LINQ

Ethernet/Network Communications Module

Installation and Programming Manual

LINQ2
- Two (2) Port Connectivity Module

Altronix ®

More than just power.™

Overview:

Altronix LINQ2 network module is designed to interface with eFlow and MaximalF power supply/chargers. It enables power supply status monitoring and control of two (2) eFlow power supply/chargers over a LAN/WAN or USB connection. LINQ2 provides values on demand for AC fault status, DC current and voltage, as well as Battery fault status and reports conditions via SNMP.

Features:

- Management interface for up to two (2) eFlow power supply/chargers.
- Real time status of DC output voltage, output current, AC and Battery status and enclosure temperature.
- Two (2) network controlled Form "C" relays.
- Local and remote control of DC power outputs.
- Battery service date indication.

- SNMP trap message notifications (instant and delayed).
- Connect up to five (5) local or remote trap receivers.
- E-mail notification selectable by event.
- Event log tracks history.
- Programmable via USB or web browser.
- Management interface software included (USB flash drive).
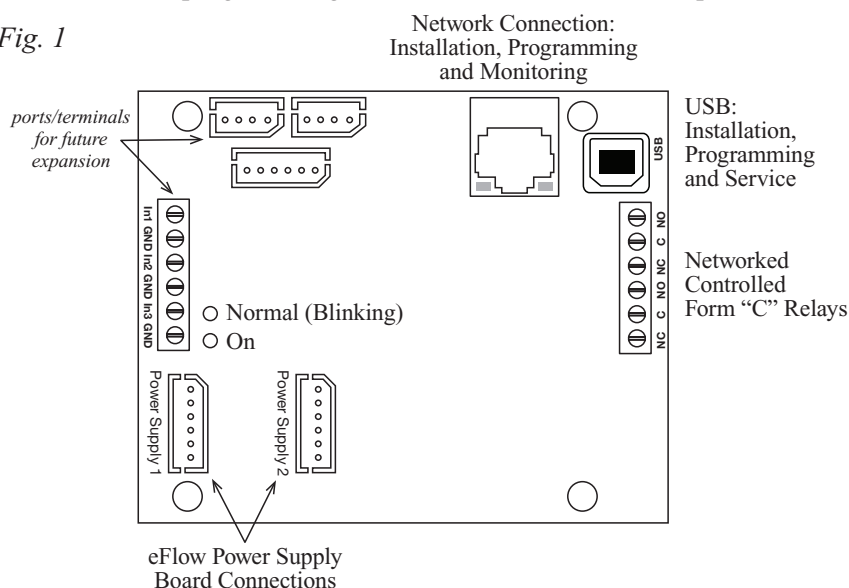- Includes interface cables and mounting bracket.

Status Monitoring:

- AC status.
- Output current draw.
- Unit's temperature.

- DC output voltage.
- Low Battery/Battery presence detection.

Installing LINQ2 Board:

1. Using the mounting bracket mount the LINQ2 network module to the desired location on the enclosure. Secure the module by tightening the screws on the front edge of the mounting bracket *(Fig. 2, pg. 3)*.
2. Connect one end of the supplied interface cables to the ports marked [Power Supply 1] and [Power Supply 2] on LINQ2 *(Fig. 1, pg. 2)*. When connecting to one power supply use the connector marked [Power Supply 1].
3. Connect the other end of the interface cable to the interface port of each eFlow power supply board.
4. Connect Ethernet cable (CAT5e or higher) to the RJ45 jack on the LINQ2 network module.
5. Refer to the programming section of this manual to setup the LINQ2 network module for proper operation.
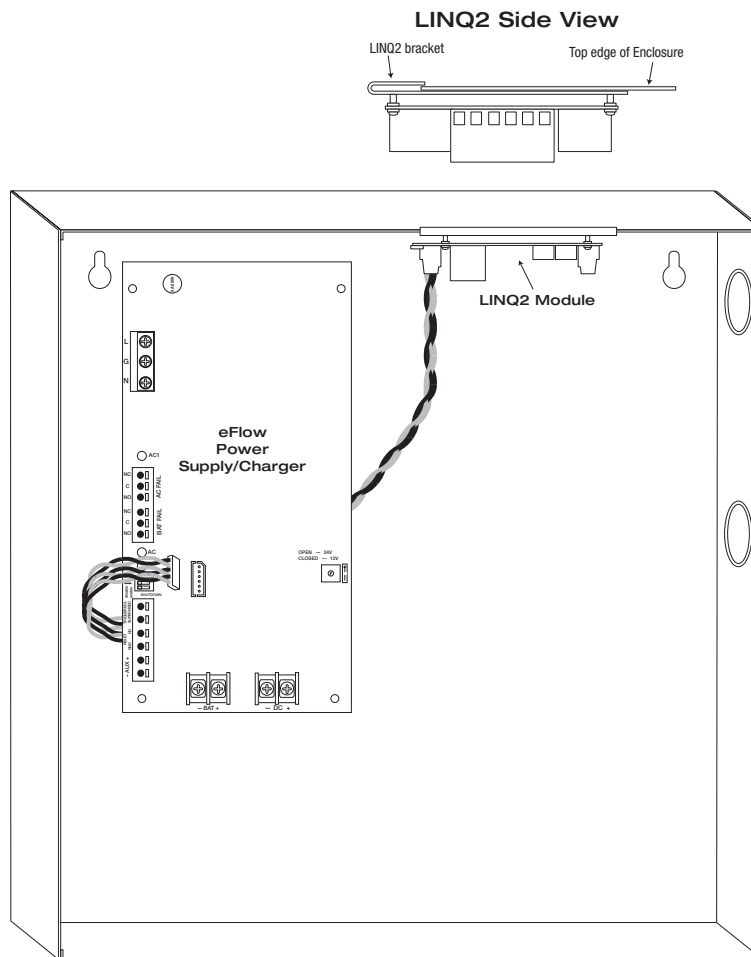
Fig. 1

Network Connection:
Installation, Programming and Monitoring

ports/terminals for future expansion

USB:
Installation, Programming and Service

Networked Controlled Form "C" Relays

Normal (Blinking)
On

eFlow Power Supply Board Connections

LED Diagnostics:

LED	Color	State	Status
1	BLUE	ON/STEADY	Power
2	BLUE	BLINKING	Normal operating condition
3	N/A		
4	N/A		

Terminal Identification:

Terminal/Legend	Description
Power Supply 1	Interfaces with first eFlow Power Supply/Charger
Power Supply 2	Interfaces with second eFlow Power Supply/Charger
RJ45	Ethernet: LAN or laptop connection enables LINQ2 programming and status monitoring
USB	Laptop connection enables LINQ2 programming

LINQ2 Installed Inside the eFlow Enclosure:

Fig. 2

LINQ2 Side View

LINQ2 bracket   Top edge of Enclosure

LINQ2 Module

eFlow
Power
Supply/Charger

Establishing Network Connection:

Preparing to Configure LINQ2:

Communication with LINQ2 board may be established via USB, Computer's Ethernet port or LAN/WAN Connection *(Fig. 1, pg. 2)*. Connect to PC Ethernet Port or USB port (recommended) for the initial network setup before connecting LINQ2 to the LAN. While connected to a PC via USB connection, LINQ2 will be powered by the PC and will not require to be connected to a power supply for normal operation allowing for off-site setup. LINQ2 module does not require external power when programming via USB port.

Initial Setup Via USB Connection:

Installing LINQ2 Management Software:
1. Insert LINQ2 flash drive into your PC.
2. Double click Computer icon on the desktop.
3. Navigate to the LINQ2 flash drive.
4. Double click the "eFlowSetupReleasev2".
5. Follow the on screen instructions to complete installation.
Your PC is now ready for the initial configuration of LINQ2 Board via USB.

Initial Network Configuration via USB:

1. Open the eFlow Management software.
2. Click "Connect via USB" button *(Fig. 3, pg. 4)*.

Fig. 3

3. Click Network Settings tab *(Fig. 4, pg. 4)*. eFlow Authentication Required window will appear.
   Enter Username: admin and Password admin. Click Log In *(Fig. 4a, pg. 4)*.
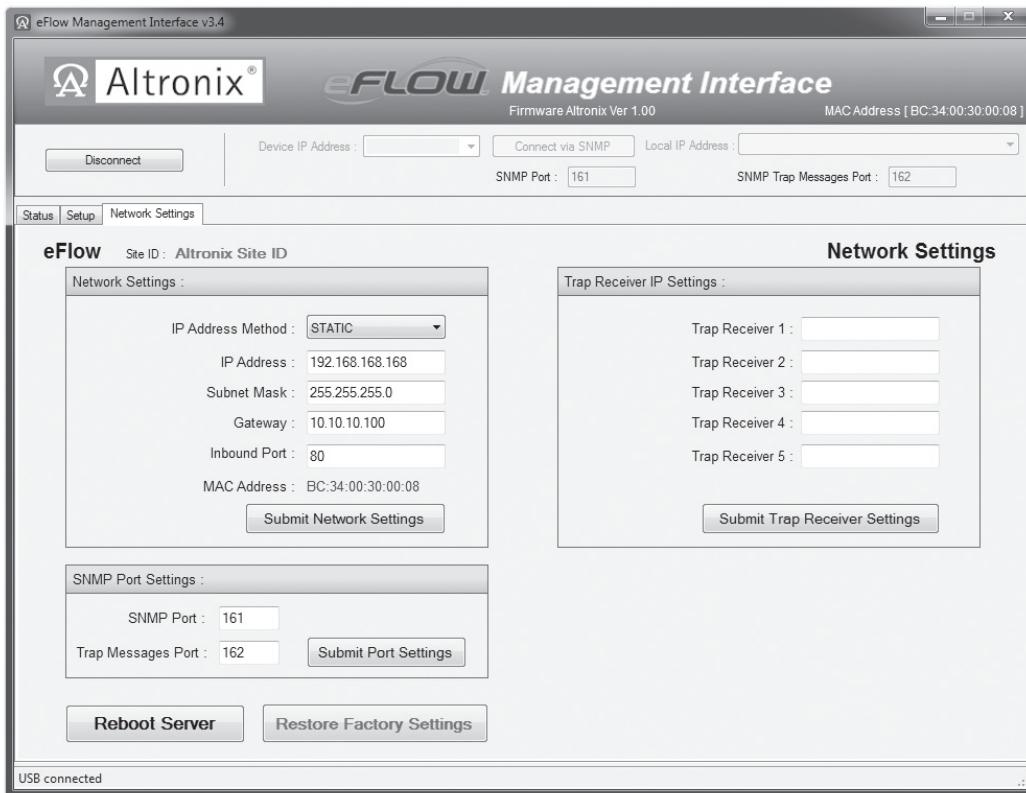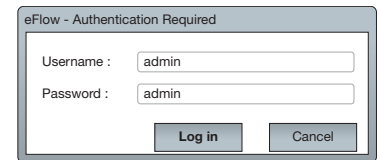
Fig. 4

Fig. 4a

4. Network Settings page will be displayed *(Fig. 4, pg. 4)*.
   a. Select the desired "IP Address Method". If using "STATIC IP" (recommended), you will need to input the "IP Address" manually. If using "DHCP", the IP Address will be assigned to LINQ2 automatically *(Fig. 4, pg. 4)*.
   b. Input "IP Address" matching the subnet of the network LINQ2 will be connected to.
      Contact the network administrator to obtain the correct values.
   c. Input the "Subnet Mask" IP for your network so the LINQ2 will be recognized within the network.
      If "DHCP" is selected, this value will be assigned automatically.
   d. Input the "Gateway IP" for the WAN communication.
   e. Input the "Inbound Port" number for HTTP/WEB communication.
   f. Click "Submit Network Settings" button, then Click "Reboot Server" to reboot the LINQ2 board *(Fig. 4, pg. 4)*.
      Changes will not take effect until the server is rebooted.

Network Settings:

Field Name	Field Description
IP Address Method	Static IP: User can set a fixed IP for network connection. DHCP: DHCP server in LAN will automatically an assign IP configuration for the network connection
IP Address	LINQ2 current IP Address. A static IP address must be set manually. If DHCP this value will be assigned automatically.
Subnet Mask	The subnet mask IP for your network so the LINQ2 will be recognized within the network. If DHCP is selected, this value will be assigned automatically.
Gateway	The IP address to the router or another device to allow the Internet access (required for remote access).
Inbound Port	Port number for HTTP/WEB communication.

LINQ2 is now ready to be connected to the LAN.

Initial Setup Via Ethernet Port (PC/Laptop Setup)

1. Connect a laptop to a LINQ2 board via a network cable.
2. Set Local Area Connection of your laptop to Static IP mode.
    Static IP address of the laptop must be assigned to the same network as the current IP address of LINQ2.
    The default IP address of LINQ2 units is 192.168.168.168.
    This manual assumes that it has not been changed by user.
For Windows XP:
a. Open Network Connections by clicking **Start** button, then clicking **Settings**, then clicking **Network Connections**.
b. Right click the **Local Area Connection**. Click **Properties**. Administrator permission required.
   If you are prompted for an administrator password or confirmation, type the password or provide confirmation.
c. Double click **Internet Protocol** (TCP/IP) menu item.
d. Choose the **Use the following IP address** option.
e. Set the IP address to 192.168.168.15 (or another valid IP address on the same network).
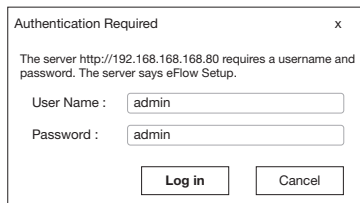f. Click **OK**. Close all windows.
For Windows 7:
a. Open Network Connections by clicking the **Start** button, clicking **Control Panel**, clicking **Network and Internet**, clicking **Network and Sharing Center**, and then clicking **Change Adapter Settings**.
b. Right click the **Local Area Connection** icon, and then click **Properties**. Administrator permission required.
   If you are prompted for an administrator password or confirmation, type the password or provide confirmation.
c. Click the **Networking** tab. Under this connection uses the following items, click either **Internet Protocol Version 4** (TCP/IPv4) and then click **Properties**.
d. Choose the **Use the following IP address** option.
e. Set the IP address to 192.168.168.15 (or another valid IP address on the same network).
f. Click **OK**. Close all windows.

Initial Network Configuration via Ethernet Port (LINQ2 Setup):

1. Open any major Internet Browser. For best results, please update your browser to the latest version.
2. Type http://192.168.168.168 in the URL window. Press "Enter". Status Page will be displayed.
3. Click Network Settings Tab to set up LINQ2 for LAN connection.
   If prompted for username and password, enter the correct values and click "Log In".

Fig. 5

Authentication Required	x

The server http://192.168.168.168.80 requires a username and password. The server says eFlow Setup.

User Name : admin

Password : admin

Log in   Cancel

The default values are:
username: admin
password: admin.

4. Select the IP Address Method. If using STATIC IP (recommended), you will need to input the IP address manually *(Fig. 6, pg. 6)*. If using DHCP, the IP address will be assigned to LINQ2 automatically.
5. Input IP address matching the subnet of the network LINQ2 will be connected to. Contact the network administrator to obtain the correct values.
6. Input the Subnet Mask IP for your network so the LINQ2 will be recognized within the network.
   If DHCP is selected, this value will be assigned automatically.

7. Input the Gateway IP for the WAN communication.
8. Input the Inbound Port number for HTTP/WEB communication.
9. Click "Submit Network Settings" button, then click "Reboot Server" to reboot the LINQ2 board *(Fig. 6, pg. 6)*.
   Changes will not take affect until the server is rebooted.

Fig. 6
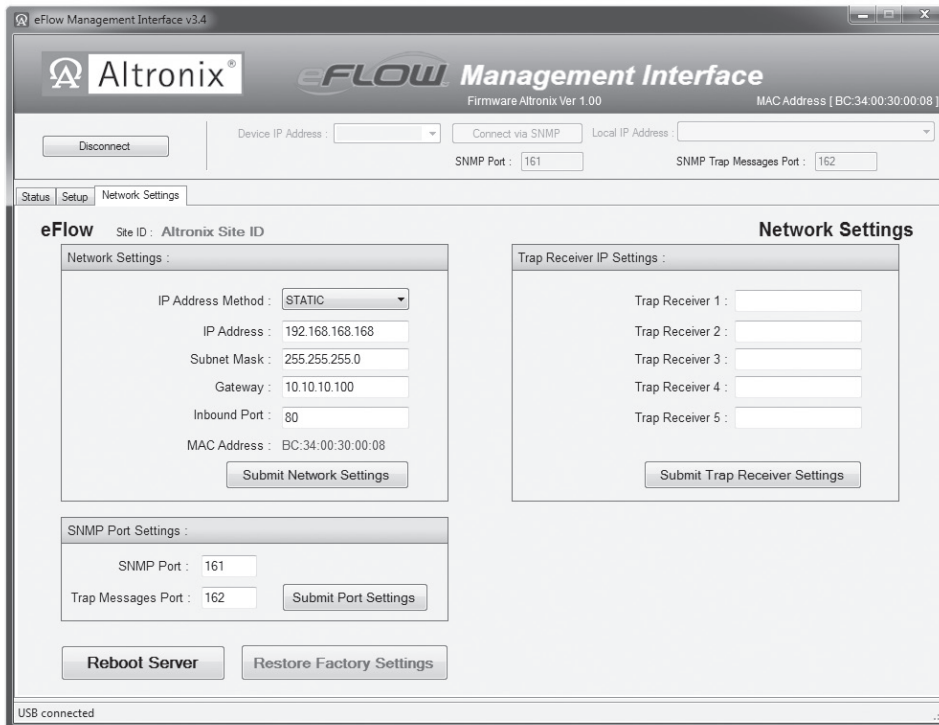
Additional information:
1. If using DHCP, all settings will be detected automatically.
   While DHCP is a useful tool for determining the network settings, if you set up your LINQ2 in this manner its IP address may change at different times for different reasons, particularly after a power failure. If the IP address of the LINQ2 changes, you may have difficulties accessing your LINQ2 locally and/or remotely.
   It is strongly recommended that you connect via host name when units configured as DHCP.
   Please do not set the DHCP address issued to the LINQ2 by the router as its static IP address unless you take specific steps that program your router to prevent such address conflicts.
2. If using a Static IP (recommended), you will need to input the information manually. In order for DDNS to work, you must enter valid data, compatible with your network, for all of the network setting fields: IP address, Subnet Mask, Gateway and Inbound Port.
3. If you are connecting through a router, make sure that you have 'opened up' all the required network ports in the port forwarding section of your router's setup options. That is, you have directed the router to send any incoming traffic using those IP ports to the LAN IP address of the LINQ2. Useful information about router port forwarding can be found at www.portforward.com. Different routers may use different terms for port forwarding function.
   For instance, D-Link calls it virtual server, Netopia calls it pinholes.
The default port for LINQ2 is: 80
Note: Port 80 is the default port used for web browsing. Because of this, in order to prevent the average user from hosting a web server, most ISPs BLOCK traffic using port 80 from reaching the average site. If you only plan to monitor your LINQ2 on a LAN, you can use port 80, and don't have to concern yourself with routers. However, if you desire remote access to your LINQ2, you MUST select functional ports and set up the port forwarding in your router. Other ports, such as 8080 and 8000 are sometimes blocked by ISPs as well. What port(s) should be used? There are 65,535 valid IP ports to choose from. These are broken down into three groups:

• Well Known Ports 0 through 1023
• Registered Ports 1024 through 49151
• Dynamic and/or Private Ports 49152 through 65535
So, rather than encounter a port conflict by choosing a port commonly used for another purpose (like port 25 for SMTP mail or port 448 for secure sockets), choose an 'unusual' port number. For example, add 50,000 to your house number: 50,123 is less likely to lead to a port conflict. For a list of the known and registered ports, see http://www.iana.org/assignments/port-numbers.

Configuring SNMP Trap Receiver Settings:

1. Connect to your LINQ2 board using either the eFlow Management Interface (see the "Connecting to LINQ2 using eFlow Management Interface" section of this manual) or by typing LINQ2 IP address into an internet browser's URL window. **The default IP address is 192.168.168.168.**
2. Open Network Settings tab *(Fig. 6, pg. 6)*.
3. Enter up to five IP addresses for the servers capable of receiving SNMP traps. The trap messages will be sent to the default SNMP port 161.
4. Click "Submit Trap Receiver Settings" button, then click "Reboot Server" to reboot the LINQ2 board. Changes will not take effect until the server is rebooted.

Configuring General and Unit Specific Settings:

1. Connect to your LINQ2 board using either the eFlow Management Interface (see the "Connecting to LINQ2 using eFlow Management Interface" section of this manual) or by typing LINQ2 IP address into an internet browser's URL window. The default IP address is 192.168.168.168.
2. Open Setup tab. If prompted for username and password enter the correct values and click "Submit". The default values are: username: admin, password: admin.

Site ID setting *(Fig. 7, pg. 7)*:
Site ID is used to identify installation site by name.
1. Enter any meaningful name of up to 32 characters long.
2. Click "Update Site ID".

Date and Time settings *(Fig. 7, pg. 7)*:
LINQ2 has an internal clock that must be configured to accurately stamp the Syslog and SNMP Trap messages. Click "Sync Date/Time with computer".

Fig. 7

Basic Power Supply Calibration *(Fig. 7, pg. 7)*:
When purchased factory installed, LINQ2 is pre-configured with the default calibration values for the enclosed power supplies. When purchased separately and installed on existing system, power supply calibration values must be set for each power supply to ensure proper monitoring.

To set the default calibration values for the power supplies your LINQ2 board is monitoring, select the correct power supply model numbers from the "Power Supply" drop down list for each power supply.

Note: If only one (1) eFlow power supply/charger is connected to the LINQ2 uncheck the box next to [Power supply 2].

Advanced Power Supply Calibration *(Fig. 7, pg. 7)*:
For the most precise power supply status monitoring, it is advised to use the Advanced Calibration Menu.
1. Click "Advanced Power Supply Calibration Settings" to display the existing output voltage and current values.
2. Measure voltage and current values at the main output of each power supply.
3. Click "Calibration" button across from each setting.
4. Enter the measured voltage and current values into the respective inputs.
5. Click "Calibration" button again to store the new values.

Switching Power Supplies main output *(Fig. 7, pg. 7)*:
Click "Shut down main output" to turn it's main output off, or "Turn on main output", to turn it back on.
This does not affect the auxiliary output.

Relay ID Setting *(Fig. 7, pg. 7)***:**
Relay ID is used to identify the function of each of the two (2) relays.
1. Enter the function of the associated relay.
2. Click update Relay ID.

Timer Settings *(Fig. 8, pg. 8)***:**
It is possible to set a time delay between the event happening and when the event is reported via SNMP trap.
1. Click Timer Settings link and set delay for each power supplies' AC, Battery and Output Fault event.

After all the settings have been made, click "Apply Settings" button at the bottom of the screen.
The new changes will not take effect until this button is pressed.

Fig. 8

Changing Security Settings:

Settings and Network Settings menus are protected by password when using web interface.
The default values are:
username: admin
password: admin
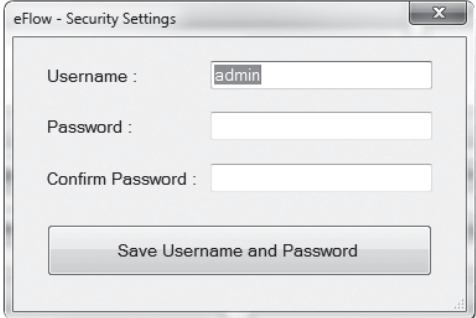
To Change The Default Security Settings *(Fig. 9, pg. 9)*:

1. Connect to your LINQ2 board by typing LINQ2 IP address into an internet browser's URL window.
   The default IP address is 192.168.168.168.
2. Open Setup tab. When prompted for username and password enter the correct values and click "Submit".
3. Click "Change Username and Password" link on the bottom of the page to open Security Settings dialog.
   Current username and password values will be displayed.
4. Enter the new values for username and password in the respective windows.
5. Click "Save username and Password" button.

Fig. 9

Connecting via SNMP:
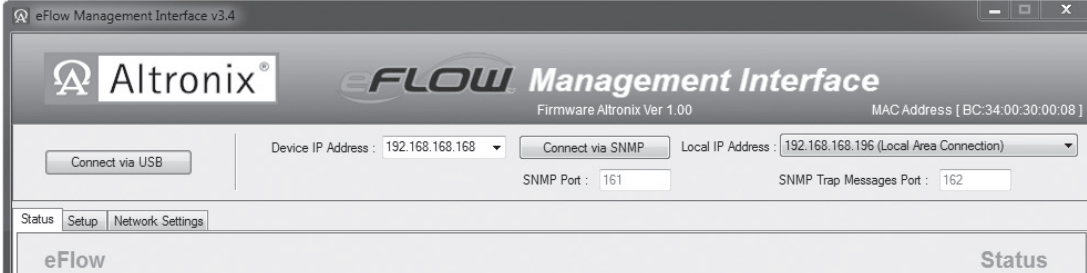
To connect via SNMP the LINQ2 network module must be connected to the facilities LAN.

1. Open the eFlow Management software.
2. Enter LINQ2 IP address into "Device IP Address" field *(Fig. 10, pg. 9)*.
3. Select the computer's IP address from the "Local IP Address" drop down menu *(Fig. 10, pg. 9)*.
4. Click "Connect via SNMP" button *(Fig. 10, pg. 9)*.
   Note: Both IP addresses subnet values must match in order to connect successfully.

Once the LINQ2 is connected to the network (LAN/WAN) trap messages will be receive by all assigned trap receivers.

Fig. 10

To setup remote SNMP trap messaging consult the facilities IT department for the required parameters.

Viewing Trap messages:

Trap messages can be viewed by clicking on the tab labeled TRAP MESSAGES. All received trap messages can be view in this field. Clicking on the button labeled Open Traps Log File will open a Notepad version of the Trap log which can be saved or printed.

Event Log Viewing and Setup:

The event log can be viewed via the web browser or SNMP connection by clicking on the tab labeled "Events Log". The web browser and SNMP event log must be setup separately.

Via Web Browser:

Event Log Setup *(Fig. 11, pg. 10)***:**
1. Click the button labeled "Filter Options".
2. Check the box next to each of the events to be logged.
3. Click the button labeled "OK" to save selections.

Fig. 11

To update the event log to the last recorded event click the "Display/Refresh Log" button *(Fig. 12, pg. 10)*.

Fig. 12

Heartbeat Timer Setup *(Fig. 13, pg. 11)***:**
The LINQ2 will send a trap message that it is maintaining a viable connection the network.
1. Click the button labeled "Heartbeat Timer Setting".
2. Select the desired time between heartbeat messaging in the Days, Hours, and Minutes or Second fields.
3. Click the button labeled "Submit" to save selections.

Fig. 13
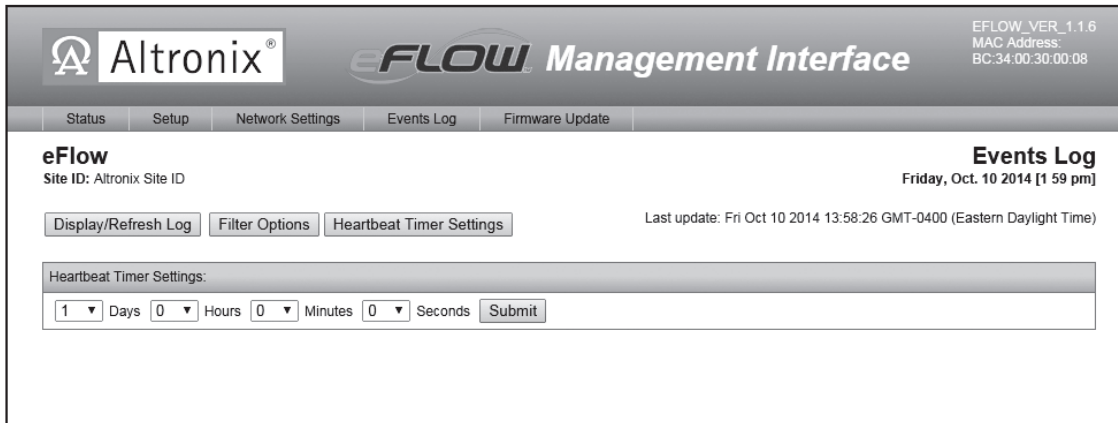
Via SNMP:

Event Log Setup *(Fig. 14, pg. 11)***:**
When viewing the log via SNMP all event occurrences will be displayed. A separate Event Report can be generated with selected events and saved in a selected folder for future review.
Events Report Setup:
1. Click the button labeled "Events Report Menu".
2. Check the box next to each of the events to be logged.
3. Enter the files identification in the field labeled "Name".
4. Click the Browser For a Folder button to locate where the file will be saved.
5. Click the "Generate Events Log Report" to save and view report.
6. When finished click the "Done" button to exit.
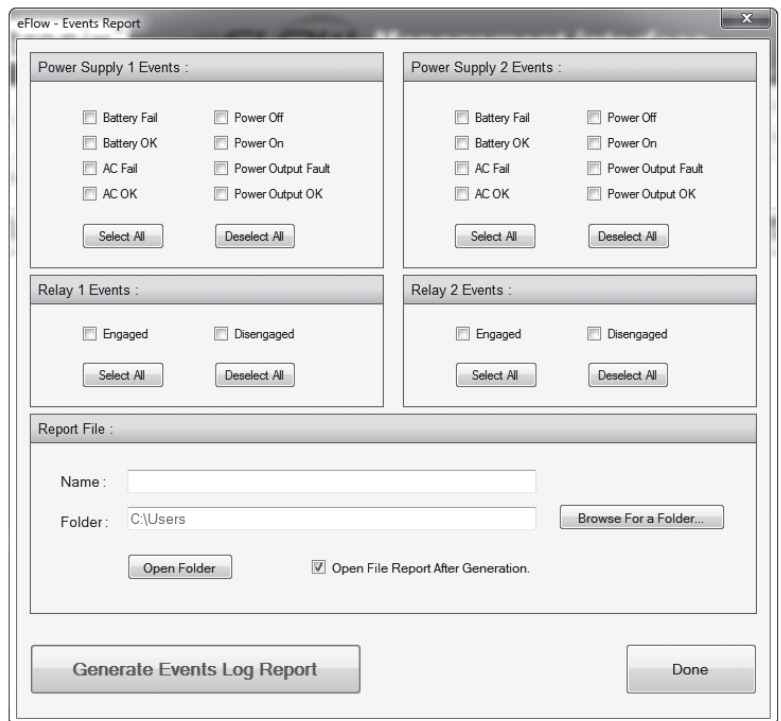
Fig. 14

Heartbeat Timer Setup *(Fig. 14a, pg. 11)***:**
The LINQ2 will send a trap message that it is maintaining a viable connection the network.
1. Click the button labeled "Heartbeat Timer Setting".
2. To clear previous programmed setting click the "Clear All" button.
3. Select the desired time between heartbeat messaging in Days, Hours, and Minutes or Second fields.
4. Click the button labeled "Apply Settings" to save selections.
5. When finished click the "Done" button to exit.

Fig. 14a
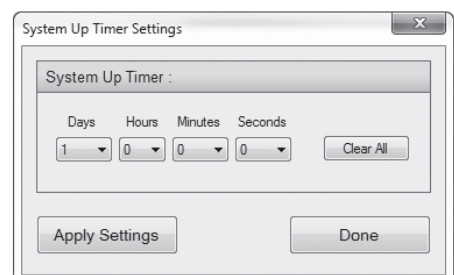
Email Alert Setup:

Consult the facilities IT department for the required parameters.

In Event Logs tab click the button labeled "Email Alerts settings".

Fig. 15

1. Sender Fields *(Fig. 15, pg. 12)*:
   a) Enter the address for the facilities SMTP email server in the Sender SMTP Server: field.
   b) Enter the email address assigned to the LINQ2 network module Sender Email Address: field.
   c) Enter the password assigned to the LINQ2 email address in the Sender Email Password: field.
   d) Enter the port number being used by the facilities email server in the Sender SMTP Port: field.
   e) If SSL is required click the box for SSL.

A separate Gmail account may be use if the facilities email server in unavailable *(Fig. 15a, pg. 12)*:
   a) Click the button labeled Use Gmail.
   b) Enter the email address assigned to the LINQ2 network module Sender Email Address: field.
   c) Enter the password assigned to the LINQ2 email address in the Sender Email Password:" field.
   d) All other field will automatically populate.

Sending a Test Email:
   a) Enter an email address in the Test Email Recipient: field.
   b) Click the button labeled "Send Test Email".
      If the test email is received the sender field is setup properly.

If not receive consult the facilities IT and repeat setup.
2. Add up to five email addresses in the Recipient's field.
3. Select events to send email alerts.
4. *Click the box next to Enable sending of Email Alerts.*
5. Click the button labeled "SAVE SETTING" to save.
6. When finished click the "Done" button to exit.

Fig. 15a

MEMBER