

M8/M8P Installation Manual

Table of Contents

Description	1
Specifications	1
Regulatory Information	1
Mounting the Power Control Module	1
Power Control Module Overview.	2
Connecting the Power Control Module	4
Input and Output Wiring	5
Programming	6
Application Example	10

Description

The M8 power control modules add 8 zones to an FPO power supply system for powering and monitoring locks, cameras, or other critical devices. The M8 **MUST** be used with an NL4 network module. The M8 accepts either one or two voltage sources, either of which are selectable for output on a zone-by-zone basis. 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 fail-safe or fail-secure door-strike outputs. The suffix "P" added to the model number denotes Class 2 Power Limited outputs.

Specifications

Power Input	Voltage	12 or 24VDC nominal $\pm 15\%$
	Current	20A maximum
	Standby Current	300mA All lock control relays active
Zone Input	Voltage Input	12 or 24VDC
	Max Current	10mA
Zone Output	Voltage	Same as input
	M8 Current	3A
	M8P Current	2.5A Class 2 Power Limited
Fuse	3A	ATM automotive style (M8 only)
Size	M8/M8P	6.00" x 4.00" x 1.4" (152mm x 64mm x 36 mm)
Weight	M8/M8P	0.35lb (0.16kg)

Regulatory Information

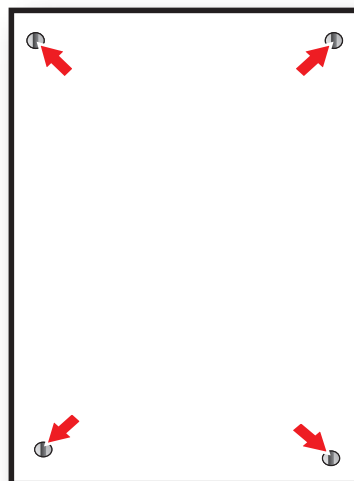
The equipment discussed within this manual has been tested to the following standards:

- UL294, UL603, UL864, UL1076, UL1481, UL2044, UL2572
- ULC S318, ULC S319, ULC S527
- CSA C22.2 #107.1
- CSFM Approved

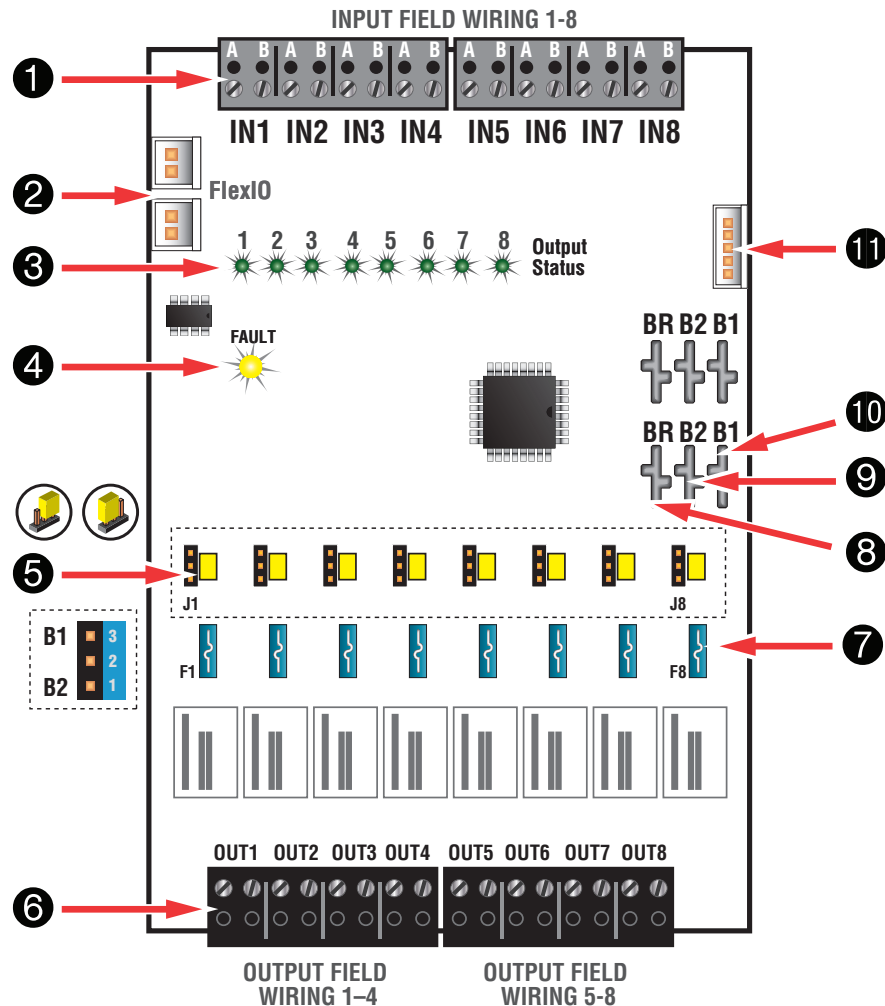
Mounting the Power Control Module

Mounting of the board to an enclosure is 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.



Power Control Module 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 of this manual for more information.

- When using a dry contact input, the contact is connected across the A and B terminals. When configured for a dry contact input, *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 Status LEDs (OUTPUT STATUS 1 – 8) – Green

These LEDs indicate the status of the zone's output. LED numbers correspond with the zone number (e.g. LED 1 is the LED for Output 1).

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
- **Off** Fuse or PTC open

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
- **Off** Fuse or PTC open

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 - See M8 Programming section of this manual for more information). This fault condition also transmits to the FPO 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.

 **CAUTION** 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.

7 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.

8 BR Connectors (J5 & J6)

The DC Common buss in the system. All boards in the system must have their BR fastons wired together for proper operation (except for between the DC and AC sections of an FPX hybrid system).

9 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 DC1 faston of an FPO 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.

10 B1 Connectors (J1 & J2)

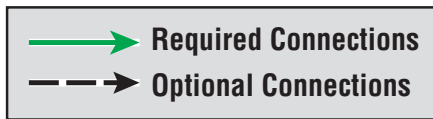
These fastons are for connection to the B1 voltage buss in the system. The voltage on the B1 buss comes from the DC1 faston of an FPO power supply. This voltage will be directed to any outputs whose Buss Selection Jumper is set in the B1 position.

11 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 an NL4 board and will not function if connected to an NL2 board.

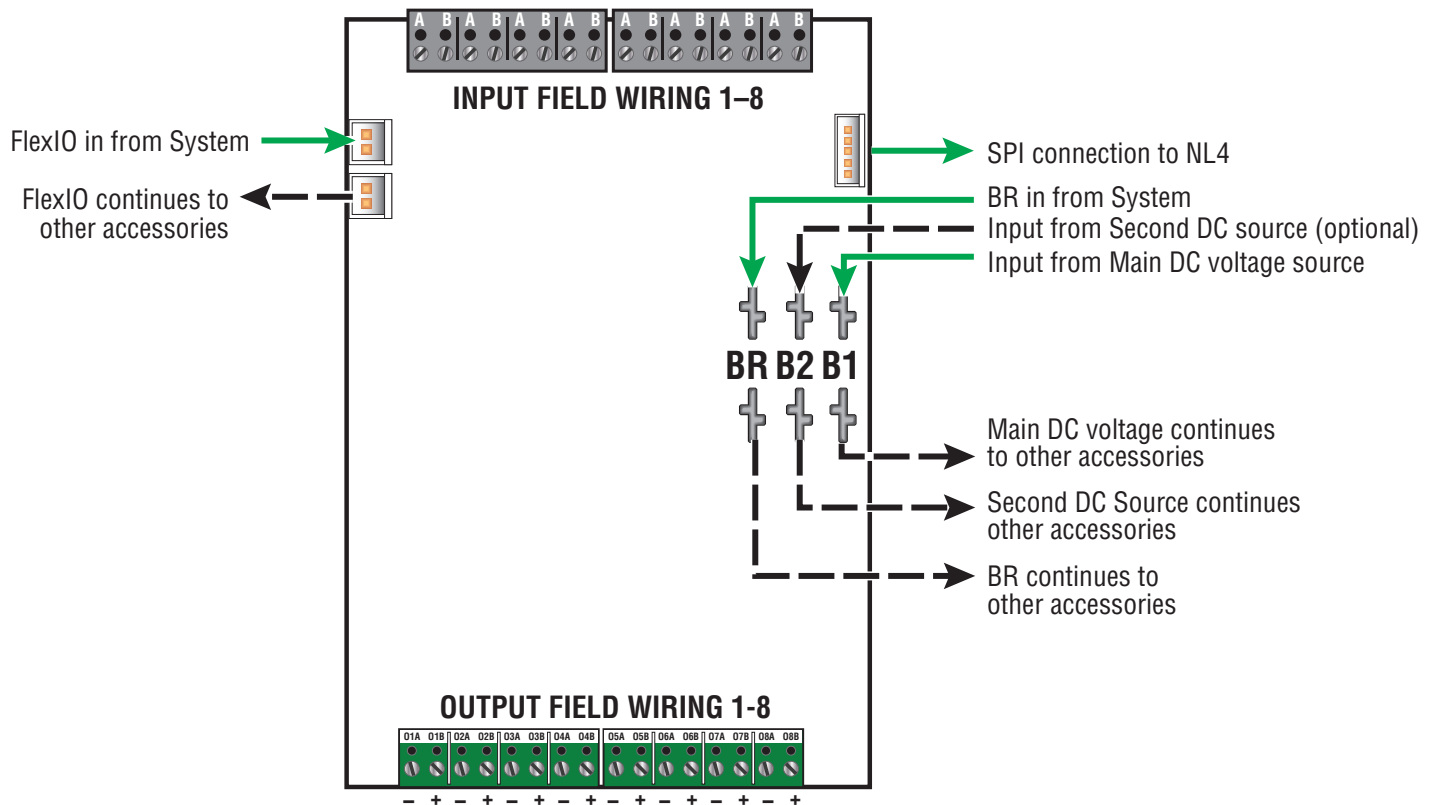
Connecting the Power Control Module

 **Remove all AC and battery power from the FPO system before adding or replacing a power control board.**



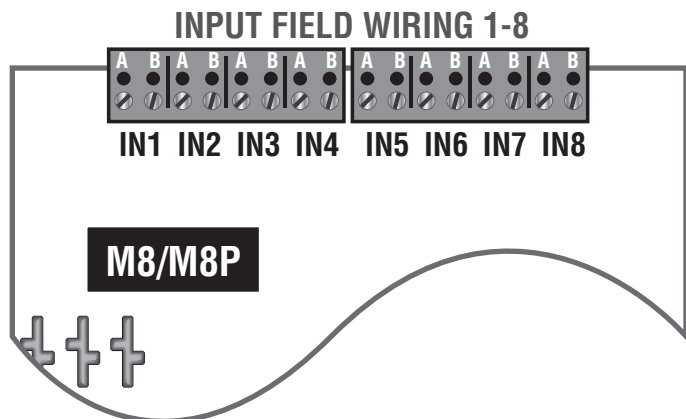
Each of the **B1**, **B2**, **BR**, and **FlexIO** busses has *two connectors*. These connectors may be used interchangeably.

For example: **FlexIO** from the power supply may be connected to either of the M8's FlexIO connectors, the Main DC voltage source may connect to either B1 terminal, etc.



Input and Output Wiring

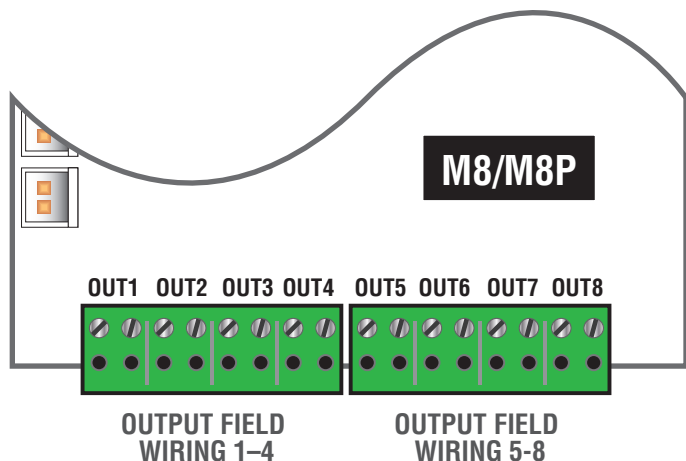
INPUT WIRING



Each input on the **M8** 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.

OUTPUT WIRING



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

⚠ CAUTION 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.

Programming

This section discusses software programming of the M8 board. It assumes a basic understanding of the NL4 software GUI interface. Consult the NL4 manual (P03-037) for more information on using the NL4 interface.

Accessing the M8 from the NL4 interface

From the home page of the NL4 interface, click on the photo of the M8 to be programmed 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 gives an overview of the current state of the M8 board.

Return Button - This button returns to the NL4 Home page.

Device ID - This field is the unique ID given to the device being monitored by the NL4.

Model - This is the model number of the board being monitored. In this case, "M8".

AC Power - This field gives the AC Power status of the connected FPO boards. "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".

Voltage (V) - This column shows the actual measured voltage (in DC Volts) at the output terminals of the M8 board for each zone. This is only the voltage at the output of the M8 and does not indicate power at the field device.

Current (A) - This column shows the measured current (in DC Amps) being drawn from the output terminals of the M8 for each zone.

Power (W) - This column shows the calculated power (in DC Watts) being supplied by the output terminals of the M8 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 board.

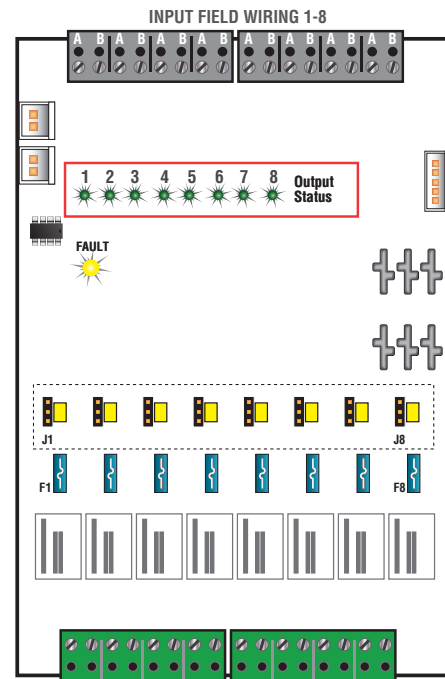
Control Input - This column indicates the state of the input terminals for each zone as "Active" or "Inactive". For example, if a zone is programmed for an Normally Open Input, the "Control Input" field for that zone will show "Active" when a closure is placed across the input terminals for that zone.



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.

Output Status - This column shows the status of each zone of the M8. "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.

Output Status - Detected Fault Conditions

- Ruptured Output Fuse
- Corresponding Green LED off, yellow Fault ON
- Incorrect Configuration
- Corresponding Green LED fast blink
- Output Voltage or Current Outside Programmed Limits
- Corresponding Green LED fast blink
- External Voltage applied to an Output that should be OFF
- Corresponding Green LED fast blink




PowerCom® POWER SYSTEM MANAGER


[HOME](#)
[Reporting](#)
[Configure](#)
[Tools](#)
 admin [Log Out](#)
 Ver: 6.05

Return
SITE ID NL4

Programming
Date Mon Jul 15 2013
 Time 14:43:08

Device ID: M8-1
 Model: M8
 AC Power: ON

Output #	Output Description	Voltage (V)	Current (A)	Power (W)	Power Ready	Control Input	FAI State	Output Status
<input type="checkbox"/> 1	Lobby Door	25.255	0.000	0.000	Yes	Inactive	Inactive	Normal
<input type="checkbox"/> 2	Storage Closet	25.225	0.000	0.000	Yes	Inactive	Disabled	Normal
<input type="checkbox"/> 3	Loading Dock	25.196	0.000	0.000	Yes	Inactive	Inactive	Normal
<input type="checkbox"/> 4		25.136	0.000	0.000	Yes	Inactive	Inactive	Normal
<input type="checkbox"/> 5		25.166	0.000	0.000	Yes	Inactive	Inactive	Normal
<input type="checkbox"/> 6		25.196	0.000	0.000	Yes	Inactive	Inactive	Normal
<input type="checkbox"/> 7		25.136	0.000	0.000	Yes	Inactive	Disabled	Normal
<input type="checkbox"/> 8		25.225	0.000	0.000	Yes	Inactive	Inactive	Normal

Rev.0.20
 Enable Selected Outputs
Disable Selected Outputs
Enable All Outputs
Disable All Outputs
Save Settings

The Status Page

The Programming Page

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" Button - 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" Button - This button will save all changes on the page.

"Fill All" Button - This button will take the settings from Zone 1 and copy them to Zones 2 through 8.

"Export Settings" Button - 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".

"Import Settings" Button - 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".

"Fill All" Buttons - 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 through 8.

Output # - This column shows each zone number

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

Normally Closed - A Normally Closed (NC) dry contact. The input will be activated when the contact is opened.

Normally Open - A 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 12 or 24VDC voltage will activate the input.

Disabled - The input terminal will have no effect on the zone.

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

Maglock - The output power will be removed when the input is activated.

Fail-Safe Strike - The output power will be removed when the input is activated.

Fail-Secure Strike - The output power will be applied when the input is activated.

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 for each zone to select whether an FAI condition will affect the output of that zone. Choices are "Yes" and "No"

Unlock on AC Loss - This column has a drop-down list for each zone to select whether an AC Loss condition will affect the output of that 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 for each zone to select whether a fault condition on that zone will send an email alert. Choices are "Yes" and "No". Email settings must be properly configured in the NL4 Configuration Page. Consult the NL4 manual (P03-037) for more information.

Voltage Lower Limit (V) - This column allows setting a lower voltage limit to trigger an email alert for each zone. For example, if the lower voltage limit is set for 23.5V, an email will be sent 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 an email alert for each zone. For example, if the upper voltage limit is set for 26.0V, an email will be sent if the voltage on that zone goes above 26.0V.

Current Lower Limit (A) - This column allows setting a lower current limit to trigger an email alert for each zone. For example, if the lower current limit is set for 1.0A, an email will be sent if the current on that zone goes 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 an email alert for each zone. For example, if the upper current limit is set for 2.0A, an email will be sent when the current on that zone goes above 2.0A.


PowerCom® POWER SYSTEM MANAGER


HOME [Reporting](#) [Configure](#) [Tools](#)
admin [Log Out](#)
Ver: 6.05

SITE ID NL4

Date Mon Jul 15 2013

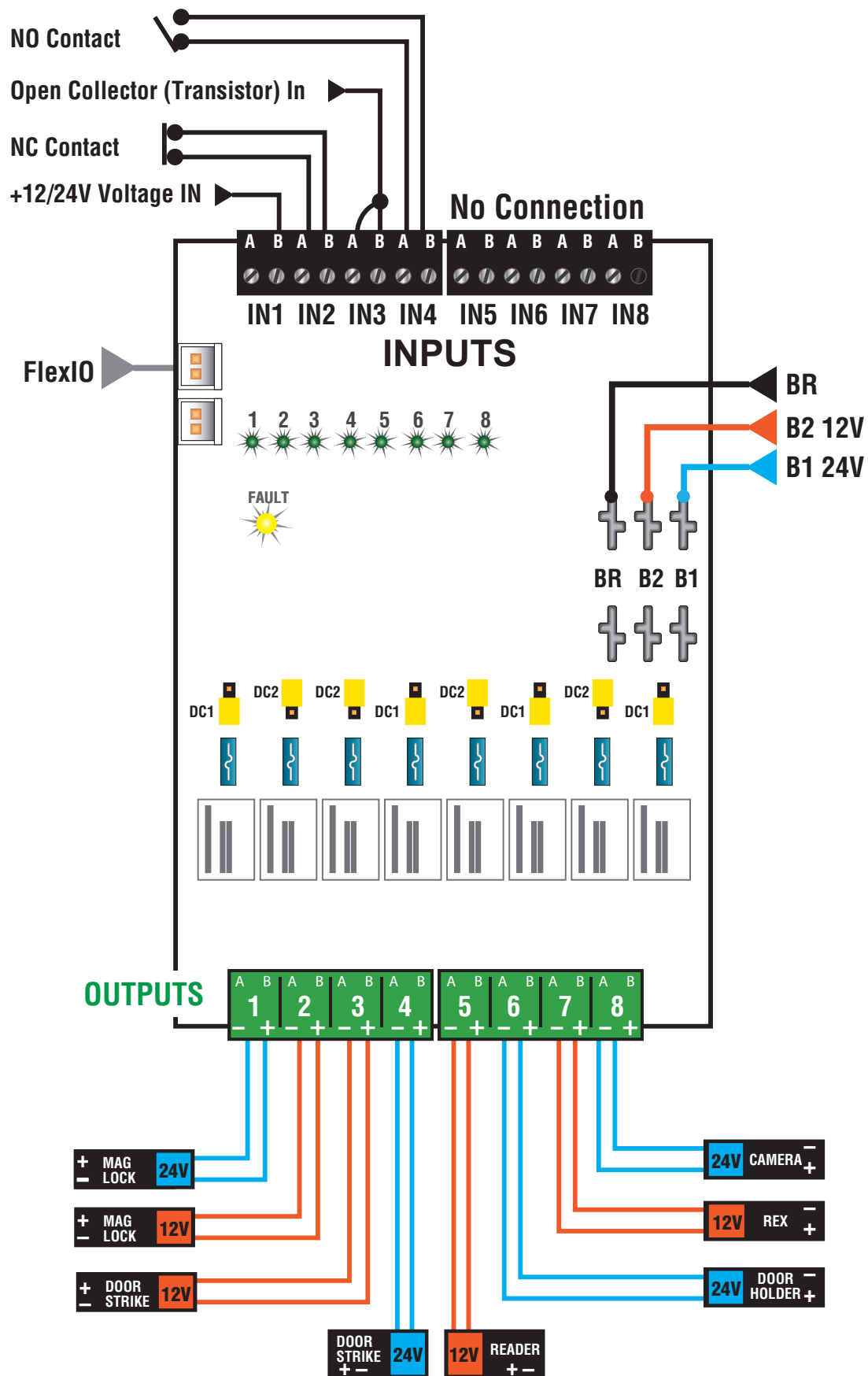
Time 14:48:00

Return
Save Setting
Fill All
Export Setting
Import Setting

Output #	Control Input Type	Output Load Type	Unlock on FAI Activation	Unlock on AC Loss	Email Alert on Fault	Voltage Lower Limit (V)	Voltage Upper Limit (V)	Current Lower Limit (A)	Current Upper Limit (A)
	Fill All	Fill All	Fill All	Fill All	Fill All	Fill All	Fill All	Fill All	Fill All
1	Normally Open ▾	Maglock ▾	Yes ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
2	Normally Open ▾	Maglock ▾	No ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
3	Normally Open ▾	Maglock ▾	Yes ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
4	Normally Open ▾	Maglock ▾	Yes ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
5	Normally Open ▾	Maglock ▾	Yes ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
6	Normally Open ▾	Maglock ▾	Yes ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
7	Normally Open ▾	Maglock ▾	No ▾	No ▾	No ▾	0.000	28.000	0.000	2.000
8	Normally Open ▾	Maglock ▾	Yes ▾	No ▾	No ▾	0.000	28.000	0.000	2.000

The Programming Page

Application Example



Zone 1***24V Mag Lock Output, Voltage Input***

This zone shows a typical 24V Mag Lock application, using a voltage input on the zone. The door can be configured via software to unlock upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B1

Zone 2***12V Mag Lock Output, NC Relay Contact Input***

This zone shows a typical 12V Mag Lock application, using a NC relay contact as the input for the zone. The door can be configured via software to unlock upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B2

Zone 3***12V Door Strike Output, Open Collector (transistor) Input***

This zone shows a typical 12V Door Strike application, using an open collector (transistor) input on the zone. The door can be configured via software to unlock upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B2

Zone 4***24V Door Strike Output, NO Relay Contact Input***

This zone shows a typical 24V Door Strike application, using a NO relay contact as the input for the zone. The door can be configured via software to unlock upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B1

Zone 5***12V Reader Power, no control input***

This zone shows continuous 12V auxiliary power for powering a device such as a reader. The output can be configured via software to remove power upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B2

Zone 6***24V Door Holder Power, no control input***

This zone shows continuous 24V auxiliary power for powering devices such as door holders. The output can be configured via software to remove power upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B1

Zone 7***12V REX Power, no control input***

This zone shows continuous 12V auxiliary power for powering devices such as REX devices. The output can be configured via software to remove power upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B2

Zone 8***24V Camera Output, no control input***

This zone shows continuous 24V auxiliary power for powering devices such as PTZ Cameras. The output can be configured via software to remove power upon an FAI signal being received from the FPO Power Supply.

Jumper Position: B1

FlexPower System Replacement Parts

Board Kits	Order #	Description
FPO250	A01-007	FPO250 replacement board
FPO150	A01-005	FPO150 replacement board
FPO75	A01-003	FPO75 replacement board
FPO25	A01-001	FPO25 replacement board
B100	A03-009	DC-DC Converter (12VDC or adjustable 5 to 18VDC) replacement board
D8	A02-001	Simple distribution replacement board
D8P	A02-002	Simple distribution (Class 2) replacement board
F8	A02-003	FAI controlled distribution replacement board
F8P	A02-004	FAI controlled distribution (Class 2) replacement board
C4	A02-005	Four zone power control replacement board
C4P	A02-006	Four zone power control (Class 2) replacement board
C8	A02-007	Eight zone power control replacement board
C8P	A02-008	Eight zone power control (Class 2) replacement board
N24	A04-001	Two Input, 4 Output NAC Expander accessory replacement board
NL2	A11-001	NetLink network communication board (used in FPO systems)
NLR	A11-002	NetLink network communication kit / remote reset (used in FPA systems)
NS2	A11-003	Reset module board for use with NL2
RB2	A25-001	2A Relay, 12VDC or 24VDC input range, DP/DT
RB5	A25-002	5A Relay, 12VDC or 24VDC input range, DP/DT
RB8	A25-003	8A Relay, 12VDC or 24VDC input range, DP/DT
Hardware	Order #	Description
DL1	A05-001	DataLink USB cable
BDM	A05-006	Battery Disconnect Module cable
AC Cable	A05-005	AC Input Cable for FPO Power Supply
Battery Cable	A05-002	Battery Harness – 24"
Module Cable - 12"	A05-003	Accessory board cable set – 12"
Module Cable - 18"	A05-004	Accessory board cable set – 18"
Fuse - 3A	A05-201	ATM-3A Fuse – Bag of 25
Fuse - 5A	A05-202	ATM-5A Fuse – Bag of 25
Fuse - 7.5A	A05-203	ATM-7.5A Fuse – Bag of 25
Fuse - 10A	A05-204	ATM-10A Fuse – Bag of 25
Fuse - 15A	A05-205	ATM-15A Fuse – Bag of 25
Fuse - 30A	A05-206	ATM-30A Fuse – Bag of 25
Standoffs	A05-301	Nylon Standoffs – Bag of 25
Camlock Set	A05-302	Key and Lock fits LSP "E" enclosure

LifeSafety Power, FlexConnect and FlexIO are trademarks of LifeSafety Power Inc. or its affiliates.

LifeSafety Power, Inc.
 750 Tower Road, Unit B
 Mundelein, IL 60060 USA
www.lifesafetypower.com
 Tel (888) 577-2898
info@lifesafetypower.com

Important: All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their particular application. LifeSafety Power makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use. LifeSafety Power's only obligations are those in the LifeSafety Power Standard Terms and Conditions of Sale for this product, and in no case will LifeSafety Power or its distributors be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of the product. Specifications are subject to change without notice. In addition, LifeSafety Power reserves the right to make changes—without notification to Buyer—to processing or materials that do not affect compliance with any applicable specification.