

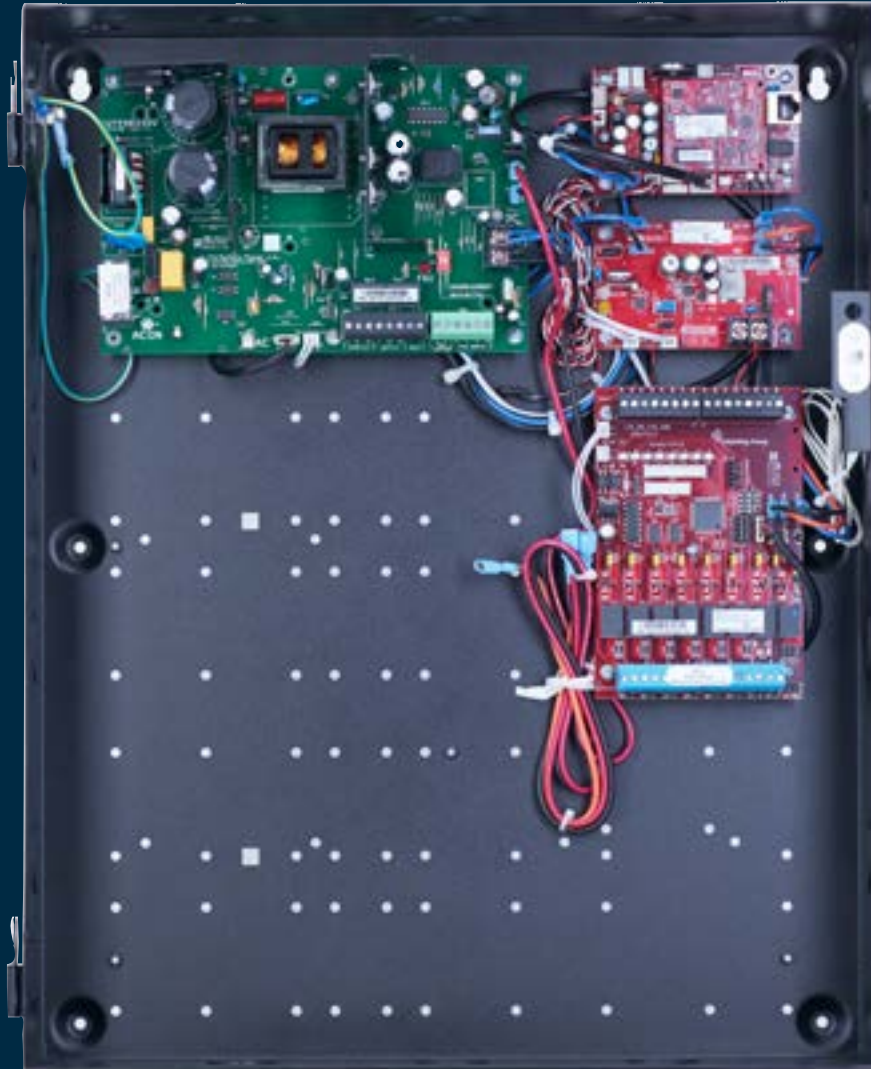
AQL Series Intelligent Power Systems

SECURITRON

ASSA ABLOY

Installation Instructions

Experience a safer
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Product Pages



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Introduction

Symbol Definitions

The following symbols are used throughout this manual:

	Shock Hazards within the enclosure. Service should only be performed by qualified service personnel.
	Important Information intended to help the installer avoid personal injury or property damage.

Warnings

	Installation and service should be performed only by qualified service personnel and should conform to all local codes.
	To reduce the risk of electric shock or fire, do not expose this equipment to rain or moisture.
	Replace fuses only with the same type and rating as indicated in the specifications section of this manual.
	This equipment shall be installed in a manner which prevents unintentional operation by employees, cleaning personnel, or others working in the premises, by falling objects, customers, building vibration, or similar causes.
	This equipment is not intended for use within the patient care areas of a Health Care Facility.
	To prevent impaired operation, ensure that all wiring is routed and secured to prevent accidental open or short circuit conditions.
	The system and any batteries (if used) should be tested at least once per year to ensure proper operation.
	Batteries (if used) should be maintained at an ambient temperature of between 32° and 120° degrees Fahrenheit (0°–49° Celsius) or premature loss of battery power could occur.
	Test and verify output voltage before connecting the load.

FCC Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and ICES-003. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Conventions Used Within this Manual

Positional information (e.g. top, bottom, up, down, left, right, etc.) is referenced with the board or enclosure in the orientation shown in the illustrations in this manual.

General Applications

- 1 The power supply must be installed within the protected area.
- 2 Connections to the SYS FLT, AC FLT, and FAI inputs shall be completed within the same room, not exceeding a length of 3 m.
- 3 Do not connect equipment to an AC power source that is controlled by a switch.
- 4 The power supplies shall be mounted in a UL Listed enclosure.
- 5 Trouble contacts shall be monitored by a listed alarm system.

The following sections cover specific requirements based on application:

UL1076, Proprietary Burglar Alarm Applications

- The Securitron tamper switch must be employed to monitor the power supply.
- To achieve 4 hours of standby at full load current, 80 Ah min. battery capacity is required for the AQL102 or AQL104. To achieve 4 hours of standby at full load current, 40Ah min. battery capacity is required for the AQL4 and AQL6.

S319, Access Control Applications

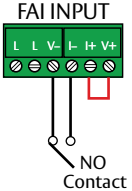
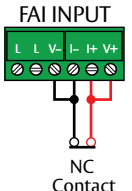
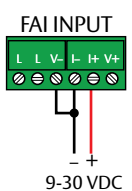
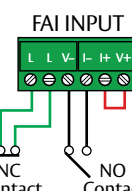
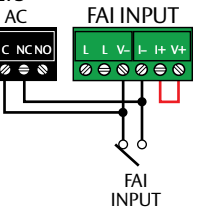
- The tamper switch must be employed to monitor the power supply.

For UL Compliance

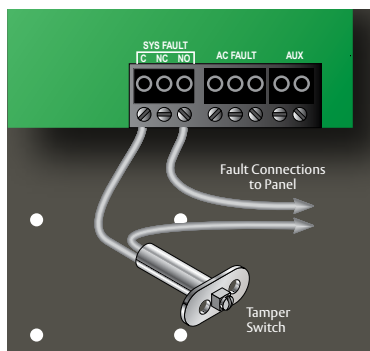
- Any locking device shall be configured for fail safe operation upon occurrence of an alarm as shown in Activation with a Normally Closed Relay Contact (see page 3), FAI Input Usage.

FAI Usage

The Fire Alarm Interface (FAI) is used to unlock doors during a fire alarm condition. The FAI input will accept various activation methods and must be wired as shown below.

	<h3>Activation with a Normally <u>Open</u> Relay Contact</h3> <p>FAI Activates when the NO contact CLOSSES. FAI Deactivates when the NO contact OPENS.</p>
	<h3>Activation with a Normally <u>Closed</u> Relay Contact</h3> <p>FAI Activates when the NC contact OPENS. FAI Deactivates when the NC contact CLOSSES.</p> <p>NOTE: FAI with a NC contact cannot be tested by removing the terminal strip, as this will remove the jumper wires from V+ and V- as well. To test, remove one wire going to the NC Contact.</p>
	<h3>Activation with a Voltage Input</h3> <p>FAI Activates when voltage is APPLIED in the correct polarity. FAI Deactivates when voltage is REMOVED.</p>
	<h3>Latching the FAI Input</h3> <p>Latching of the FAI Input is achieved by placing a NC contact across the two 'L' terminals. The FAI may be activated by any of the methods listed. FAI Deactivates when the input is deactivated AND the NC Latching contact is momentarily OPENED.</p> <p><i>Example — NO Contact activation with latching</i></p> <p>FAI Activates when the NO contact CLOSSES. FAI Deactivates when the NO contact OPENS AND the NC contact momentarily OPENS.</p>
	<h3>FAI Activation with a Normally Open Relay Contact and AQL AC Fault Lock Override</h3> <p>FAI Activates either, when the Fire Alarm NO contact CLOSSES, or when the AC Fault NC contact CLOSSES. FAI Deactivates either, when the Fire Alarm NO contact OPENS, or when the AQL AC Fault NC contact OPENS.</p>

Tamper Switch Wiring



Securiton AQL DC systems with an enclosure may include a normally closed tamper switch for monitoring by the host panel.

The tamper switch can either be brought into a dedicated input in the panel (see the panel's instructions), to the Event1 input of a Netlink Network Module (see page 26), or the tamper switch may be series connected into the System Fault relay in the AQL supply as shown in the illustration.

Any UL1076 installation must use the tamper switch to indicate the opening or removal of the front door of the enclosure.

AQL4, AQL6, AQL102/104 Power Supply Boards



Specifications

Certifications

- UL 294 Listed
- UL 603 Listed
- UL 1076 Listed
- ULC-S318 Listed
- ULC-S319 Listed
- CE Certified
- CSA C22.2 #107.1
- RoHS Compliant

Electrical

- Up to 91% efficiency

Environmental

- Operating Temperature: 32° to 120°F [0° to 49°C]

		AQL4	AQL6	AQL102	AQL104
AC Input	Voltage	120 VAC or 230 VAC at 50 – 60Hz			
	Current	1.8 A max	3.7 A max	3 A	5.7 A
Standby	Current	80 mA	150 mA	110 mA	160 mA
DC Output at 12 V Setting <i>(Auxiliary power-limited output rated at 1.5 A. Total current must not exceed max current)</i>	Voltage	11.3 – 12.0 V	11.2 – 12.0 V	11.3 – 12.0 V	
	Max Current	4 A	6 A	10 A	
	Ripple & Noise	120 mV	120 mV	120 mV	
	Regulation	±2%	±2%	±2%	
	Efficiency <small>(120 VAC 60 Hz In, Full Load, No Batt)</small>	82%	88%	89%	
Auxiliary Output (12 V)	Current	1.5 A max	1.5 A max	1.5 A max	
DC Output at 24 V Setting <i>(Auxiliary power-limited output rated at 1.5 A. Total current must not exceed max current)</i>	Voltage	23.5 – 24.0	23.2 – 24.0		23.4 – 25.0 V
	Max Current	3 A	6 A		10 A
	Ripple & Noise	240 mV	240 mV		240 mV
	Regulation	±2%	±2%		±2%
	Efficiency <small>(120 VAC 60 Hz In, Full Load, No Batt)</small>	83%	85%		91%
Auxiliary Output (24 V)	Current	1.5 A max	1.5 A max		1.5 A max
Battery	Size & Type	4 – 40 AH Lead Acid or Gel Cell	4 – 80 AH Lead Acid or Gel Cell	4 – 80 AH Lead Acid or Gel Cell	4 – 80 AH Lead Acid or Gel Cell
	Charge Current	1 A (±10%) maximum adjustable via DIP switch. 1.0 A high setting, 0.5 A low setting.	1.6 A (±10%) maximum adjustable via DIP switch. 1.6 A high setting, 0.8 A low setting.	1.6 A (±10%) max Charger current is 1.6 A max for high setting, 0.8 A max for low setting.	1.6 A (±10%) max Charger current is 1.6 A max for high setting, 0.8 A max for low setting.
	Low battery disconnect to prevent deep discharge	70% of nominal battery voltage			
Fuse Rating	Battery	ATM 15 A			
BTU Output	BTU/Hr	34 – 41	44 – 62	55	92
Fault Setpoints	Low AC	95 V (±6%)			
	Output Voltage	±10% of nominal			
Fault Relay Contacts	AC FLT	1 A at 24 VDC			
	SYS FLT	1 A at 24 VDC			
Board Size		6"L x 4"W x 2.5"H [152.4mm x 101.6mm x 63.5mm]	8.25"L x 5.5"W x 2.5"H [209.55mm x 139.7mm x 63.5mm]	8.25"L x 5.5"W x 2.5"H [209.55mm x 139.7mm x 63.5mm]	8.25"L x 5.5"W x 2.5"H [209.55mm x 139.7mm x 63.5mm]
Board Weight		.75 lbs	1.0 lbs	1.5 lbs	1.5 lbs
Enclosure Size	E1	14"H x 12"W x 4.5"D [355.6mm x 304.8mm x 114.3mm]			
	E2	20"H x 16"W x 4.5"D [508mm x 406.4mm x 114.3mm]			
Enclosure Weight	E1	14 lbs			
	E2	17 lbs			

Mounting Power Boards to the Enclosure

Mounting a Securitron Intelligent Power Board to an enclosure via the four snap-in standoffs supplied.

- 1 Locate the appropriate mounting holes in the enclosure and snap the standoffs into the holes.
- 2 Align the board mounting holes with the standoffs (be sure the PC board is properly oriented) and snap the board onto the standoffs.

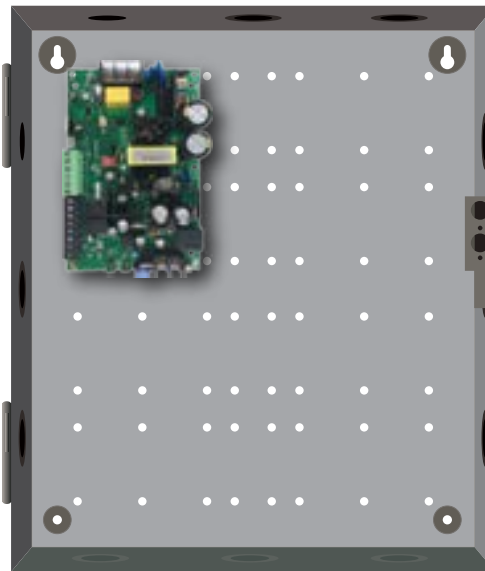


Intelligent Power Supply Board

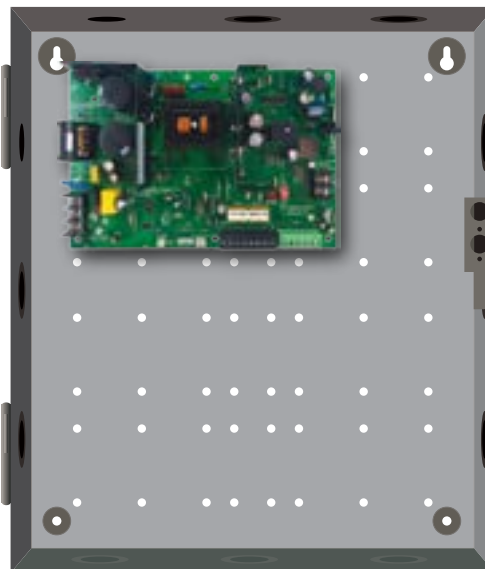
Mounting an Enclosure to a Wall

Use the following procedure when mounting a wall-mount enclosure.

- 1 (Optional) Remove the enclosure's cover.
- 2 Locate the top keyhole mounting holes in the back of the enclosure.
- 3 Mark and pre-drill the locations for the keyholes in the mounting surface.
- 4 Partially install two fasteners appropriate for the surface on which the enclosure is being installed. Leave the heads of the fasteners approximately 1/4" out from the surface. Minimum fastener size should be #10 or larger.
- 5 Hang the enclosure on the two fasteners and mark the locations of the remaining mounting holes.
- 6 Remove the enclosure and pre-drill the locations for the remaining mounting holes.
- 7 Re-hang the enclosure on the top mounting fasteners, start the remaining fasteners and tighten all fasteners.
- 8 Reinstall the enclosure's cover, if removed in Step 1.



AQL4



AQL6, 102, 104

WARNING: It is the installer's responsibility to determine the appropriate fastening system for use with the surface the enclosure is being mounted to.



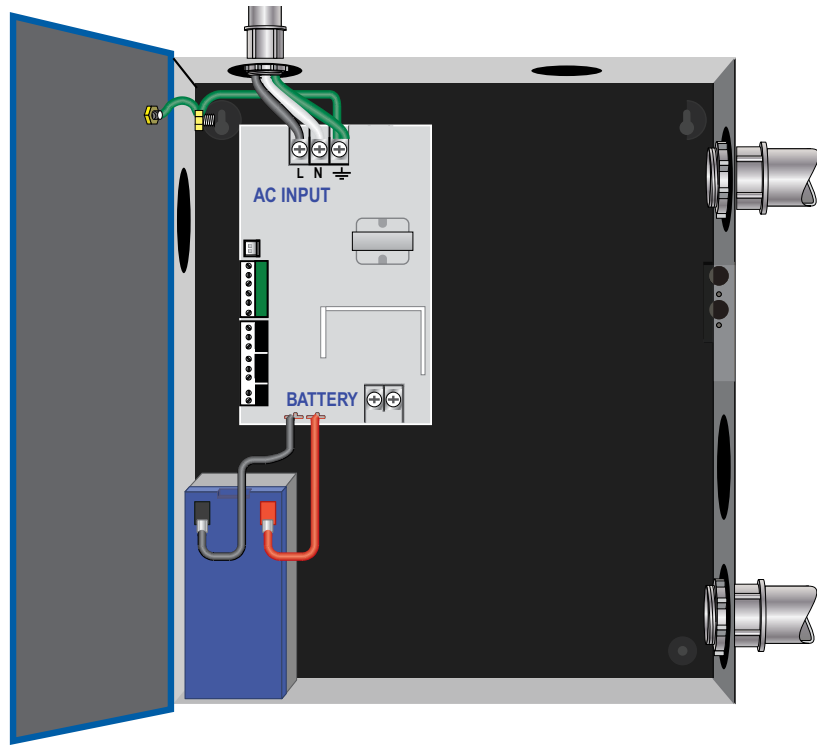
For UL1076 applications, after installation is complete, the installer must install the two supplied 1" long screws to the edge of the enclosure's cover for additional security.

Typical Installation & Wire Routing

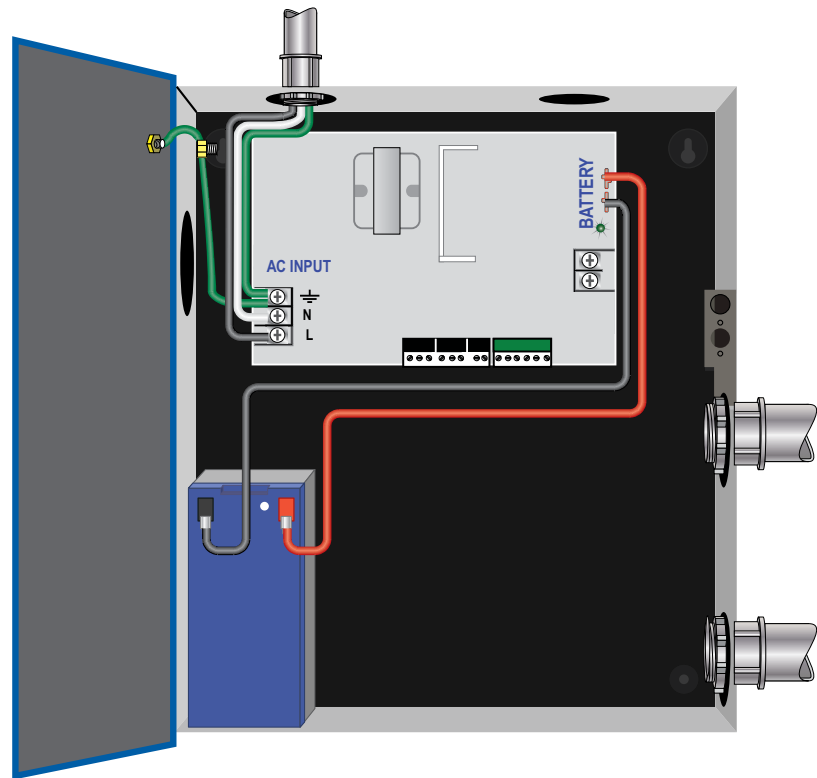
Actual configuration and wire routing will vary based on the components installed in your system.

The following guidelines should be followed for installation:

- Class 2 Power limited wiring must be separated from nonpower limited wiring by a minimum of 1/4" and must use separate knockouts.
- Any wiring passing through knockouts in the bottom or top surfaces of the enclosure must be enclosed in rigid or flexible metal conduit.
- **Canadian Installations** — For permanently connected equipment, a readily accessible disconnect device shall be incorporated external to the equipment (not shown). Output circuits not connected to removable terminal strips shall also utilize a readily accessible disconnect device.




AQL4



AQL6, 102, 104 (Typical installation)


AQL4 Power Supply Overview

- 1 AC Input Voltage Selection** — Leave INTACT for 120 V input. CUT for 230 V input.


 **WARNING:** Failure to cut this jumper when using the AQL with a 230 VAC input will result in damage to the system.

- 2 AC Input** — The primary AC connection. Cut Jp1 for 230 VAC input.

- 3 AC On LED (GREEN)** — Indicates a valid AC input voltage is present. Missing AC is indicated by this LED extinguishing.

 **WARNING:** Always confirm the absence of AC power with a meter before servicing to prevent electric shock.

- 4 Voltage Selection Jumper** — Selects the output voltage between 12 V and 24 VDC.

 **WARNING:** Remove AC input power before changing the voltage select switch to avoid damaging the power supply or connected equipment.

- 5 FAI LED (RED)** — Indicates activation of the Fire Alarm Input.

- 6 FlexIO Connector** — Supplies FAI status to any accessory boards. Receives fault signal from accessory boards.

- 7 FAI & Charge Current Configuration Switches**

SWITCH 1 — FAI Selection
OFF = Constant Output
ON = Output switches on FAI
SWITCH 2 — Charge Current
OFF = High Charge Current
ON = Low Charge Current

- 8 System Fault Contact** — Contact labeling is adjacent to the terminals and shown in the unpowered (FAULT) condition.


- 9 AC Fault Contact** — Contact labeling is adjacent to the terminals and shown in the unpowered (FAULT) condition. AC fault is indicated on a missing AC Input voltage.

- 10 Auxiliary Voltage** — A fixed Class 2 DC output.

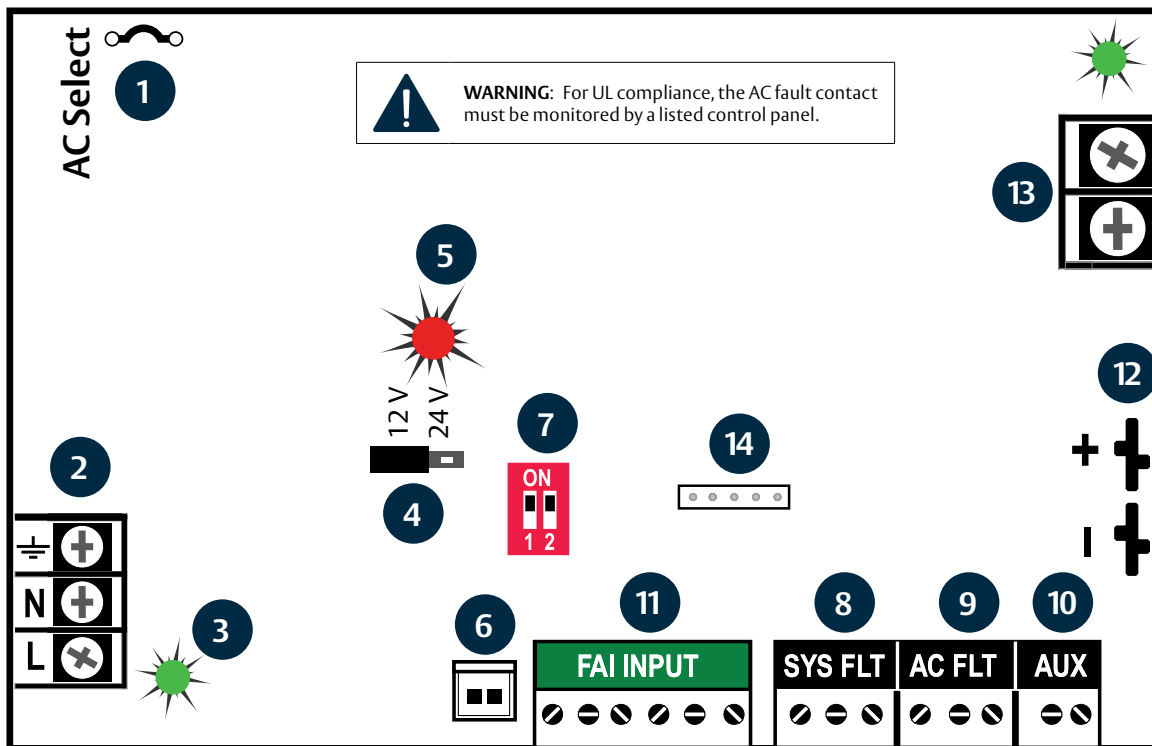
- 11 FAI Input** — The input from the FACP. Can be wired to accept a NO, NC, Open Collector, or Voltage input.

- 12 Battery Terminal Connection** — For the optional battery backup. Battery set voltage must match the DC output voltage setting.

- 13 Main Output** — Output of the power supply. The output can either be constant or switched based on the configuration setting of Switch 1.


 **WARNING:** Remove AC input power before changing the voltage select switch to avoid damaging the power supply or connected equipment.

- 14 DataLink Connection** — This connector allows optional programming and monitoring of the AQL power supply via an optional Netlink network module. *Reference instructions for the Netlink module for more information (see page 26).*




AQL6 Power Supply Overview

- 1 AC Input Voltage Selection** — Leave INTACT for 120 V input. CUT for 230 V input.

 **WARNING:** Failure to cut this jumper when using the AQL with a 230 VAC input will result in damage to the system.

- 2 AC Input** — The primary AC connection. Cut JP1 for 230 VAC input.

- 3 AC On LED (GREEN)** — Indicates a valid AC input voltage is present. Missing AC is indicated by this LED extinguishing.

 **WARNING:** Always confirm the absence of AC power with a meter before servicing to prevent electric shock.

- 4 FAI LED (RED)** — Indicates activation of the Fire Alarm Input.

- 5 FAI & Charge Current Configuration Switches**

SWITCH 1 — FAI Selection
OFF = Constant Output
ON = Output switches on FAI
SWITCH 2 — Charge Current
OFF = High Charge Current
ON = Low Charge Current

- 6 FlexIO Connector** — Supplies FAI status to any accessory boards. Receives fault signal from accessory boards.


- 7 System Fault Contact** — Contact labeling is adjacent to the terminals and shown in the unpowered (FAULT) condition.

- 8 AC Fault Contact** — Contact labeling is adjacent to the terminals and shown in the unpowered (FAULT) condition. AC fault is indicated on a missing AC Input voltage.

- 9 Auxiliary Voltage** — A fixed Class 2 DC output.


- 10 FAI Input** — The input from the FACP. Can be wired to accept a NO, NC, Open Collector, or Voltage input.

- 11 Main Output** — Output of the power supply. The output can either be constant or switched based on the configuration setting of Switch 1.

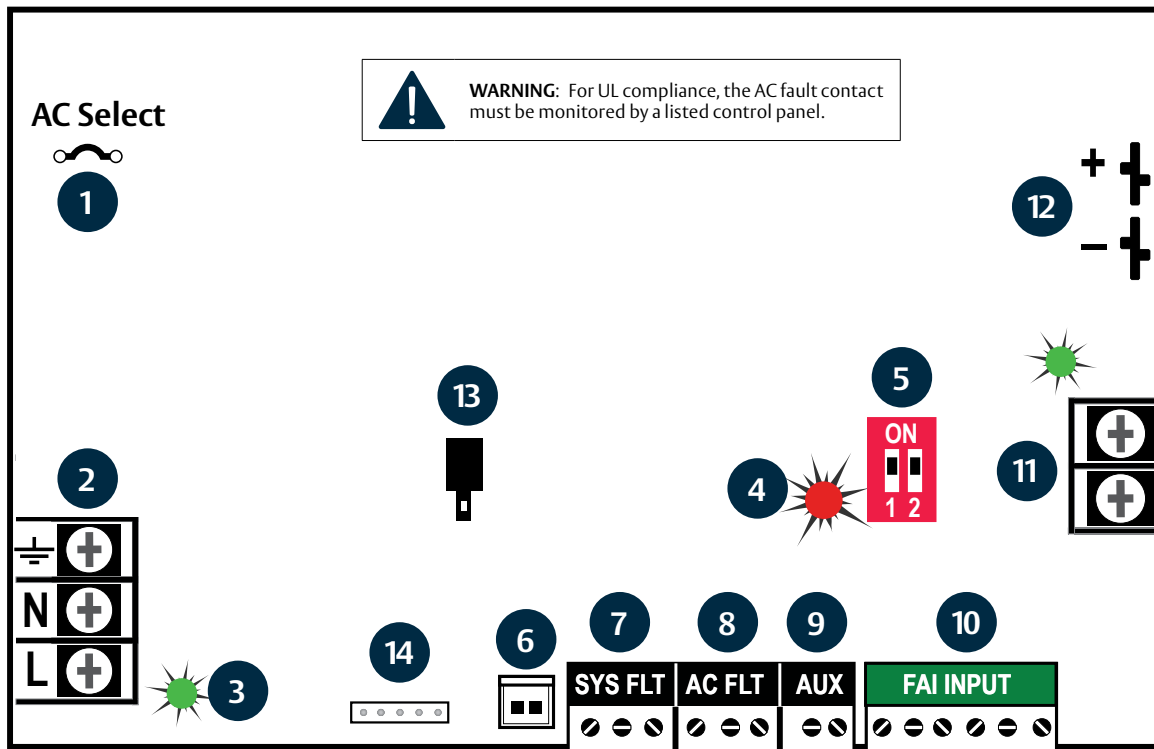
 **WARNING:** Remove AC input power before changing the voltage select switch to avoid damaging the power supply or connected equipment.

- 12 Battery Terminal Connection** — For the optional battery backup. Battery set voltage must match the DC output voltage setting.

- 13 Voltage Selection Jumper** — Selects the output voltage between 12 V and 24 VDC.


 **WARNING:** Remove AC input power before changing the voltage select switch to avoid damaging the power supply or connected equipment.

- 14 DataLink Connection** — This connector allows optional programming and monitoring of the AQL power supply via an optional Netlink network module. *Reference instructions for the Netlink module for more information (see page 26).*




AQL102/104 Power Supply Overview

- 1 AC Input Voltage Selection** — Leave INTACT for 120 V input. CUT for 230 V input.

 **WARNING:** Failure to cut this jumper when using the AQL with a 230 VAC input will result in damage to the system.

- 2 AC Input** — The primary AC connection. Cut JP1 for 230 VAC input.

- 3 AC On LED (GREEN)** — Indicates a valid AC input voltage is present. Missing AC is indicated by this LED extinguishing.

 **WARNING:** Always confirm the absence of AC power with a meter before servicing to prevent electric shock.

- 4 FAI LED (RED)** — Indicates activation of the Fire Alarm Input.

- 5 FAI & Charge Current Configuration Switches**

SWITCH 1 — FAI Selection
OFF = Constant Output
ON = Output switches on FAI

SWITCH 2 — Charge Current
OFF = High Charge Current
ON = Low Charge Current

- 6 FlexIO Connector** — Supplies FAI status to any accessory boards. Receives fault signal from accessory boards.

- 7 System Fault Contact** — Contact labeling is adjacent to the terminals and shown in the unpowered (FAULT) condition.

- 8 AC Fault Contact** — Contact labeling is adjacent to the terminals and shown in the unpowered (FAULT) condition. AC fault is indicated on a missing AC Input voltage.

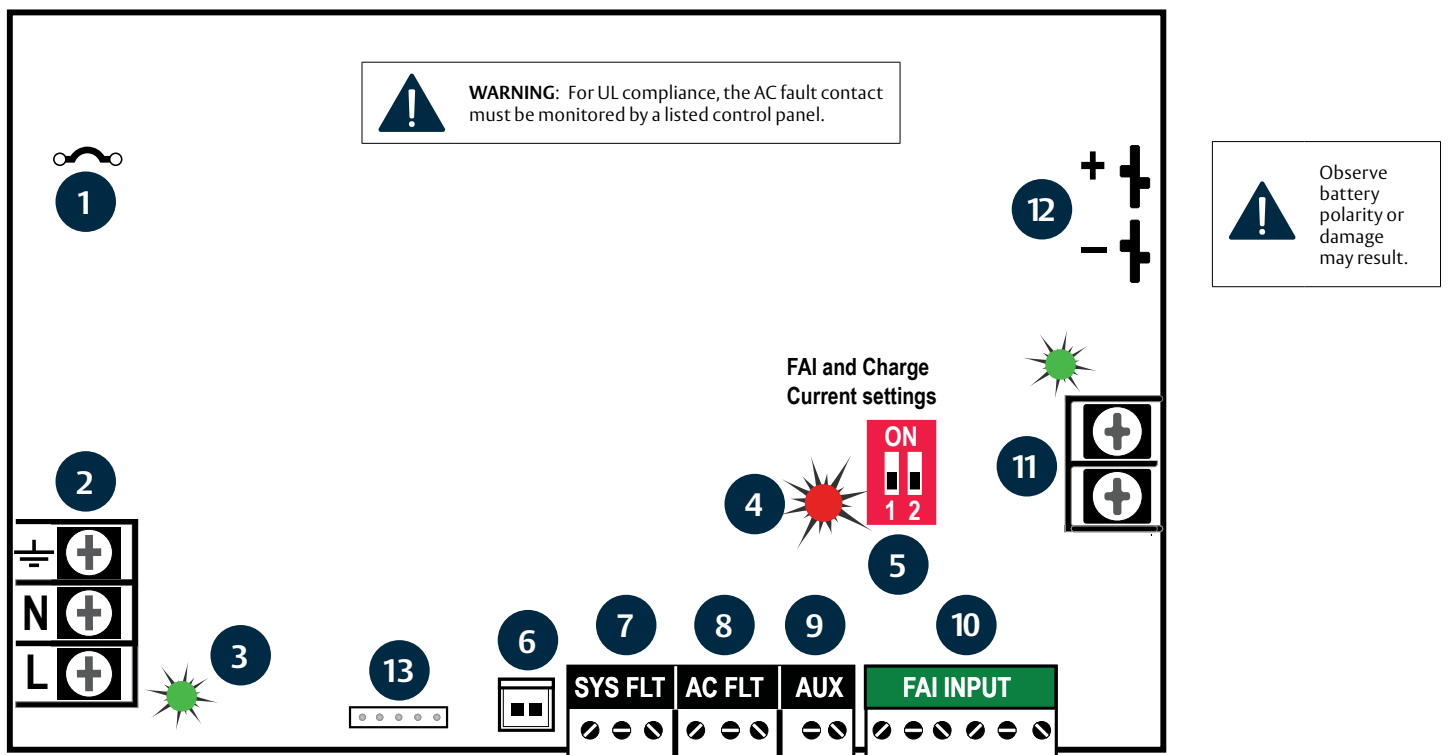
- 9 Auxiliary Voltage** — A fixed Class 2 DC output.

- 10 FAI Input** — The input from the FACP. Can be wired to accept a NO, NC, Open Collector, or Voltage input.

- 11 Main Output** — Output of the power supply. The output can either be constant or switched based on the configuration setting of Switch 1. The DC ON LED will light: GREEN 12 V | BLUE 24 V.

- 12 Battery Terminal Connection** — For the optional battery backup. Battery set voltage must match the DC output voltage setting.
 Power Supply Fixed Voltage:
 • AQL102: 12 V – AQL102
 • AQL104: 24 V – AQL104

- 13 DataLink Connection** — This connector allows optional programming and monitoring of the AQL power supply via an optional Netlink network module. *Reference instructions for the Netlink module for more information (see page 26).*



D8/D8P Power Distribution Module



Specifications

Certifications

- UL 294 Listed
- UL 603 Listed
- UL 1076 Listed
- ULC-S318 Listed
- ULC-S319 Listed
- CSA C22.2 #107.1
- RoHS Compliant
- CSFM Approved
- FCC Part 15, Subpart B
- CE Certified

Electrical

- 8 continuous outputs
- Input
 - Voltage: 5-24 VDC nominal
 - Current: 12 A maximum
 - Standby Current: 65 mA
- Output
 - Voltage: same as input
 - D8 Current: 3 A resistive
 - D8P Current: 2.5 A resistive
- Fuse
 - 3A: ATM automotive style (D8)

Shipping Weight

- .25 lbs

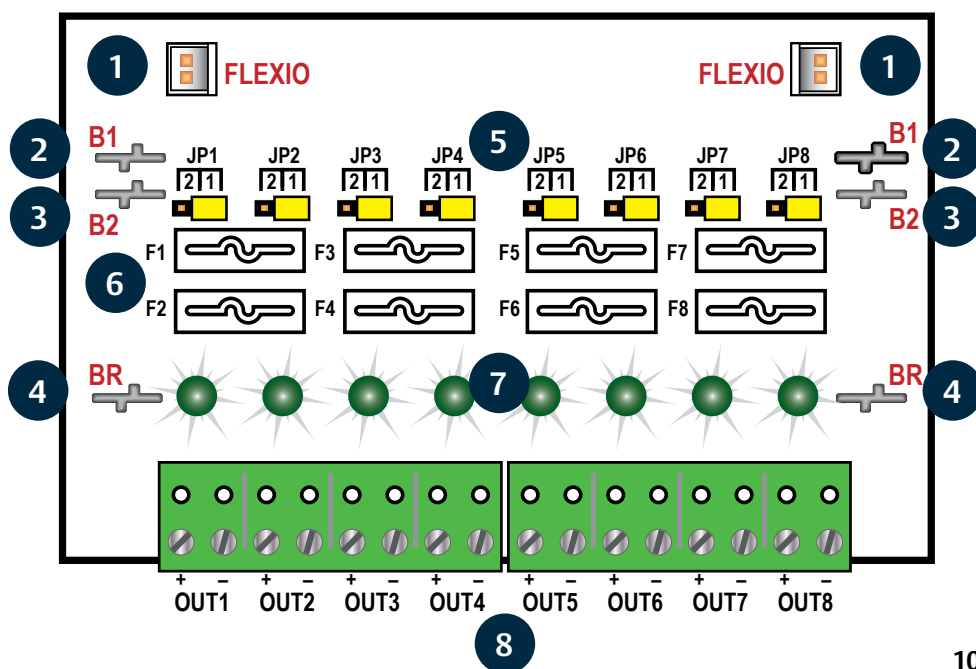
Dimensions

- 4" x 2.5" x 1"
[101.6mm x 63.5mm x 25.4mm]

Overview

- FlexIO Connectors** — These connectors pass the FlexIO buss through the D8 to other accessory boards in the system.
- B1 Connectors (J1 & J4)** — These fastons are for connection to the B1 voltage buss in the system. The voltage on the B1 buss comes from the main output of an AQL power supply. This voltage will be directed to any outputs whose Output Selection Jumper is set in the B1 position.
- B2 Connectors (J3 & J5)** — These fastons are for connection to the B2 voltage buss in the system. The voltage on the B2 buss comes from the main output of an AQL power supply in a dual voltage system. This voltage will be directed to any outputs whose Output Selection Jumper is set in the B2 position. If the D8 is being used in a single voltage system, these fastons can be left unused.
- BR Connectors (J2 & J6)** — The DC Common buss in the system. All boards in the system must have their BR fastons wired together for proper operation.
- Output Selection Jumpers (JP1–JP8)** — These jumpers select which voltage buss input is selected for the output. Jumper numbers correspond with the zone number (e.g. JP1 is the jumper for OUT1). Possible settings are as follows:
 - Position 2 (LEFT) — B2 Buss
 - Position 1 (RIGHT) — B1 Buss
 - Removed — Disable Output
- Output Fuses (F1–F8)** — When using the fused version of the D8, these are the fuses for each zone output. Fuse numbers correspond with the zone number (e.g. F1 is the fuse for OUT1). When using the PTC version of the D8, the fuse will be replaced with a soldered-in PTC.
- Output LEDs (D1–D8) (Dual Color – GREEN/BLUE)** — These LEDs indicate the availability of voltage on a zone's output. When voltage is available on the output terminals, the LED is lit. GREEN 12 VDC BLUE 24 VDC. LED numbers correspond with the zone number (e.g. D1 is the LED for OUT1).
- Zone Outputs (Out1–Out8)** — These are the zone output terminal strips. These terminal strips are removable and accept wire sizes from AWG 14 – AWG 22. The terminals are labeled on the PC board underneath the terminal strip.

WARNING: When powering magnetic loads such as maglocks, door strikes, solenoids, etc, each of these loads must have a reverse protection diode either built-in or external to the device.



R8 Power Power Relay Module



Specifications

Certifications

- UL 294 Listed
- UL 603 Listed
- UL 1076 Listed
- ULC-S318 Listed
- ULC-S319 Listed
- CSA C22.2 #107.1
- RoHS Compliant
- CSFM Approved
- CE Certified

Electrical

- Input
 - Voltage: 12 or 24 VDC nominal $\pm 15\%$
 - Current: 12 A maximum
 - Standby Current: .6 A at 12 V and .3 A at 24 V (all relays energized)
- Zone Input
 - Zone Count: 8
 - Max Current: 10 mA
- Zone Output
 - Zone Count: 8
 - Voltage: same as input
 - R8 Current: 3.0 A resistive

- R8P Current: 2.5 A resistive (Class 2 power LTD)
- Fuse
 - 3 A: ATM automotive style (R8)

Environmental

- Operating Temperature: 32° to 120°F [0° to 49°C]

Shipping Weight

- 1 lb

Dimensions

- 6" x 4" x 2.5" [152.4mm x 101.6mm x 63.5mm]

Overview

- FlexIO Connectors** — These connectors pass the FAI signal to the R8 board and pass the FlexIO buss on to other accessory boards in the system.
- B1, B2, and BR Connectors** — These connectors are the voltage inputs for the R8 board. BR is the DC Common buss in the system. B1 is the positive voltage input for the first power supply. In dual voltage systems, B2 is the input for the second power supply.
- Zone Inputs (IN1–IN8)** — These are the zone input terminal strips. These terminal strips are removable and accept wire sizes from AWG 14–AWG 22. The terminals are labeled on the PC board near the terminal strip (see page 12).
 - When using a normally open relay contact input, the contact is connected across the IN and GND terminals.
 - When using an open collector (transistor) input, the open collector is connected to the IN terminal. Note that the input source must be common grounded with the R8 board's power source.
- Voltage Selection Jumpers (YELLOW)** — These jumpers select the power input to be used for each output. For single voltage systems, this jumper should stay in the B1 position. This jumper should be removed on any zones where a dry contact output is needed.
- Relay State LEDs (RED)** — These LEDs indicate the state of the output relay. The LED will be lit when the relay is active and extinguished when the relay is not active.

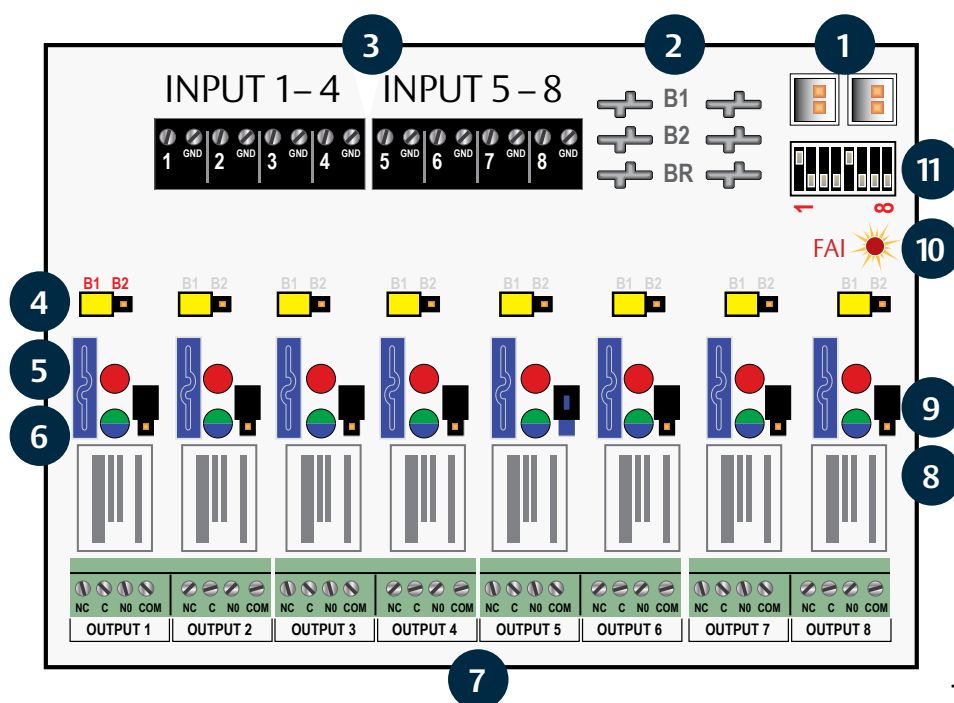
- Output Voltage LEDs (Dual Color – BLUE/GREEN)** — These LEDs indicate the voltage of the zone's output.
 - BLUE The output is set to 24 V
 - GREEN The output is set to 12 V
 - OFF Blown fuse, no fuse, or dry contact output selected
- Zone Outputs (01–08)** — These are the zone output terminal strips. These terminal strips are removable and accept wire sizes from AWG 14 – AWG 22. The terminals are labeled on the PC board near the terminal strip. See the Output Wiring section for more information. C, NC, and NO are the relay output. Details next page.

- Dry Output Selection (BLACK)** — When a dry contact output is needed, this jumper must be removed in addition to the yellow jumper for the zone. The output diodes must also be cut for the zone.




WARNING: When a dry contact output is needed, the Yellow and Black jumpers must be removed and the output diodes must be cut.

- Output Fuses (F1–F8)** — These are the fuses for each zone output. Fuse numbers correspond with the zone number (e.g. F1 is the fuse for OUTPUT1). Fuses are not in the circuit when the zone is being used as a relay contact output.



10 FAI LED (RED) — This LED indicates that the R8 has received an FAI signal from the AQL power supply through the FlexIO connector. When lit, any zones selected to respond to FAI will unlock.


11 FAI Selection Switches (SW1) — These switches select FAI for each output. Switch 1 is for Zone 1, Switch 2 for Zone 2, etc. When the switch is ON, the zone will unlock when an FAI is received.



WARNING: When powering magnetic loads such as maglocks, door strikes, solenoids, etc, each of these loads must have a reverse protection diode either built-in or external to the device.

Power Control Dry Contact Output

The outputs of the R8 have built-in reverse protection diodes. If a delay in lock release is present or if the zone is being used as a dry contact output, the diode from that zone may be removed from the circuit as shown below.



WARNING: Only remove the diodes from outputs requiring their removal.

Diode Removal

The diodes on the R8 are on the top side of the board between the output terminals and the edge of the board. To remove the diode from the output circuit, simply cut the exposed diode lead for the desired output zone — leave the diode body soldered to the PCB.

Input Wiring


Each input on the R8 has an “IN” terminal and a “GND” terminal.

- When using a NO relay contact to activate the input, the contact is placed across these terminals.
- To use a DC ground or an open collector (transistor) as an input, connect the ground/open collector to the “IN” terminal to activate the input. Note that the input source must be common grounded with the R8 board’s power source.

Output Wiring


Each output on the R8 has “NC”, “C”, “NO”, and “COM” terminals.

- When set for a dry contact output, the C, NC, and NO terminals may be used as any relay would. C to NC will have a connection when the red LED for the zone is not lit. C to NO will have a connection when the red LED is lit.

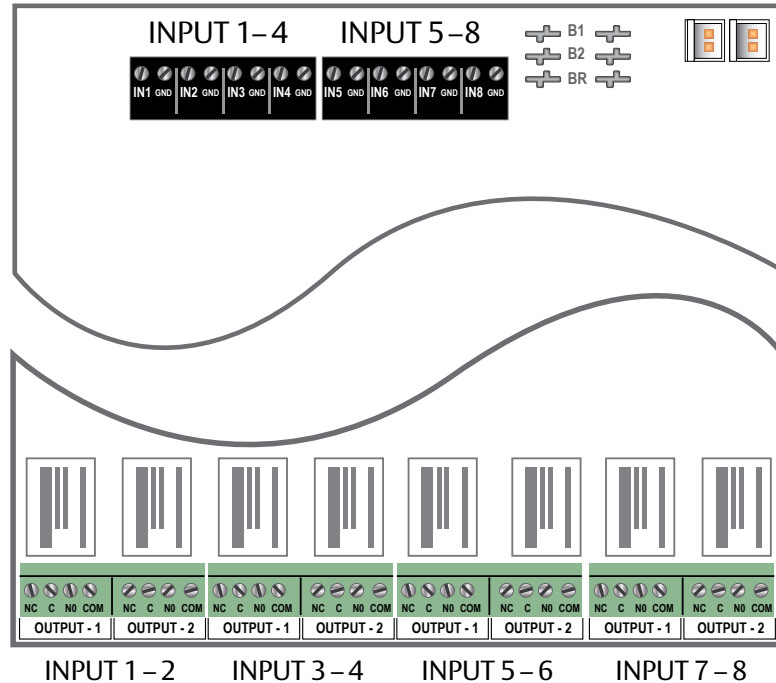


WARNING: To set the output as a dry contact, the yellow and black jumpers for the zone must be removed and the output diodes must be cut.

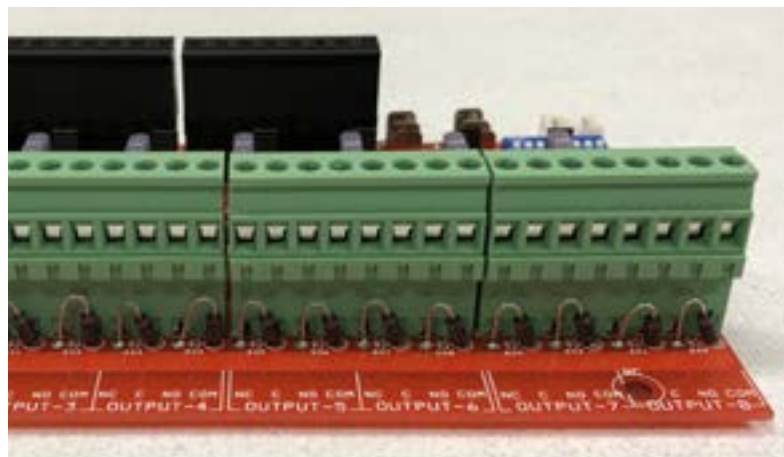
- When set for a voltage output, the terminal use is as follows:
 - **COM** — This is the Negative DC Common for the device being powered.
 - **C** — This terminal always has positive voltage, regardless of the relay state. This terminal may be used to power auxiliary devices such as REX or readers.
 - **NC** — This output has positive voltage when the relay is NOT ACTIVE. This terminal is used for FAIL SAFE locks.
 - **NO** — This output has positive voltage when the relay is ACTIVE. This terminal is used for FAIL SECURE locks.



WARNING: Other Securitron Power Boards (not part of AQL series) use C as a negative DC common.



Input Wiring



Output Wiring

B100 Secondary Voltage Module



Specifications

Certifications

- UL 294 Listed
- UL 603 Listed
- UL 1076 Listed
- ULC-S318 Listed
- ULC-S319 Listed
- CSA C22.2 #107.1
- RoHS Compliant

Electrical

- Input
 - Voltage: 8-25 V (Must be at least 3 V above output voltage setting)
 - Current: 3.5 A maximum
 - Standby Current: 35 mA
- Output
 - Voltage: 4.7-23 V
 - Current: 4 A maximum (Class 2 power limited)
- Fuse
 - 7.5 A ATM automotive style

Shipping Weight

- .2 lbs

Dimensions

- 4" x 2.5" x 1.75"
[101.6mm x 63.5mm x 44.5mm]

Description


The Securitron B100 provides an additional voltage in a Securitron AQL power system. This voltage can either be accessed directly via the B100's terminals or through other AQL Accessory Boards. The B100's input

is typically supplied by the B1 buss in the system, allowing the AQL's battery set to back up the B100's output voltage without the need for a second battery set. Output settings for the B100 include a fixed 12 V


setting and an adjustable setting of 5 to 18 V. Multiple B100s can be added to a system for virtually unlimited voltage combinations.

Overview

- DC IN Connectors (J1 & J4)** — These fastons are the input to the B100. Either faston may be used as the input. Two connections are provided to allow this voltage to pass through to other accessory boards in the system. This input voltage must always be at least 3 volts above the output voltage setting for the B100 to maintain its output.
- DC OUT Connectors (J2 & J5)** — These fastons are the output of the B100 for connection to other accessories in the system. This output may be considered as an equivalent to the main output of an AQL power supply. Either or both DC OUT fastons may be used in the system.


 **WARNING:** Ensure there are no other voltage sources connected to the buss before powering the system or damage WILL occur.

- BR Connectors (J3 & J6)** — The DC Common buss in the system. All boards in the system must have their BR fastons wired together for proper operation.
- DC IN LED (D1) (BLUE/GREEN)** — This LED indicates the availability of voltage on the DC IN Buss. When voltage is available on the buss, the LED is lit. This LED is bi-color and indicates the input voltage as follows: GREEN – 12 V Input | BLUE – 24 V Input.

 **WARNING:** LED colors are range based. Voltage Less than 13 V will show Green. Voltage above 20V will show Blue. Voltage between 13 and 20 may show either voltage or a combination Green & Blue. Always verify voltage with a voltmeter.

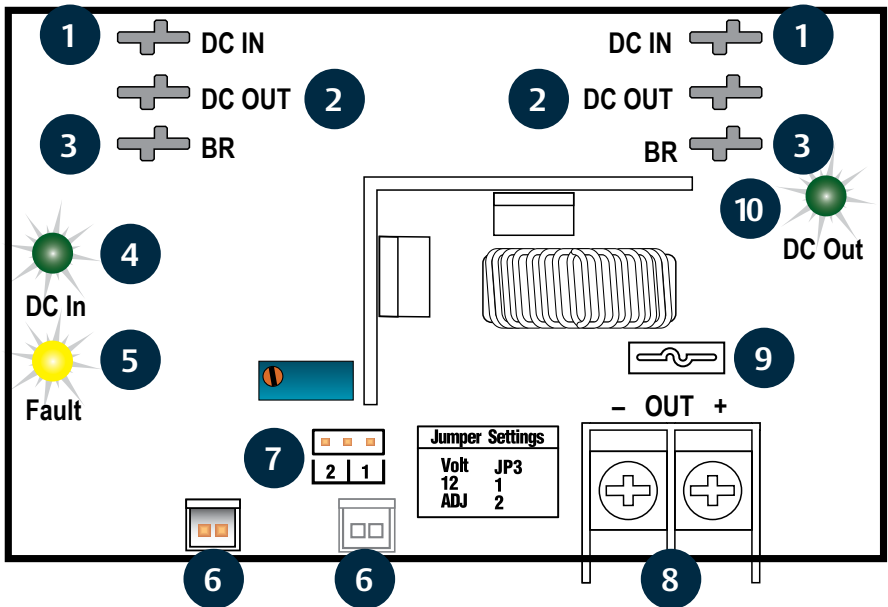
- FAULT LED (D7) (YELLOW)** — This LED lights when the B100 detects a fault condition. This fault condition also transmits to the AQL power supply. Fault conditions detected include ruptured output fuse, no output, output overload, or output voltage out of regulation.

- FlexIO Connectors (JP1 & JP2)** — These connectors allow the fault status of the B100 to be transmitted to the AQL power supply and pass the FlexIO buss on to other accessory boards in the system.
- Output Voltage Selection (JP3 & VR1)** — This jumper selects the output voltage for the B100 and the potentiometer sets the output voltage when in the adjustable range. In adjustable range, voltage may be set from 5 to 18 VDC. *Possible jumper settings are as follows:*
 - 12 V Out JP3 Position 1
 - Adjustable Output JP3 Position 2

 **WARNING:** The VR1 potentiometer will have no effect unless the jumper is set for the adjustable range.

The input must be at least 3 V above the output voltage setting or the B100 will display a fault condition. It may be helpful to temporarily set the input power supply to 24 V (Remove load devices first) before setting the B100 output voltage.

- DC Output** — This is the output terminal strip. This terminal strip is nonremovable and accepts wire sizes from AWG 12 – AWG 22. The terminals are labeled on the PC board by the terminal strip.
- Output Fuse (F1)** — This fuse protects the DC Output terminals. It does not protect the DC OUT faston.
- DC OUT LED (D4) (GREEN)** — This LED indicates the availability of voltage on the DC OUT Buss. When voltage is available on the buss, the LED is lit.



Current Loading

Power drawn from the B100 subtracts from the power available from the AQL supplying the B100. The most accurate way to determine the draw from the AQL is to calculate the actual power draw and factor in the efficiency of the B100.

$$PI = PO * 1.15$$

Where:

- **PI** = Input power of the B100
- **PO** = Output power draw on the B100

MAX POWER AVAILABLE	12V	24V
AQL4	48 W	72 W
AQL6	72 W	144 W
AQL102	120 W	—
AQL104	240W	—

Current Load Examples

Example 1 What size AQL power supply do you need to create a dual voltage power supply system providing 24 V at 2 A and 12 V at 2 A?

- 1 Determine current load: $12\text{ V} \times 2\text{ A} = 24\text{ W} \times 1.15 = 27\text{ W} \mid 24\text{ V} \times 2\text{ A} = 48\text{ W}$
- 2 $27\text{ W} + 48\text{ W} = 75\text{ W}$ current load
- 3 Find AQL power supply rating: 144 W for AQL6 \mid 240 W for AQL104
- 4 Use AQL6 or AQL104 to meet the system's power needs.

Example 2 An AQL4 is powering a B100. The B100 is set for an output of 12 V and has 3 A total load connected. How much power is available from the AQL4?

- 1 Determine current load: $12\text{ V} \times 3\text{ A} = 36\text{ W} \times 1.15 = 41\text{ W}$
- 2 Find AQL power supply rating: 48 W for the AQL4
- 3 Subtract current load from power supply rating: $48\text{ W} - 41\text{ W} = 7\text{ W}$ available from AQL power supply.

Example 3 What size AQL power supply do you need to create a dual voltage power supply system providing 24 V at 4 A and 5 V at 2 A?

- 1 Determine current load: $5\text{ V} \times 2\text{ A} = 10\text{ W} \times 1.15 = 11\text{ W} \mid 24\text{ V} \times 4\text{ A} = 96\text{ W}$
- 2 $11\text{ W} + 96\text{ W} = 107\text{ W}$ current load
- 3 Find AQL power supply rating: 144 W for AQL6
- 4 Use an AQL6 to meet the system's power needs.

Connecting the B100



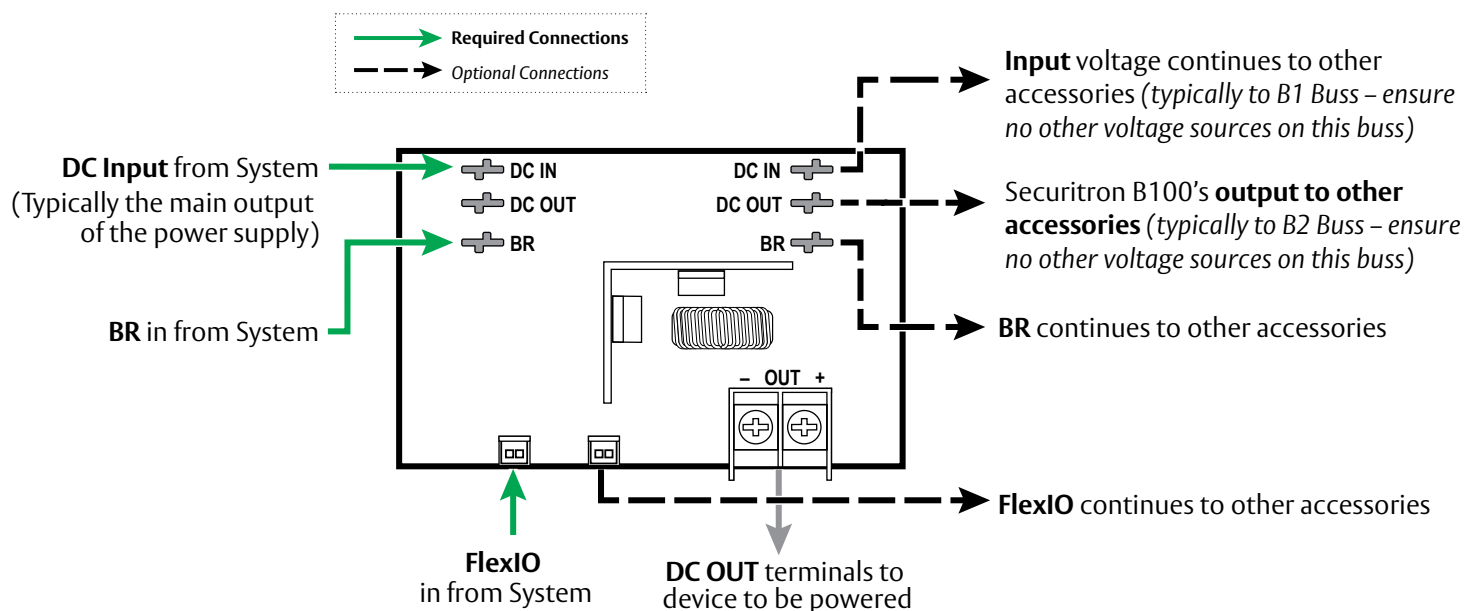
Remove all AC and battery power from the AQL system before adding or replacing a B100 board.



Observe polarity of the DC IN and BR Connections or damage to the system could occur.



WARNING: The DC IN, DC OUT, and BR terminals run through the board for daisy chaining and each terminal set is interchangeable from a functional standpoint. Either DC IN may be used, either DC OUT may be used or either BR may be used interchangeably.

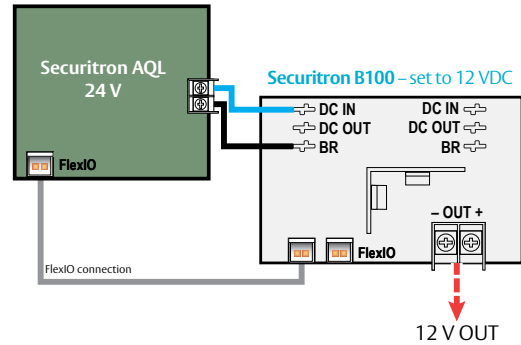


Application Examples

Dual Voltage 24 V | 12 V

Using:

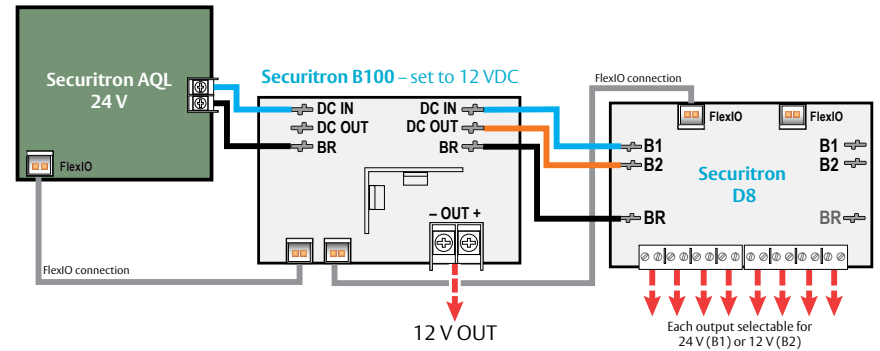
- One (1) AQL Power Supply
- One (1) B100 Secondary Voltage Module



Dual Voltage 24 V | 12 V

Using:

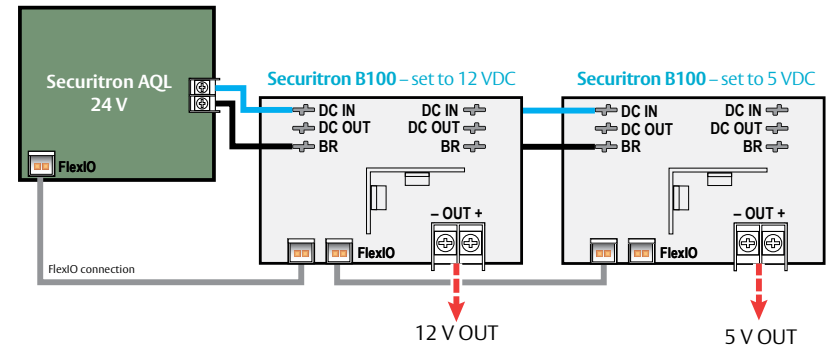
- One (1) AQL Power Supply
- One (1) B100 Secondary Voltage Module
- One (1) D8/D8P Power Distribution Module



Multi Voltage 24 V | 12 V | 5 V

Using:

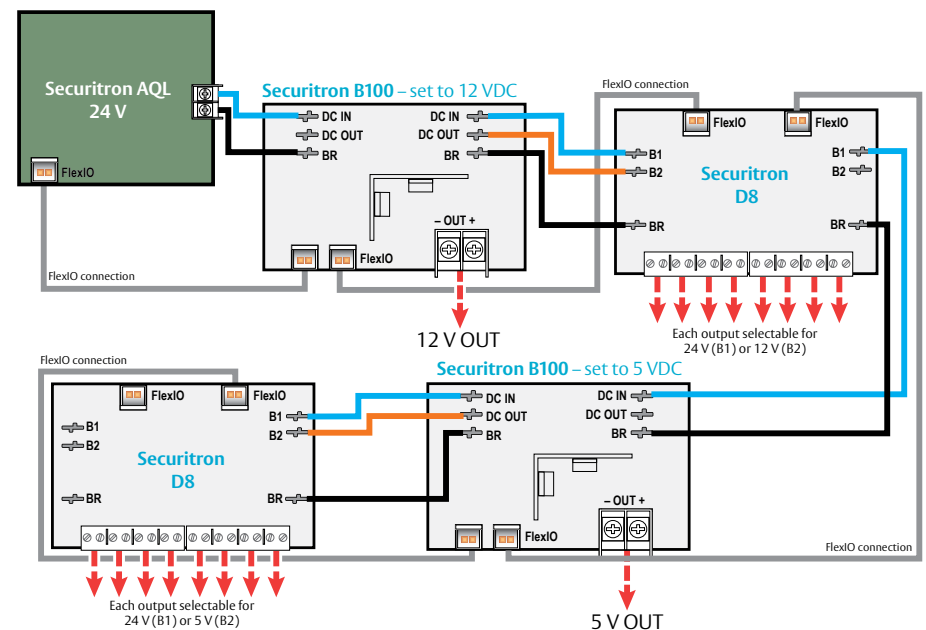
- One (1) AQL Power Supply
- Two (2) B100 Secondary Voltage Modules



Multi Voltage 24 V | 12 V | 5 V

Using:

- One (1) AQL Power Supply
- Two (2) D8 Power Distribution Modules
- Two (2) B100 Secondary Voltage Modules



M8 Managed Power Control Module



Specifications

Certifications

- UL 294 Listed
- UL 603 Listed
- UL 1076 Listed
- ULC-S318 Listed
- ULC-S319 Listed
- CSA C22.2 #107.1
- RoHS Compliant
- CE Certified

Electrical

- Input
 - Voltage: 12 or 24 VDC nominal
 - Current: 12 A maximum
 - Standby Current: 300 mA (*all relays energized*)
- Zone Input
 - Zone Count: 8
 - Max Current: 10 mA
- Zone Output
 - Zone Count: 8
 - Voltage: same as input
 - M8 Current: 3.0 A resistive
 - M8P Current: 2.5 A resistive (Class 2 power LTD)
- Fuse
 - 3 A: ATM automotive style (M8)

Environmental

- Operating Temperature: 32° to 120°F [0° to 49°C]

Shipping Weight

- 1 lb

Dimensions

- 6" x 4" x 2.5" [152.4mm x 101.6mm x 63.5mm]

Description

The M8 power control modules add 8 zones to a Securitron AQL power supply system for powering and monitoring locks, cameras, or other critical devices. The M8 MUST be used with Netlink network

module. The M8 accepts either one or two voltage sources, either of which are selectable for each output. Each input is fully programmable via software to accept a voltage, dry contact, or open collector

input. Each zone output is selectable via software for FAI operation, constant output, maglock output, or door strike outputs. Dual color LEDs indicate the output voltage for each zone — Green/12V or Blue/24V.

Overview

1 Zone Inputs (INPUT 1–8)

These are the zone input terminal strips. These terminal strips are removable and accept wire sizes from AWG12 – AWG22. The terminals are labeled on the PC board near the terminal strip. See the Input Wiring section for more information.

- When using a dry contact input, the contact is connected across the A and B terminals. It is normal to measure a voltage across these two terminals. This voltage is current limited and will not damage the activation contact.
- When using a voltage input, the voltage is connected to the B terminal. The activation voltage must be common grounded with the system voltage. The activation voltage must be between 12 and 24VDC nominal. Do not connect anything to the A terminal of the input.
- When using an open collector (transistor) input, place a jumper across the A and B terminals and connect the open collector to the B terminal. Note that the input source must be common grounded with the M8 board's power source.

2 FlexIO Connectors

These connectors pass the FAI and Fault signals to and from the M8 board and pass the FlexIO buss on to other accessory boards in the system.

3 Output LEDs

(OUTPUT STATUS 1–8) — Green/Blue
These LEDs indicate the voltage and status of the zone's output. LED numbers correspond with the zone number (e.g. LED 1 is the LED for Output 1). These LEDs are dual color and indicate the voltage as follows:

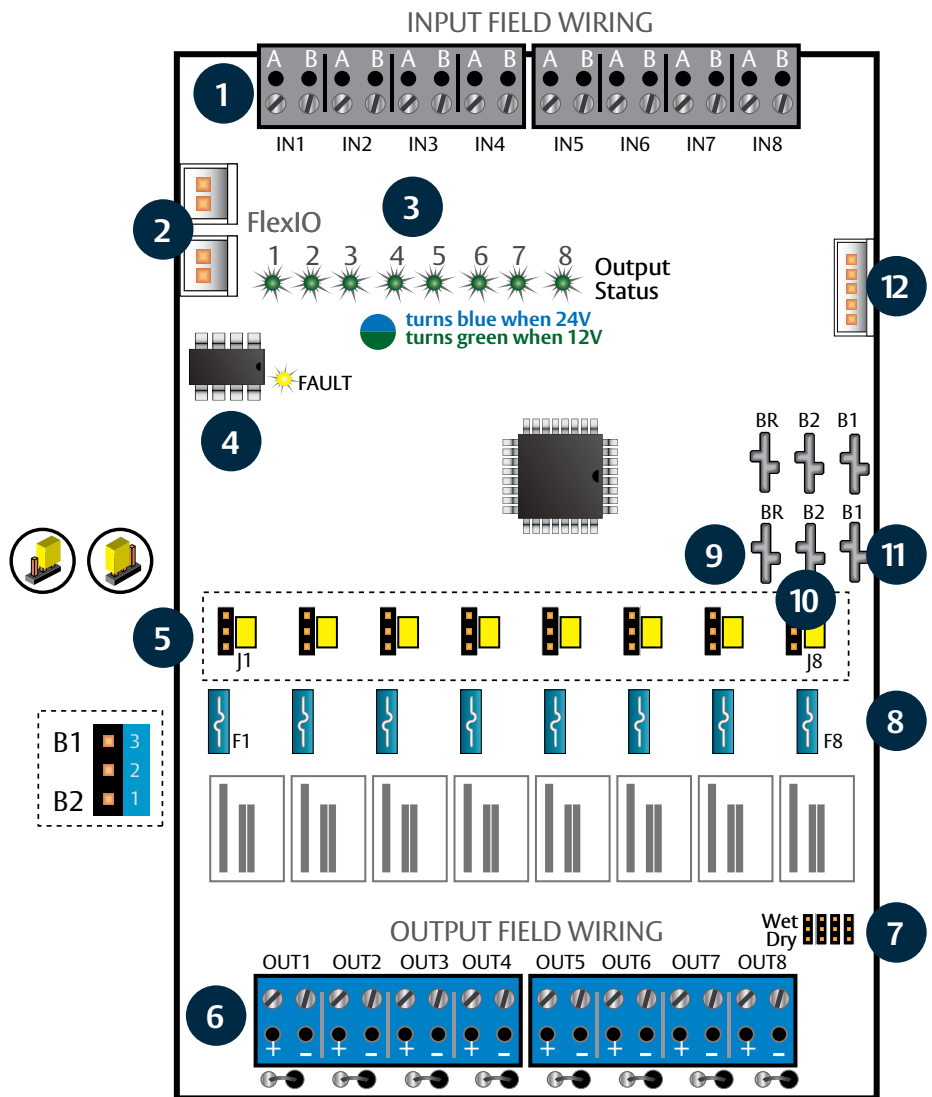
- **Blue** Output is set for 24V
- **Green** Output is set for 12V
- **Off** Fuse or PTC open

When Powering Lock Devices:

- **On Steady** Door Locked (Fuse or PTC Intact)
- **Slow Flashing (1 per second)** Door Unlocked (Either due to Zone Input or FAI)
- **Fast Flashing (4 per second)** Fault Detected on Zone

When Set for Constant Output:

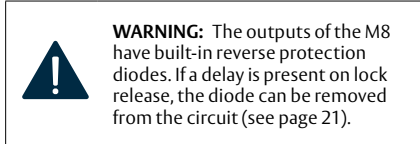
- **On Steady** Output Powered (Fuse or PTC Intact)
- **Slow Flashing (1 per second)** Output Unpowered (Due to FAI)
- **Fast Flashing (4 per second)** Fault Detected on Zone



Overview

- 4 Fault LED (FAULT) – Yellow** — This LED lights when the M8 detects a ruptured output fuse or other fault condition (including a tripped upper or lower limit exceeded) — See M8 Programming section section of the full manual for more information). This fault condition also transmits to the main power supply.
- 5 Buss Selection Yellow Jumpers (1–8)** — The M8 can accept up to two power supply inputs connected to B1 and B2. This jumper selects which of the two power supply inputs are used for the zone’s output. If only a single power supply is being used, set this jumper for Position 1.
- **B1** — This position selects the power supply connected to the B1 input of the M8 board.
 - **B2** — This position selects the power supply connected to the B2 input of the M8 board.

- 6 Zone Outputs (OUTPUT 1–8)** — These are the zone output terminal strips. These terminal strips are removable and accept wire sizes from AWG12-AWG22. The terminals are labeled on the PC board near the terminal strip. See the Output Wiring section for more information.



- 7 Zone 8 Wet / Dry Output Selection (J25–J28)** — Zone 8 of the M8 is able to be set as a dry contact output . Factory default setting is all four jumpers set to “Wet” . To set the zone as a dry output, all four jumpers must be set to “Dry”.
- 8 Output Fuses (F1–F8) – Optional** — When using the fused version of the M8, these are the fuses for each zone output. Fuse numbers correspond with the zone number (e.g. F1 is the fuse for OUT1). When using the PTC version of the M8, the fuse will be replaced with a soldered-in PTC.
- 9 BR Connectors (J5 & J6)** — The DC Common buss in the system. All DC boards in the system must have their BR fastons wired together for proper operation.

- 10 B2 Connectors (J7 & J8)** — These fastons are for connection to the B2 voltage buss in the system. The voltage on the B2 buss comes from the main output of a power supply or the DC OUT faston of a B100 secondary supply in a dual voltage system. This voltage will be directed to any outputs whose Buss Selection Jumper is set in the B2 position. If the M8 is being used in a single voltage system, these fastons can be left unused.

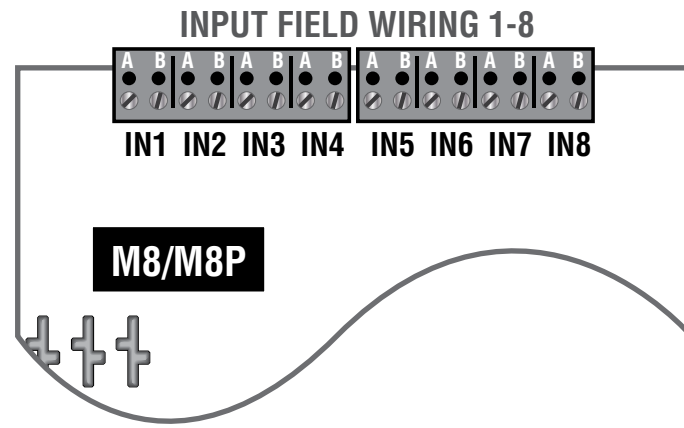
- 11 B1 Connectors (J1 & J2)** — These fastons are for connection to the B1 voltage buss in the system. The voltage on the B1 buss comes from the main output of a power supply. This voltage will be directed to any outputs whose Buss Selection Jumper is set in the B1 position.

- 12 SPI Connector (J13)** — This connector accepts the SPI cable which provides communication between the M8 and the NL4 board. This cable **MUST** be connected at all times for proper operation of the M8. The M8 must be connected to the NL4 board.

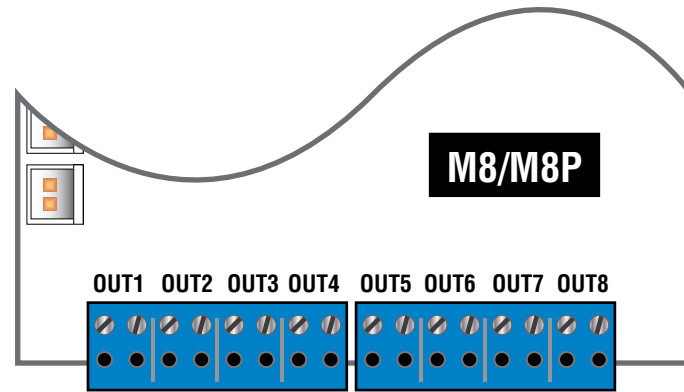
Input Wiring

Each input on the M8/M8P has an “A” terminal and a “B” terminal.

- When using a dry contact to activate the input, the contact is placed across these terminals. *It is normal to measure a voltage across these terminals when set for a dry contact input.*
- When set for a voltage input, the voltage to activate the zone is placed on the “B” terminal. The “A” terminal is left disconnected. Note that the voltage used to activate the zone must be common grounded with the M8 board’s power source.
- To use a DC ground or an open collector (transistor) as an input, place a wire jumper across the “A” and “B” terminals and connect the ground/ open collector to the “B” terminal to activate the input. Note that the input source must be common grounded with the M8 board’s power source.



Input Wiring



Output Wiring

Output Wiring

Each output on the M8/M8P has a “+” and “-” marked adjacent to the terminal to indicate polarity.




WARNING: When powering magnetic loads such as maglocks, door strikes, solenoids, etc, each of these loads must have a reverse protection diode either built-in or external to the device.

Reverse Protection Diodes

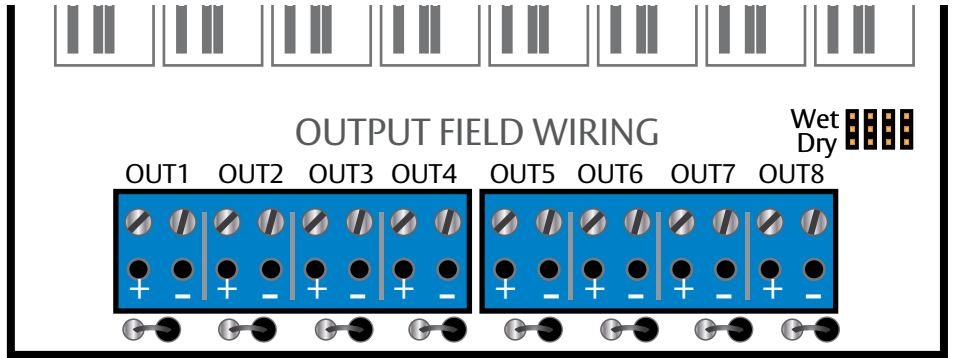
The outputs of the M8/M8P have built-in reverse protection diodes.

M8/M8P Diode Removal

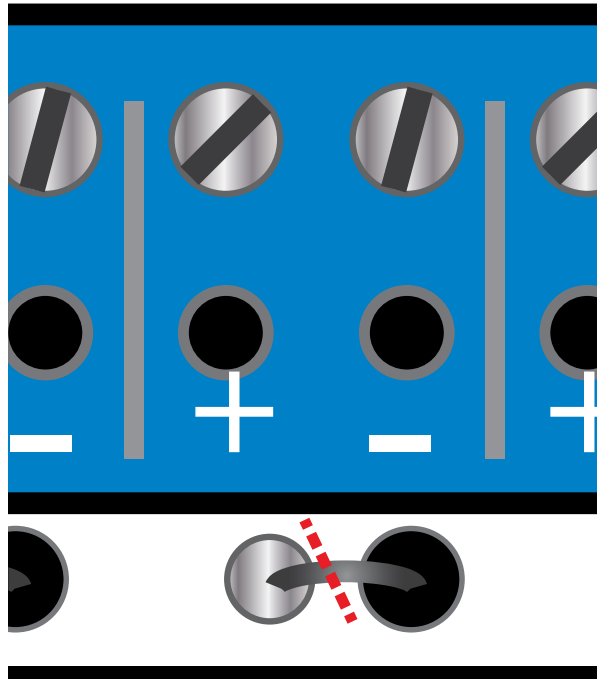
If a delay in lock release is present the diode from the corresponding output zone should be removed from the circuit as shown.

 **WARNING:** Only remove the diodes from outputs requiring their removal!

The diodes on the M8 are on the front side of the board between the output terminals and the edge of the board. To remove the diode from the output circuit, simply cut and separate the exposed diode lead for the desired output zone — leave the diode body soldered to the PCB.



M8/M8P Diodes



M8/M8P Diode Cut Detail

REMOTE REPORTING
LSP

SYSTEM MANAGER **POWERCOM**[®]

Home Reporting Configure Tools msm Firmware: 9.79.15

Client ID

Reboot Settings Site ID

Programming Date Mon Feb 26 2024 Time 10:46:53

Device ID M8-1 Model M8 AC Power ON M8 Notes Ver: 0.50

Output #	Output Description	Voltage (V)	Current (A)	Power (W)	Power Ready	Control Input	FAI State	Cycle Count	Output Status
1	Main Ent. 5000-C-630	0.00	0.00	0.00	Yes	Inactive	Inactive	0	Normal
2	East Entrance	25.13	0.00	0.00	Yes	Inactive	Inactive	1	Normal
3	Ftr 1 Acad. Offices	25.19	0.00	0.00	Yes	Inactive	Inactive	1	Normal
4	Ftr 1 Storage Room	25.16	0.00	0.00	Yes	Inactive	Inactive	1	Normal
5	Ftr 2 Storage Room	25.16	0.11	2.76	Yes	Inactive	Inactive	1	Normal
6	Basement	25.10	0.00	0.00	Yes	Inactive	Inactive	1	Normal
7		25.13	0.00	0.00	Yes	Inactive	Inactive	1	Normal
8		25.07	0.00	0.00	Yes	Inactive	Inactive	1	Normal

Enable Selected Outputs Disable Selected Outputs Reset Selected Outputs Reset Selected Cycle Count Save Settings

Enable All Outputs Disable All Outputs Reset All Outputs Reset All Cycle Count

M8 Status Page

Using the M8 Power Control Module

This section discusses software programming of the M8/M8P board. It assumes a basic understanding of the NL4 software GUI interface. Consult the Netlink section of this manual (see page 26) for more information on using the NL4 interface.

Accessing the M8/M8P from the NL4 interface

From the home page of the NL4 interface, click on the photo of the M8 in the “NL4 Connected Devices” section. Alternatively, the “M8” link to the right of the photo may be clicked.

The M8 Status Page

The status page of the M8/M8P gives an overview of the current state of the M8/M8P board and allows manual output control.

Return Button — This button returns to the NL4 Home page. Any changes must be saved prior to clicking this button or the changes will be lost.

Programming Button — This button opens the programming page for the M8 module.

Device ID — This field is the unique ID given to the M8 by the NL4.

Model — This is the model number of the board being monitored. In this case, “M8”.

M8 Notes — This field allows the user to enter any notes regarding the M8 board. Click the Save Settings button to save the notes.

AC Power — This field gives the AC Power status of the connected power supplies. “ON” with a green background indicates that AC power is present.

Output # — This column shows each zone number and provides a checkbox for selecting one or more zones.

Output Description — This column shows the programmable descriptive name given to the zone. It can be changed directly by clicking on the text field and typing the description for each zone. Example descriptions include “Front Door Lobby, Mag”, “Second Floor Door Holders”, or “Cash Register 13 PTZ”. Click “Save Settings” to save the descriptions.

Voltage (V) — This column shows the measured voltage at the output terminals of the M8 board for each zone. This is only the voltage at the output of the M8/M8P and does not indicate power at the field device.

Current (A) — This column shows the measured current being drawn from the output terminals of the M8/M8P for each zone.

Using the M8 Power Control Module *(continued)*

Power (W) — This column shows the calculated power being supplied by the output terminals of the M8/M8P for each zone.

Power Ready — This column indicates whether power is available to each zone. This column should be “Yes” — if any zone shows “No”, verify jumper placement, fuse integrity, and proper DC voltage at the B1/B2 inputs of the M8/M8P board.

Control Input — This column indicates the state of the input terminals for each zone as “Active” or “Inactive”. For example, if a zone is programmed for an Normally Open Input, the “Control Input” field for that zone will show “Active” when a closure is placed across the input terminals for that zone.

FAI State — This column shows the FAI status for each zone. If FAI control is disabled for the zone, the field will show “Disabled”. If enabled, the field will show “Active” or “Inactive” to show the FAI status.

Cycle Count — This column shows the total number of cycles for each output since the count was last reset. Note that an activation must be present for at least 3 seconds to register. This counter can be used to monitor lock activations vs. expected life.

Output Status — This column shows the status of each zone of the M8/M8P. “Normal” indicates that the zone is working and configured correctly, and that there are no faults on that zone. “Fault” indicates a problem with that zone. Verify fuse/PTC integrity, jumper placement, and field wiring integrity.

Enable / Disable Selected Outputs — These buttons will manually enable or disable any outputs whose Output # checkbox is selected.

Enable / Disable All Outputs — These buttons will manually enable or disable all outputs on the M8.

Reset Selected / All Outputs — These buttons will manually disable outputs for 5 seconds, then return to normal. This function is helpful for resetting devices such as routers which would cause network loss when powered down.

Reset Selected / All Cycle Counts — These buttons will reset the cycle counter for one or more outputs to zero.

Save Settings — This button saves the output descriptions and M8 Notes fields when changed.

Client ID

Site ID

Date Time

Save Settings Include Output Description Export Settings

Output #	Output Description	Control Input Type	Output Load Type	Unlock on FAZ Ack/Alarm	Unlock on AC Loss	Small Nuisance Fault	Voltage Lower Limit (V)	Voltage Upper Limit (V)	Current Lower Limit (A)	Current Upper Limit (A)	Cycle Count Limit
1	Main Ent. 5000-C-63C	Normally Open	Fail Secure Strike	Yes	No	Yes	1.50	28.00	0.10	1.50	100000000
2	East Entrance	Normally Open	Maglock	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000
3	Ftr. 1 Acad. Offices	Normally Open	Maglock	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000
4	Ftr. 1 Storage Room	Normally Open	Maglock	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000
5	Ftr. 2 Storage Room	Normally Open	Maglock	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000
6	Basement	Normally Open	Maglock	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000
7		Normally Open	Maglock	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000
8		Normally Open	Maglock/NC Contact	Yes	No	Yes	0.00	30.00	0.00	3.00	100000000

Output Limit Setting Aid

Set voltage Lower limits to % below the measured values. Set current Lower limits to % below the measured values.

Set voltage upper limits to % above the measured values. Set current upper limits to % above the measured values.

Output Limit Setting Aid aids in setting the output voltage and current limits of all outputs to a certain percentage above and below the measured value. Verify that all outputs are connected to their normal operating load and be aware that during this process ALL outputs will be simultaneously powered. Enter the desired percentage values for upper and lower limits, then click the "Start Measurement" button. The process will take approximately 10 seconds, after which the upper and lower limits of all output voltages and currents will be set according to the entered percentages.

M8 Programming Page

Programming the M8 Power Control Module

From the Status page of the NL4 interface, click the “Programming” button near the top left corner. This will open the M8’s configuration page.

Return — This button returns to the M8 Status page. Any changes must be saved prior to clicking this button or the changes will be lost.

Save Settings — This button will save all changes on the page.

Fill All (top) — This button will take all settings from Zone 1 and copy them to Zones 2–8.

Import Setting — This button opens a page allowing you to select an M8 Configuration file to import. Click the Browse button to select the file, then click open. After selecting the file, click “Download” then “Confirm”.

Export Settings — This button saves the configuration of the M8 zones to a file, which may be imported to other M8 boards. If prompted after clicking, select “Save File”. Check the “Include Output Descriptions” selection to include the output descriptions in the export file.

Fill All (column) — Each column has a “Fill All” button. This button takes the setting from Zone 1 of that column only and copies it to Zones 2–8.

Output # — This column shows each zone number.

Output Description — This column shows the programmable descriptive name given to the zone.

Control Input Type — This column has a drop-down list for the type of input to be used to activate the zone.

Choices include:

- *Normally Closed* — Normally Closed (NC) dry contact. The input will be activated when the contact is opened.
- *Normally Open* — Normally Open (NO) dry contact. The input will be activated when the contact is closed.
- *Open Collector* — An open collector transistor output will activate the input when the input is pulled to ground.
- *Voltage* — A positive voltage (12-24VDC) will activate the input.
- *Disabled* — The input terminals will have no effect.

Programming the M8 Power Control Module *(continued)*

Output Load Type — This column has a drop-down list for the type of device being powered. Select the type of device closest to the device being powered. Choices include:

- *Maglock* — The output power will be removed when the input is activated. Zone 8 also adds NC Contact for dry contact operation (see page 24).
- *Fail-Secure Strike* — The output power will be applied when the input is activated. Zone 8 also adds NO Contact for dry contact operation (see page 24).
- *Constant ON* — The output will always have power, regardless of the state of the input.

Unlock on FAI Activation — This column has a drop-down list to select whether an FAI condition will affect the output of each zone. Choices are “Yes” and “No”

Unlock on AC Loss — This column has a drop-down list to select whether an AC Loss will affect the output of each zone. Choices are “Yes” and “No”. This is useful for regions where it is required to unlock all doors upon a loss of AC.

Email Alert on Fault — This column has a drop-down list to select whether fault conditions on each zone will send an email alert when email is configured in the NL4. Choices are “Yes” and “No”.

Voltage Lower Limit (V) — This column allows setting a lower voltage limit to trigger a fault for each zone. For example, if the lower voltage limit is set for 23.5V, a fault will be triggered if the voltage on that zone goes below 23.5V. This limit will not be triggered when the zone is deactivated via the zone’s input, FAI, or other intended deactivation.

Voltage Upper Limit (V) — This column allows setting an upper voltage limit to trigger a fault for each zone. For example, if the upper voltage limit is set for 26.0V, a fault will be triggered if the voltage on that zone goes above 26.0V.

Current Lower Limit (A) — This column allows setting a lower current limit to trigger a fault for each zone. For example, if the lower current limit is set for 1.0A, a fault will be triggered if the current on that zone falls below 1.0A. This limit will not be triggered when the zone is deactivated via the zone’s input, FAI, or other intended deactivation.

Current Upper Limit (A) — This column allows setting an upper current limit to trigger a fault for each zone. For example, if the upper current limit is set for 2.0A, a fault will be triggered when the current on that zone goes above 2.0A.

Cycle Count Limit — This column allows setting a limit to trigger a fault when the zone is activated a certain number of total cycles.

Output Limit Setting Aid — This section allows automatic setting of the upper and lower voltage and current limits for each output. To utilize the automatic settings, all output field wiring must be completed to the output devices to be powered. Enter the desired percentage for each limit, and click the “Start Measurement” button. The M8 will briefly cycle each output on and off and measure the voltage and current levels for each device. When complete, the upper and lower limits will be set based on the entered percentages.

Netlink Power Monitoring Module



Specifications

Certifications

- UL 294 Listed
- UL 603 Listed
- UL 1076 Listed
- ULC-S318 Listed
- ULC-S319 Listed
- CSA C22.2 #107.1

Electrical

- Input
 - Voltage: 8 to 30 VDC
 - Current: 60 mA nominal
- Network Data Rate: 10/100 Mbps
- Voltage Measurement Range: 0 to 30 VDC $\pm 3\%$
- Current Measurement Range: 0 to 20 A ± 0.1 A + 5% of reading
- Event
 - Input: 8 to 30 VDC
 - Current: 15 mA Max
- Output 1 & 2 Current: 50 mA maximum

Class 2 power limited wiring must be separated from non-power limited wiring by a minimum of 1/4 inch and must use separate knockouts

The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes.

For ULC compliance, installation and all wiring methods shall be in accordance with the Canadian Electrical Code, C22.1, Part I, Section 32.

All input/output wiring to the module shall be located within the same room (3 m. max.).

The remote control features have not been investigated by UL.

Shipping Weight

- .25 lbs

Dimensions

- 4" x 2.5" x 1.5"
[101.6mm x 63.5mm x 38.1mm]

Description

The Securitron Netlink NL4 module is a network appliance which may be used with Securitron AQL power systems to provide remote monitoring of the power system and connected devices. The NL4 provides four ports for connection to Securitron power supply boards.

The Netlink module monitors power supply system status over a local or wide area network and provides values such as output voltage, fault status, battery voltage, battery charging current, fire alarm status, and temperature. In addition, automated battery tests may be run manually, or scheduled to happen automatically.

Automated alerts may be sent via email or SNMP on any detected fault condition, service due date approaching, battery condition, fire alarm activation, or on a time basis for status updates on regular intervals. A time and date stamped log of the past 1000 events is kept and may be viewed on demand, or immediately on an alert occurrence. When all parameters are in range, the log is updated once per selected interval with a snapshot of current values.

All Netlink modules provide a voltmeter input, event input (for monitoring devices such as the enclosure tamper switch), and one or two current sensors. Internal temperature is also sensed, and the NL4 also includes a 6 foot external temperature probe for monitoring room temperature.

Resetting the Netlink



If the user name or password is unknown for a Netlink board, press and hold the Reset button located next to the backup battery for 10 seconds to return these values to default. Pressing the Reset button for 30 seconds will also reset the IP address, certificate, and Cipher Suite to default.

Upgrading Netlink Firmware



The browser history/cache should be cleared after performing the firmware upgrade and before accessing the Netlink again to prevent any cached pages from giving outdated information. For detailed steps for firmware upgrades (see page 48).

Manual covers Firmware Rev 9.7



Older firmware revisions may not have all features described. See the latest firmware release notes at <http://www.lifesafetypower.com/support/software-firmware-downloads>

Module Overview

The following are basic Netlink board descriptions. Refer to the appropriate section for more detailed information.

- 1 C1 & C2 Inputs (J12 & J16)** — These are the connectors for the current sensors. Only NL4 current sensors should be plugged into this connector. The sensors have a range of +/-20 A and are typically used to monitor battery discharge current (see page 30).
- 2 Event1 Input (J14)** — This is the connector for the Event1 input. This input will accept 9-30 VDC to initiate an event alert. This input will only indicate an active or inactive condition and will not measure the voltage level (see page 30).
- 3 ADC1 Input (J15)** — This is the Analog to Digital Converter (ADC) input, which acts as a voltmeter. It accepts 0-30 V and is used to measure positive or negative system voltages which are common grounded with the Netlink board. The ADC cable wiring must be routed away from high voltages (see page 31).
- 4 Input V+ & V- (J1 & J3)** — This is the power input for the Netlink board. This input accepts 8 to 30 VDC ONLY from any power supply.



WARNING: The voltage input of the Netlink must be connected directly to the main or aux output or to the AUX input of the power supply.

- 5 Ethernet Connection (SK1)** — This is the RJ45 jack for the network connection. The ethernet cable is plugged into this jack (see page 29).
- 6 Status LED Indicators (D2, D3, D4)** — These LEDs indicate the status of the Ethernet link to the Netlink board.
LED Indicator:
 - **GREEN (LINK)** Lights when Netlink is connected to a network.
 - **RED (DATA)** Flashes during data transfer.
 - **BLUE (SYS)** Lights when the Netlink is fully booted up and running. During the bootup process, this LED may flash on and off several times. The Netlink will not be able to be accessed until this LED lights steady.
- 7 External Temperature Sensor (J18)** — This connector is for the external temperature sensor (see page 31).

- 8 Future Use (J9)** — This jumper is reserved for future use and should be left OFF.
- 9 Event1 Input Invert Jumper (J8)** — This jumper inverts the action of the Event1 Input (see page 30).
Jumper Position:
 - **OFF** Event1 active when voltage is applied
 - **ON** Event1 active when voltage is removed
- 10 Backup Battery (BT1)** — This is the coin cell battery for maintaining the clock when all power is removed from the Netlink. The battery type is CR2032.
- 11 Factory Reset Button (SW1)** — This button resets the User Name, Password, and IP Address settings back to factory default. Typically used when IP and/or login information has been lost (see page 33).
- 12 Device 1 — Device 4 (J4, J5, J11, J17)** — Data is passed between the Netlink board and it's connected devices through these Device serial port links. The NL4 has four serial links to monitor up to four devices (maximum combination of two AQL). AQL must connect to Device 1 and 2 respectively (see page 29).
- 13 Control Outputs (J10)** — This connector is for the two control outputs. These outputs are open collector (transistor) low-current outputs for use with RB Relay Boards or other low-current inputs. The Control Output cable wiring must be routed away from high voltages (see page 31).
- 14 Enable 100Mbps (J19)** — If present, this jumper enables 100Mbps speed for the network connection.
- 15 Future Use (J20 & J22)** — If present, these jumpers are reserved for future use and should be left OFF.
- 16 Current Sensor – Current Lead 1 (SHORT)** — The short orange lead connects in-line with the current to be measured toward the more negative side of the current flow. Positive current is measured when current flows from Current Lead 2 (Long Lead) to Current Lead 1 (Short Lead). When using to measure battery discharge current, this lead goes to the BAT+ terminal on the power supply (see page 30).
- 17 Current Sensor – Current Lead 2 (LONG)** — The long red lead connects in-line with the current to be measured toward the more positive side of the current flow. Positive current is measured when current flows from Current Lead 2 (Long Lead) to Current Lead 1 (Short Lead). When using to measure battery discharge current, this lead goes toward the positive battery terminal (see page 30).
- 18 Current Sensor – Data Connector** — This connector connects to the Netlink board's C1 or C2 input (J12 or J16) to provide the current reading to the Securitron Netlink (see page 30).

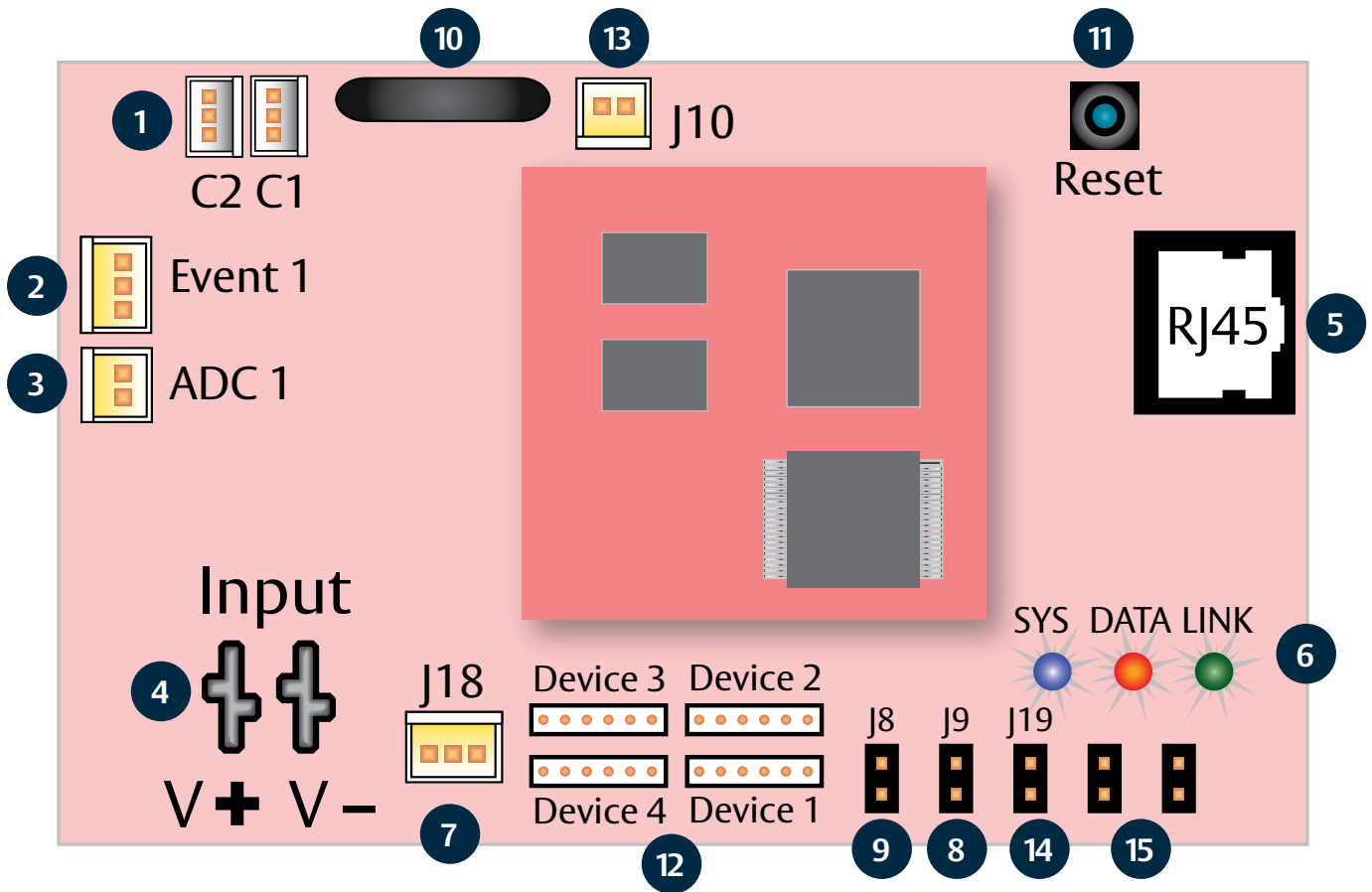


Diagram 1: NL4 Module Overview

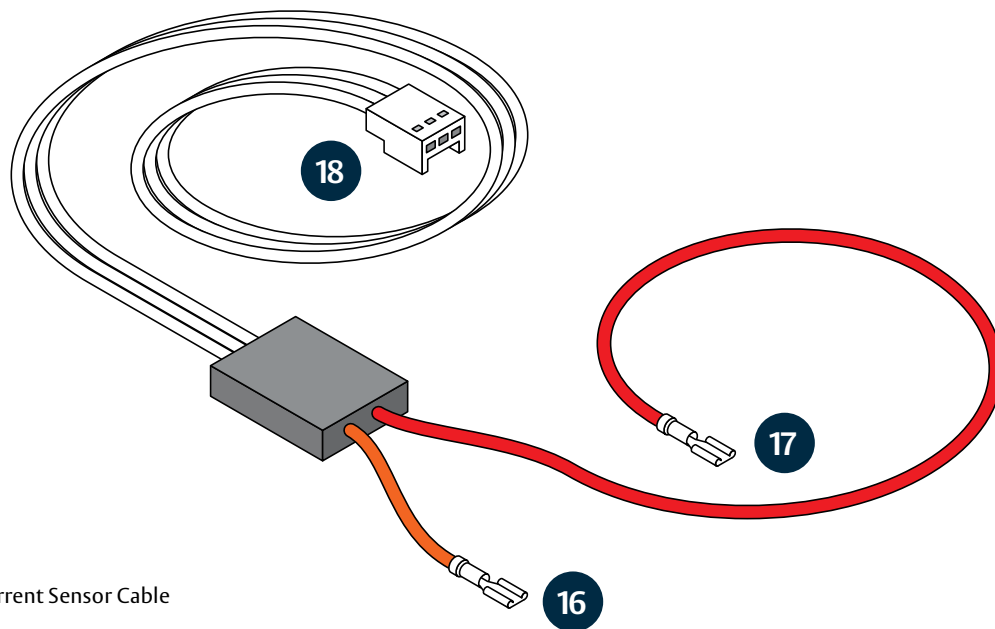


Diagram 2: Current Sensor Cable

Making the Power Connections to the Netlink

DC Systems ONLY

In a DC system, the DC power source for the Netlink is connected to the INPUT (V+ & V-) fastons. The voltage of this source must be between 8 and 30 VDC and should be backed up with a battery set or UPS to maintain communication during a loss of primary AC voltage.

The power connections for the Netlink must connect directly to the main or aux output of the AQL power supply.

WARNING: Do not power the Netlink through another accessory board's output or from the B1/B2 connectors.

WARNING: Do not connect AC power to the Netlink board's input (v+ & v-) terminals or damage to the Netlink will occur.

Connecting Devices to be Monitored to the Netlink

Connect one end of the SPI cable to one of the "Device" connectors on the Netlink. Connect the other end to the DataLink (DL) connector of the device to be monitored (such as an AQL — see the manual for the device being connected for the location of the DL connector). If monitoring more than one device, repeat this process for Devices 2–4 as appropriate. Note that both ends of these cables are keyed and will only plug in one direction.

If monitoring the battery health of AQL power supplies using the Current Sensors, the Netlink will assign Current Sensor 1 to the AQL power supply connected to Device 1. Current Sensor 2 will be assigned to Device 2.

WARNING: NL4 can accommodate any combination of a maximum of two power supply boards.

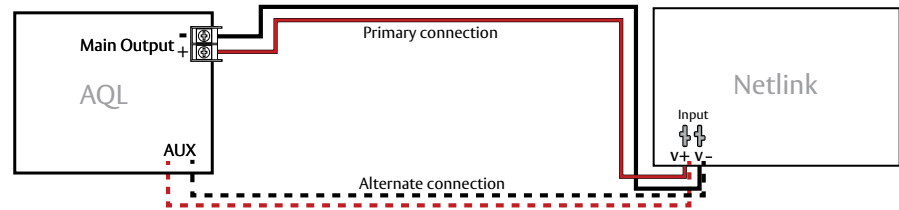


Diagram 2: Power the Netlink from the AQL main or aux output terminals.

Making the Ethernet Connection to the Netlink

Plug the Ethernet cable into the RJ45 jack on the Netlink until the locking tab clicks. Connect the other end of the Ethernet cable to the network.

WARNING: The Netlink board should be configured via a direct connection to a laptop or PC before connecting to the network. See the Initial Configuration Section (see page 32) of this manual for more details.

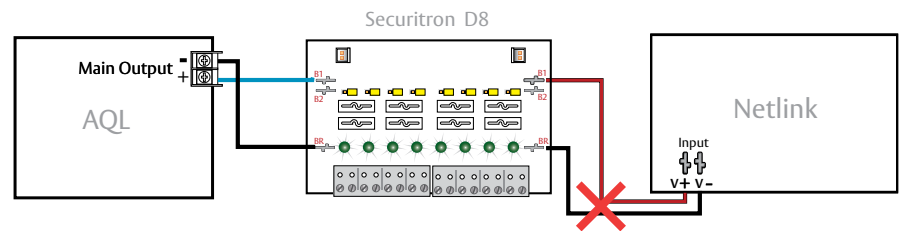


Diagram 3: DO NOT power from another accessory board's output.

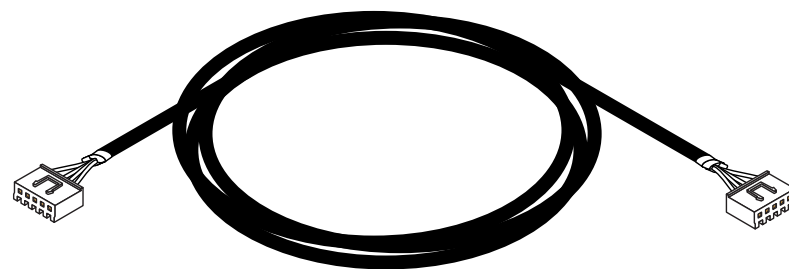


Diagram 4: SPI Cable

Connecting the Current Sensor(s)

Typically, the current sensor is used to measure battery discharge current to allow battery testing and utilization of the Battery Condition bar graph. In this application, the short orange lead connects toward the power supply and the long red lead connects toward the battery. For wiring details see Diagram 5.

If not using the current sensor for the battery, connect the Current Sensor in-line with the device(s) to be monitored. To read current in the correct polarity, the positive current should flow from the longer (red) lead to the shorter (orange) lead on the current sensor. If current is being displayed in the opposite polarity than expected, swap the short/orange and red/long leads.

After connecting the red and orange leads, connect the white cable to the "C1" or "C2" connector on the Netlink.

Connecting the Event Input

Connect one end of the Event cable to the Event1 connector on the Netlink board and cut off the connector at the other end of the Event cable. Connect the red and black wires to the voltage to be monitored.

If monitoring a relay or switch contact (a common example would be the tamper switch of the enclosure), an external voltage must be run through the contact. Set the Event1 Input Invert Jumper as required.

Example: To monitor the NC tamper switch in a Securitron enclosure, connect a positive voltage (from the Securitron AQL power supply or distribution board) to one lead of the tamper switch. Connect the other lead of the tamper switch to the red (positive) lead of the Event cable. Connect the black (negative) lead of the Event cable to the negative (DC Common) of the voltage source, see Diagram 6. Since we want to cause an alert on the removal of voltage, leave the Event1 Input Invert Jumper OFF.

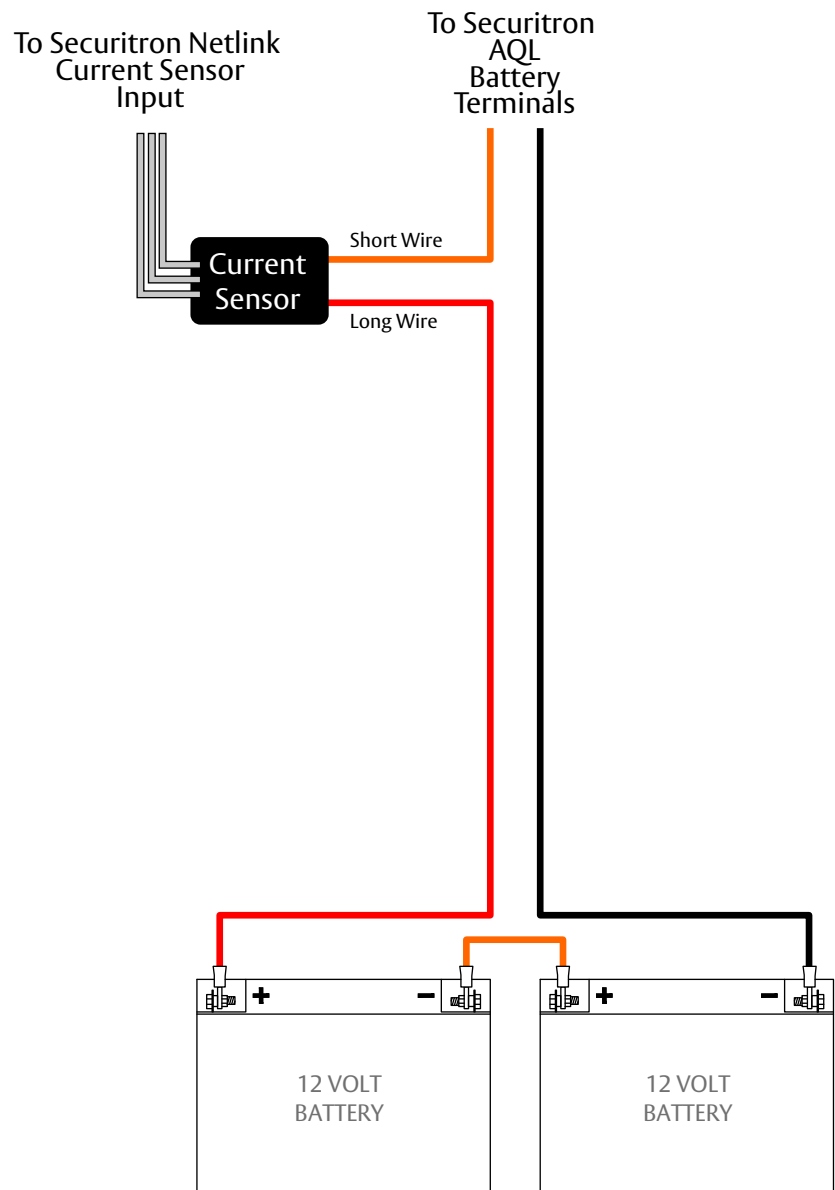


Diagram 5: Connecting the Current Sensors

Remote Temperature Sensor

The remote temperature sensor allows measuring a temperature up to 6 feet away from the NL4 board. Plug the sensor into J18 and run the sensor wire to the area or device to be monitored.

Connecting the ADC (Voltmeter) Input

When using the voltmeter input, connect one end of the ADC cable to the ADC1 input on the Netlink board. Cut off the other end of the ADC cable and connect it to the voltage source to be monitored, observing polarity. The red wire is the positive input and the black wire is the negative (DC Common) input. The ADC cable wiring must be routed away from high voltages and the wire used must be rated for the voltages and temperatures in the area in which it is installed.

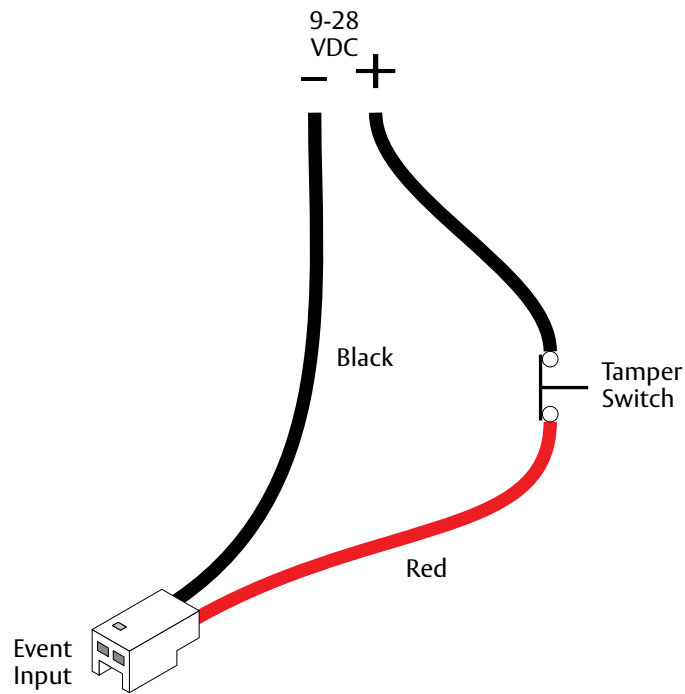


Diagram 6: Connecting the Event Input



WARNING: The voltage being measured by the ADC input MUST be common grounded with the voltage source of the Netlink board.

Wiring the Control Outputs

When using the control outputs, connect one end of the Control Output cable to the Control Outputs connector on the Netlink. Cut off the other end of the control output cable. The wire going to the pin on the connector labeled “FLT” is Control Output # 1. The wire going to the pin labeled “EN_FAI” is Control Output #2.

The Control Outputs are low-current, open collector (transistor) outputs which pull to ground when activated. These outputs can be used to activate sensitive trip relays such as the LifeSafety Power’s RB Series, supply the ground side to an FAI Input, or other similar uses. See Diagram 7 for an example using an RB relay.

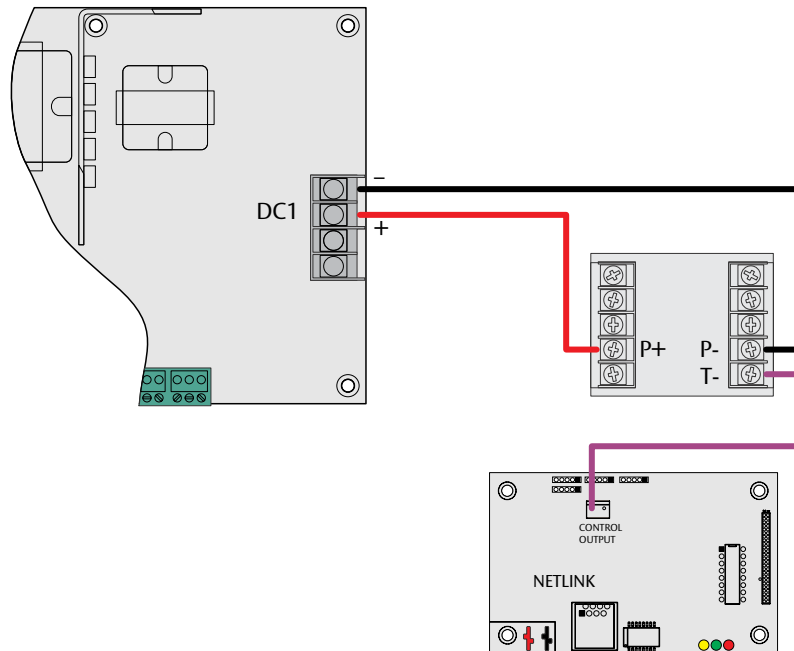


Diagram 7: Wiring the Control Outputs



WARNING: Do not connect these outputs directly to a voltage source or damage to the Netlink will occur. Also, ensure the wire used is rated for the voltages and temperatures in the area which it is installed.

Preparing to configure the Netlink board

In order to perform the initial configuration of the Netlink, you will need the following:

- A computer (PC or Mac) set to a static IP address in the subnet 192.168.1.xxx, where xxx is a subnet address (0 to 255) not being used by any other device on the network. Do not use 192.168.1.9 or the final IP address you will be using for the Netlink. Disable any active WiFi connections. See image on right.
- A web browser installed on the computer.
- A standard (not crossover) Ethernet cable long enough to reach between the computer and the Netlink.
- The Netlink to be configured must be wired into the system and powered. After powering the Netlink, wait for it to initialize — when ready, the blue SYS LED will be lit steady.
- After the Netlink is powered within the system and initialized, connect the Ethernet cable between the Ethernet ports of the computer and the Netlink.

Logging into the Netlink for the first time

From the factory, the Netlink is preset with the following settings:

- IP Address: 192.168.1.9
- Username: admin
- Password: admin

Open a browser on the computer and enter the IP address into the address bar. When prompted, enter the user name and password. Note that BOTH are case sensitive. The Netlink License Agreement and one or more Cybersecurity windows will also appear. Read these and click OK. The home page for the Netlink should appear in the browser window (see page 33).



WARNING: If the wrong password is entered three consecutive times, the user will be locked out of the device for the programmed lockout time (24 Hours by default). Enter the password carefully to avoid lockout. This time period may be changed on the configure page.

Before connecting the Securitron Netlink to a network for the first time, the board must be configured using a laptop.



WARNING: All screens shown are of the NL4 GUI. screens are similar, with changes as noted in the text. If using DHCP, a Network Scan Tool used for finding Securitron devices is available at <http://www.lifesafetypower.com/support/software-firmware-downloads>



Example of a PC Ethernet Port Settings Window (may appear different, depending on browser).

Resetting the Netlink

- To reset the Netlink to factory default user name and password press and hold the Reset button for 10 seconds.
- To reset the Netlink to factory default user name, password, IP address, certificate, and Cipher Suite settings, press and hold the Reset button for 30 seconds.
- After releasing the button, the Netlink will reset and reboot.
- Depending on the firmware revision, the Netlink may default to DHCP after reboot. If a DHCP server is found, an IP address will be assigned. The LifeSafety Power scan software, or a third party software must then be used to find the IP address of the Netlink.

Configuring the TCP/IP Settings

- 1 In the menu bar at the top of the browser screen, click the Configure link.
- 2 In the TCP/IP Settings block of the Configuration screen, set the TCP/IP settings to the desired values for the network to which the Netlink will be connected.

Consult your IT department for information on these settings.

- After completing the TCP/IP settings, click the Submit button in the bottom right corner of the TCP/IP Settings box. Note that the new TCP/IP settings will not take effect until the Netlink is rebooted or power to the Netlink is cycled.
- If the Netlink is connected to a DHCP network and DHCP is enabled, the DHCP server will automatically configure the TCP/IP settings. Note that you will need the Network Scan tool available at <http://www.lifesafetypower.com/support/software-firmware-downloads> to locate the Netlink's IP address before logging into the Netlink board.



WARNING: The port number used by the Netlink can also be set in the Port# field. By default the Netlink is set to use port 80. To disable HTTP access and only allow access via HTTPS, check the "Disable HTTP" selection.



WARNING: To access the Netlink board from outside the installation site's firewall, the firewall must have the ports used by the Netlink for http/https, and SNMP (if used) open. See your IT department for firewall port opening detail.



NL4 Home Page



NL4 TCP/IP Settings

Time Settings

The Time Settings block on Configuration Page (see page 33), is where the time and date are programmed into the Netlink. First, select the correct time zone from the drop down list and click Submit. After the time zone is set, the time and date can be set one of three ways:

Manual Entry

Enter the correct time and date in the following format and click the Submit button:

- For Date: **YYYY MM DD**
- For Time: **HH MM SS**



ALWAYS enter two digits in time field.. i.e., 7AM = 07, not 7 The new date and time will take effect immediately.

Sync With Computer

The Sync Date/Time with computer button will set the date and time of the Netlink to match the computer currently being used to access the Netlink. The new date and time will take effect immediately.

Using an NTP Server

The NTP Server fields allow you to enter one or two NTP servers for automatic setting of the time and date via the internet. The Netlink must be configured for internet access before this setting will work. Either the IP address of the server or the DNS name of the server may be entered. After entering at least one server, click the Get GMT Time button to set the Netlink time and date. Depending on server traffic, it could take several seconds for the time setting to complete.

MSM Settings

These settings are used when connecting the NetLink to a LifeSafety Power MSM Enterprise server. Enter the IP address of the MSM Server in the "IP Address" field. Set the Port numbers as appropriate (typically 9888 for Destination Port). Click Submit when done to save the settings. Consult the LifeSafety Power MSM Enterprise manual for more information.

SNMP Settings

Configuring the SNMP Settings

Scrolling down in the Configure page reveals the "SNMP Settings" section.

In the SNMP Setting block, under the "Basic" heading, set Read and Write Community to "public" and set Location to a meaningful name of your choice. This entry will help you identify the specific Netlink board when multiple Netlink boards are installed on the same subnet. This entry will be read by an SNMP system as "syslocation", OID .1.3.6.1.2.1.1.6. The port used for SNMP may also be changed in this section (161 Default). Be sure to open the SNMP port if accessing SNMP outside your firewall. Below the port number setting, select the trap type (Trap or Inform). Click the Submit button at the bottom of the "Basic" section to save the settings, otherwise you will lose the settings. These settings will take effect after a reboot of the Netlink.

The "Security Name" section of the SNMP Setting block allows you to grant only specified computers (by IP address) SNMP v1 and v2 access. Since v1 and v2 do not have password protection, the Security Name settings add security to v1 and v2 access. The web server is password protected and a user must have the web server password in order to setup a computer in the Security Name settings and gain v1 and v2 access. Multiple source networks can be added to the Security Name Setting block. Be sure to click the Submit button to save the settings. The settings will take effect after a reboot of the Netlink.

The "V3 User" section of the SNMP Setting block allows for a user to set up an SNMP v3 user name and password. With a user name and password, the Netlink board may be accessed from anywhere via the internet by using the SNMP v3 protocol. No security name setup is required for v3 users and multiple v3 users may be set up in the same table. Click the Submit button to save the settings, which will take effect after rebooting the Netlink.

The SNMP Trap Receiver IP and Port settings should be set to the proper address for the SNMP Trap receiver. Click the Submit button and reboot the Netlink for the settings to take effect. The SNMP Trap Version may be selected using "Select Trap Version". The SNMP Inform Log may be seen by clicking the Show Inform Log button. If the trap type is set to "Trap", no data will be displayed in this section. Click Hide Inform Log to hide the log window.


Configuring the Email Settings

The Netlink can be configured to send email alerts on user-specified conditions and periodic status reports. Underneath the SNMP Settings block on the Configure page is the Email Settings block.

Under “Receive Addresses”, the email address or addresses to receive the alerts and reports should be entered. Up to four recipient email addresses may be entered.



WARNING: Regarding Microsoft Exchange – By Default, Microsoft Exchange will not accept SMTP connections. To use the Netlink’s email functions through Microsoft Exchange, the Exchange service must be configured to allow SMTP connections. Consult with the administrator of your Microsoft Exchange Server.



WARNING: Click the Submit button to save the settings, which will take effect after rebooting the Netlink.

TIP: Most mobile phone providers have an email address available which will convert an email into an SMS text message. This email address is usually in the form of: (the mobile phone number)@xxxxxx. Consult with your mobile provider for more information. The CSV attachment will be removed, since SMS text messages are not compatible with attachments. Because of this, it is recommended that the SMS email be entered as an ADDITIONAL “Receive Address” on the Netlink, so that the CSV file will still be available via regular email.

The Email Test Section

Below the Email Settings section is the Email Test section. After configuring the email settings, the Email Test button will send a test email to all Email Receive addresses. Please note that it could take an hour or more to receive the email, depending on the speed of your email server. Clicking the Show Email Log button will show the feedback from the email server. This can be useful for diagnosing email problems.

Email Settings

Under “Sender”, the settings of the account to send the emails should be entered. These settings include:

Sender SMTP Server	This is the address of the SMTP server for the email provider. Consult with your email provider for this address.
Sender’s Email	This is the email address which the Netlink will use to send emails.
Sender Email Password	This is the password associated with the Sender’s Email account.
TLS	Check this box if your email provider requires TLS or SSL encryption.
SMTP Port #	Enter the port number required by your email provider for sending email. Usually this is “25”.
Authentication	Choose the proper authentication method for your email provider from the drop-down list. Usually, this is “login”. Select “off” to completely disable authentication.
Send Period	Selects how often the Netlink sends a regular email status report. The period can vary from 1 hour to 6 months or, if you do not want the Netlink to send periodic reports, select “Never”. Note that the “Send Period” setting does not affect the sending of email alerts generated on faults or events selected by the user, only the periodic status report.

Configuring the Securitron Netlink Network Module Settings

Below the Email Test block is the Network Module Settings block, where application-specific parameters of the Netlink can be set.

Client ID	Enter any meaningful name to help identify the site or customer. The Client ID will appear at the top of the home page.	Current Sense 1 Upper Limit	This is the upper current limit for Current Sensor 1. If the measured current goes above this value an alert will be generated. By default this value is set to 15 A.	ADC1 Lower Limit	This is the lower voltage limit for the ADC1 input. If the measured voltage goes below this value, an alert will be generated. By default, this value is set to -30 V to disable the limit.
Site ID	Enter any meaningful name to help identify the installation site. The Site ID text will appear at the top of the Home page, as well as in the subject line of email alerts and reports.	Current Sense 2	Enter a name indicating the current being measured by the current sensor connected to the C2 connector of the Netlink.	ADC1 Upper Limit	This is the upper voltage limit for the ADC1 input. If the measured voltage goes above this value, an alert will be generated. By default, this value is set to 30 V.
Data Buffer Interval	This selects the time period between "snapshots" of the data for the email/csv reports. Typically, this value should be set to 24 hours.	Current Sense 2 Lower Limit	This is the lower current limit for Current Sensor 2. If the measured current goes below this value, an alert will be generated. By default, this value is set to -3 A to disable the limit.	External Temperature	Enter a name for the external temperature measurement.
Password Lockout Delay	Selects the length of time to lock out a user after three consecutive incorrect password attempts. Selections range from 5 minutes to 24 hours.	Current Sense 2 Upper Limit	This is the upper current limit for Current Sensor 2. If the measured current goes above this value an alert will be generated. By default this value is set to 15 A.	Lower Limit Temperature	Enter a lower temperature limit for the external temperature sensor input. If the temperature measured by the sensor goes BELOW this value, an alert will be triggered.
External Event	Enter a name related to the usage of the Event1 input.	Control 1	Enter a name for the Control 1 output. This label will appear below the Netlink Control Setting 1 radio buttons on the home page.	Upper Limit Temperature	Enter an upper temperature limit for the external temperature sensor input. If the temperature measured by the sensor goes ABOVE this value, an alert will be triggered.
Current Sense 1	Enter a name indicating the current being measured by the current sensor connected to the C1 connector of the Securitron Netlink.	Control 2	Enter a name for the Control 2 output. This label will appear below the Netlink Control Setting 2 radio buttons on the home page.	Next Service Due	Enter a date indicating the next service due date. If "Service Due" is selected as an email alert condition, an alert email will be sent out to the specified email recipient(s) when the system time matches the due date time.
Current Sense 1 Lower Limit	This is the lower current limit for Current Sensor 1. If the measured current goes below this value, an alert will be generated. By default, this value is set to -3A to disable the limit.	ADC1 Reading	Enter a name indicating the voltage being measured by the ADC input of the Netlink. This reading is the voltage between the two ADC input pins.	Reminder Message	Enter a brief message to indicate the type of service which is due in the email alert. This message will appear in the Subject line of the alert email.



WARNING: After entering the above information into the Netlink Network Module Setting block, click the Submit button to save the settings. These settings will take effect immediately without rebooting the Netlink board.

User Settings

In the User Settings block of the Configure screen, you can enter the user names, passwords, access levels, and password complexity for the Netlink board.

The default user is “admin” and the password for this account is also “admin”. Upon first login, the system will prompt changing the username and password. Click Submit when done. Note that there must ALWAYS be at least one admin-level user.

Adding a New User

To add another user, first select the Authorization level desired for the user. Three authorization levels are available:

- **ADMIN** Admin-level users have full control over the Netlink. There are no restrictions.
- **MANAGER** Manager-level users have access to all areas of the Securitron Netlink except for the Configure page.
- **GUEST** Guest-level users may only view information on the Netlink screens. No changes can be made and none of the control features are available.

After selecting the Authorization level, enter the new user name in the User Name column and enter the password into the Password column. Passwords must meet the complexity level setting requirements. Re-enter the password into the Verify Password column.

After clicking Submit, the new user will be active and another blank row will appear for entering the next user name.

Select Certificate

The Netlink allows a user-supplied certificate to be used. Click the Select Certificate button to enter the Import Certificate screen. Contact your IT department for more information.

- 1 Click the Choose File button to select the certificate to be used, then click Download, then Confirm to download the certificate.
- 2 Click the Submit and Test button to use and test the certificate.

SSL Protocol & CipherSuite Settings

This section allows the user to select which SSL protocol to use. The default setting is Normal.

The screenshot shows the 'User Settings' section of the PowerCOM System Manager interface. It features a table with columns for 'Authorization', 'User Name', 'Password', and 'Verify Password'. The 'Authorization' column has a dropdown menu with options 'admin', 'guest', and 'admin'. The 'User Name' column has input fields with 'admin' and 'guest' entered. The 'Password' and 'Verify Password' columns have empty input fields. A 'Password Complexity' dropdown is set to 'Normal'. There are 'Submit' and 'Delete' buttons at the bottom of the table. Above the table, there are sections for 'VPN Settings', 'NL4 Network Module Settings', and 'Current Sensor Calibration'.

User Settings

The screenshot shows the 'Certificate Settings' section of the PowerCOM System Manager interface. It has three tabs: 'PFX Certificate', 'Certificate Authority', and 'Default Certificate'. The 'PFX Certificate' tab is active, showing 'Certificate' and 'Password' fields, each with a 'Select Certificate' button. There are 'Test' and 'Submit' buttons. Below the tabs is a 'Certificate Log' section with a 'Show certificate log' button. The 'SSL Protocol and CipherSuite Settings' section has a dropdown for 'SSL Options' (set to 'Normal'), an input for 'SSL Protocol' (set to 'SSLv2, SSLv3'), and a text area for 'CipherSuite' containing 'HIGH:MEDIUM:LOW:SSLv3'. There is a 'Submit' button. At the bottom, there is an 'Import and Export Configuration File' section with 'Import Configuration File' and 'Export Configuration File' buttons, and a 'User Login Record' section with a 'Show Login log' button.

Certificate Settings

Certificate Log

- Click Show Certificate Log to view the certificate activity log.
- Click Hide Certificate Log to hide the window.

Import & Export Configuration File

The Netlink allows the user to export the settings that are configured in the Netlink to a file. This file can be used as a backup or to transfer these settings to other Netlink devices that require similar settings. The settings exported include:

- **From Configure Page:** Time Settings (including NTP Server), MSM Settings, SNMP Settings, VPN Settings, Netlink Module Settings, User Settings.
- **From Reporting Page:** Alert Enable On, Netlink Report, AQL1/2 Report.
- **Power Supply Settings (AQL)** — For all connected power supplies.

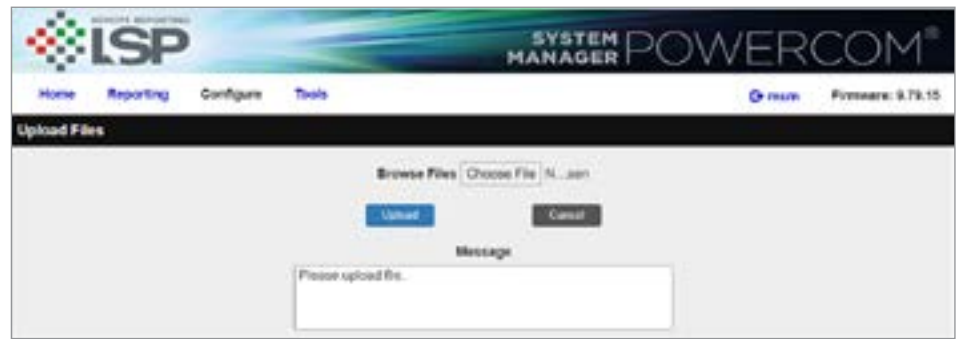
To export the settings, click the Export Configuration File button. The exported file saves to the default download location of the browser.

To import a configuration file, click the Import Configuration File button to open the Import Settings screen.

Click the Choose Files button and select the configuration file to be imported. Click Upload, then Confirm to import the settings.

User Login Record

Click the Show Login Log button to show the history of login information for the Netlink board.



Import Certificate and Import Settings

Setting up the Parameters for the Email Reports

The Netlink can send email alerts based on selectable conditions. If enabled, when the selected conditions are met, the Netlink will send an email with an attached report file (in CSV format). To set up the email alert conditions, click the Reporting link in the top menu.

Select the Email Alert Triggers

The “Alert Enable On” block of the Reporting page contains checkboxes for the various conditions that can cause an email alert to be sent.

System Fault	If checked, a System Fault condition on a connected device will generate an email alert.	FAI Active	If checked, an active FAI Input on a connected device will cause an email alert.	ADC1 Reading	If checked, a voltage outside the range set for ADC1 will generate an email report.
AC Fault	If checked, an AC fault condition on a connected device will generate an email alert.	Current Sensor 2	If checked, a current outside the range set for Current Sensor 2 will generate an email report.	Service Reminder	An email alert will be sent when the "Next Service Due" date and time on the Configure page are reached.
Battery Backup Time	If checked, an alert will be generated if the required standby time is not able to be met with the installed battery.	Battery End of Life	If checked, an email alert will be sent when the Battery Runtime of the connected device reaches the "Rated Battery Life" setting on the Configure page. When a new battery is installed, the "Reset Timer for New Battery Installation" box on the Programming page should be set to reset the Battery Runtime counter.	Device Detect	An email alert will be sent when a device is connected or disconnected from the Netlink board. This will notify the email recipient if the Netlink loses communication with a connected device.
Current Sensor 1	If checked, a current outside the range set for Current Sensor 1 will generate an email alert.	Battery Condition	An email alert will be sent when the battery charge is less than 20% (one yellow bar on the "Bat. Condition" display on the power supply page).		
External Temperature	If checked, an external temperature outside of the range set will generate an email alert.				
External Event	If checked, a valid input on the Event1 Input will generate an email alert.				

After setting the email alert triggers, click the Submit button at the bottom of the “Alert Enable On” section for the settings to take effect.

Select the Occurrences to Report

The “Select Occurrences to Report” block of the Reporting page allows the setting of the number of history events to be included in the report file attached to the alert email (example right). The Netlink records a snapshot of device parameters at the time period selected on the Configure page. Up to 1000 history events can be recorded. The user can enter between 1 (the latest event only), up to 1000 (for all events). After entering the number of history events to email, click the Submit button to save this setting.

Select the Devices and Parameters to Report

The bottom section of the Reporting page contains the devices and parameters selection area. Any connected devices will show here, along with a section for the Netlink itself.

The Netlink and each device also have selectable parameters listed below their headings. Checking these parameters will add them to the report attached to the email alert. These are the same parameters as seen on the Home page.

Available Netlink parameters

include: Enclosure temperature, external temperature, current sensor readings, the ADC1 reading, and the Event Status (these may appear as the labels set on the Configure page).

Available AQL parameters include:

Model Number, System Fault Status, AC Fault Status, FAI Status, FAI Latch Status, AQL Output Voltage, Battery Voltage, Battery Charge Current, Total Power-up time, Battery Installed time, AC Fault Total, System Fault Total, Battery State Of Charge, Battery Runtime Test Total, Battery Runtime Test Failed Total, Required Standby, and Actual Standby.

After setting the devices and parameters to be reported, be sure to click the Submit button for each device.

Typical Reporting Page

Viewing System Parameters on the Netlink Home Page

Before system parameters can be viewed, you must be logged into the Securitron Netlink board using the proper IP address, user name, and password for the Netlink.

The Home page contains all of the real-time parameters monitored directly by the Netlink as well as status of the connected devices. The Home page is broken into several sections as follows.

Basic Site Information

The top portion of the Netlink Home page lists the Client ID and Site ID (as programmed on the Configure page) as well as the system time and date. The Site ID field will be green if there are no faults or service alerts detected. This field will turn yellow on any fault condition or blue on any service alert conditions.



Typical Securitron Netlink Home Page

Network Module Data, History & Control Sections

Below the Basic Site Information are the parameters and settings related to the Securitron Netlink board and the Web Interface itself.

Enclosure Temperature	This is the temperature of the Netlink board. This temperature sensor is installed on the Netlink's PC board.	Event1 Indicator	This field shows the status of the Event1 input. It will appear as the label set for the Event1 input on the configure page. This field will show "Active" on a yellow background or "Inactive" on a green background to indicate the status of the Event1 input.	View/Export History	The Netlink saves a snapshot of data at the programmed interval. These snapshots can be reviewed by entering the number of events to view or export then clicking the View Data button. To view only the detected fault data, check the Fault Data Only box before clicking View Data. There are up to 1000 events available for review. To save the data, click the Export to CSV File button. Click the Return button at the top to return to the home page.
External Temperature	If an external temperature sensor is connected to J18, this temperature display will display the external sensor's temperature.	Service Due	This field will display "Yes" when the "Next Service Due" date programmed on the Configure page has been reached and will display "No" before the due date. If the "Service Due" checkbox is enabled on the Reporting page, the color of the "Service Due" field will be blue if service is required or green if not required.	Device On/Off Control	These two pairs of radio buttons select the state of the two Control Outputs of the Netlink board. After changing the radio button, the Submit button must be clicked for the setting to take effect. The labels entered for these outputs on the Configure page appear below the radio buttons.
Current Sensor	These will appear as the labels you set for the Current Sensors on the Configure page. These measurements are shown as a positive or negative current in Amps DC. A positive current measurement indicates current flow from the longer red lead of the current sensor to the shorter orange lead of the current sensor. If current is being displayed in the opposite polarity than expected, swap the short and long red leads (see page 30) for more information on the current sensor.	Control 1 & Control 2 Status	These fields indicate the state of the two control outputs of the Securitron Netlink. These control outputs will be labeled with the names given on the Configure page and can be changed with the Output Control radio buttons to the right. The Control 1 and Control 2 fields will display "Off" with a gray background or "On" with a green background.	Temperature	This changes the display of the Netlink temperature between Celsius and Fahrenheit on the browser display. The Submit button must be clicked for this setting to take effect.
ADC Voltage Measurement	This is the voltage measured by the on-board Analog-to-Digital converter (ADC) and will appear as the label you set for the ADC input on the Configure page. This measurement is shown as a positive or negative voltage in Volts DC.				

Connected Devices Section

The bottom of the home page shows the devices connected to the Device connectors of the Netlink with a SPI cable. Each device will display a photo of the device and the model number. The Device ID is a unique number given by the Netlink to each device. The "Status" indicator shows the current status of the device. Green indicates a normal state, yellow indicates a fault, and blue indicates a service item. A red indicator shows that an FAI request has been received by the device. Power supplies will also display the measured output voltage. To access the page for a device, click either the photo of the device or the model number. See Accessing & Programming Connected Devices of this manual for more information on connected devices.

Accessing & Programming Connected Devices

When devices are connected to the Netlink, detailed information relating to these devices may be viewed and various parameters can be programmed through the Netlink's interface. Note that programming these parameters changes the operation of the device itself. To access the page for a device, click on the photo of the device in the Netlink Connected Devices section of the home page.

AQL Power Supplies

The AQL Power Supply page contains the same Client ID, Site ID, Time, and Date information as the Home page of the Netlink.

AQL Device Parameters & History

The section at the top left of the screen will show the available parameters of the AQL Power Supply.



Typical Power Supply Page

Power System Monitoring & System History

Any power supply connected to a device input will provide the following parameters:


Device ID	This is the identifying label for the device. The FP-1 or FP-2 label is given by the Securitron Netlink and is not user settable. Also displayed is the model number of the power supply.	Battery Charge Current	This field indicates the charge current being applied to the battery set (in Amps DC). This field only represents charge into the battery and does not show battery discharge current. Use the Securitron Netlink current sensor to measure both charge and discharge current (see page 30).	Battery Installed Time	This field displays the battery runtime in hours since the last reset of the battery runtime counter. The battery runtime field may display random data on a new supply and should be reset on the Power Supply Settings section before use. This Runtime is independent of the Battery End-of-Life / Bat. Replacement Date.
Output Voltage	This is the measured system output voltage (in Volts DC) of the supply, as measured directly out of the power supply engine within the power supply board. This voltage is distributed to the outputs of the supply.	FAI Status	This field indicates the status of the FAI Input of the supply. "Inactive" on a green background indicates that the FAI input is not activated. "Active" on a red background indicates that the FAI input is activated.	Batt Tests Performed	The total number of automated battery tests performed (see page 46).
AC Fault Status	Indicates whether the supply is reporting a low or missing AC voltage. "No" on a green background indicates that no problem is being reported. "Yes" on a yellow background indicates an AC Fault condition. See the power supply manual to troubleshoot.	FAI Latch	This field indicates the status of the FAI Latch Input of the supply. If the Latch Input is being used and the FAI Input is active and latched, this field will show "Active" on a red background. If FAI Latch is not being used this field will show "Inactive" on a green background.	Battery Tests Failed	The number of failed battery tests that have occurred (see page 46).
System Fault Status	Indicates whether the supply is reporting a System Fault condition. "No" on a green background indicates that no problem is being reported. "Yes" on a yellow background indicates a System Fault condition. See the power supply manual to troubleshoot.	AC Fault Count	This field shows the number of AC Faults detected since the last fault counter reset. When new, a supply may contain a random number in this field and the counter should be reset (in the Power Supply Settings section) before being used.	System Installed Date	This field allows the installer to enter the initial installation date for the power supply as a service record.
Battery Voltage	Indicates the measured battery voltage in Volts DC. This field only indicates the terminal voltage of the battery set and does not necessarily indicate the condition or state of charge of the battery set.	System Fault Count	This field shows the number of System Faults detected since the last reset of the fault counter. A supply may contain random data in this field when new and the counter should be reset (in the Power Supply Settings section) before being used.	Total Power-up Time	This field displays the total power-up time in hours for the supply. This value cannot be reset. It is normal for several hours to show in this field on a new supply, due to burn-in testing at the factory.

Battery Status

The section at the left of the middle section of the screen shows the current battery status. This section will only be enabled if a current sensor is connected in line with the battery for the AQL (see page 30).







Battery State of Charge

If enabled, a bar graph will display indicating the estimated condition of the battery connected to the supply. Once the battery is connected and the Securitron Netlink detects current flow, an Enable/Disable button will appear at the bottom of the Battery Status area. If the button is enabled, a four segment bar graph display will appear with one end labeled “Full”.



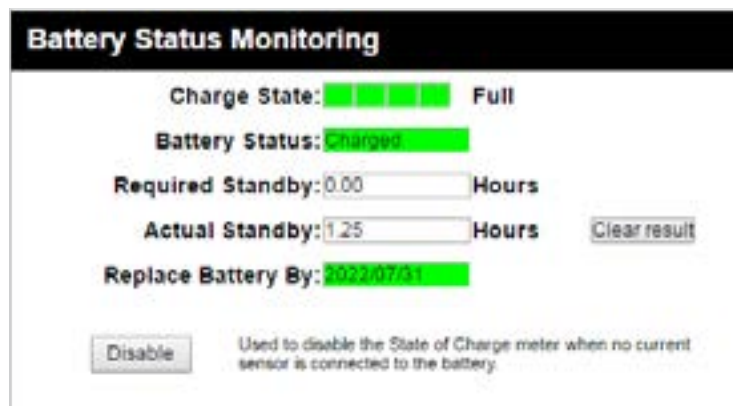
WARNING: It can take several minutes for an accurate indication of battery condition.

The various possible states of the Battery Condition bar graph display are as follows:

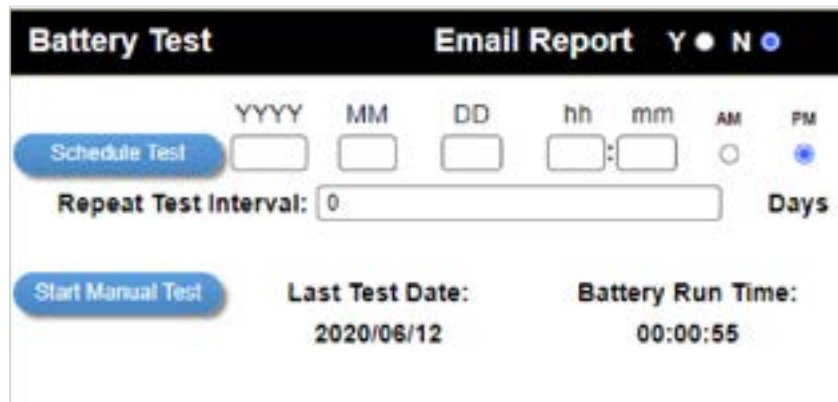
Color Bars	Battery is at
	4 Green Bars 80%–100% charge
	3 Green Bars 60%–79% charge
	2 Green Bars 40%–59% charge
	1 Green Bar 20%–39% charge
	1 Yellow Bar 6%–19% charge <i>(email alert will be sent, if enabled)</i>
	1 Red Bar 5% or lower charge

When the battery discharges to one yellow bar, an email alert will be sent if the Battery Condition checkbox on the Reporting page is enabled.

- **Battery Status** — Possible states are “Charging”, “Charged”, or “Discharging”.
- **Required Standby** — The required standby time as set in the Battery Settings section (see page 46).
- **Actual Standby** — The measured battery standby time as recorded during the Battery Test (see page 46).
- **Replace Battery** — This displays the scheduled battery replacement date, which is calculated based on the current date and the “Rated Battery Life” setting entered on the Configure page. If the battery is within its calculated life, the field will be green. Once the due date has passed, this field will change to blue and an email alert will be sent if enabled on the Reporting page.
- **Enable/Disable Button** — This button will enable or disable the Battery Status section. Disable the section to prevent confusion and erroneous email alerts if the current sensor is not connected in series with the battery.



Battery Enable/Disable Button (AQL main screen)



Battery Test Results

Battery Test

The Battery Test section allows the user to test the actual run-time of a system with the installed battery set. This test may be run manually or may be scheduled for a one-time or repeating automated test. If email is configured on the Netlink, a report of the results can be emailed.



WARNING: During the Battery Run Time Test, the system battery will be discharged to 85% of the nominal voltage, leaving essentially 0% battery capacity should AC power be interrupted during or immediately after the test. Appropriate measures MUST be taken to ensure the security/safety of the building and its occupants during the Battery Run Time Test.

Run a Test Manually

- 1 Ensure a battery set is connected to the power supply and that the Current Sensor is properly connected in line with the battery set (see page 30) for more information on the Current Sensor. The Enable/Disable button in the Battery Status section must be ENABLED.
- 2 Select whether or not you want a report emailed at the end of the test by selecting Y or N in the “Battery Test” header. Email parameters must be properly set up on the Configure page of the Netlink, or this selection will be unavailable.
- 3 Click the Start Manual Test button. A warning message will appear. Click OK to begin the test.
- 4 While the test is in progress, there will be two messages on the page — one indicating “Battery discharging...” in the Battery Test section, and one indicating “Caution Battery test in progress. System powered by battery” in the Power System Monitoring section.
- 5 At the conclusion of the test, the measured battery runtime and last test date will be displayed in the Battery Test section. The results will also be emailed if emailing is enabled.

Schedule a Test

- 1 Ensure a battery set is connected to the power supply and that the Current Sensor is properly connected in line with the battery set (see page 30) for more information on the Current Sensor. The Enable/Disable button in the Battery Status section must be ENABLED.

- 2 Select whether or not you want a report emailed at the end of the test by selecting “Y” or “N” in the “Battery Test” header. Email parameters must be properly set up on the Configure page of the Netlink, or this selection will be unavailable.
- 3 Enter the Year, Month, Day, Hour, Minute, and am/pm for when you want the test to begin.
- 4 Enter the test interval (in days) for repeating the battery test. For example, to run the test yearly, enter 365. Set to 0 for a one-time test.
- 5 Click the Schedule Test Button — the Scheduled Start Time will appear.
- 6 At the conclusion of the test, the measured battery runtime and last test date will be displayed in the Battery Test section. The results will also be emailed if enabled.
- 7 If the tested battery standby time is less than the Required Battery Standby entered in the Battery Settings section, an alert will be generated.

Battery Settings

The Battery Settings block is under the Battery Test block next to the Power Supply Settings (see page 47). The available settings are as follows:

Required Battery Runtime

Enter the required standby time for the application. This number is only used for comparison to the measured standby time after the battery test.

Rated Battery Life

Enter the rated battery life or desired replacement period in years. This is used by the Netlink to calculate the Battery End-of-Life alert time.



WARNING: The current time and date MUST be set BEFORE setting the rated battery life for proper Battery End-of-Life date calculation.

Rated Capacity

Enter the battery capacity of the battery connected to the AQL. This rating is used by the Netlink to approximate how much capacity is remaining in the battery (*if using the current sensor to monitor battery health*).

The screenshot displays the PowerCOM SYSTEM MANAGER interface. At the top, there are navigation tabs: HOME, Reporting, Configs, Tools, and user options: mem, Log Out, Firmware: 9.50. Below this, there are input fields for Client ID, SITE ID, Date (Tue Mar 16 2021), and Time (14:19:00). A yellow 'Run' button is visible. The main content area is divided into several sections:

- Power System Monitoring:** Shows various electrical parameters: Output Reset Delay (5 Sec), Output Voltage (13.48 VDC), Output Current (0.33 A), AC Input Voltage (120.3 V), AC Fault Status (OK), System Fault Status (Yes), Battery Voltage (12.98 VDC), Battery Chg Current (0.31 Amp), FAI Status (Active), and FAI Latch (Active). A red alert message at the bottom reads "System Fault Occurs: External Fault".
- System History:** Lists historical events: AC Fault Count (0), System Fault Count (17), Battery Installed Time (0 Hours), Battery Tests Performed (1), Battery Tests Failed (1), System Installed Date (2019/03/03), and Total Power-up Time (2025 Hours).
- Battery Status Monitoring:** Shows Charge State (65%), Battery Status (Charging), Required Standby (0:00 Hours), Actual Standby (0:00 Hours), and Replace Battery By (100.00%).
- Battery Test:** Includes a "Schedule Test" button, a date/time selector (YYYY, MM, DD, AM, PM, Day of Week), a "Repeat Test Interval" field (Days), and a "Start Manual Test" button. An "Email Report" option is set to "Y".

NL4 Power Supply Page

Power Supply Settings

The power supply section shows the programmable settings for the AQL power supply.

The following parameters are available:

Battery Charge Selector

Select the proper battery size range for optimal charging rate.

AC Fault Reporting Delay

Select the desired delay for reporting an AC fault in hours, minutes, and seconds. Note that this delay will affect the AC Fault LED and relay as well as email reporting. Check your local codes regarding fault delays.

System Fault Reporting Delay

Select the desired delay for reporting System fault conditions in hours, minutes, and seconds. Note that this delay will affect the Sys Fault LED and relay as well as email reporting. This setting should be used with caution, as intermittent faults may be masked by a fault delay. System Fault delays should typically be kept to 5 seconds or less to prevent critical faults from being masked. Check your local codes regarding fault delays.

Reset Timer for New Battery Installation

Select this option after installing a new battery set in order to reset the battery replacement alert counter. The Netlink uses this counter along with the user-entered "Battery Rated Life" to calculate the next battery replacement date. See Battery Settings, previous page.

Enter Installation Date

Enter the date the system was initially installed. This value is only for the user's information and is not used by the Netlink.

Reset AC & System Fault Counts

Selecting this option will reset the AC and System Fault counters. This is typically done after testing or servicing the system.

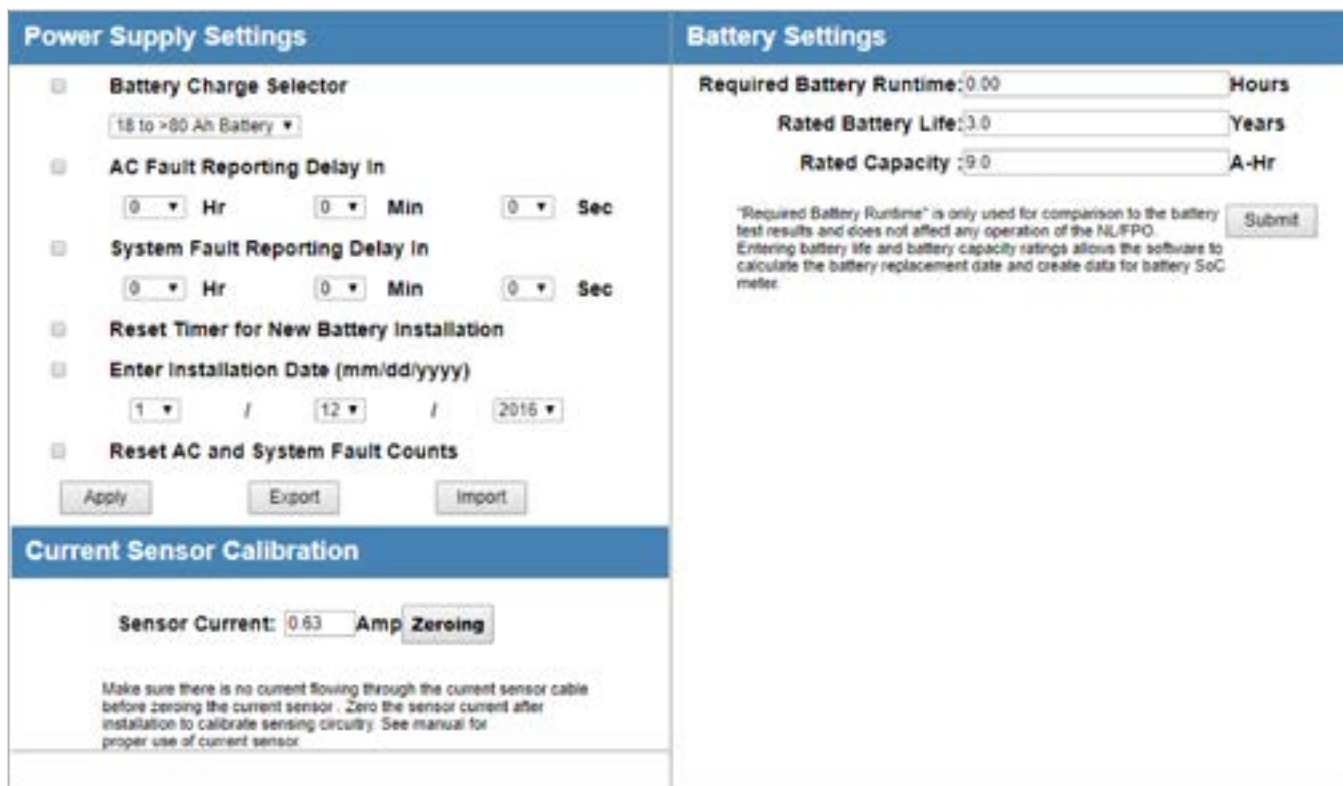
After entering the values or selecting the appropriate options, click the Apply button at the bottom of the "Power Supply Settings" area. These settings will take effect immediately without rebooting the Netlink.

Current Sensor Calibration

The Current Sensor Calibration block is at the bottom of the power supply page. This section allows the current sensor to be calibrated to allow the most accurate current readings.

Perform the Calibration

- 1 Ensure the red and orange leads of the current sensor are disconnected and that the white cable on the current sensor is connected to the Netlink board.
- 2 After the red and orange leads are disconnected, click the Zeroing button. A warning message will appear, reminding you to make sure the current through the sensor is zero (by disconnecting the red and orange leads on the current sensor).
- 3 Click OK, and the Netlink will self-calibrate to the current sensor.
- 4 Ensure the current reading on the home page is zero (or very close to zero) before reconnecting the current sensor's red and orange leads. If the reading is not zero, repeat the calibration procedure.



Typical Power Supply Page (bottom portion)

Using the Tools Page


Clicking the Tools link at the top of the display will bring up the Tools page. This page allows upgrading of the firmware and rebooting the Netlink board.

Upgrading Firmware


The Upgrade Firmware section is at the top left of the Tools page. To upgrade the firmware:

- 1 Ensure that the new firmware file is available on your computer, then click the Upgrade button and the Upgrade window will appear.
- 2 Click the Browse... button and locate the new firmware file with the file extension ".bin" on your computer.
- 3 Once the file is selected, click the Download button to temporarily download the new firmware into the RAM of the Netlink board. This process will take from 30 seconds to 3 minutes depending on network speed and traffic, and the message box will display "Download...".
- 4 Once the firmware is loaded into the Netlink's RAM, it can then be burned to the processor in the Netlink.

- 5 Verify the correct file name and click the Confirm button to confirm the upgrade. Next click the Burn button to begin burning the firmware to the Netlink's processor.


 **WARNING:** This process may take up to 12 minutes – DO NOT REMOVE POWER TO THE Securitron Netlink DURING THIS PROCESS or the Securitron Netlink will be rendered nonfunctional.

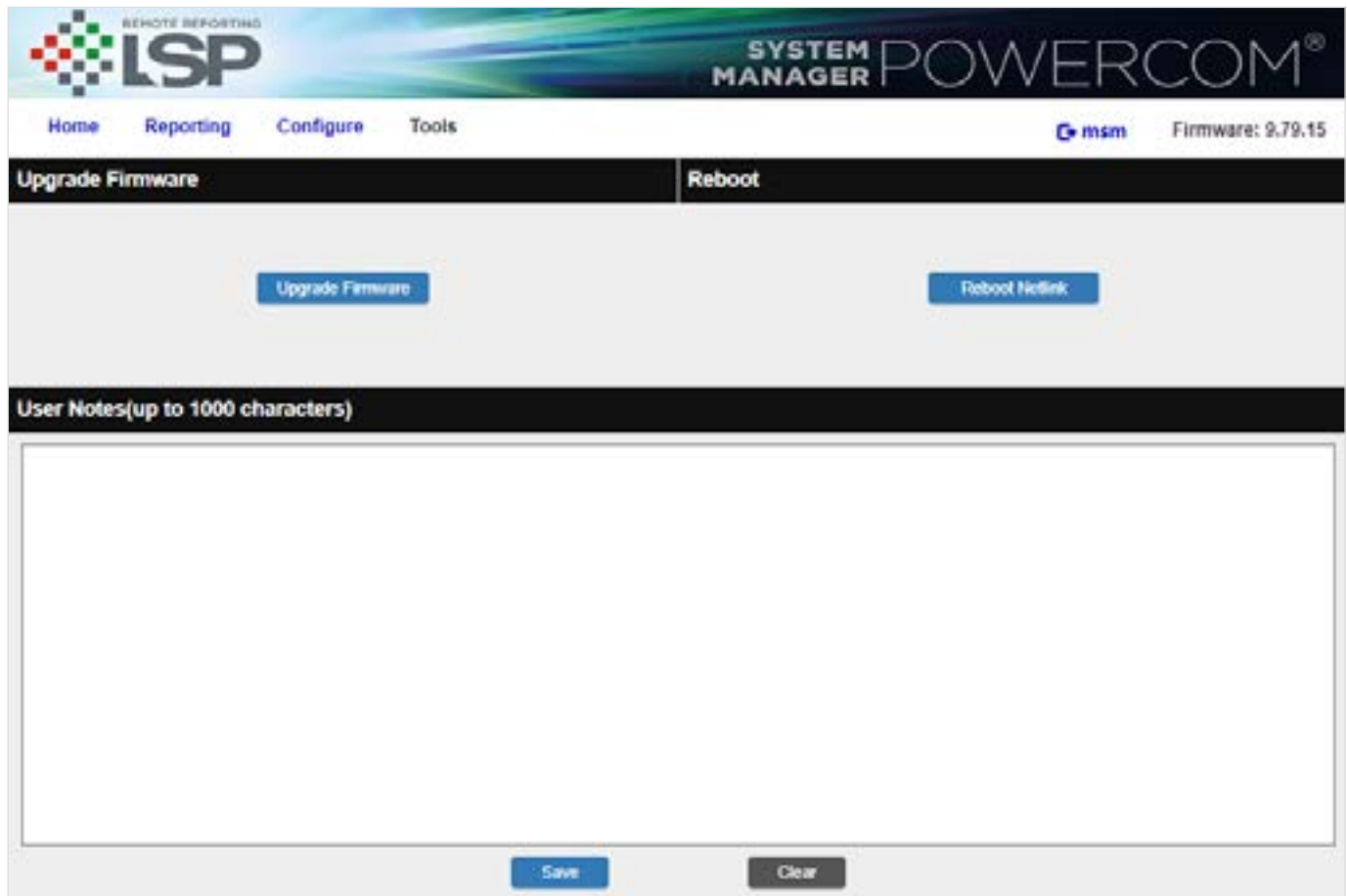
- 6 Once the update is complete, a message will appear in the message box indicating "Update Finished".
- 7 The Netlink must be rebooted in order to start the new firmware.

 **WARNING:** The browser history / cache should be cleared after performing the firmware upgrade and before accessing the Securitron Netlink again to prevent any cached pages from giving outdated information.

Rebooting the Netlink Board

- 1 The "Reboot" section is on the top right of the Tools page. To reboot the Netlink:
- 2 Click the Submit button.
- 3 Once the "Confirm Reboot" message appears in the Message window, click the OK button to Confirm the reboot.
- 4 The rebooting process will take approximately 1-2 minutes, during which time you will lose communication with the Netlink.
- 5 Communication will be restored once the blue LED lights steady.

 **WARNING:** This section allows the user to enter notes such as service history, installation specifics, reminders, etc. Up to 1000 characters may be entered.



Tools Page

Power Supply Settings

The report file sent by email by the Netlink is sent as an unformatted .CSV file. Many programs, such as Microsoft Excel, will import a .CSV file to allow viewing of the data. Note that the fields included will vary depending on the specific system and which parameters are selected on the Reporting page.

The example below has been reformatted for better readability in Excel. The top three rows of data give the following basic information:

Site ID

BGO Chicago Office - This is set in the "Site ID" setting on the Configure Page of the Netlink

Report Trigger

Report Period - this is a periodic status report. The frequency of the status reports is set by the "Send Period" setting in the Email Settings section of the Configure page.

Service Due

No — The "Next Service Due" date set on the Configure page has not been reached.

Below the top three rows is data specific to the Netlink and any devices connected to it.

Device Name

This column shows which device the associated parameter belongs to. In this example, the devices are the Netlink and FP1.

Device Parameter

This column shows the available parameters which are being monitored. These parameters vary depending on the device(s) connected to the Netlink.

Date/Time Stamp

To the right of the Parameter column are columns with date/time stamps. These columns are the data, measured hourly at the dates and times listed. The number of columns displayed is set by the "Select Occurrences to Report" setting on the Reporting page.

	A	B	C	D	E	F	G
1	Site ID	BGO Chicago Office					
2							
3	Report trigger: report period						
4							
5	Service due	no					
6							
7	Device name	Device parameter	Wed Jul 10 2013 09:00:00	Wed Jul 10 2013 08:00:00	Wed Jul 10 2013 07:00:03	Wed Jul 10 2013 06:00:02	Wed Jul 10 2013 05:00:01
8							
9	Netlink	Cabinet internal temperature	87.83 Deg.F	87.83 Deg.F	87.83 Deg.F	94.74 Deg.F	96.46 Deg.F
10							
11	FP1	Model number	AQL	AQL	AQL	AQL	AQL
12							
13	FP1	System fault status	No	No	No	No	No
14							
15	FP1	AC fault status	No	No	No	No	No
16							
17	FP1	FAI status	Active	Active	Active	Active	Active
18							
19	FP1	Output latching on FAI	Inactive	Inactive	Inactive	Inactive	Inactive
20							
21	FP1	Output voltage	12.46 Volts	12.46 Volts	12.46 Volts	12.46 Volts	12.46 Volts
22							
23	FP1	Battery voltage	13.84 Volts	13.81 Volts	13.81 Volts	13.78 Volts	13.81 Volts
24							
25	FP1	Battery charger current	0.00 Amps	-0.00 Amps	-0.00 Amps	-0.00 Amps	-0.00 Amps
26							
27	FP1	Total power-up time	12469 Hours	12468 Hours	12467 Hours	12466 Hours	12465 Hours
28							
29	FP1	Battery installed time	12263 Hours	12262 Hours	12261 Hours	12260 Hours	12259 Hours
30							
31	FP1	# of AC faults detected		133	133	133	133
32							
33	FP1	# of system faults detected		106	106	106	106

Example of Tools Page opened in Excel

Software Agreement

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