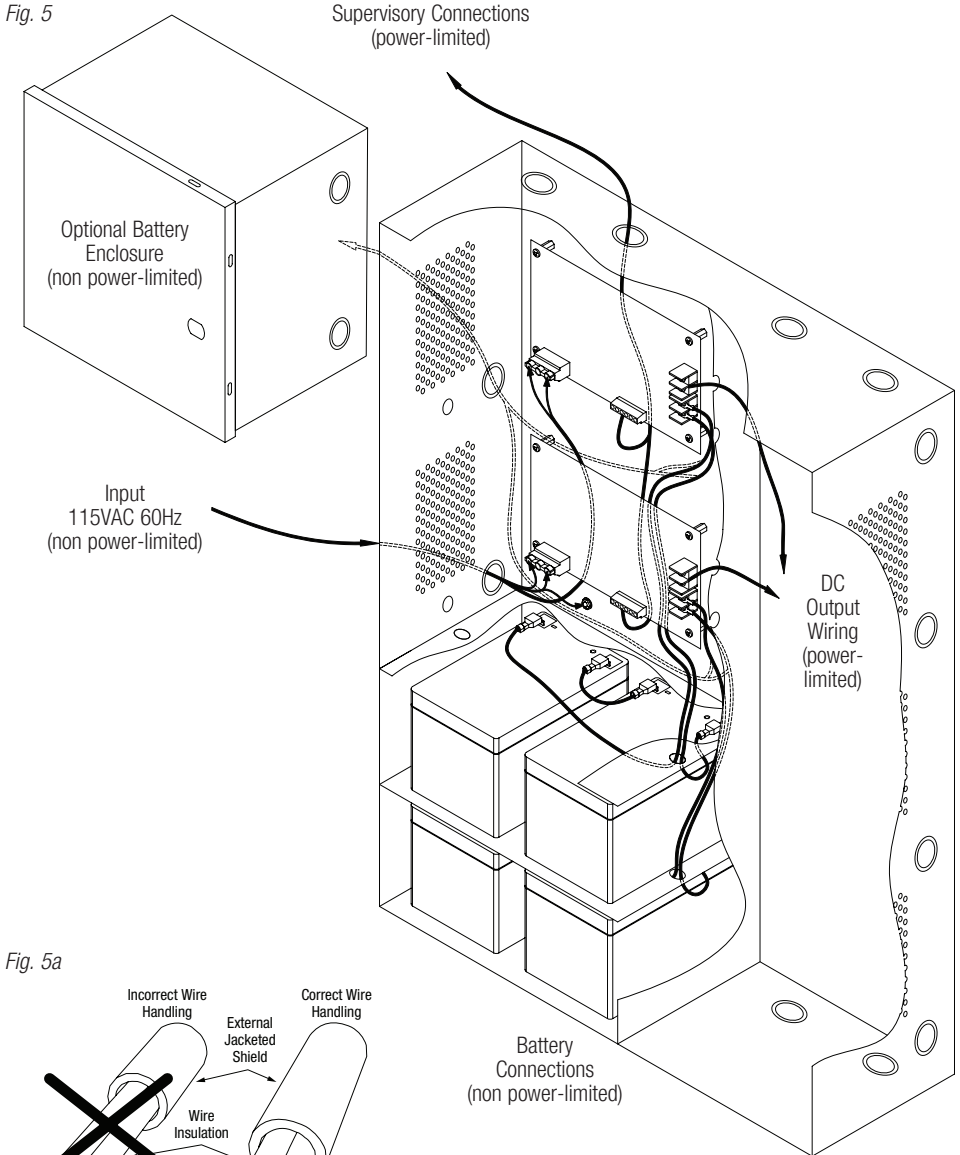
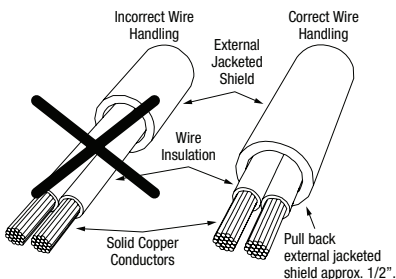


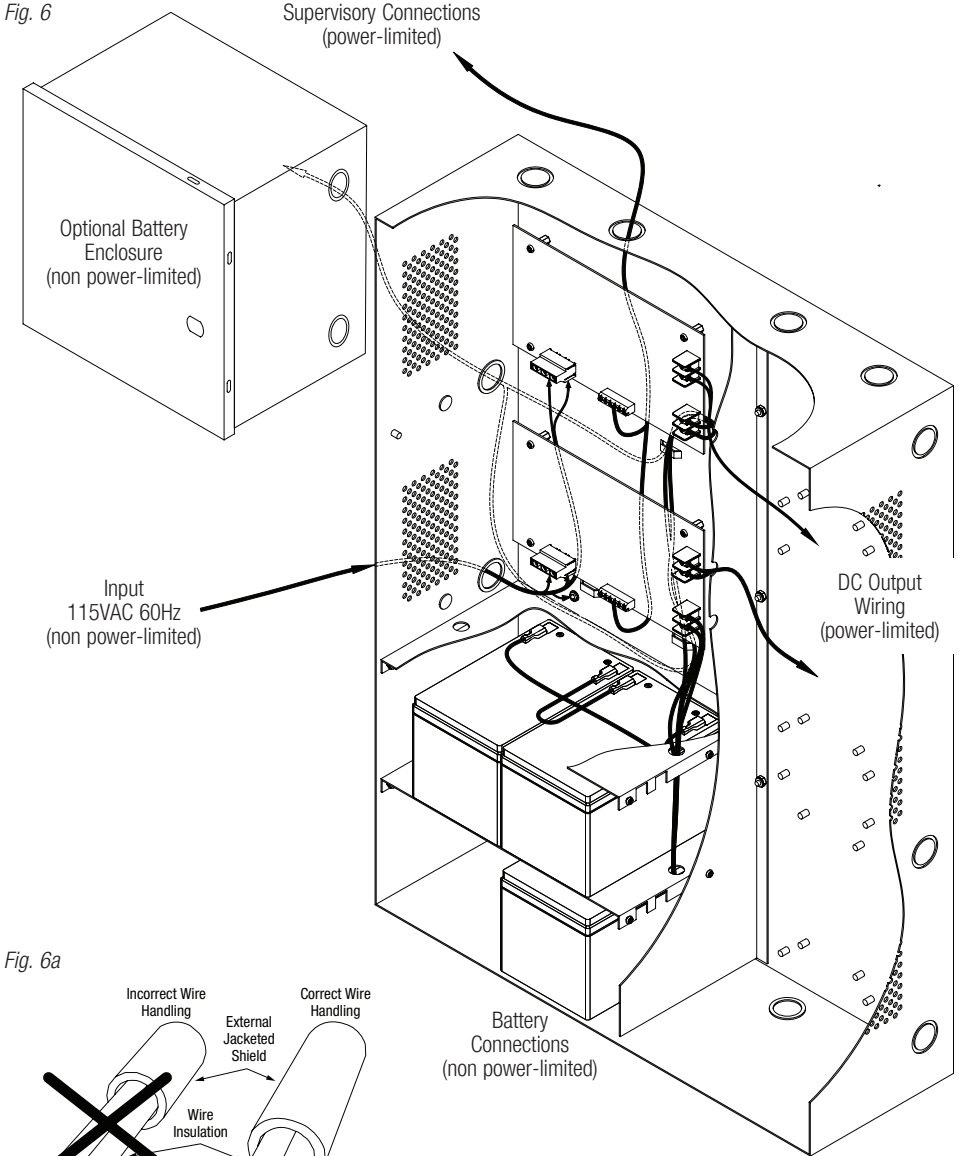
Fig. 5a



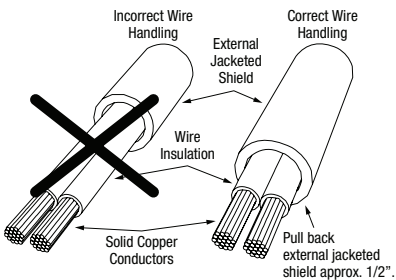
## NEC Power-Limited Wiring Requirements for Maximal37E and Maximal75E:

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. 6a).



**Fig. 6a**



## NEC Power-Limited Wiring Requirements for Maximal77E:

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. 7a).

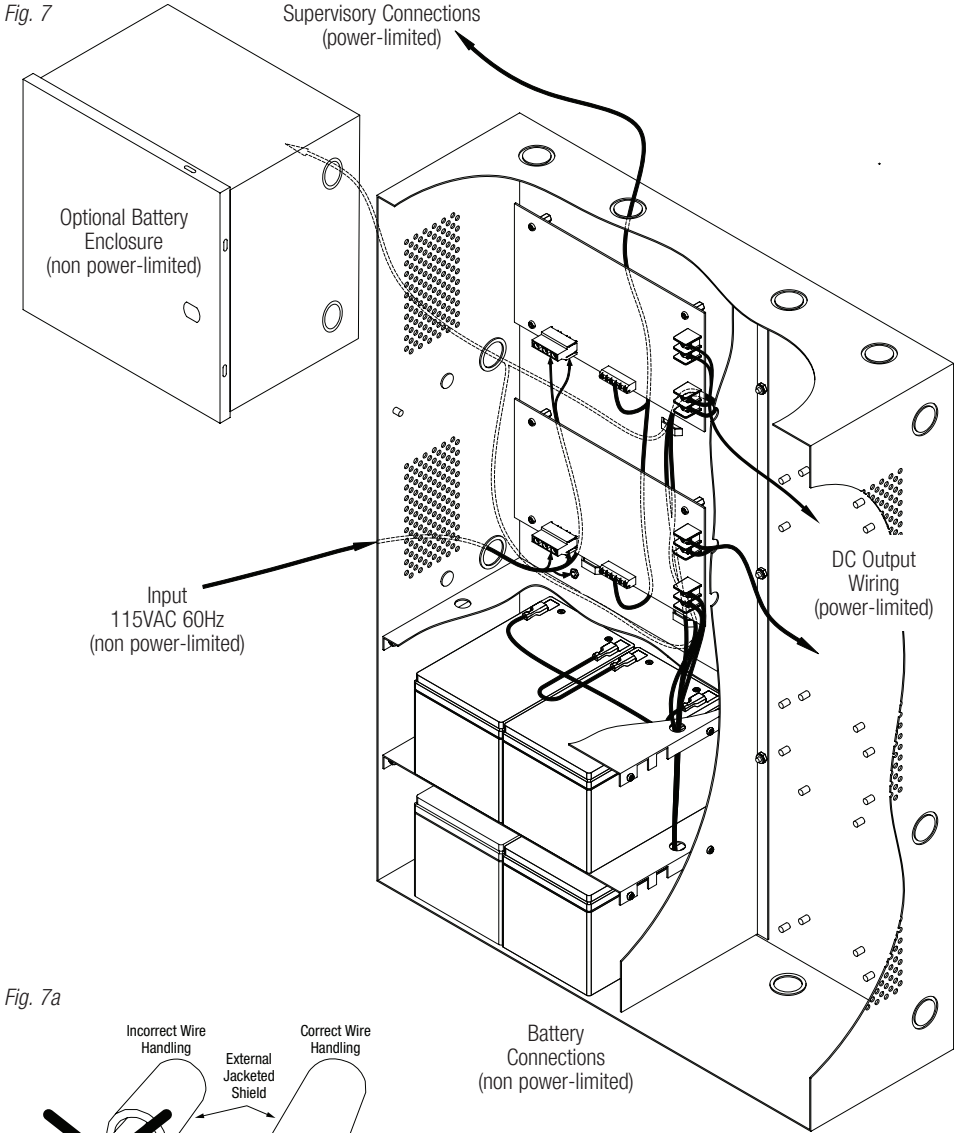
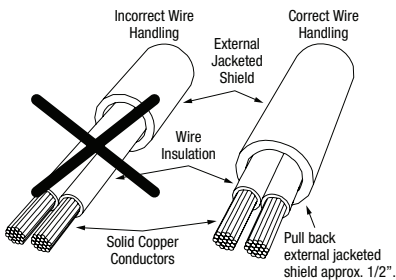
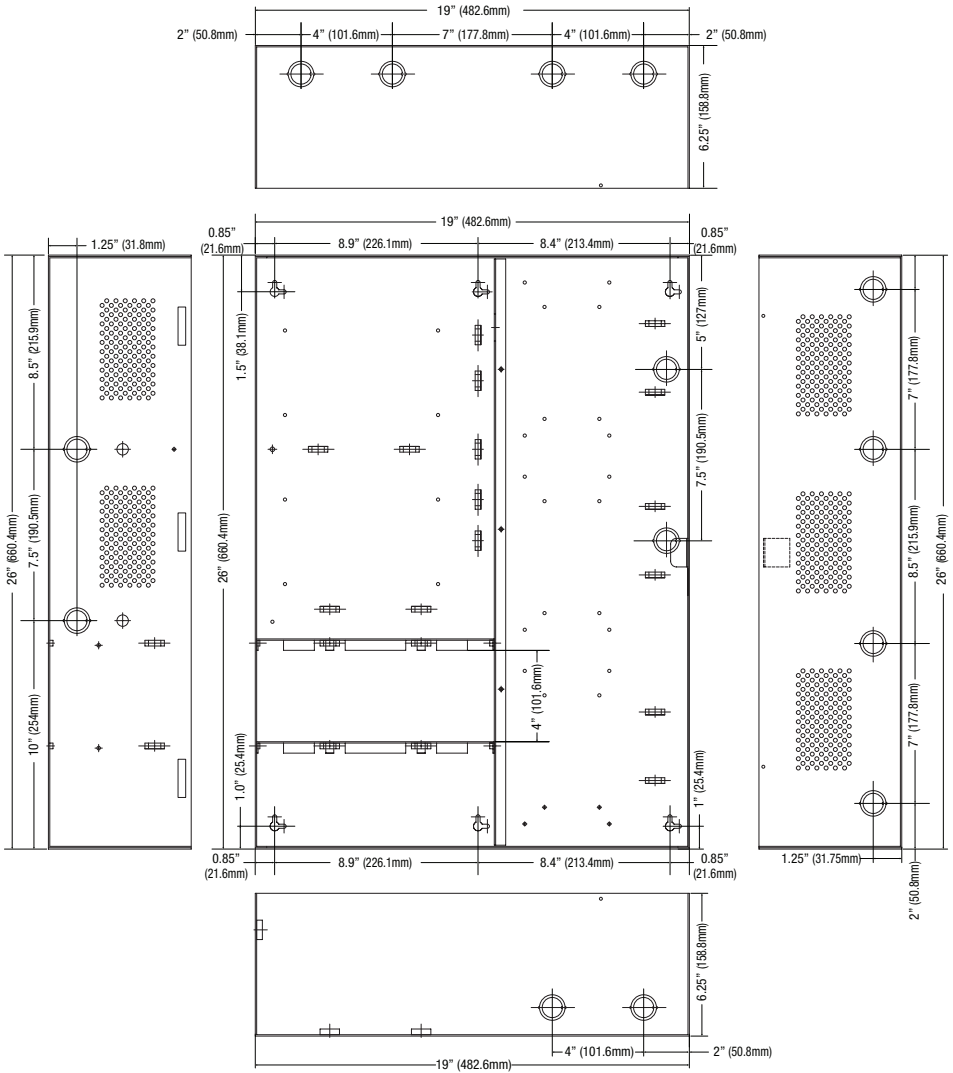


Fig. 7a



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

26" x 19" x 6.25" (660.4mm x 482.6mm x 158.8mm)



Altronix is not responsible for any typographical errors.

140 58th Street, Brooklyn, New York 11220 USA | phone: 718-567-8181 | fax: 718-567-9056  
 website: [www.altronix.com](http://www.altronix.com) | e-mail: [info@altronix.com](mailto:info@altronix.com) | Lifetime Warranty  
 IIMaximalE Series H10U

