



Gallagher ProWire Product Companion

Wiring Convention and Supplemental Guide to
Prewired Power Management Systems



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Introduction

Traditional wiring for access control systems is time consuming and labor intensive. ProWire systems take LifeSafety Power's award-winning Unified Power[™] solutions to a new higher level of service by pre-wiring all lock and system power connections to Gallagher Security terminal strips for easy plug-and-play installation.

Prewired features of ProWire Systems include access control or system power, lock power, auxiliary power distribution, lock control, and optional remote management.

The Gallagher controllers are powered from a dedicated 13.6VDC power supply. Auxiliary outputs are available from a D8, SD4, or SD16 power distribution module with individual protection for each output. Each D8 module provides eight protected outputs capable of 2.5A or 3A per output and a configuration jumper to select which power supply is applied to a specific output in dual voltage systems. SD4 modules provide four outputs capable of 2.5A or 3A each. SD16 modules provide 16 outputs electronically limited to 1A each.

The field connected locks are powered and controlled from either a C8 or M8 lock control module with a separate dedicated power supply typically configured for 24VDC. Each C8 or M8 module provides either jumpers or software programmability to configure each individual output for 12 or 24VDC, FAI operation, and failsafe or failsecure operation of the lock when triggered by the access control.

Optional remote management provides the system with the ability to generate email or SNMP alert messages on a scheduled or event driven basis, monitor and control power remotely, test standby batteries over the network, and maintain a historical record of system performance.

Units from eight to twenty-four door capacity are available with wire tie or wire duct wire management. **ProWire systems accommodate Gallagher 6000 series controllers.**

Standard Conventions

The following section presents the conventions used within this document for board labeling and placement, output usage, and wire coloring.

Gallagher Board Numbering

Board locations are numbered as G1, G2, etc. in sequence, from top to bottom, left to right or in a clockwise order, depending on enclosure and available open locations.

See Typical enclosure configurations starting on page 5 for examples.

LSP Board Numbering

LifeSafety Power board locations are numbered with the board type and a number to indicate individual boards. Locations with multiple designations may have either board or may have both boards stacked, depending on configuration.

FPO-1 Lock Power, or System Power in Single Voltage Systems

FPO-2 System Power in large Dual Voltage Systems

B100 or B150 System Power in small Dual Voltage Systems

D8P-1 to D8P-n Power Distribution, Class 2 Power Limited

SD4P-1 to SD4P-n Network Managed Power Distribution, Class 2 Power Limited

SD16-1 to SD16-n Network Managed Power Distribution, Class 2 Power Limited


C8-1 / M8-1 Lock Control for locks 1 - 8

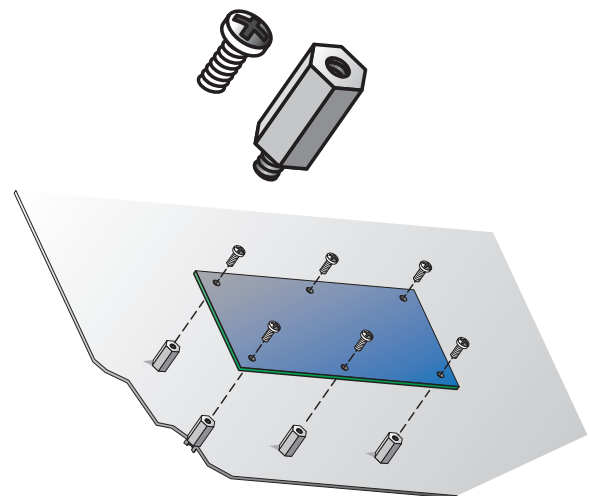
C8-2 / M8-2 Lock Control for locks 9 - 16

C8-3 / M8-3 Lock Control for locks 17 - 24

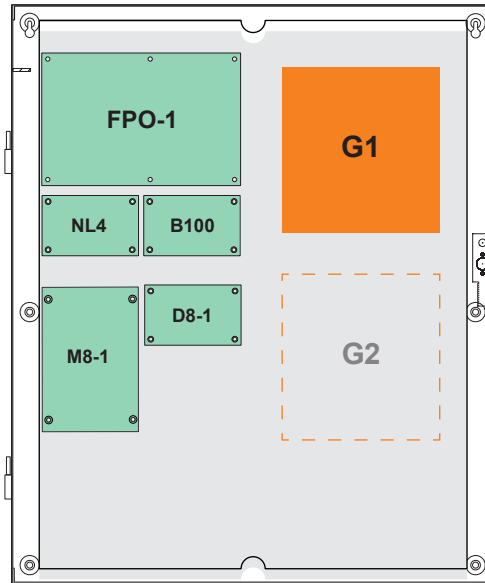
Gallagher Board Mounting

Mounting of the subassemblies are by means of the supplied 4-40 screws directly to the backplate.

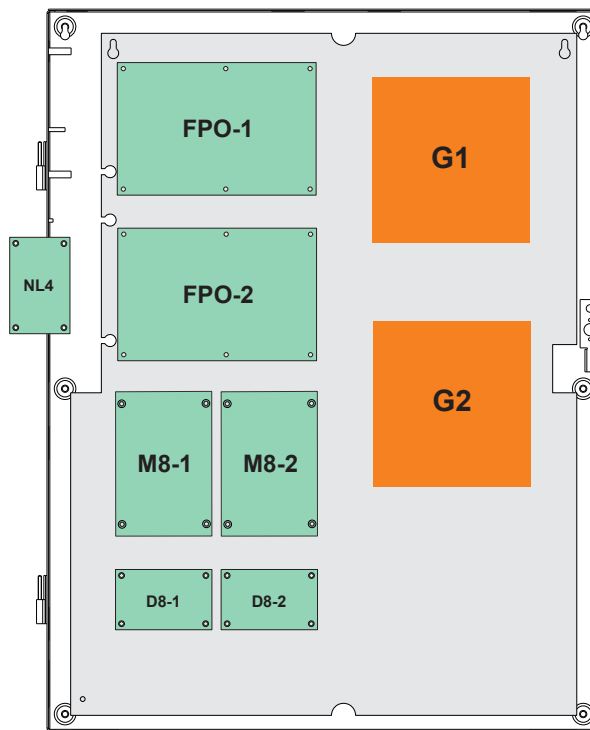
 Do not overtighten the hardware during the install process.



Typical System Configurations

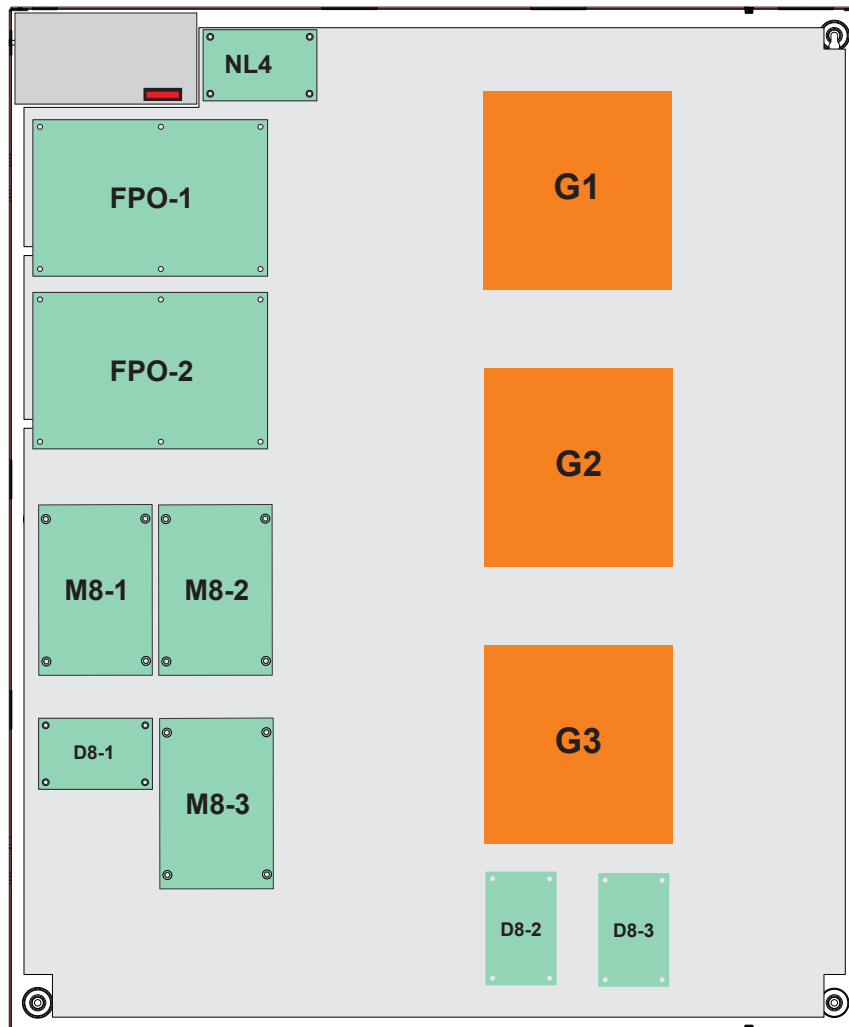


8 Door - E4G



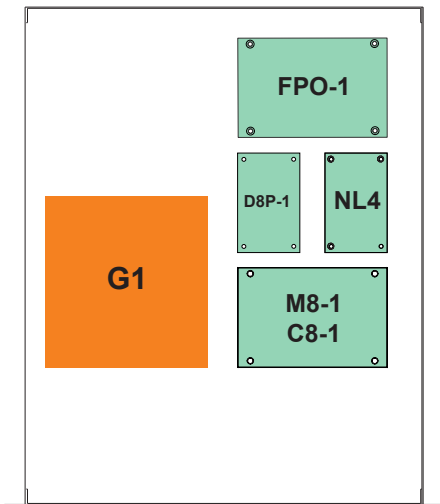
16 Door - E6G

Typical System Configurations



24 Door - E8G

Typical System Configurations



FRONT
 8 Door - RGG
 Rack Mount

Gallagher MODEL GUIDE

STANDARD
NETWORK
 PRE-WIRED **W**



standard

C305724
 C305725 **W**

network

C305726
 C305727 **W**



standard

C305766
 C305767 **W**

network

C305768
 C305769 **W**



standard

C305728
 C305728 **W**

network

C305730
 C305731 **W**



standard

C305766
 C305767 **W**

network

C305768
 C305769 **W**

Wiring Conventions

Wiring within the enclosure uses a consistent method and wire coloring as detailed below.

Gallagher Board Power Connections

Gallagher board power originates from a dedicated 13.6V supply (B100 or B150) in Dual Voltage systems. Power is supplied to the controllers from the supply's main output. Gallagher Power wiring uses twisted 18AWG wire.

Red: +13.6VDC

Black: DC -

Lock Control Input Color Code to C8/M8 from Gallagher Outputs

The wiring between the Gallagher outputs and the C8 or M8 Lock Control board inputs uses twisted 18AWG wire with the following color convention:

Output 1: Brown / Black

Output 2: Red / Black

Output 3: Orange / Black

Output 4: Yellow / Black

Output 5: Green / Black

Output 6: Blue / Black

Output 7: Violet / Black

Output 8: Gray / Black

Wire coloring repeats for inputs 9-16 on C8-2/M8-2 and 17-24 on C8-3/M8-3

ProWire®

Standard Conventions

Quick Reference

GALLAGHER Board Numbering

- G1
- G2
- First Controller location - G1

LSP Board Numbering

- FPO1 - Lock power
- FPO2 - System power
- B100/B150 - Controller Power
- D8P-1 to D8P-n - Power distribution
- SD4P-1 to SD4P-n - Power distribution
- SD16-1 to SD16-n - Power distribution
- C8-1/M8-1 Lock control for locks 1 - 8
- C8-2/M8-2 Lock control for locks 9 - 16
- C8-3/M8-3 Lock control for locks 17 - 24
-

GALLAGHER Board Power

- Red +13.6VDC
- Black DC -
- Twisted 18 AWG
- From B100 or B150 DCOUT

Lock Control Input Color Code to C8 /M8 from Access Control

- 1 - Brown / Black twisted 18 AWG
- 2 - Red / Black twisted 18 AWG
- 3 - Orange / Black twisted 18 AWG
- 4 - Yellow / Black twisted 18 AWG
- 5 - Green / Black twisted 18 AWG
- 6 - Blue / Black twisted 18 AWG
- 7 - Violet / Black twisted 18 AWG
- 8 - Gray / Black twisted 18 AWG
- Repeat for inputs 9 - 24 on C8-2/M8-2 and C8-3/M8-3

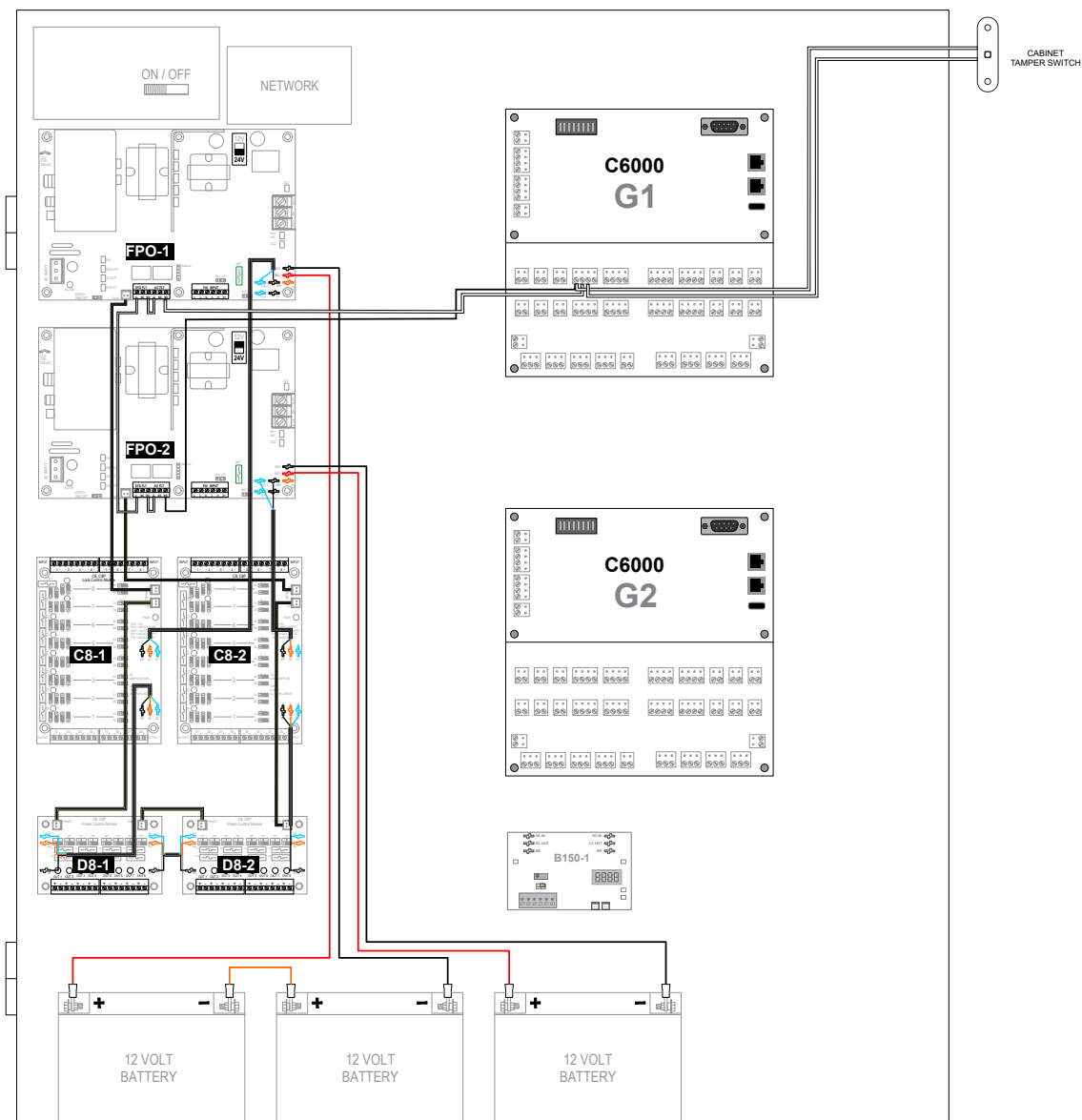


System Wiring Example

The following pages show an overview of wiring for a typical prewired system. Details of the wiring for each board are in later sections.

LifeSafety Power Board, Fault, and Tamper Switch Wiring

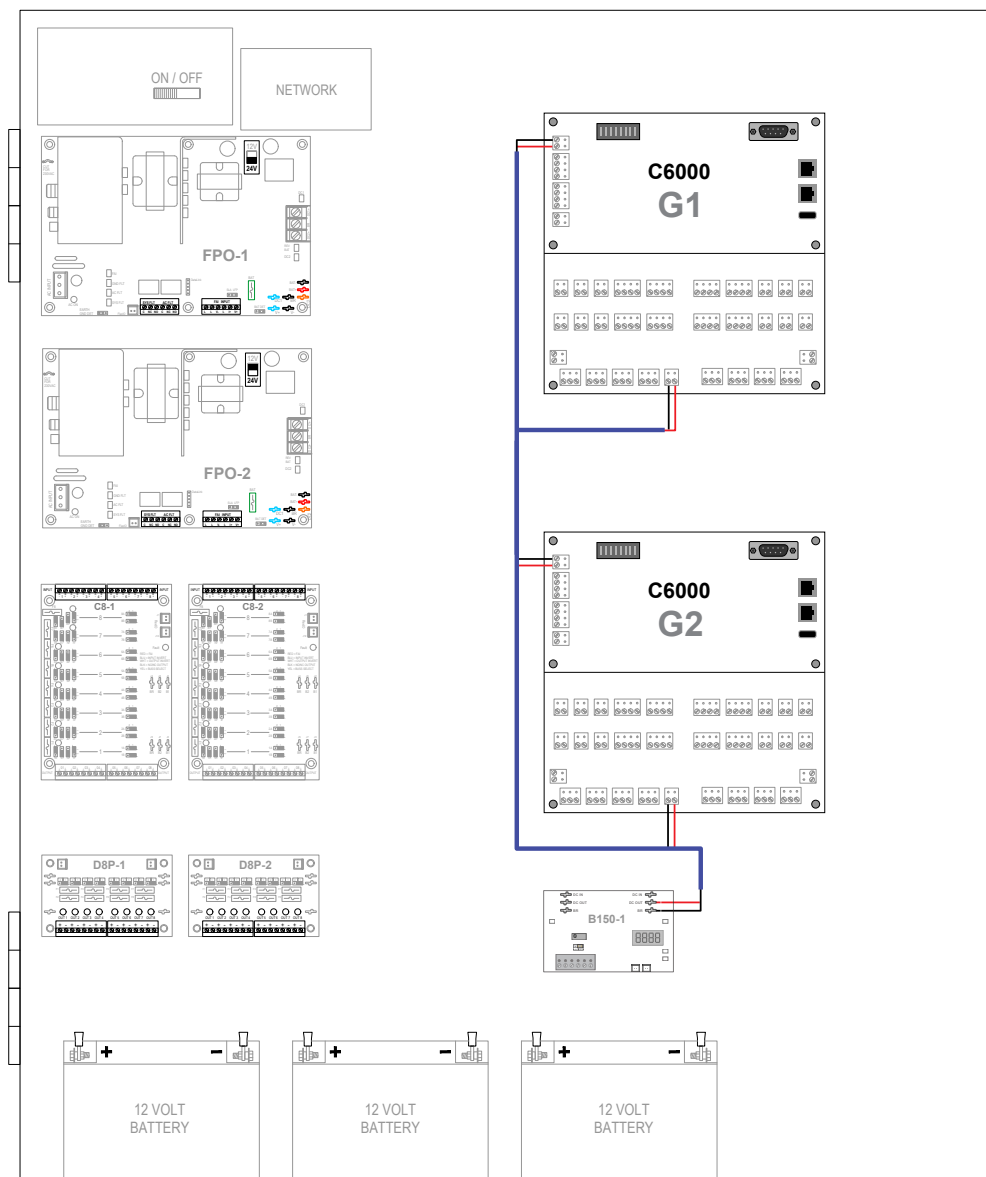
The LifeSafety Power boards are prewired for power, Fault, and FlexIO. FPO-1 is wired to the B1 buss, and FPO-2 is wired to the B2 buss. FlexIO daisychains between all of the LSP boards to provide fault and FAI throughout the system. Fault wiring uses the FPO's NO contacts for System and AC fault and connects to G1's input 1. The enclosure tamper switch wires to G1's input 2. See AN-19 for more information on the Dual Buss architecture used for accessory power.



System Wiring Example

Gallagher Board Power Wiring

The controllers are prewired for power to the DCOUT of B150-1. Wiring is red/black twisted pair.



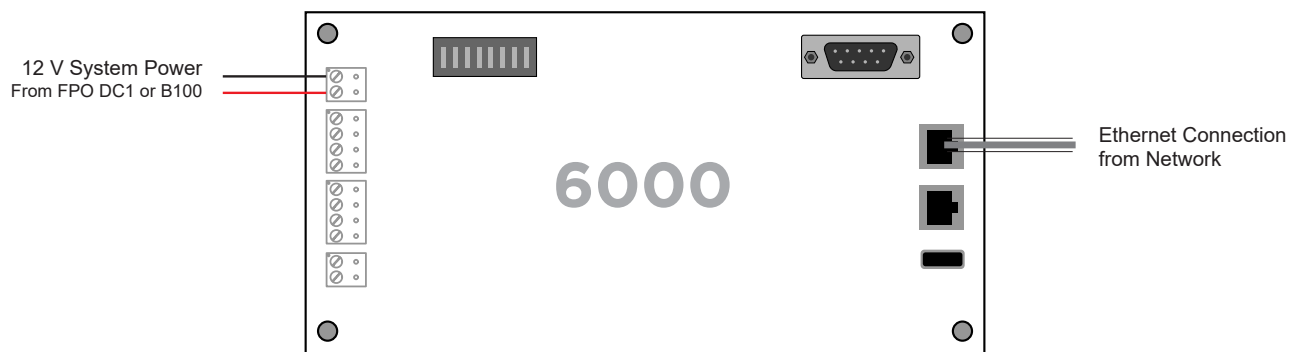
System Wiring Example

Gallagher Board Output Relay Wiring

The output relays of the Gallagher controllers are prewired to the inputs of the C8 or M8 lock control boards. Wiring is twisted pair and is color coded.



Typical Wiring: Controller 6000 Series



The Gallagher Security 6000 series intelligent controllers provide decision making, event reporting, and database storage for the controller hardware platform.

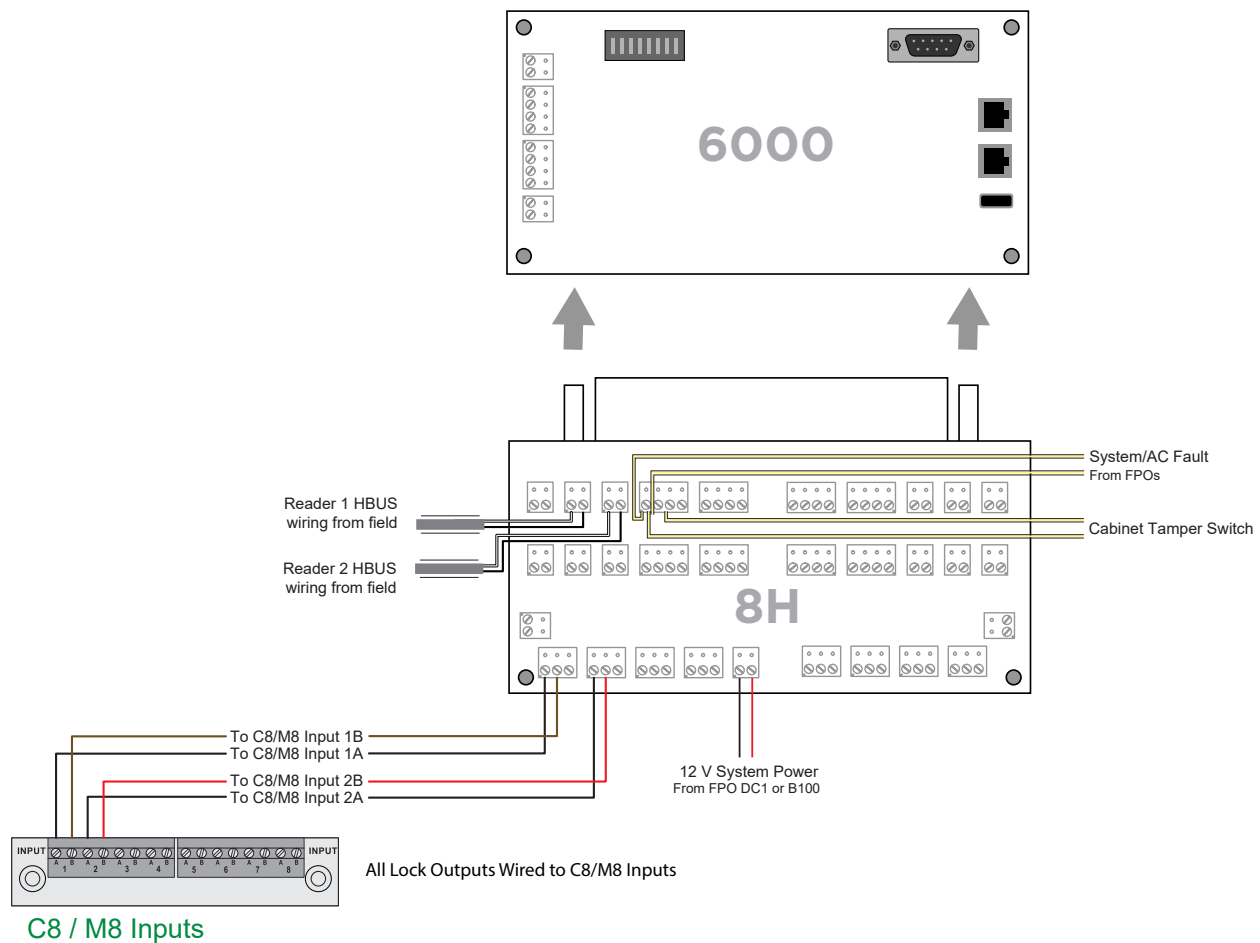
4H or 8H modules can be plugged into the 6000 controller to provide door control. Other HBUS devices can be attached using the RS-485 1 or 2 out of the controller or by using HBUS lines out of the expansion module.

The 6000 series controllers and expansion modules require 13.6VDC for power and are connected directly to the B150.

Mechanical mounting is by six, supplied, 4-40 x 3/4" machine screws (four for the 6000 controller and an additional two for the connected module). Before installing, the 4H, 8H, or IO module must be plugged into the 6000 controller.

For electrical connection, remove the appropriate terminal strips from the board and replace with the supplied, pre-wired and identified terminal strips.

Typical Wiring: 8H, 4H Modules



The Gallagher Security 4H and 8H modules provide input, output and HBUS connectivity. The 8H provides eight reader interfaces to control eight doors, while the 4H provides four reader interface to control four doors. The 4H and 8H modules plug into the bottom edge of the 6000 controller.

The 4H or 8H module requires 13.6VDC for power and are connected directly to the B150. Eight physical barriers can be controlled with the 8H.

The relay outputs are used to interface with the C8 or M8 lock control board input terminals. These wires are color coded to denote the specific input connection.

For electrical connection, remove the appropriate terminal strips from the board and replace with the supplied, pre-wired and identified terminal strips.



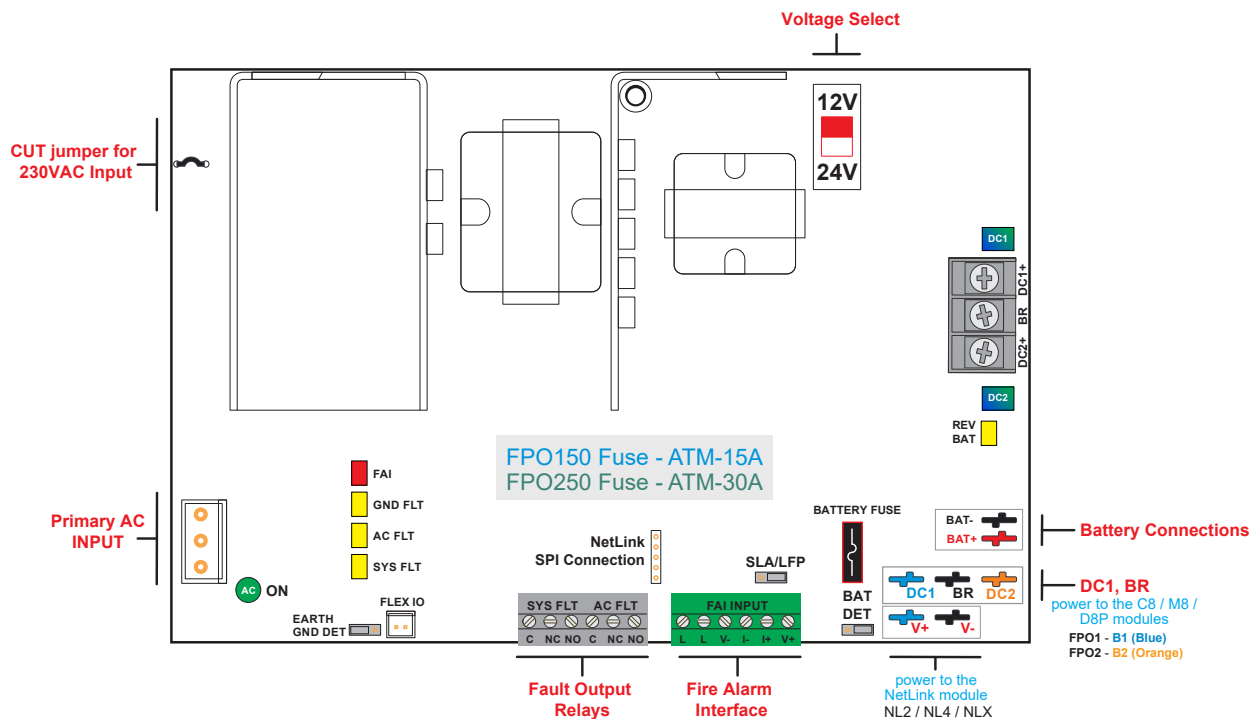
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LSP /
GALLAGHER
PROWIRE®



Typical Wiring: FPO150 / FPO250



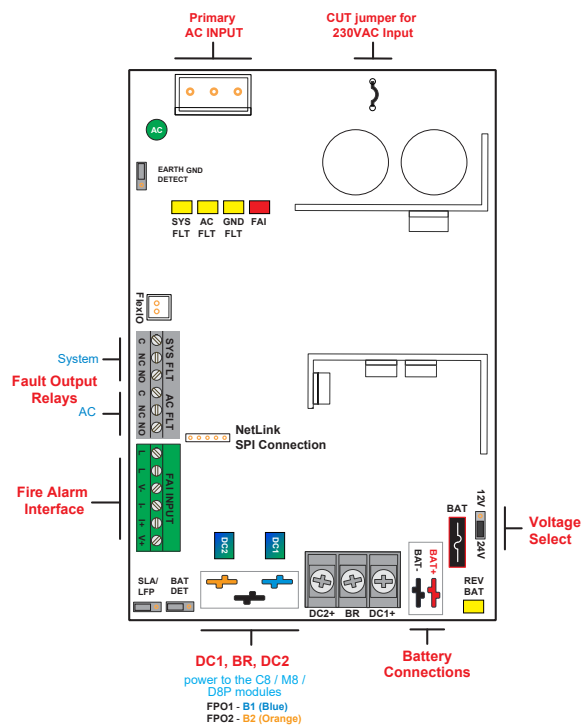
The FPO150 will provide 12VDC @ 12A or 24VDC @ 6A and the FPO250 will provide 12VDC @ 20A or 24VDC @ 10A. The output voltage is selectable by the slide switch in the upper right corner of the unit. Either unit will charge 4 to 80 Ah of battery capacity.

Voltage from this device is available throughout the system from the C8/M8 lock control boards and the D8P, SD4P, or SD16 power distribution boards.

AC and System Fault output relays of the FPO are wired to the Gallagher hardware, and a fire alarm interface is available for lock over ride in the event of a fire condition. The fire over ride is applied to the C8/M8 lock control boards as needed and programmed.

See the FPO installation manual for more information.

Typical Wiring: FPO75



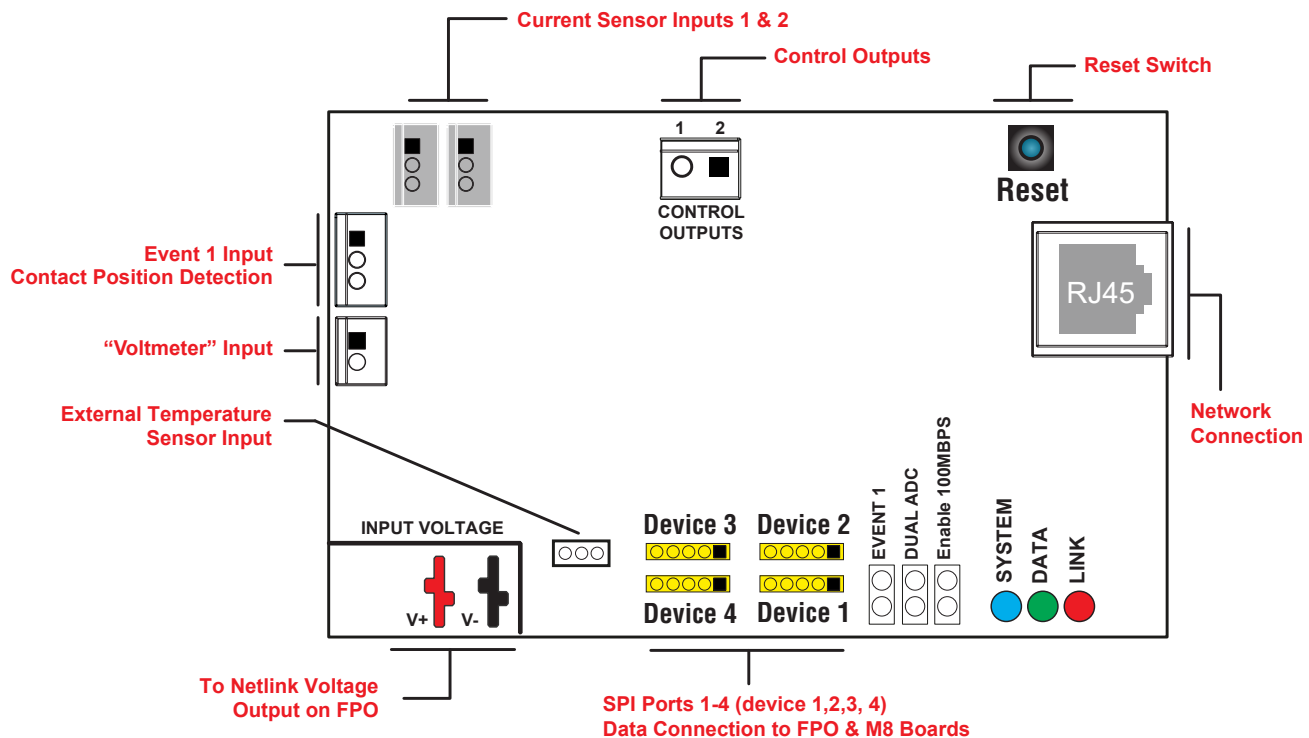
The FPO75 will provide 12VDC @ 6A or 24VDC @ 3A. The output voltage is selectable by the two position jumper in the center of the unit. The FPO75 will charge 4 to 40 Ah of battery capacity.

Voltage from this device is available throughout the system from the C8/M8 lock control boards and the D8P, SD4P, or SD16 power distribution boards.

AC and System Fault output relays of the FPO are wired to the Gallagher hardware, and a fire alarm interface is available for lock over ride in the event of a fire condition. The fire over ride is applied to the C8/M8 lock control boards as needed and programmed.

See the FPO installation manual for more information.

Typical Wiring: NL4 NetLink Module



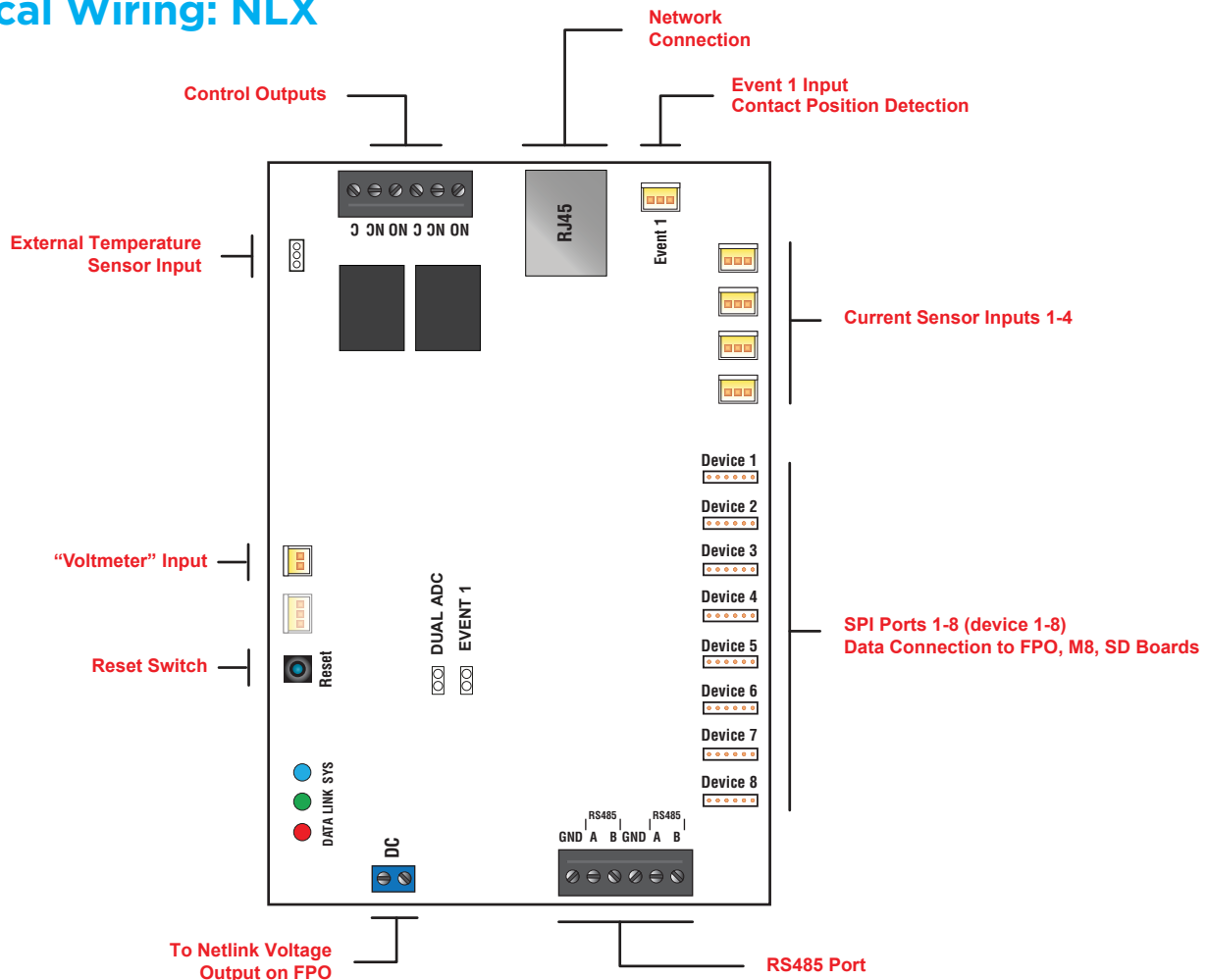
The NL4 is a network module that allows status communication and power control over a local or wide area network. The NL4 provides four device ports for connection to local FlexPower devices. Data monitored includes fault status, power supply output voltage, battery voltage and charging current, and FAI status. When used with an M8, SD4, or SD16 output board, the NL4 allows control, along with the ability to view voltage and current for each output.

In addition to the four device ports, the NL4 also includes two current sensors, a voltmeter input, an external temperature sensor, and a contact monitor input. Upper and lower limits can be set for these inputs to provide an alert if the value goes out of range.

A 1000 point history data log updates at the selected interval and is emailed on a status change. The data log can also be set to send on a selected schedule.

See the NL4 Installation manual and Application notes AN-20, AN-23, AN-24, and AN-25.

Typical Wiring: NLX



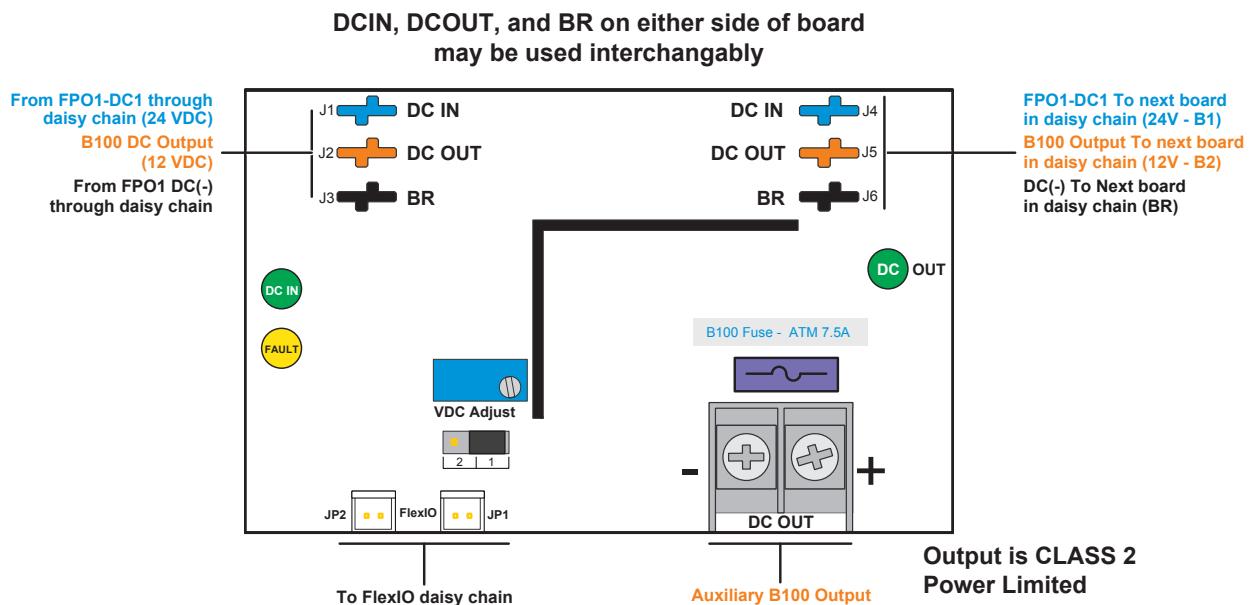
The NLX is a network module that allows status communication and power control over a local or wide area network. The NLX provides eight SPI device ports for connection to local FlexPower devices, and an RS485 port for connection to remote devices. Data monitored includes fault status, power supply output voltage, battery voltage and charging current, and FAI status. When used with an M8, SD4, SD16, or B150 board, the NLX allows control, along with the ability to view voltage and current for each output.

In addition to the SPI and RS485 ports, the NLX also includes four current sensors, a voltmeter input, an external temperature sensor, and a contact monitor input. Upper and lower limits can be set for these inputs to provide an alert if the value goes out of range.

A 1000 point history data log updates at the selected interval and is emailed on a status change. The data log can also be set to send on a selected schedule.

See the NLX Installation manual and Application notes AN-20, AN-23, AN-24, and AN-25.

Typical Wiring: B100



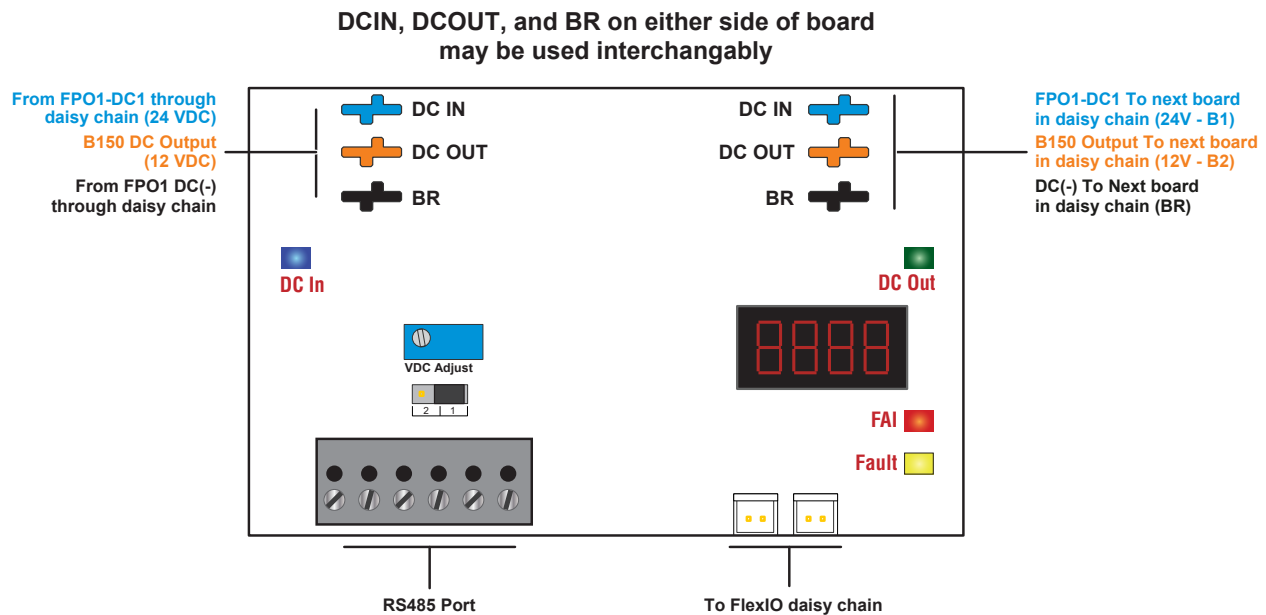
The B100 is used to provide an additional voltage when the necessary current is less than 4A. The advantages of using the B100 over a second FPO are that the B100 is physically smaller for more effective space utilization, more economical, and does not require a separate standby battery for 12V backup. Input power for the B100 is derived from FPO-1, which is set for 24V, rather than the AC line.

The B100 provides onboard visual indication of an operational or output fault and will transmit that fault condition to the host FPO in the system for activation of the FPO system fault relay. A system fault alert will be provided by the NetLink if installed in the system.

The B100 is rated as a Low Voltage, Class 2, power Limited unit.

See the B100 installation manual and Application Note AN-07 for more information.

Typical Wiring: B150

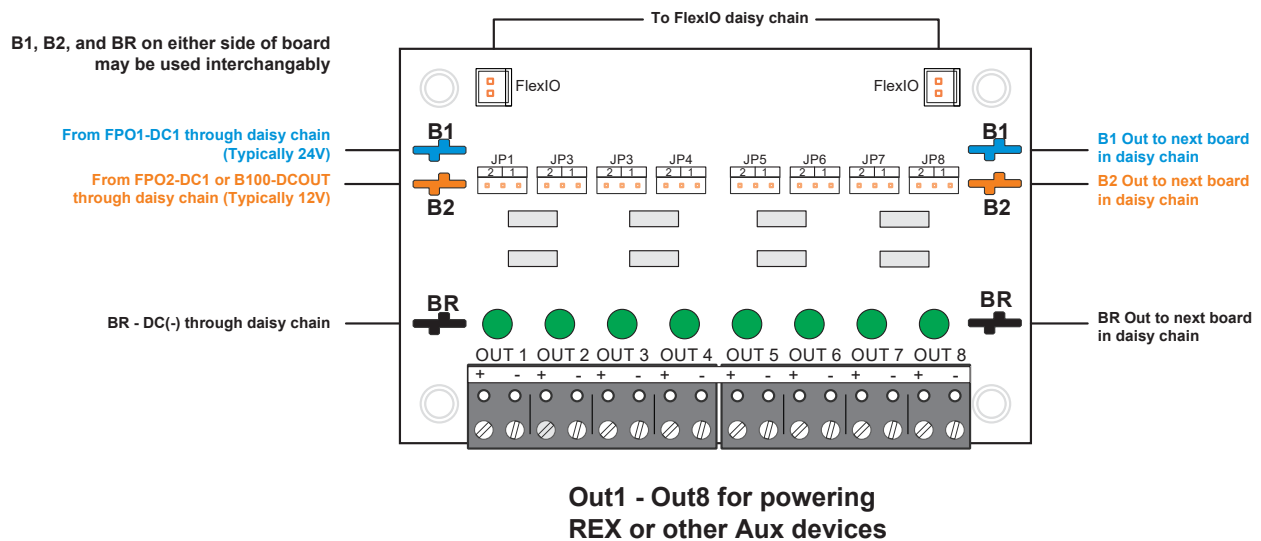


The B150 is used to provide 13.6V system power to the Gallagher controllers. Input power for the B150 is derived from FPO-1, which is set for 24V, rather than the AC line.

The B150 provides onboard visual indication of an operational or output fault and will transmit that fault condition to the host FPO in the system for activation of the FPO system fault relay. A four digit LED display shows total input power, output voltage, and output current.

An optional RS485 port allows connection of the B150 to the RS485 port of an NLX module to allow control and the ability to view the voltage and current of the output.

Typical Wiring: D8



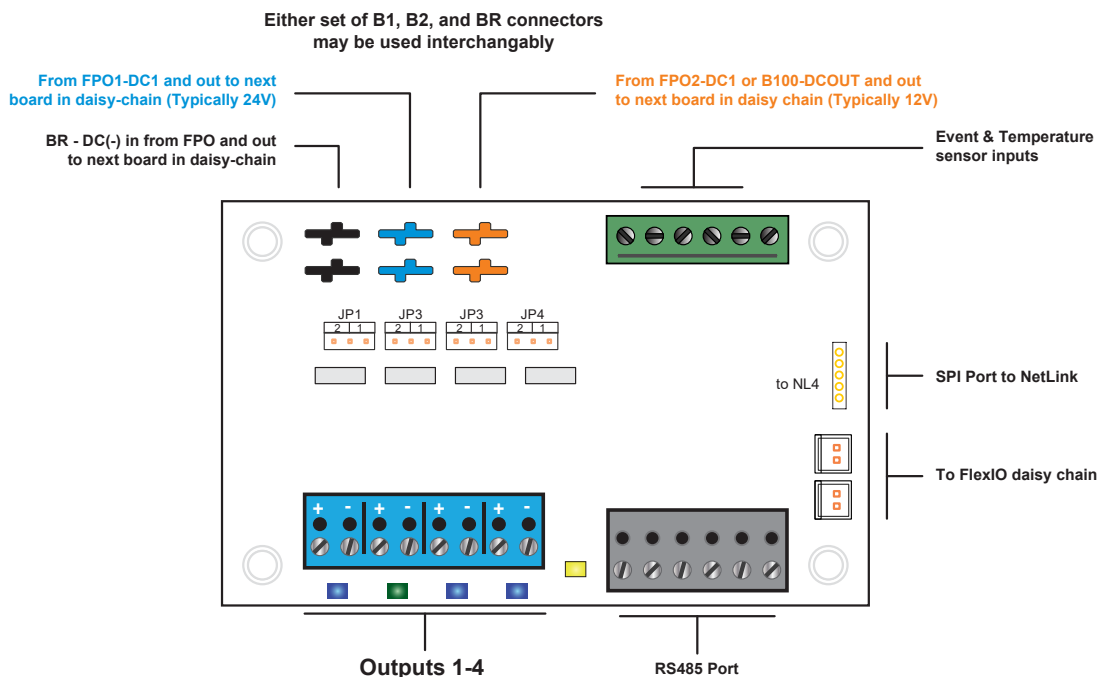
The D8 provides continuous auxiliary outputs. One or more D8 boards may be provided for external auxiliary power. The terminal strips on these D8 boards will be empty for connection to field devices.

Jumpers JP1 through JP8 are used to select the output voltage for each output in dual voltage systems. Position 1 selects the voltage on the B1 buss, while position 2 selects the voltage on the B2 buss. Single voltage systems should leave these jumpers in position 1.

In dual voltage systems, B1 is 24V and B2 is 13.6V, as set from the factory.

See the D8 installation manual for more information.

Typical Wiring: SD4P



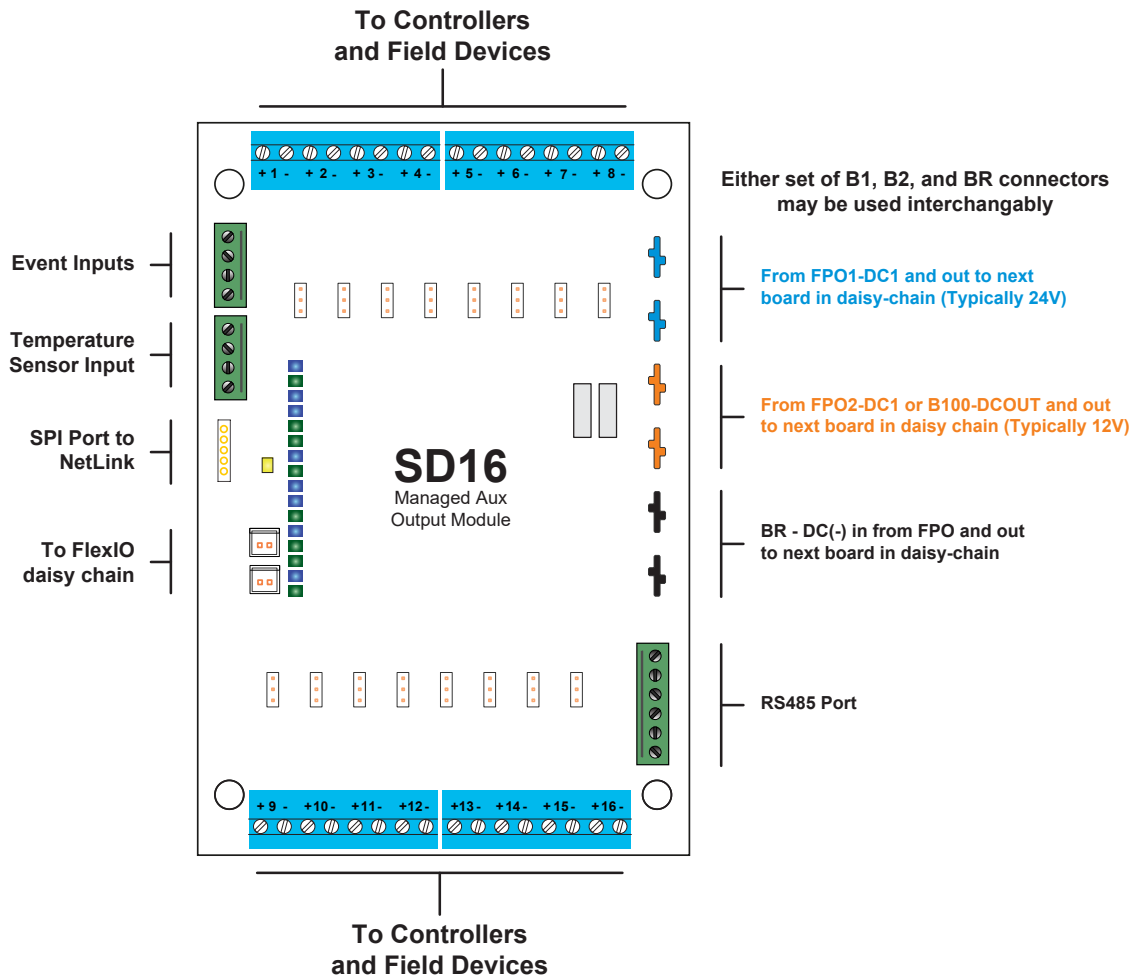
The SD4P provides network managed continuous auxiliary outputs. One or more SD4P boards may be provided for external auxiliary power. The terminal strips on these additional SD4P boards will be empty for connection to field devices.

System configuration, FAI Operation, and fault setpoints are selectable through the embedded browser interface of the required NL4 or NLX. Outputs may be individually power cycled remotely. One jumper per zone is provided for voltage selection in dual voltage systems.

See the SD4 and NL4/NLX Installation manuals for more information.



Typical Wiring: SD16



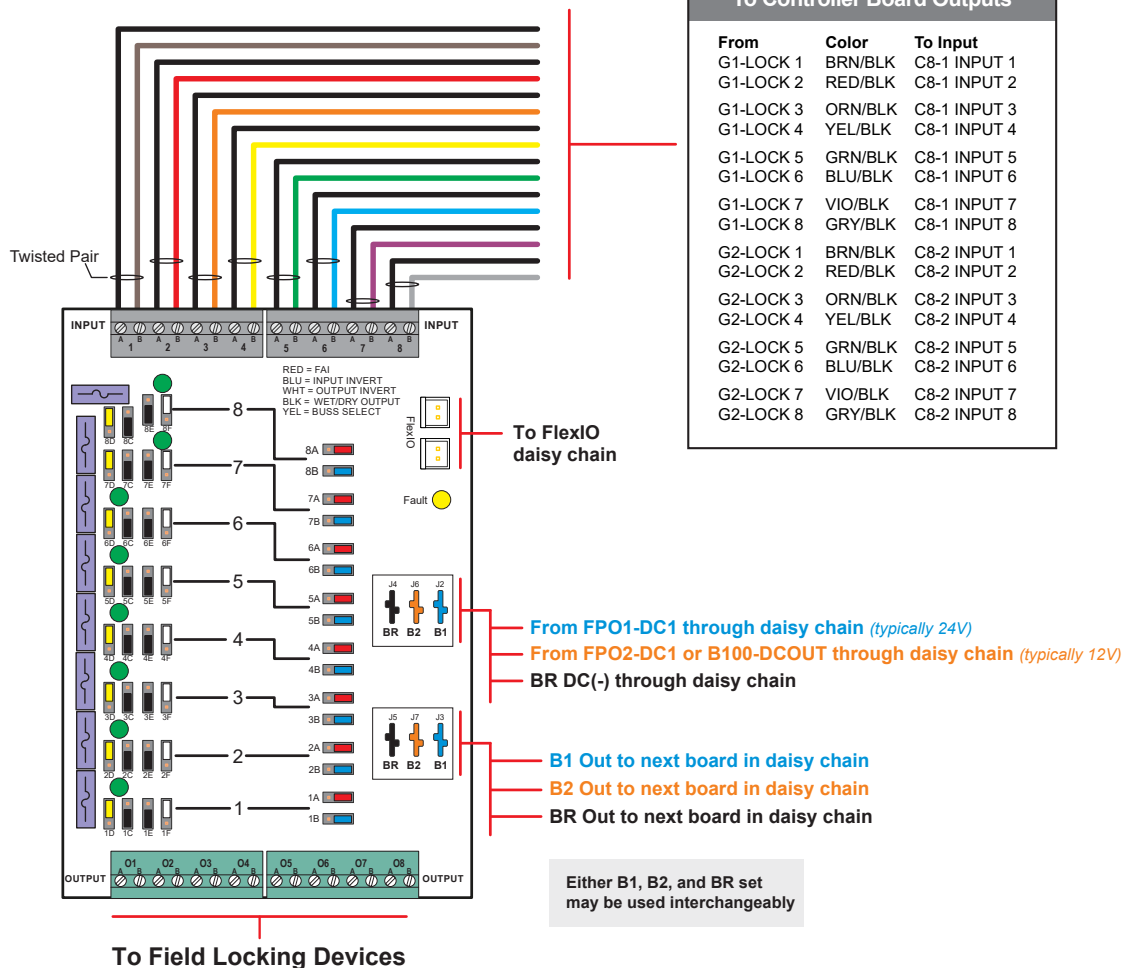
The SD16 provides network managed continuous auxiliary outputs. One or more SD16 boards may be provided for external auxiliary power. The terminal strips on these SD16 boards will be empty for connection to field devices..

System configuration, FAI Operation, and fault setpoints are selectable through the embedded browser interface of the required NL4 or NLX. Outputs may be individually power cycled remotely. One jumper per zone is provided for voltage selection in dual voltage systems.

See the SD16 and NL4/NLX Installation manuals for more information.



Typical Wiring: C8



The C8 provides a protective and operational buffer between the access control boards and field induced problems or issues.

Eight trigger inputs are pre-wired to the access control outputs with color-coded, twisted-pair wires and eight relay controlled outputs are provided for lock control. Each output is capable of 3A of current and is selectable for either voltage in dual voltage systems.

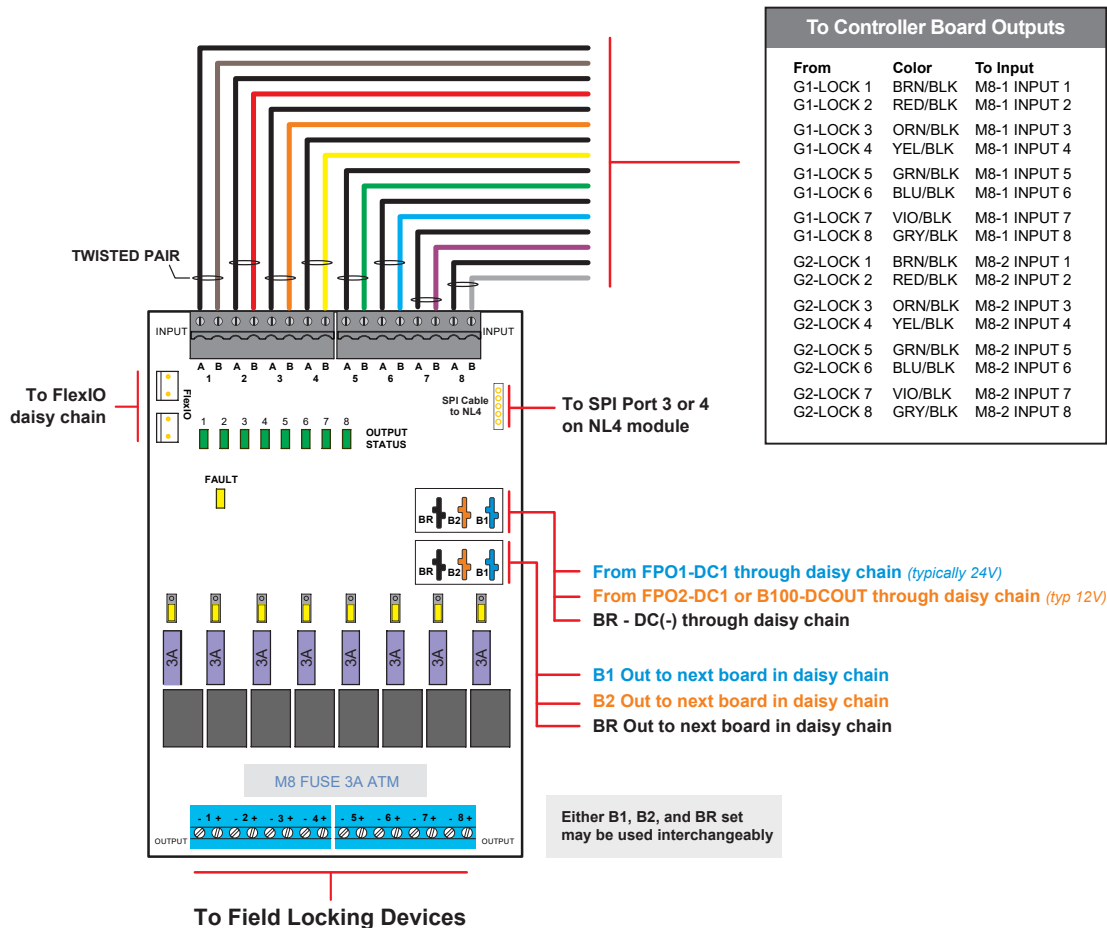
The blue and black jumpers are pre-set from the factory. The jumpers below need to be set by the installer.

See the C8 installation manual and Application Note AN-29 for more information.

Color	Function	Position 1	Position 2
Red	FAI	Enabled	Disabled
Yellow	Voltage Select	B1	B2
White	Lock Type	Maglock (Fail Safe)	Strike (Fail Secure)



Typical Wiring: M8



The M8 provides a protective and operational buffer between the access control boards and field induced problems or issues. This unit is used for lock control when a network managed system is desired with remote control, reporting, and diagnostics.

Eight trigger inputs are pre-wired to the access control lock outputs with color-coded, twisted-pair wires and eight relay controlled outputs are provided for lock control. Each output is capable of 3A of current and is selectable for either voltage in dual voltage systems.

System configuration, FAI Operation, and lock operation are selectable through the embedded browser interface of the required NL4. One jumper per zone is provided for voltage selection in dual voltage systems.

See the M8 and NL4 installation manuals for more information.



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