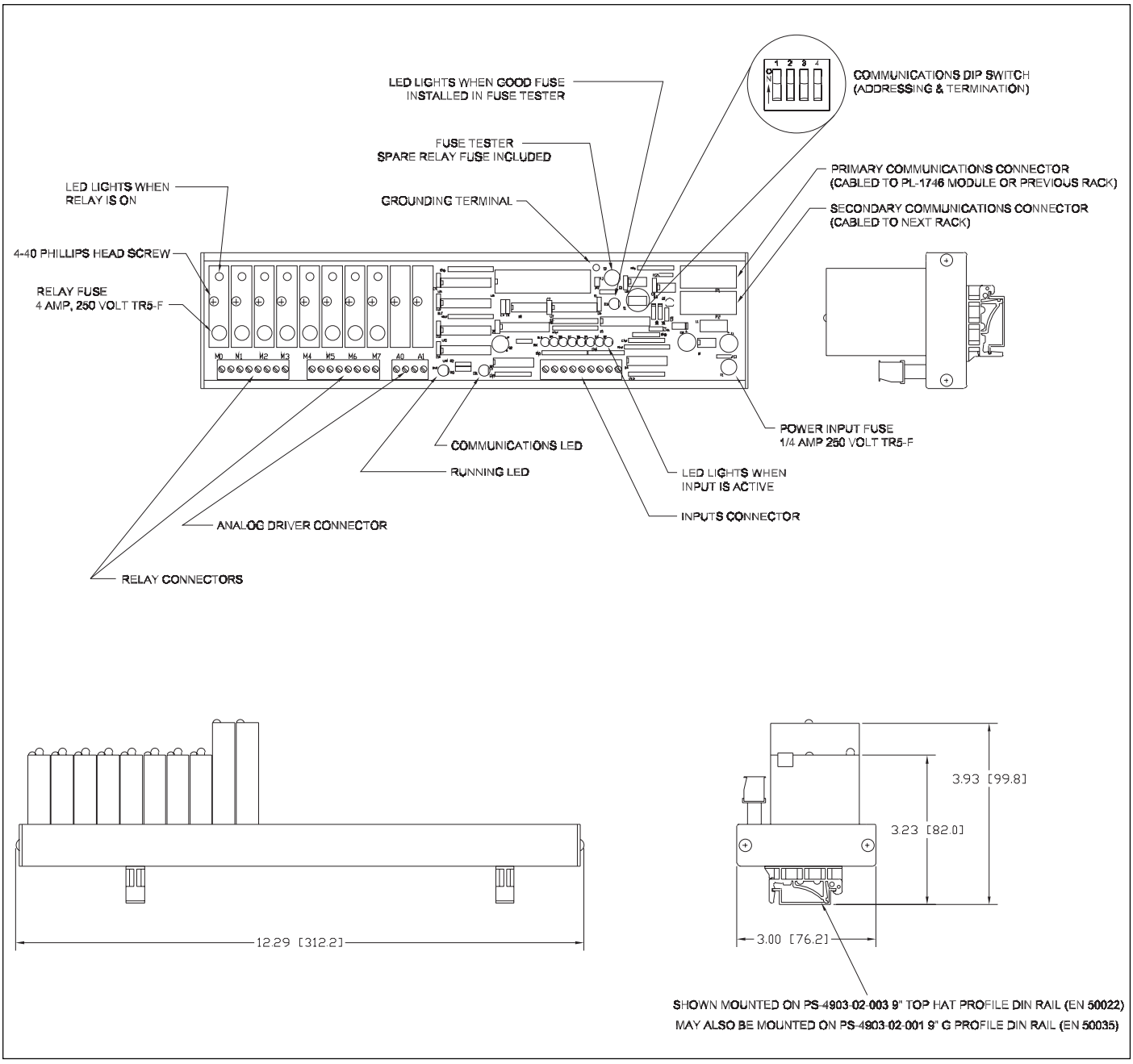
PS-4108-13-L08 I/O Rack



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PS-4108-13-L08 I/O Rack Description

Overview
The PS-4108-13-L08 I/O rack provides inputs, analog outputs, and digital power outputs (requiring Slimline™ solid state relays) for the PL-1746 programmable limit switch plug-in modules. The rack is UL/C-UL listed. CE marking is pending.

PS	The rack is a member of Electro Cam Corp.'s PLµS product line.
41	The rack is mounted external to the Allen-Bradley module chassis.
08	The rack has 8 inputs.
13	The rack and PLS module communicate via Electro Cam Corp.'s proprietary *Type 13* communications.
L	The rack has two SLIMLINE analog output module slots.
08	The rack has 8 SLIMLINE solid state slots.

Environmental Requirements

Operating Temperature	0 to 55 ∞C (32 to 131 ∞F)
Storage Temperature	-40 to 70 ∞C (-40 to 160 ∞F)
Humidity	95% maximum, non-condensing

For indoor use only.
For use at altitudes up to 2000 m (meters).
Overvoltage Category I. Pollution Degree I.

CE Installations
For installations that must comply with CE requirements the PL-1746 and PS-4108 must be mounted inside a metal enclosure. In addition, a CoreCom 20VK6 or equivalent single stage PI filter must be connected across the AC input to the SLC power supply. A Steward 28A2025-0A0 or equivalent ferrite bead must be snapped onto the resolver cable as close to the enclosure wall (inside) as possible.
Installations must comply with all other manufacturer's requirements.

Mounting & Grounding
The rack's mounting channel is held to either EN 50035 G profile or EN 50035 top hat profile DIN rail via three mounting clips. The rack has a 4-40 captive nut connected to the ground plane that must be tied to earth ground in the customer's installation. This must be done to maintain EMC compatibility.

Cabling
The primary communications connector (see the connections drawing) on the rack is connected to the PLS module via the special rack cable. The secondary communications connector allows the user to daisy-chain a second rack to the first. These connections provide both for receiving input power from the PLS and for communication with the PLS. The aggregate length of all rack cables attached to a given PLS module must be 50 feet or less. The cable's shield is tied to the metal jacket covering the connectors on both ends. The jackscrews of the second DB9 are tied to ground on the PCB, while those of the first DB9 are not. Thus the shield of each cable is tied to ground at only one end.

Power
The input voltage delivered to the PS-4108 rack from the PL-1746 PLS module is nominally 24V (20V min, 30V max) at a maximum of 250mA.

Fusing

Power Input Fuse (F1)	1/4 A, 250 V, TR5-F (European Style)
Spare Output Module Fuse(F3)	4 A, 250 V, TR5-F (European Style)
Fuse Tester	The rack includes a green LED (D3) that lights when a good fuse is installed in the fuse tester.

Communications
DIP switch S1 selects the rack's physical address. Note that if only one rack is used it must be addressed as rack 0.

Physical Address	Switch 1 (A0)	Switch 2 (A1)
0	ON	ON
1	OFF	ON

Rack Addressing

Termination resistors for the data and clock differential pairs are switched into the communications circuit by the S1 DIP switch. Line termination should be employed only on the rack furthest from the PLS module.

Switch	OFF	ON
3	Data Line Not Terminated	Data Line Terminated into 120W
4	Clock Line Not Terminated	Clock Line Terminated into 120W

Line Termination

Inputs

The rack has 8 inputs, and up to two racks can be daisy-chained in a given system; however, the inputs for the second rack are ignored. Each input is optically isolated and has a green LED status indicator. The terminals are labeled I0 through I7. All user connections to the inputs are made via a pluggable header. Each input has a single terminal and there is one common terminal, labeled C. An input's state is a logic one when current is flowing through its terminal on the connector, and it's state is a logic zero when current is not flowing. The inputs are not fused.

- To source current to the inputs, wire the rack's common terminal to the negative terminal of an external power supply.
- To sink current from the inputs, wire the rack's common terminal to the positive terminal of an external power supply.

	Minimum	Typical	Maximum
Absolute Maximum Voltage	----	----	30 V dc
Pickup Voltage		9.2 V	11.0V
Dropout Voltage	7.0V	9.2V	----
Current Draw	----	3.5mA	20 mA dc

See datasheet for Phoenix 1755804 header and 1792825 plug for insulation ratings.

Digital Outputs

The rack has 8 relay slots, so the maximum of two racks allows a system total of 16 power outputs. Additionally, a PS-4108-13-L16 can be added to a PS-4108-13-L08, but be aware that real-world outputs 8-15 will be skipped. Digital outputs are provided by SLIMLINE solid state relays or reed relays, and thus have specifications dependent on the relays used. All user connections to the outputs are made via pluggable headers, and plugs are included with the rack when it is shipped from the factory. The output terminals are labeled M0A, M0B through M7A, M7B, where the number is the output number and dc conventional current flows into the B terminal and out of the A terminal.

The maximum current rating for each module installed in the PS-4108 rack is as stated in the module's specifications, OR 1.5 amps, whichever is less.

See datasheet for Phoenix 1755794 header and 1792812 plug for insulation ratings.

Analog Outputs

The rack can control up to two analog modules in positions A0 and A1. Only one rack (the one with address 0) in a given system can have analog outputs. Analog outputs are provided by slimline analog modules, and thus have specifications dependent on the modules used. A pluggable header is used for wiring to the analog outputs, and a plug is included with the rack when it is shipped from the factory. The terminals are labeled such that, for analog output 0, conventional current flows out of the A0 terminal, through the load, and returns to the - terminal for analog output 0. Similarly, for analog output 1, conventional current flows out of the A1 terminal, through the load, and returns to the - terminal for analog output 1.

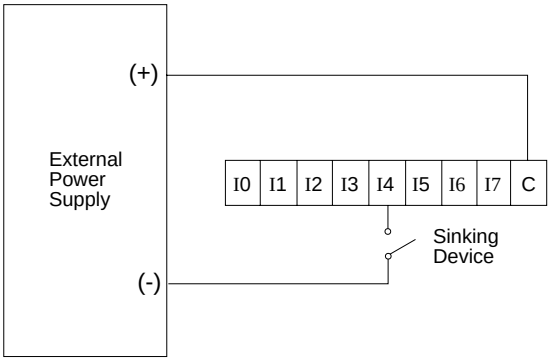
See datasheet for Phoenix 1755752 header and 1792773 plug for insulation ratings

Status Indicators

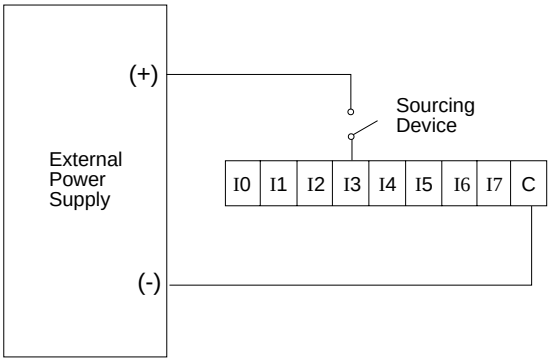
RUNNING	During normal operation the green *RUNNING* LED (D12) is lit.
COMMUNICATIONS	When Rack-to-PLS communications are ongoing the yellow *COMMUNICATIONS* LED (D11) is lit.

PS-4108-13-L08 Wiring Inputs

Sinking Devices



Sourcing Devices



I0	Group One Input
I1	Group Two Input
I2	Group Three Input
I3	Group Four Input
I4	Group Five input
I5	Group Six Input
I6	1st Cycle Enable
I7	Output Enable

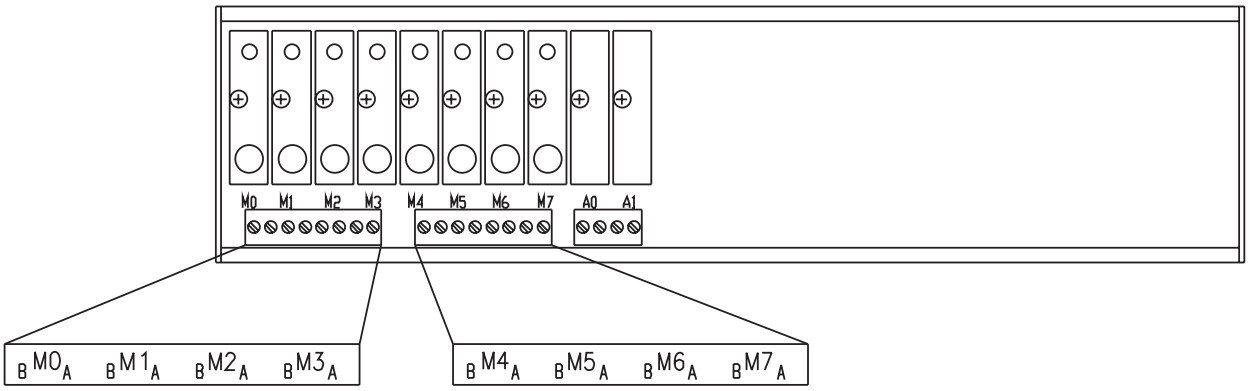
SINKING or SOURCING ***(as pertaining to Electro Cam Corp. products)***

Sinking means that when the logic is true and the output (or input device) is ON, the output (or input device) is providing a DC common or ground to the connected device.

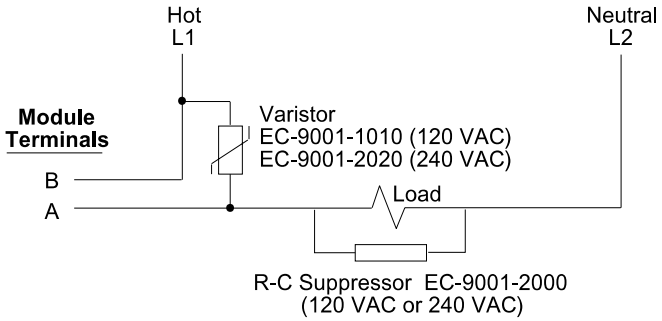
Sourcing means that when the logic is true and the output (or input device) is ON, the output (or input device) is providing a +DC voltage to the connected device.

This information is important when interfacing an Electro Cam Corp. product with another electronic device. The terms ***SINKING / SOURCING*** are not used in the same context by all manufacturers. If you are using an Electro Cam Corp. product input to an Allen-Bradley 1746-IN16 “sinking” input card* or similar A-B device, you have to supply a +DC voltage to this card, NOT a DC common or ground. In these cases, ***Sinking*** is what the card does with the input voltage; sinks it to common or ground.

PS-4108-13-L08 Wiring Digital Outputs



AC Output

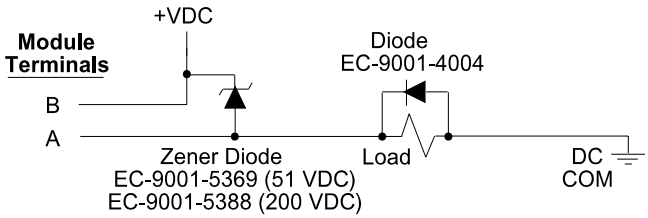


Most applications will not need the varistor or R-C suppressor shown above. However, when other switching devices are in series or parallel with the AC module, voltage spikes may damage the module. Use one of the following two methods to suppress voltage spikes.

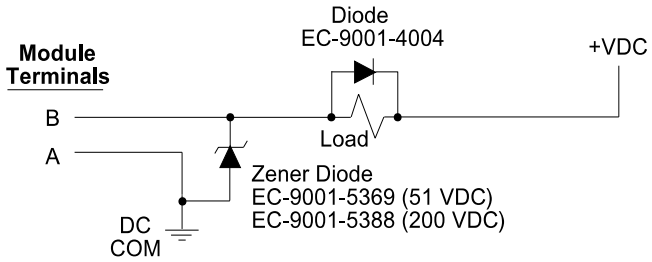
- For infrequent switching, connect a varistor (MOV) across the terminals.
- For continuous switching, wire an R-C suppressor in parallel with the load.

DC Output

Sourcing



Sinking



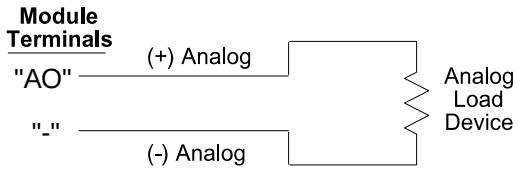
Most applications will not need the diodes shown above. However, highly inductive DC loads may damage modules by generating voltage spikes when switched off. Suppress these voltage spikes using one of these two methods:

- Connect a Zener diode across the terminals. This will not significantly increase the load turn off time. Voltage rating of the diode must be greater than the normal circuit voltage.
- Connect a reverse-biased diode across the load. This may increase the load turn off time.

PS-4108 Wiring Analog Outputs

A0	-	A1	-

Analog Output



- Analog output modules source the analog signal.
- No external supply is required.
- Analog output signals are isolated.

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