

### Description

Opto 22 SNAP "D Series" racks are designed for discrete control applications and can accommodate 4, 6, 8, or 12 SNAP 4-channel digital modules. These racks use an industry-standard 50-pin header connector, which allows them to be used in a variety of applications.

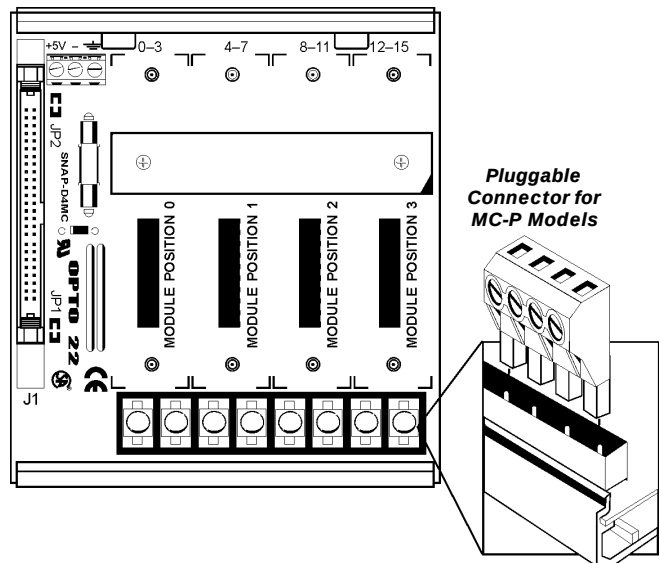
The logic side of the I/O circuitry can be controlled directly or by using an Opto 22 PCIe-AC5 (PCI Express bus), PCI-AC5 (PCI bus) or G4AC5 or AC5 (ISA bus) PC adapter card. In addition, the 4-module position SNAP-D4M can be used with Opto 22's Classic brain boards. These boards use one of Opto 22's industry-standard protocols (Mistic®, Optomux®, or Pamux®) to control the I/O, and communicate either serially or in parallel.

The MC and MC-P model racks provide an auxiliary screw-type terminal strip for additional wiring requirements. The MC racks use a fixed terminal strip while the MC-P uses removable connectors for easy maintenance (see enlarged view below).

Field devices are wired directly to the top-mounted removable connectors on the SNAP I/O modules. The module and rack design allows modules to simply "snap" on and off the mounting rack. SNAP racks use a retention rail locking system that holds modules securely to the rack. Normally, a hold-down screw is not required. However, for applications that require additional mounting security, SNAP racks have provisions for two 4-40 by 1/2-inch standard machine screws to hold each module in position. All SNAP racks offer panel mounting and the option of DIN-rail mounting. SNAP racks use a single 5 VDC power source.

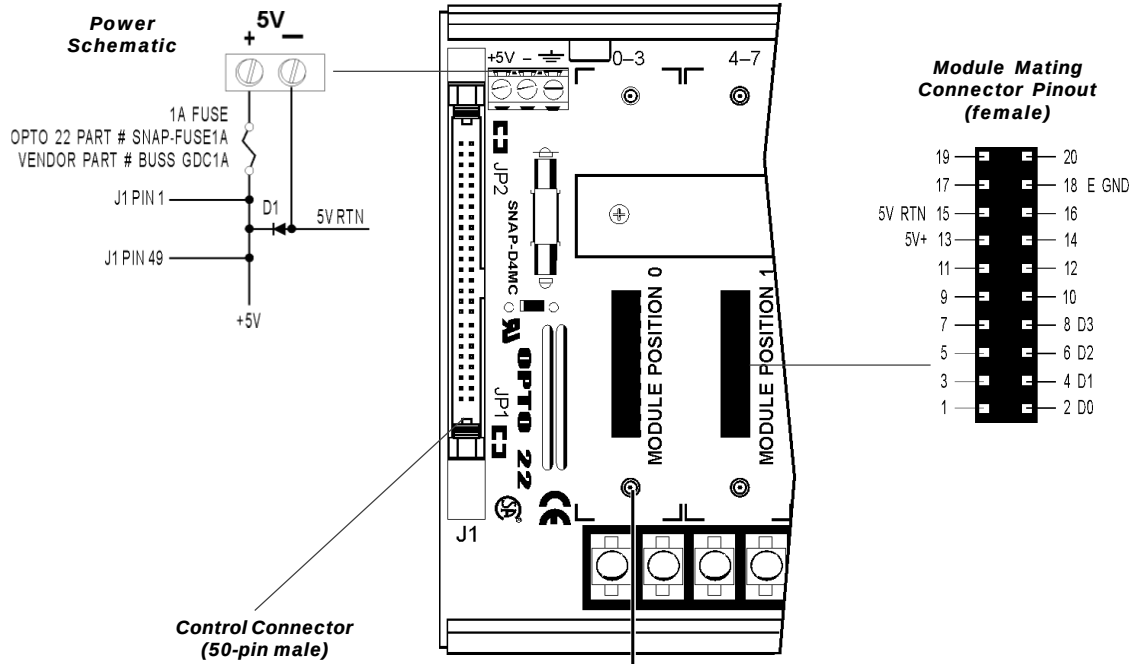
| Part Number    | Ordering Guide                                                                                        |
|----------------|-------------------------------------------------------------------------------------------------------|
| SNAP-D4MC      | SNAP I/O mounting rack: Digital 4-module rack with header connector. Common terminal block            |
| SNAP-D4MC-P    | SNAP I/O mounting rack: Digital 4-module rack with header connector. Common terminal block pluggable  |
| SNAP-D6MC      | SNAP I/O mounting rack: Digital 6-module rack with header connector. Common terminal block            |
| SNAP-D6MC-P    | SNAP I/O mounting rack: Digital 6-module rack with header connector. Common terminal block pluggable  |
| SNAP-D8MC      | SNAP I/O mounting rack: Digital 8-module rack with header connector. Common terminal block            |
| SNAP-D8MC-P    | SNAP I/O mounting rack: Digital 8-module rack with header connector. Common terminal block pluggable  |
| SNAP-D12MC     | SNAP I/O mounting rack: Digital 12-module rack with header connector. Common terminal block           |
| SNAP-D12MC-P   | SNAP I/O mounting rack: Digital 12-module rack with header connector. Common terminal block pluggable |
| SNAP-CDBBN     | Classic digital brain board DIN-rail adapter                                                          |
| SNAP-FUSE1A    | SNAP 1-Amp fuse                                                                                       |
| SNAP-TEX-DRC10 | SNAP PAC rack DIN-rail adapter clip                                                                   |

### SNAP-D4M 4-Module Position I/O Mounting Rack



### Specifications

#### SNAP-D4MC/MC-P (4 Module Position)



Module Holding Screw  
4-40 Typical

| Position | Channel Position | J1 Control Connector |
|----------|------------------|----------------------|
| 0        | 0                | 47                   |
|          | 1                | 45                   |
|          | 2                | 43                   |
|          | 3                | 41                   |
| 1        | 4                | 39                   |
|          | 5                | 37                   |
|          | 6                | 35                   |
|          | 7                | 33                   |
| 2        | 8                | 31                   |
|          | 9                | 29                   |
|          | 10               | 27                   |
|          | 11               | 25                   |
| 3        | 12               | 23                   |
|          | 13               | 21                   |
|          | 14               | 19                   |
|          | 15               | 17                   |

### Operating Requirements

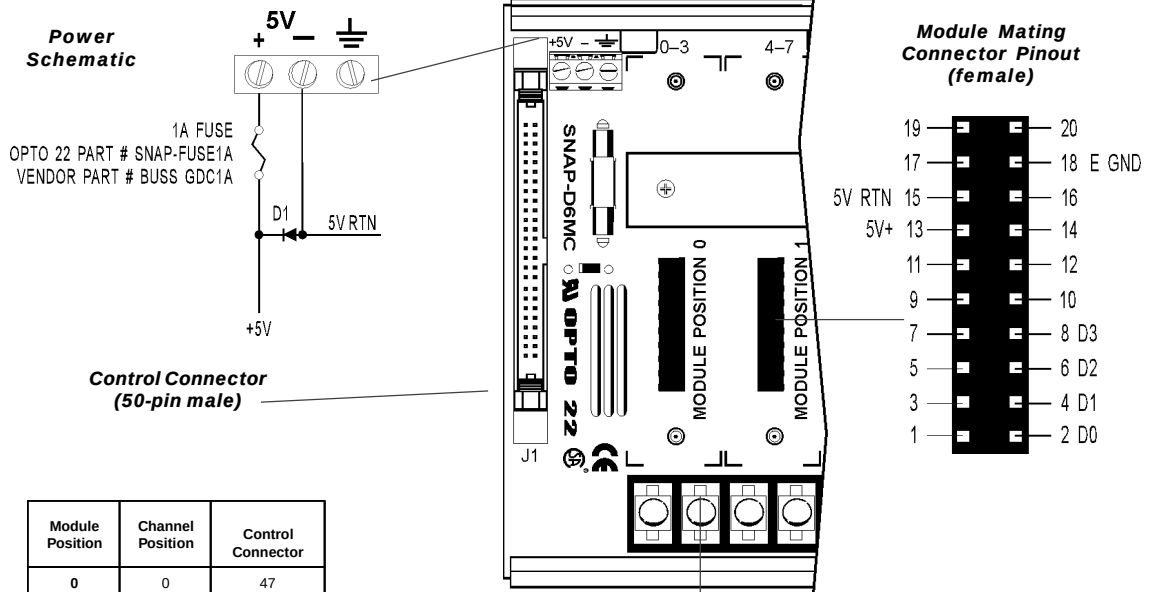
|                             |                                                                 |
|-----------------------------|-----------------------------------------------------------------|
| Power Requirements          | 5 VDC $\pm$ 0.1 VDC<br>@ 200mA max.<br>(700mA with brain board) |
| Operating Temperature Range | 0° to 70°C                                                      |
| Relative Humidity           | 95%, non-condensing                                             |

### Notes

- Even pins on control connector are connected common to +5V RTN.
- Pin 1 of control connector J1 is connected common to +5V through jumper JP1.
- Pin 49 of control connector J1 is connected common to +5V through jumper JP2.
- For operation of SNAP-D4MC/MC-P with Classic plug-in brain boards (B100, B1, and B5), install jumpers JP1 and JP2.
- For operation with PC adapter cards (i.e. G4AC5), remove jumpers JP1 and JP2.
- Odd numbered pins 3 through 15 of control connector are not used.

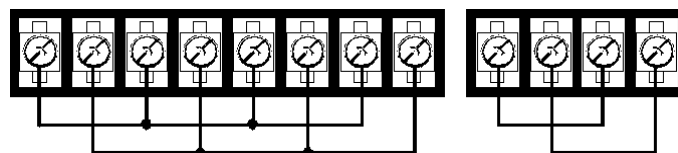
### Specifications

#### SNAP-D6MC/MC-P (6 Module Position)



| Module Position | Channel Position | Control Connector |
|-----------------|------------------|-------------------|
| 0               | 0                | 47                |
|                 | 1                | 45                |
|                 | 2                | 43                |
|                 | 3                | 41                |
| 1               | 4                | 39                |
|                 | 5                | 37                |
|                 | 6                | 35                |
|                 | 7                | 33                |
| 2               | 8                | 31                |
|                 | 9                | 29                |
|                 | 10               | 27                |
|                 | 11               | 25                |
| 3               | 12               | 23                |
|                 | 13               | 21                |
|                 | 14               | 19                |
|                 | 15               | 17                |
| 4               | 16               | 15                |
|                 | 17               | 13                |
|                 | 18               | 11                |
|                 | 19               | 9                 |
| 5               | 20               | 7                 |
|                 | 21               | 5                 |
|                 | 22               | 3                 |
|                 | 23               | 1                 |

Connection Diagram for 12-position terminal strip (MC and MC-P models, MC shown)



For detailed information on terminal strip, see pages 9-10.

#### Notes

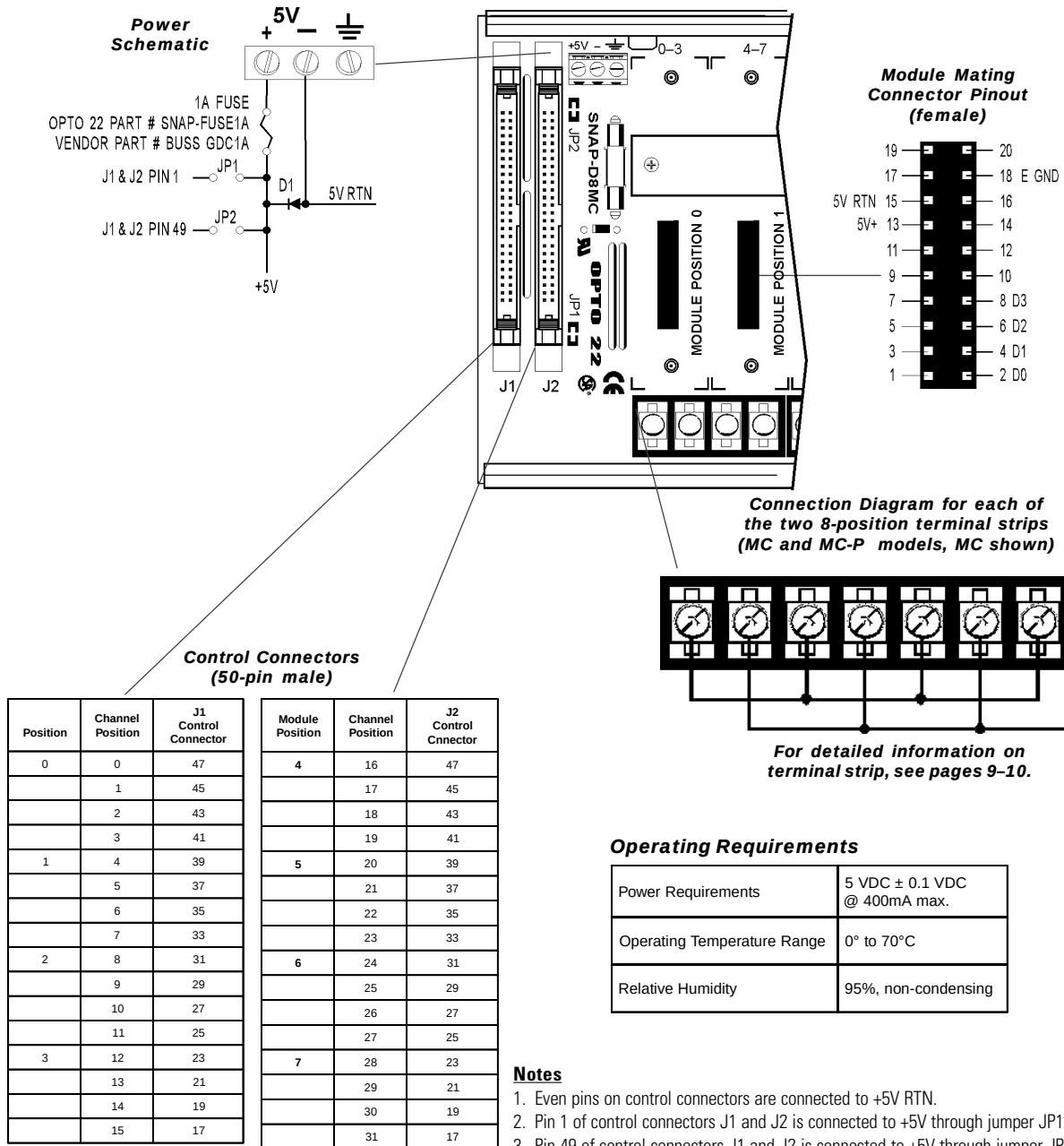
1. Even pins on control connectors are connected to +5V RTN.
2. SNAP-D6MC/MC-P is designed to interface with PC adapter cards (i.e. AC5 or G4AC5). It will not work with brain boards because there is no power to the control connector.
3. Pin 49 - "no" connection.

#### Operating Requirements

|                             |                                  |
|-----------------------------|----------------------------------|
| Power Requirements          | 5 VDC $\pm$ 0.1 VDC @ 300mA max. |
| Operating Temperature Range | 0° to 70°C                       |
| Relative Humidity           | 95%, non-condensing              |

### Specifications

#### SNAP-D8MC/MC-P (8 Module Position)



### Operating Requirements

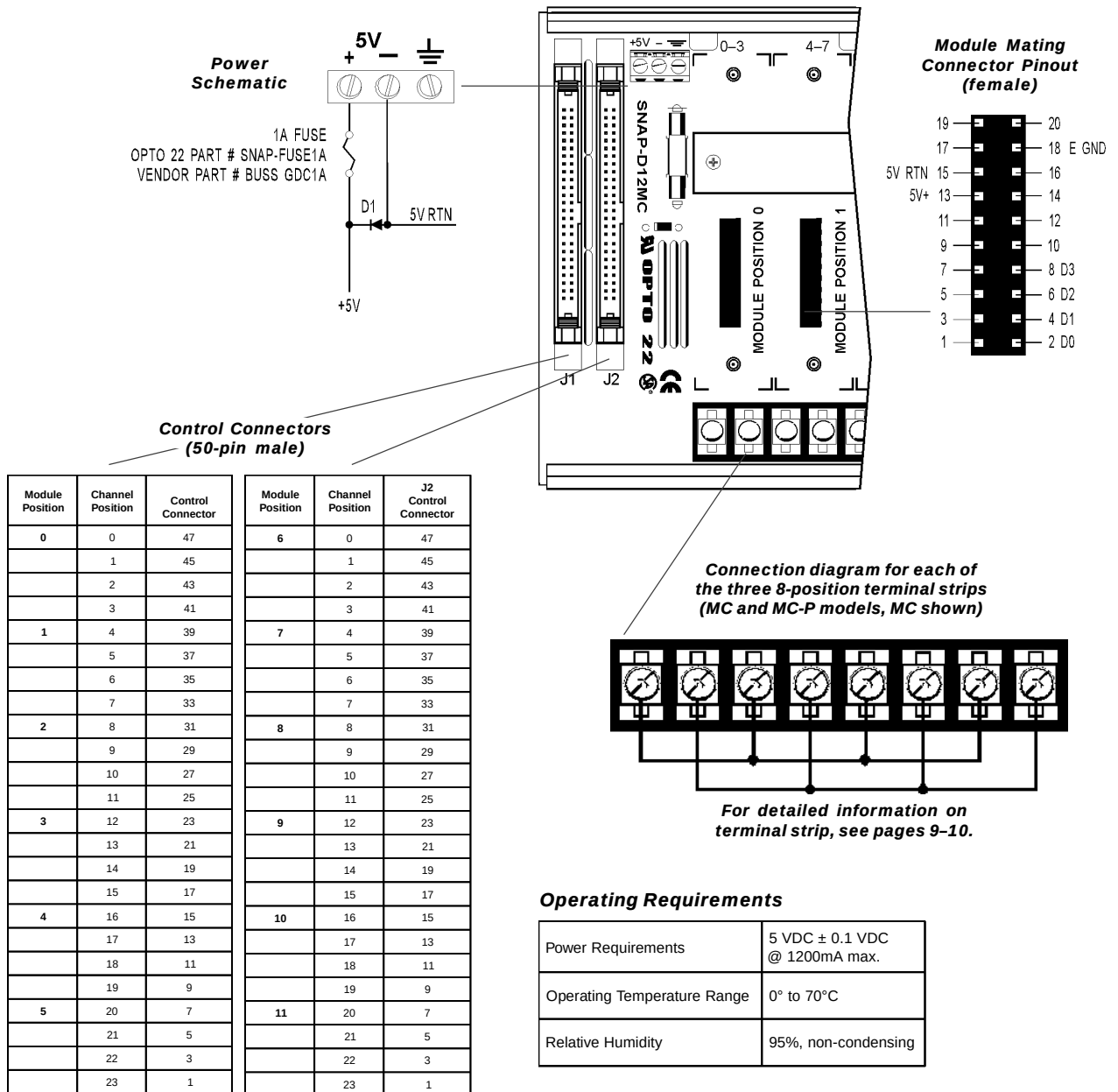
|                             |                                     |
|-----------------------------|-------------------------------------|
| Power Requirements          | 5 VDC $\pm$ 0.1 VDC<br>@ 400mA max. |
| Operating Temperature Range | 0° to 70°C                          |
| Relative Humidity           | 95%, non-condensing                 |

### Notes

- Even pins on control connectors are connected to +5V RTN.
- Pin 1 of control connectors J1 and J2 is connected to +5V through jumper JP1.
- Pin 49 of control connectors J1 and J2 is connected to +5V through jumper JP2.
- For operation with PC adapter cards (i.e. AC5 or G4AC5), remove jumpers JP1 and JP2.
- Odd numbered pins 3 through 15 of control connectors are not used.

### Specifications

#### SNAP-D12MC/MC-P (12 Module Position)

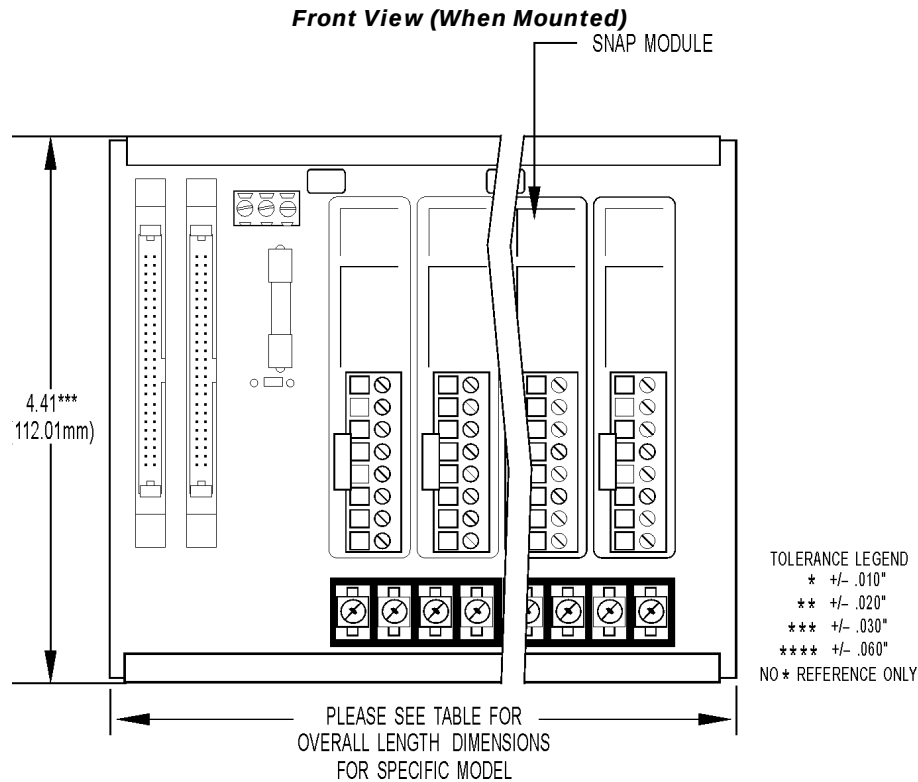


### Notes

- Even pins on control connectors are connected to +5V RTN.
- SNAP-12MC/MC-P is designed to interface with PC adapter cards (i.e. AC5 or G4AC5).  
It will not work with brain boards because there is no power to the control connector.

### Dimensional Drawing

#### All Models

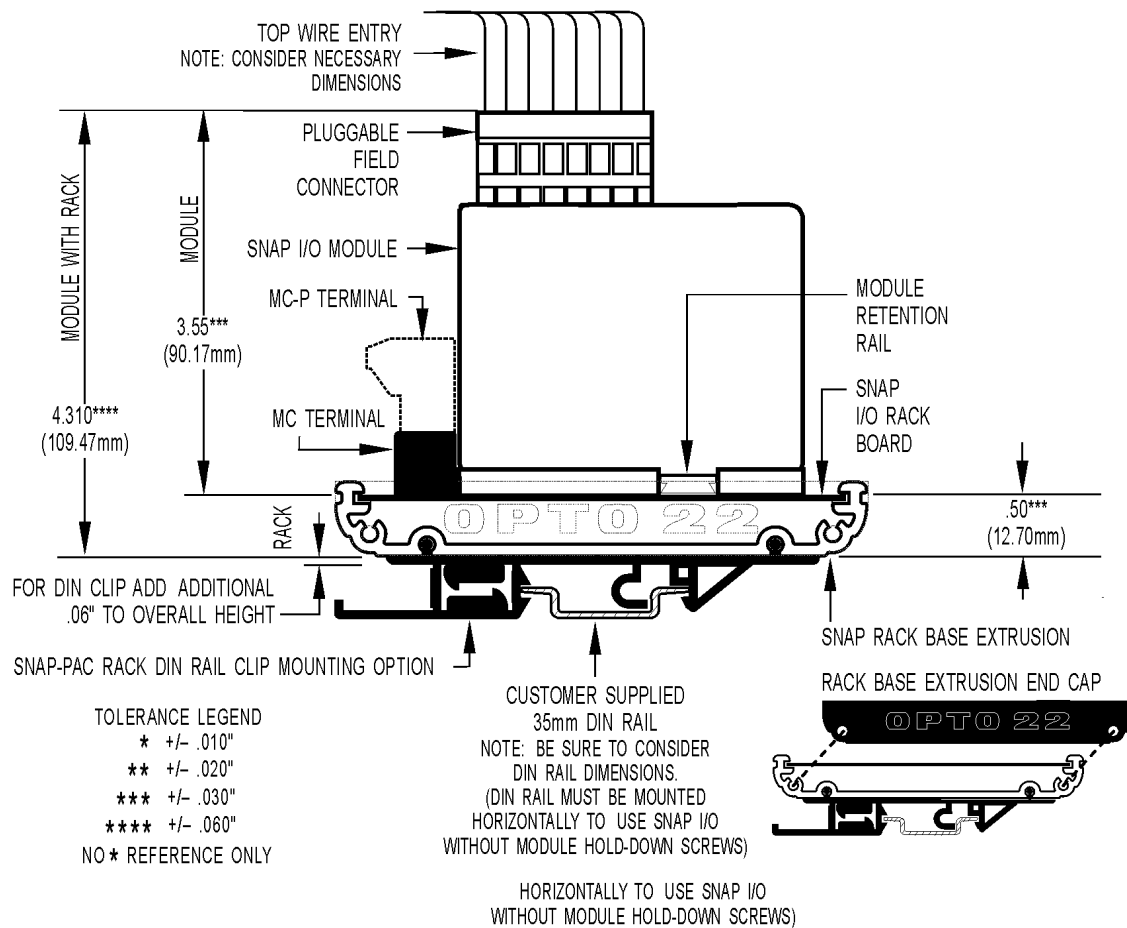


#### Overall Length Dimension (All Models)

| Part Number | Description    | Length (inches) | Length (mm) |
|-------------|----------------|-----------------|-------------|
| SNAP-D4M    | 4-module rack  | 4.19            | 106.43      |
| SNAP-D6M    | 6-module rack  | 5.74            | 145.8       |
| SNAP-D8M    | 8-module rack  | 7.74            | 196.6       |
| SNAP-D12M   | 12-module rack | 10.74           | 272.8       |

### Dimensional Drawing All Models

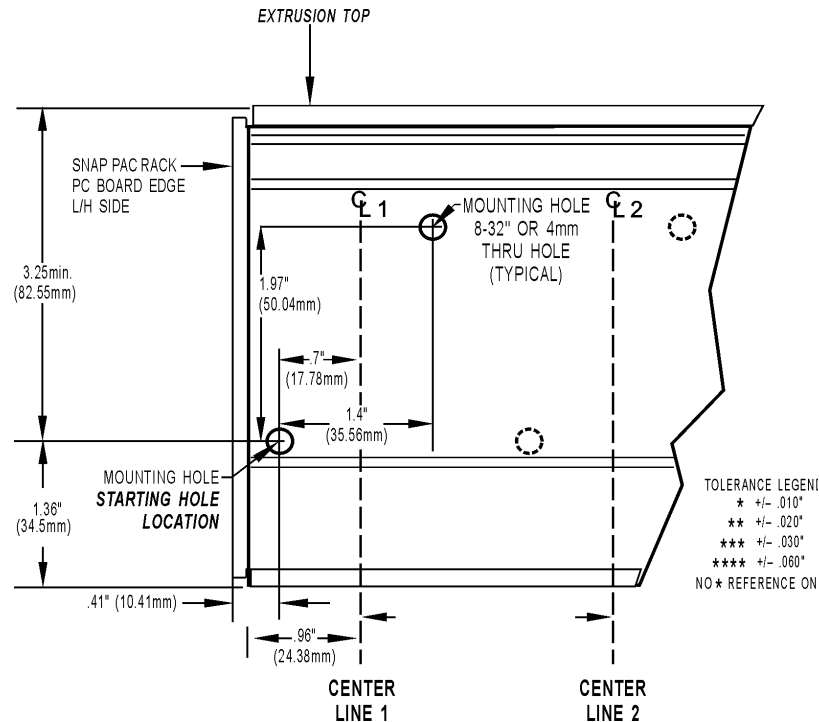
#### Right Side View (with DIN-Rail Option)



### Dimensional Drawing

#### All Models

#### Typical Plain View of SNAP Mounting Extrusion



#### General

If not using module hold-down screws, the SNAP rack assembly should be mounted horizontally, as shown in diagram.

#### Preferred Method

Template (product on site)

1. Use SNAP rack mounting extrusion as template.
2. Be sure to use drawing to determine required product and option clearances.

#### Alternate Method

Prefabrication of Panels (no product on site)

1. Mounting holes are in sets of two located on lower left and upper right, with respect to a centerline (CL).
2. Using the drawing, determine CL<sub>1</sub> mounting hole positions. (CL<sub>1</sub> is located on the left side of all SNAP rack mounting extrusions.)
3. Use the center-to-center length specification table to determine offset between centerlines and number of centerline positions for each model.
4. Repeat process for each centerline position.
5. Dimensions shown in drawing apply to all models.

#### Center-to-Center Length (All Models)

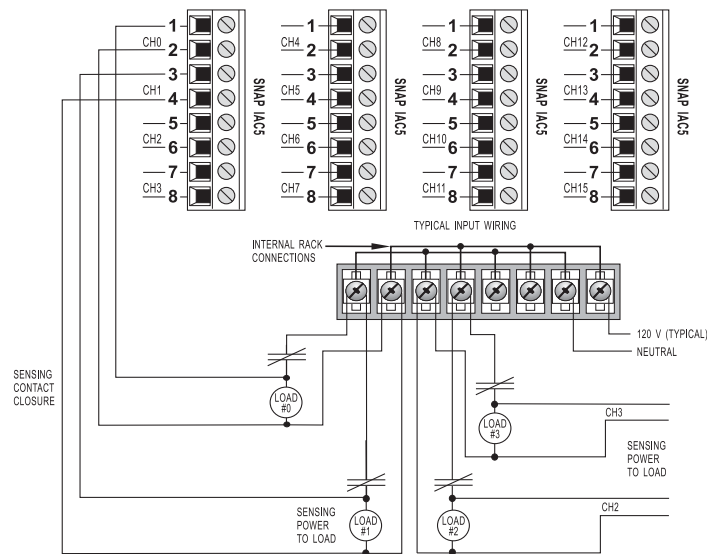
| Part Numbers | Description                                                          | Center to Center Length | # of Center Positions |
|--------------|----------------------------------------------------------------------|-------------------------|-----------------------|
| SNAP-D4MC    | 4-module rack with extra terminal block for field wiring             | 1.98"                   | 2                     |
| SNAP-D4MC-P  | 4-module rack with extra terminal block for field wiring, pluggable  | 1.98"                   | 2                     |
| SNAP-D6MC    | 6-module rack with extra terminal block for field wiring             | 3.53"                   | 2                     |
| SNAP-D6MC-P  | 6-module rack with extra terminal block for field wiring, pluggable  | 3.53"                   | 2                     |
| SNAP-D8MC    | 8-module rack with extra terminal block for field wiring             | 5.53"                   | 2                     |
| SNAP-D8MC-P  | 8-module rack with extra terminal block for field wiring, pluggable  | 5.53"                   | 2                     |
| SNAP-D12MC   | 12-module rack with extra terminal block for field wiring            | 4.26"                   | 3                     |
| SNAP-D12MC-P | 12-module rack with extra terminal block for field wiring, pluggable | 4.26"                   | 3                     |



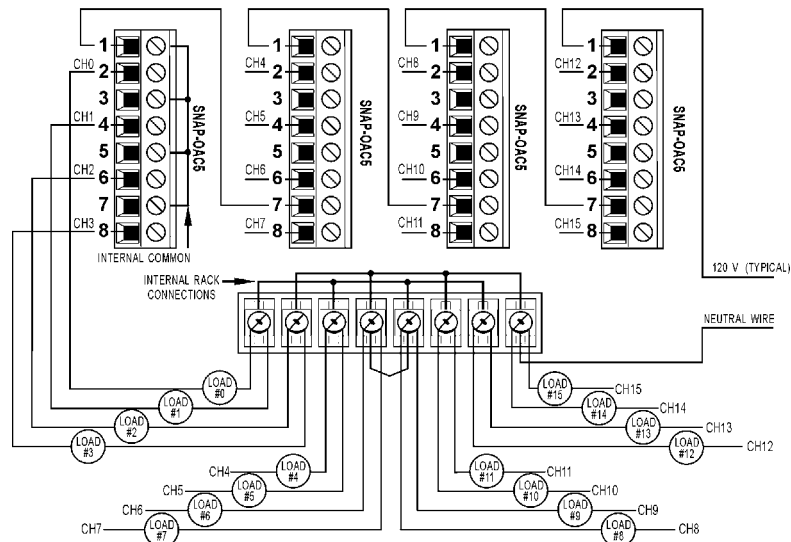
### Schematics

#### Terminal Strip Usage - Digital

##### Typical Digital Input Using Terminal Strip



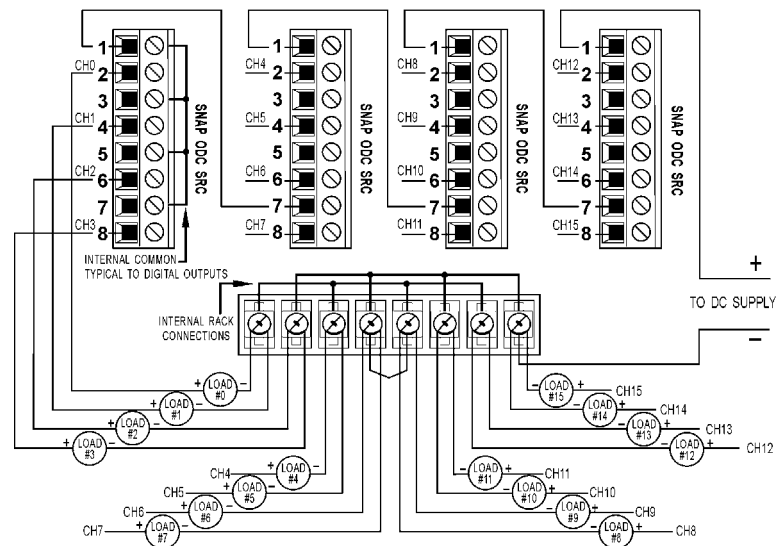
##### Typical Digital AC Output Using Terminal Strip



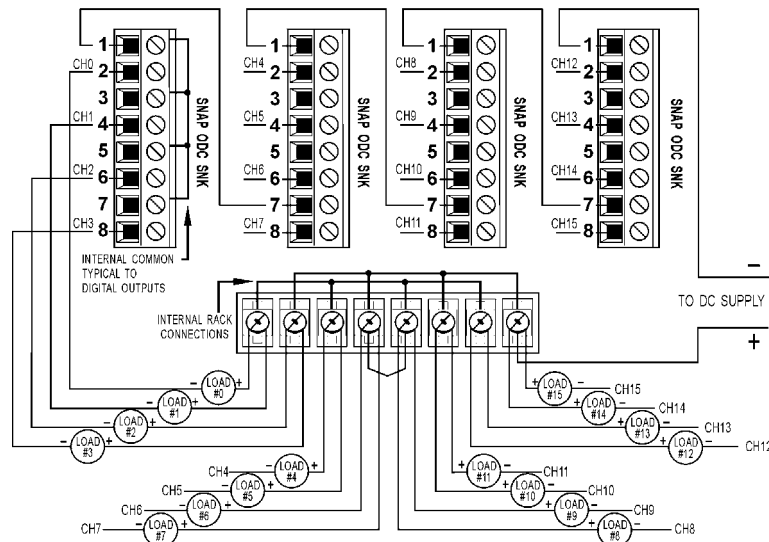
### Schematics

#### Terminal Strip Usage - Digital

##### Typical Digital DC Output (Sourcing) Using Terminal Strip



##### Typical Digital DC Output (Sinking) Using Terminal Strip



# More About Opto 22

## Products

Opto 22 develops and manufactures reliable, flexible, easy-to-use hardware and software products for industrial automation, energy management, remote monitoring, and data acquisition applications.

### OptoEMU Energy Management System

The easy-to-use OptoEMU Sensor monitors electrical energy use in your facility and delivers detailed, real-time data you can see and analyze. The Sensor can monitor energy data from pulsing meters, electrical panels or subpanels, and equipment. View energy data online using a software service or incorporate the data into your control system for complete energy management.

### SNAP PAC System

Designed to simplify the typically complex process of selecting and applying an automation system, the SNAP PAC System consists of four integrated components:

- SNAP PAC controllers
- PAC Project™ Software Suite
- SNAP PAC brains
- SNAP I/O™

#### SNAP PAC Controllers

Programmable automation controllers (PACs) are multifunctional, modular controllers based on open standards.

Opto 22 has been manufacturing PACs for over two decades. The standalone SNAP PAC S-series and the rack-mounted SNAP PAC R-series both handle a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system easily, without the expense and limitations of proprietary networks and protocols.

#### PAC Project Software Suite

Opto 22's PAC Project Software Suite provides full-featured, cost-effective control programming, HMI (human machine interface) development and runtime, OPC server, and database connectivity software for your SNAP PAC System.

Control programming includes both easy-to-learn flowcharts and optional scripting. Commands are in plain English; variables and I/O point names are fully descriptive.

PAC Project Basic offers control and HMI tools and is free for download on our website, [www.opto22.com](http://www.opto22.com). PAC Project Professional, available for separate purchase, adds

OptoOPCServer, OptoDataLink, options for controller redundancy or segmented networking, and support for legacy Opto 22 serial *mistic*™ I/O units.

#### SNAP PAC Brains

While SNAP PAC controllers provide central control and data distribution, SNAP PAC brains provide distributed intelligence for I/O processing and communications. Brains offer analog, digital, and serial functions, including thermocouple linearization; PID loop control; and optional high-speed digital counting (up to 20 kHz), quadrature counting, TPO, and pulse generation and measurement.

#### SNAP I/O

I/O provides the local connection to sensors and equipment. Opto 22 SNAP I/O offers 1 to 32 points of reliable I/O per module, depending on the type of module and your needs.

Analog, digital, and serial modules are all mixed on the same mounting rack and controlled by the same processor (SNAP PAC brain or rack-mounted controller).

## Quality

Founded in 1974, Opto 22 has established a worldwide reputation for high-quality products. All are made in the U.S.A. at our manufacturing facility in Temecula, California. Because we do no statistical testing and each part is tested twice before leaving our factory, we can guarantee most solid-state relays and optically isolated I/O modules for life.

## Free Product Support

Opto 22's California-based Product Support Group offers free, comprehensive technical support for Opto 22 products. Our staff of support engineers represents decades of training and experience. Support is available in English and Spanish by phone or email, Monday–Friday, 7 a.m. to 5 p.m. PST.

Additional support is always available on our website: how-to videos, OptoKnowledgeBase, self-training guide, troubleshooting and user's guides, and OptoForums.

In addition, hands-on training is available for free at our Temecula, California headquarters, and you can [register online](http://www.opto22.com).

## Purchasing Opto 22 Products

Opto 22 products are sold directly and through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at 800-321-6786 or 951-695-3000, or visit our website at [www.opto22.com](http://www.opto22.com).

**[www.opto22.com](http://www.opto22.com)**