MAXIMAL™

Maximal FEV Series
Expandable Power Systems

Models Include:

Maximal11FEV
- Power Supply 1: 12VDC or 24VDC @ 4A.
- Power Supply 2: 12VDC or 24VDC @ 4A.

Maximal13FEV
- Power Supply 1: 12VDC or 24VDC @ 4A.
- Power Supply 2: 12VDC or 24VDC @ 6A.

Maximal33FEV
- Power Supply 1: 12VDC or 24VDC @ 6A.
- Power Supply 2: 12VDC or 24VDC @ 6A.

Maximal35FEV
- Power Supply 1: 12VDC or 24VDC @ 6A.
- Power Supply 2: 12VDC @ 10A.

Maximal37FEV
- Power Supply 1: 24VDC @ 10A.
- Power Supply 2: 12VDC or 24VDC @ 6A.

Maximal55FEV
- Power Supply 1: 12VDC @ 10A.
- Power Supply 2: 12VDC @ 10A.

Maximal75FEV
- Power Supply 1: 24VDC @ 10A.
- Power Supply 2: 12VDC @ 10A.

Maximal77FEV
- Power Supply 1: 24VDC @ 10A.
- Power Supply 2: 24VDC @ 10A.

Installation Guide

CE

Altronix®

More than just power.™

Rev. MFEV031215

Installing Company: _____ Service Rep. Name: _____

Address: _____ Phone #: _____

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Maximal FEV Overview:

Maximal Expandable Power Systems provide system designers and installers with optimum 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. Enclosure facilitates up to four (4) 12VDC/12AH batteries.

Maximal FEV Features:

Input:

- 220VAC (working range 198VAC - 256VAC), 50/60Hz.

Output:

- For output voltage and supply current, refer to *Maximal FEV series Configuration Chart, pg. 4.*
- Auxiliary 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).
- 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 (depending on the power supply). Prevents deep battery discharge.

Fuse Ratings:

- Refer to *Maximal FEV series Configuration Chart, pg. 4.*

Visual Indicators:

- Green AC Power LED indicates 220VAC 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.

Maximal FEV Series Configuration Chart:

Altronix Model Number	Nominal DC Output Voltage Options								Maximum Supply Current for Main and Aux. Outputs (Power Supply 1/Power Supply 2) (A)	Non Power-Limited Outputs	Power-Limited Outputs	Aux. Power-Limited Outputs	Input Rating: 220VAC 50/60Hz (A)	Input Fuse Rating (per eFlow Power Supply Board)	Battery Fuse Rating (per eFlow Power Supply Board)	Ripple Voltage (mV) Under low battery condition
	Power Supply 1				Power Supply 2											
	[DC]		[AUX]		[DC]		[AUX]									
	12VDC Output Range (V)	24VDC Output Range (V)	12VDC Output Range (V)	24VDC Output Range (V)	12VDC Output Range (V)	24VDC Output Range (V)	12VDC Output Range (V)	24VDC Output Range (V)								
Maximal11FEV	**eFlow4NBV**				**eFlow4NBV**				4A + 4A	–	2	2	4.2	5A/250V	7.5A/32V	730
	10.1-13.2	–	10.05-13.2	–	10.1-13.2	–	10.05-13.2	–								
	10.1-13.2	–	10.05-13.2	–	–	20.28-26.4	–	20.2-26.4								
	–	20.28-26.4	–	20.2-26.4	–	20.28-26.4	–	20.2-26.4								
Maximal13FEV	**eFlow4NBV**				**eFlow6NBV**				4A + 6A	1	1	2	4.2	5A/250V	7.5A/32V (eFlow4NBV) 10A/32V (eFlow6NBV)	730 (eFlow4NBV) 910 (eFlow6NBV)
	10.1-13.2	–	10.05-13.2	–	10.0-13.2	–	10.03-13.2	–								
	10.1-13.2	–	10.05-13.2	–	–	20.19-26.4	–	20.19-26.4								
	–	20.28-26.4	–	20.2-26.4	10.0-13.2	–	10.03-13.2	–								
	–	20.28-26.4	–	20.2-26.4	–	20.19-26.4	–	20.19-26.4								
Maximal33FEV	**eFlow6NBV**				**eFlow6NBV**				6A + 6A	2	–	2	4.2	5A/250V	10A/32V	910
	10.0-13.2	–	10.03-13.2	–	10.0-13.2	–	10.03-13.2	–								
	10.0-13.2	–	10.03-13.2	–	–	20.19-26.4	–	20.19-26.4								
	–	20.19-26.4	–	20.19-26.4	–	20.19-26.4	–	20.19-26.4								
Maximal35FEV	**eFlow6NBV**				**eFlow102NBV**				6A + 10A	2	–	2	4.2	5A/250V	10A/32V (eFlow6NBV) 15A/32V (eFlow102NBV)	910 (eFlow6NBV) 760 (eFlow102NBV)
	10.0-13.2	–	10.03-13.2	–	10.03-13.2	–	10.03-13.2	–								
	–	20.19-26.4	–	20.19-26.4	10.03-13.2	–	10.03-13.2	–								
Maximal37FEV	**eFlow6NBV**				**eFlow104NBV**				6A + 10A	2	–	2	4.8	5A/250V (eFlow6NBV) 6.3A/250V (eFlow104NBV)	10A/32V (eFlow6NBV) 15A/32V (eFlow104NBV)	910 (eFlow6NBV) 700 (eFlow104NBV)
	10.0-13.2	–	10.03-13.2	–	–	20.17-26.4	–	20.28-26.4								
	–	20.19-26.4	–	20.19-26.4	–	20.17-26.4	–	20.28-26.4								
Maximal55FEV	**eFlow102NBV**				**eFlow102NBV**				10A + 10A	2	–	2	4.2	5A/250V	15A/32V	760
	10.03-13.2	–	10.03-13.2	–	10.03-13.2	–	10.03-13.2	–								
Maximal75FEV	**eFlow102NBV**				**eFlow104NBV**				10A + 10A	2	–	2	4.8	5A/250V (eFlow102NBV) 6.3A/250V (eFlow104NBV)	15A/32V	760 (eFlow102NBV) 700 (eFlow104NBV)
	10.03-13.2	–	10.03-13.2	–	–	20.17-26.4	–	20.28-26.4								
Maximal77FEV	**eFlow104NBV**				**eFlow104NBV**				10A + 10A	2	–	2	5.6	6.3A/250V	15A/32V	700
	–	20.17-26.4	–	20.28-26.4	–	20.17-26.4	–	20.28-26.4								

Maximal FEV Installation Instructions:

Wiring methods shall be in accordance with the National Electrical Code/NFPA 70/ANSI, the Canadian Electric Code, Part I, Part II, and with all local codes and authorities having jurisdiction.
Product is intended for indoor use only.

1. Mount unit in 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. 11)*.
2. Connect unswitched AC power (220VAC 50/60Hz) to terminals marked [L, N] *(Fig. 2, pg. 8)*.
   Use 14 AWG for larger for all power connections. Secure green wire lead to earth ground lug.
   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, (Maximal11FEV, Maximal13FEV, Maximal33FEV, Maximal35FEV and Maximal37FEV) *(Fig. 1a, pg. 7)*. Maximal55FEV power supplies are factory set at 12VDC. Maximal77FEV power supplies are factory set at 24VDC. Maximal75FEV power supplies are factory set at 12VDC and 24VDC *(Power Supply Board Stand-by Battery Specifications, pg. 6)*.
4. Measure output voltage before connecting devices. This helps avoiding potential damage.
5. Connect devices or Altronix sub-assembly modules to be powered to the terminals marked [– DC +] *(Fig. 2, pg. 8)*. For auxiliary device connection, this output will not be affected by Low Power Disconnect or Fire Alarm Interface. Connect device to the terminals marked [+ AUX –] *(Fig. 2, pg. 8)*.
   Refer to page 3 for non power-limited applications.
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 +] *(Fig. 2, pg. 8)*. Use two (2) 12VDC batteries connected in series for 24VDC operation (battery leads included). Use batteries - Casil CL1270 (12V/7AH), CL12120 (12V/12AH), CL12400 (12V/40AH), CL12650 (12V/65AH) batteries or UL recognized BAZR2 batteries of an appropriate rating.
7. Connect appropriate signaling notification devices to AC FAIL & BAT FAIL *(Fig. 2, pg. 8)* supervisory relay outputs.
8. To delay AC reporting for 2 hrs., set DIP switch [AC Delay] to OFF position *(Fig. 2, pg. 8)*.
   To delay AC reporting for 1 min., set DIP switch [AC Delay] to ON position *(Fig. 2, pg. 8)*.
   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. 2, pg. 8)*.
   To disable Fire Alarm Disconnect set DIP switch [Shutdown] to OFF position. *(Fig. 2, pg. 8)*.
10. Trigger terminals are end of a line resistor supervised (10k Ohms). Opening or shorting trigger terminals will cause [DC] output to shutdown *(Fig. 2, pg. 8)*.
11. Place a jumper for non-latching FACP. A momentary short on these terminals resets FACP latching [Trigger EOL Shutdown] *(Fig. 2, pg. 8)*.
12. For Access Control Applications: mount UL Listed tamper switch (Altronix Model TS112 or equivalent) at the top of the enclosure. Slide tamper switch bracket onto the edge or the enclosure approx. 2" from the right side *(Fig. 2a, pg. 8)*. Connect tamper switch wiring to the Access Control Panel input or the appropriate UL Listed reporting device.
13. 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 *(Maximal FEV Configuration Chart, 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: Maximum charge current 1.54A.

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

Power Supply Board Terminal Identification:

Terminal Legend	Function/Description
L, G, N	Connect 220VAC 50/60Hz to these terminals: L to hot, N to neutral. Do not use the [G] terminal
+ DC –	Refer to *Maximal FEV Series Configuration Chart, pg. 4.*
Trigger EOL Supervised	Fire Alarm Interface trigger input from a short or FACP. Trigger inputs can be normally open, normally closed from an FACP output circuit.
NO, GND RESET	FACP interface latching or non-latching.
+ AUX –	Auxiliary Power-Limited output rated @ 1A (unswitched).
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.
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.
– BAT +	Stand-by battery connections. Maximum charge current 1.54A.

Power Supply Board LED Diagnostics:

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

Power Supply Board Stand-by Battery Specifications

eFlow4NBV:

Battery	Access Control Applications Stand-by
7AH	30 Mins./4A*
12AH	35 Mins./4A*
40AH	Over 4 Hours/4A*
65AH	Over 4 Hours/4A*

eFlow6NBV:

Battery	Access Control Applications Stand-by
7AH	10 Mins./6A
12AH	30 Mins./6A*
40AH	Over 4 Hours/6A*
65AH	Over 4 Hours/6A*

eFlow102NBV:

Battery	Access Control Applications Stand-by
7AH	5 Mins./10A
12AH	30 Mins./10A*
40AH	Over 2 Hours/10A*
65AH	Over 4 Hours/10A*

eFlow104NBV:

Battery	Access Control Applications Stand-by
7AH	5 Mins./10A
12AH	30 Mins./10A*
40AH	Over 2 Hours/10A*
65AH	Over 4 Hours/10A*

Power Supply Board Output Voltage Settings:

Fig. 1 - eFlow4NBV / eFlow6NBV Power Supply Board

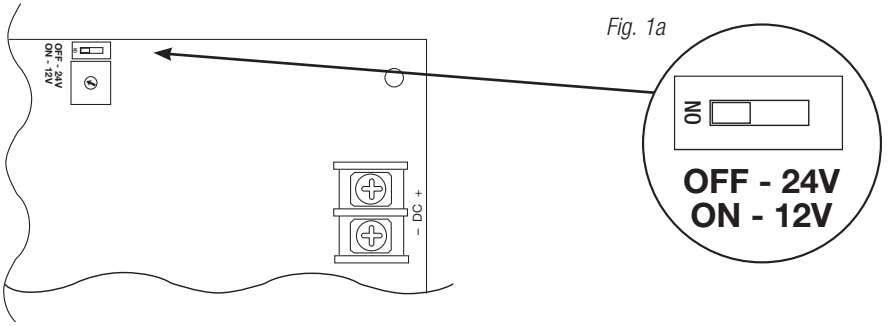


Fig. 2

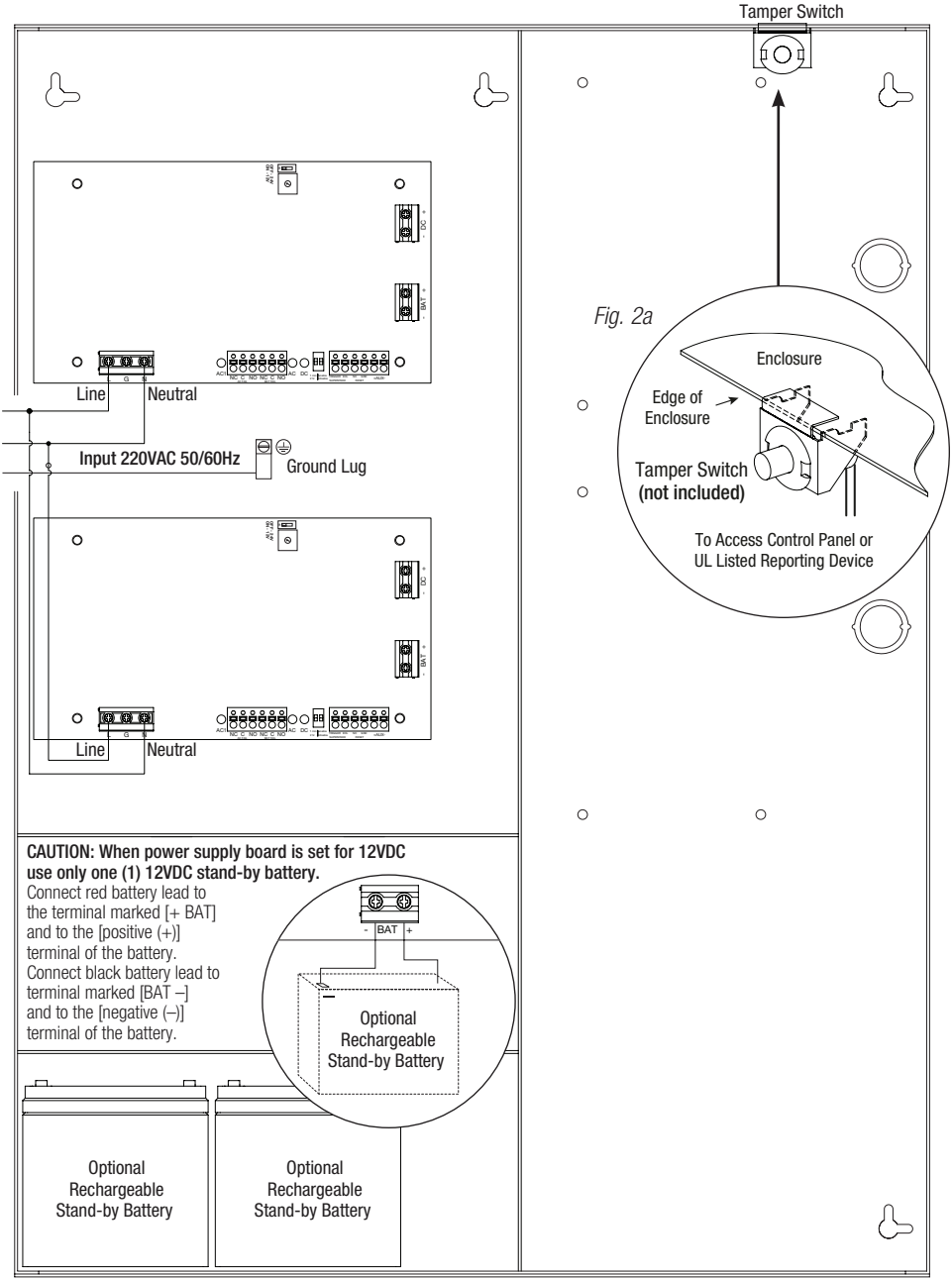


Fig. 2a

Keep power-limited wiring separate from non power-limited. Use minimum 0.25" spacing.
Up to four (4) 12AH rechargeable batteries are the largest batteries that can fit in this enclosure.
An external battery enclosure must be used if using the 40AH or 65AH batteries.

NEC Power-Limited Wiring Requirements:

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. 3a).*

Fig. 3

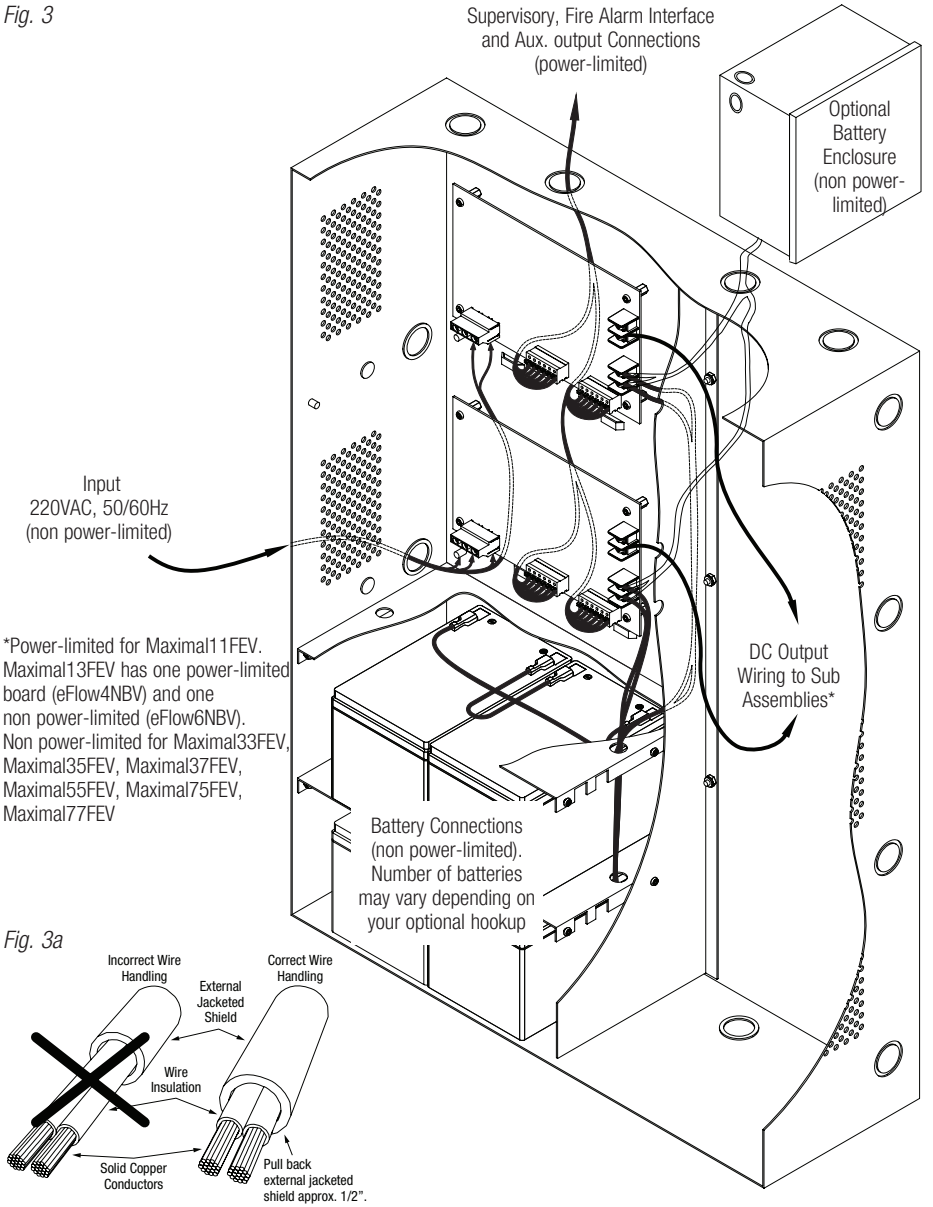
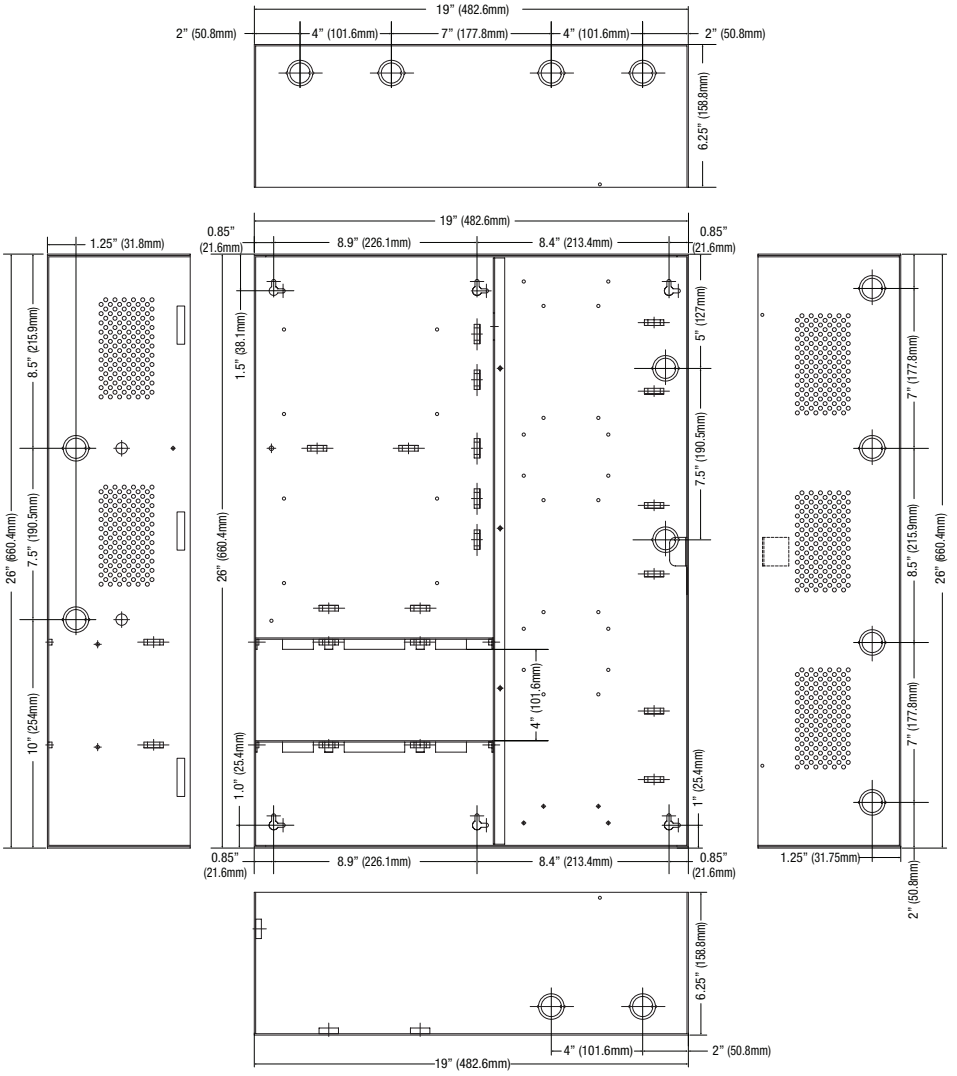


Fig. 3a

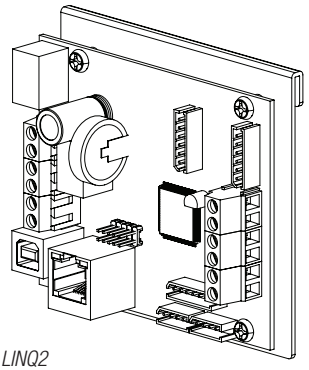
Notes:

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

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



eFlow Power Supply/Chargers can be Controlled and Monitored while Reporting Power/Diagnostics from Anywhere over the Network...



LINQ2

LINQ™

LINQ2 - Network Communication Module

LINQ2 provides remote IP access to real-time data from eFlow power supply/chargers to help keep systems up and running at optimal levels. It facilitates fast and easy installation and set-up, minimizes system downtime, and eliminates unnecessary service calls, which helps reduce Total Cost of Ownership (TCO) - as well as creating a new source of Recurring Monthly Revenue (RMR).

Features:

- UL Listed in the U.S. and Canada.
- Local or remote control of up to (2) two Altronix eFlow power output(s) via LAN and/or WAN.
- Monitor real time diagnostics: DC output voltage, output current, AC & battery status/service, input trigger state change, output state change and unit temperature.
- Access control and user managment: Restrict read/write, Restrict users to specific resources
- Two (2) integral network controlled Form "C" Relays.
- Three (3) programmable input triggers: Control relays and power supplies via external hardware sources.
- Email and Windows Dashboard notifications
- Event log tracks history.
- Secure Socket Layer (SSL).
- Programmable via USB or web browser - includes operating software and 6 ft. USB cable.

LINQ2 Mounts Inside any Maximal F Enclosure