



# eFlow104NK1

Dual Output Power Supply/Charger Kit

Fully assembled kit includes:

- (1) eFlow104N - Power Supply/Charger
- (1) VR6 - Voltage Regulator

## Installation Guide



Rev. 104NK1\_041818

**More than just power.™**

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

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

## Overview:

Altronix eFlow104NK1 dual output power supply/charger kit converts a 120VAC, 60Hz input into one (1) 5VDC or 12VDC selectable output at up to 6A supply current and one (1) 24VDC output. It also offers a suite of features that includes fire alarm disconnect, overvoltage protection, and low power disconnect which prevents deep discharge of stand-by batteries.



### UL Listings for US Installations:

UL 294 - UL Listed for Access Control System Units.

UL 603 - UL Listed for Power Supplies for Use with Burglar-Alarms Systems.

UL 1481 - UL Listed for Power Supplies for Fire Protective Signaling Systems.



### UL Listings for Canadian Installations:

ULC-S318-96 - Power Supplies for Burglar Alarm Systems. Also suitable for Access Control.



European Conformity

## Stand-by Specifications:

Battery	Burg. Applications 4 hr. Stand-by/ 15 min. Alarm	Fire Applications 24 hr. Stand-by/ 5 min. Alarm	Access Control Applications Stand-by
7AH	0.4A/10A	N/A	5 Mins./10A
12AH	1A/10A	0.3A/10A	15 Mins./10A
40AH (for eFlow104NX refer to Fig. 8, pg. 10)	6A/10A	1.2A/10A	Over 2 Hours/10A
65AH (for eFlow104NX refer to Fig. 8, pg. 10)	6A/10A	1.5A/10A	Over 4 Hours/10A

## Specifications:

### Input:

- 120VAC, 60Hz, 4.5A.

### Output:

- Two outputs:
  - Selectable 5VDC or 12VDC output;
  - 24VDC output.
- 5VDC @ 6A continuous and 24VDC @ 8A continuous or 12VDC @ 6A continuous and 24VDC @ 6A continuous
- 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 1.0A.
- 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.
- AC fail supervision (form "C" contacts).
- Battery fail & presence supervision (form "C" contacts).

### Supervision:

- 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.

### 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):

13.5" x 13" x 3.25"  
(342.9mm x 330.2mm x 82.6mm).

## 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. 9*). Secure enclosure to earth ground.
2. 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.**

For Fire Alarm applications the outputs are "Special Applications" only, see list (*refer to Appendix A, pg. 8*).

3. Measure output voltage before connecting devices. This helps avoiding potential damage.
4. Select VR6's output voltage (5VDC or 12VDC) using switch [S1] (*Fig. 3a, pg. 6*).
5. Connect devices to be powered:
  - a. For 24VDC connect device(s) to terminals marked [- DC +] on eFlow104NB (power supply board) (*Fig. 1h, pg. 5, Fig. 3, pg. 6*).
  - b. For 5VDC or 12VDC connect device(s) to terminals marked [+ OUT -] on VR6 (*Fig. 3b, pg. 6*)

**Carefully observe correct polarity.**

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*).

6. For Access Control applications batteries are optional. When batteries are not used, a loss of AC will result in the loss of the 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 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. 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. Trigger terminals are end of a line resistor supervised (10k ohms). Opening or shorting trigger terminals will cause [DC] output to shutdown (*Fig. 1d, pg. 5*).
  11. Place a jumper for non-latching FACP. A momentary short on these terminals resets FACP latching [Trigger EOL Shutdown] (*Fig. 1e, pg. 5*).
  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 of the enclosure approx. 2" from the right side (*Fig. 3, pg. 6*). 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 eFlow104NK1: 24VDC nominal rated @ 10A max.

**Battery Test:** Under normal load conditions check that the battery is fully charged, check specified voltage (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.

## Terminal Identification:

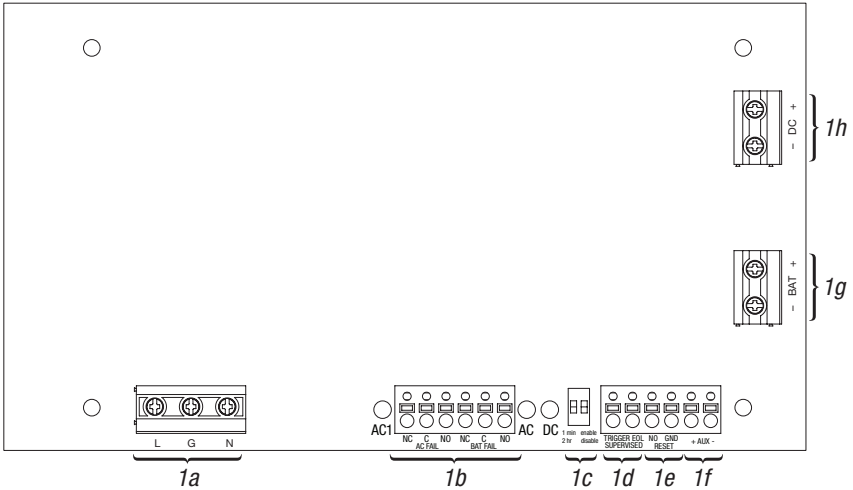
### Power Supply/Charger

Terminal Legend	Function/Description
L, N	Connect 120VAC, 60Hz to these terminals: L to hot, N to neutral (non power-limited) (Fig. 1a, pg. 5).
- DC +	24VDC nominal @ 10A continuous output (power-limited output) (Fig. 1h, pg. 5).
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 (power-limited input) (Fig. 1d, pg. 5).
NO, GND RESET	FACP interface latching or non-latching (power-limited) (Fig. 1e, pg. 5).
+ AUX -	Auxiliary Class 2 power-limited output rated @ 1A (unswitched) (Fig. 1f, pg. 5).
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) (Fig. 1b, pg. 5).
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) (Fig. 1b, pg. 5).
- BAT +	Stand-by battery connections. Maximum charge current 1.54A (non power-limited) (Fig. 1g, pg. 5).

### Voltage Regulator

Terminal Legend	Function/Description
+ IN -	Power input from eFlow104NB, factory installed.
+ OUT -	5VDC @ 6A or 12VDC @ 6A, depending on SW1 setting.

Fig. 1 - eFlow104N Board Configuration



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

For compliance with UL C 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).

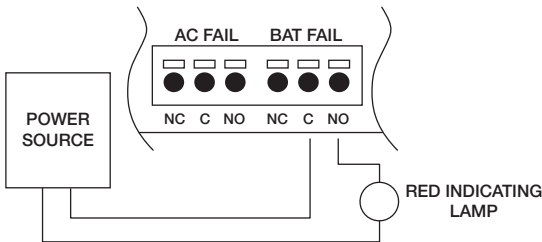
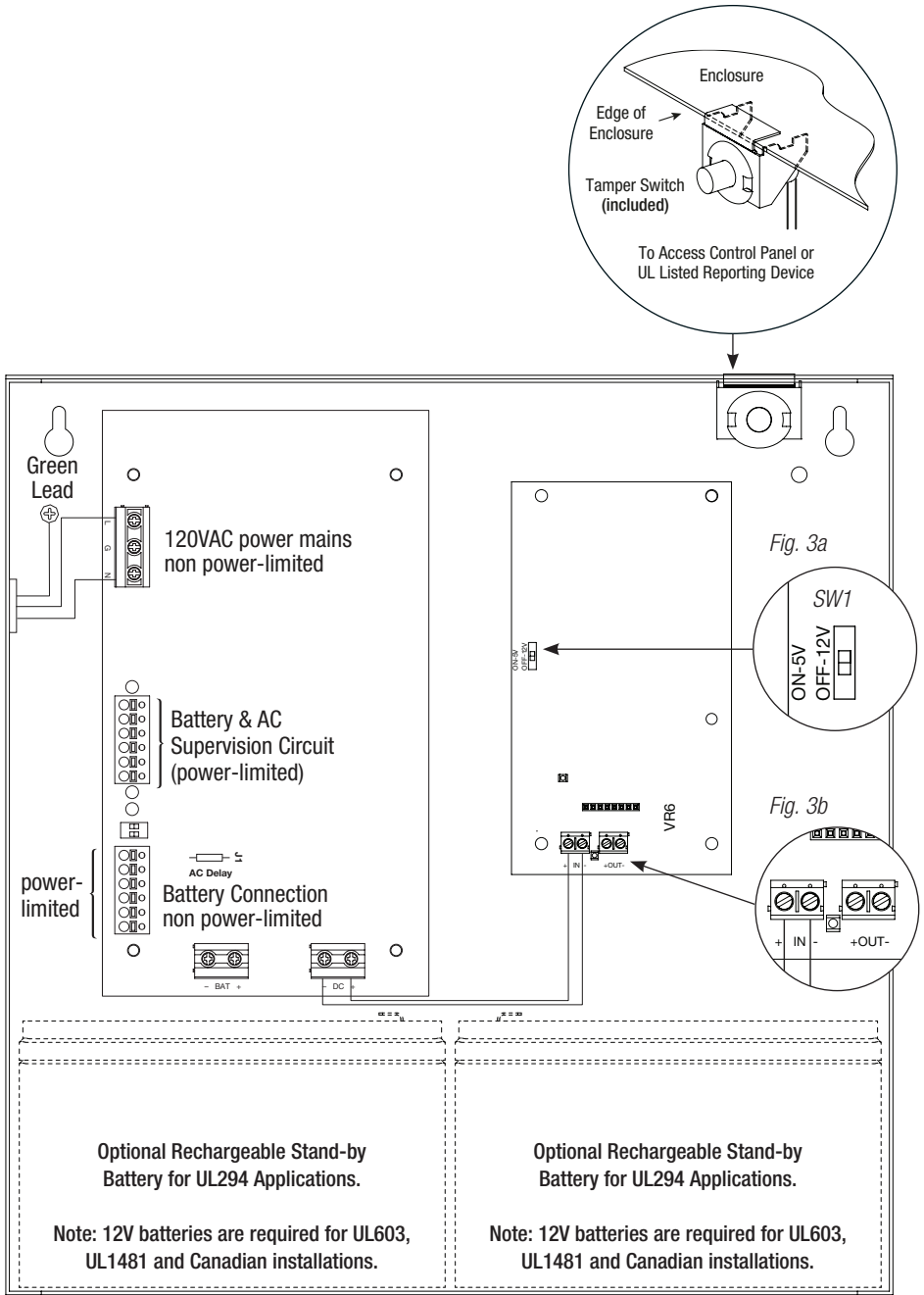


Fig. 3 - eFlow104NK1 Configuration



**CAUTION:** Power supply board is factory set for 24VDC. Use two (2) 12VDC stand-by batteries.

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 12AH, 40AH or 65AH batteries.

# NEC Power-Limited Wiring Requirements for eFlow104NK1:

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. 4a).

Fig. 4

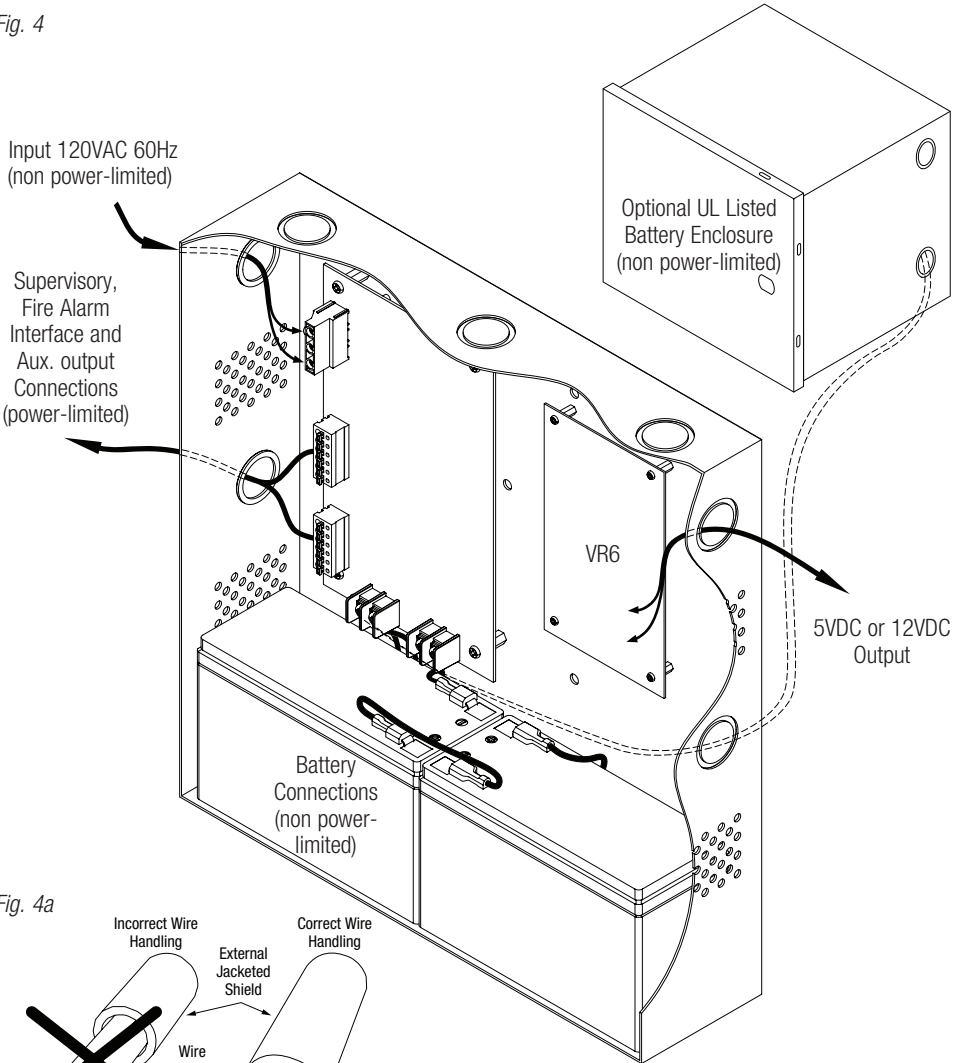
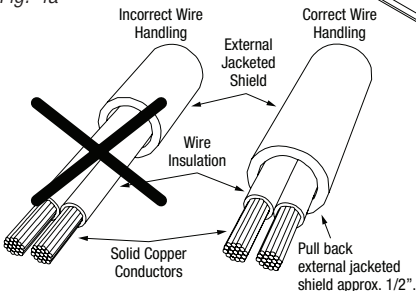


Fig. 4a



## 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 eFlow104NK1 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
2112/24AIR	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

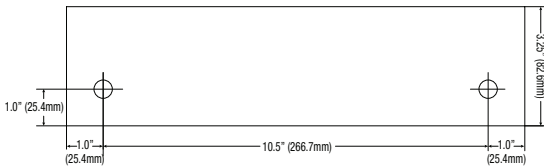
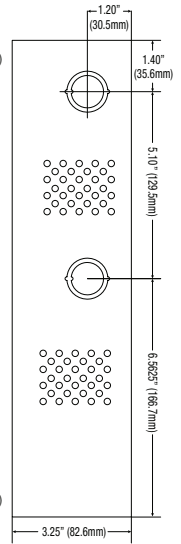
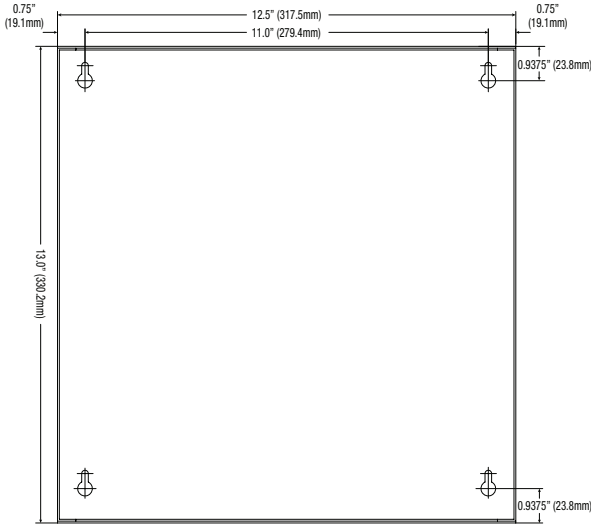
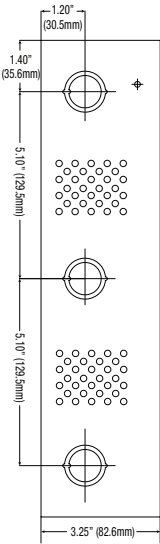
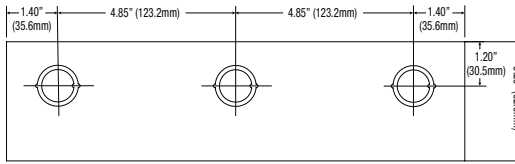
Table A-2 below lists relays compatible with eFlow104NK1 output.

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



# Enclosure Dimensions (BC300):

13.5" x 13" x 3.25" (342.9mm x 330.2mm x 82.6mm)



Altronix is not responsible for any typographical errors.

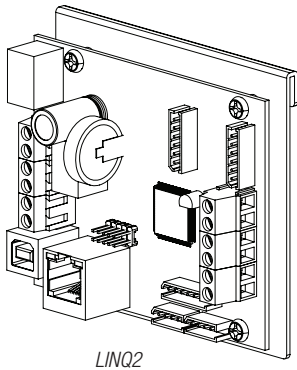
140 58th Street, Brooklyn, New York 11220 USA | phone: 718-567-8181 | fax: 718-567-9056  
 website: [www.altronix.com](http://www.altronix.com) | e-mail: [info@altronix.com](mailto:info@altronix.com) | Lifetime Warranty  
 lleFlow104NK1 G30U

eFlow104NK1 Installation Guide





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



LINQ2

# LINQ

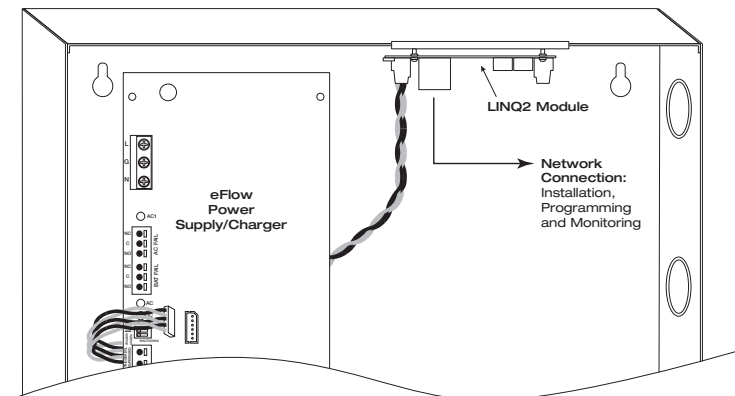
### LINQ2 - Network Communication Module

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 management: 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 eFlow Enclosure



## Notes:



# Power Supply/Charger Operating Guide

## Models Include:

Model	Input 120VAC, 60Hz	Output			Auxiliary Power-Limited Output (unswitched)	Ripple Voltage
		5VDC	12VDC	24VDC		
eFlow104NK1	4.5A	6A	–	8A	1A	700mV
		–	6A	6A		

## Overview:

The eFlow104NK1 power supply/charger converts a 120VAC, 60Hz input into one (1) 5VDC or 12VDC selectable output at up to 6A supply current and one (1) 24VDC output..

## Stand-by Specifications:

Battery	Burg. Applications 4 hr. Stand-by/ 15 min. Alarm	Fire Applications 24 hr. Stand-by/ 5 min. Alarm	Access Control Applications Stand-by
7AH	0.4A/10A	N/A	5 Mins./10A
12AH	1A/10A	0.3A/10A	15 Mins./10A
40AH	6A/10A	1.2A/10A	Over 2 Hours/10A
65AH	6A/10A	1.5A/10A	Over 4 Hours/10A

## 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 eFlow Power Supply/Charger Installation Guide: 1leFlow104NK1, Rev. 104NK1\_041818 for complete instructions. This sheet is to be removed, framed and posted next to the unit.