Form 1419-041216

Description

SNAP N-series racks integrate on a single mounting rack a SNAP Ultimate I/O™ brain, a remote communication adapter, and multiple SNAP analog, digital, and serial I/O modules. N-series racks are ideal for applications involving the wireless monitoring and control of all types of business assets.

SNAP N-series racks can accommodate 8 or 12 I/O modules. Since SNAP analog, digital, and serial modules all have the same footprint, customers using SNAP N-series racks can mix these modules on the same I/O mounting rack as needed for their applications.

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. For applications that require additional module security, two 4-40 by ½-inch standard machine screws can be used to hold each module in position.

Field devices are wired directly to the top-mounted removable connectors on the SNAP I/O modules. In addition, the SNAP-N12MC rack provides an auxiliary screw-type terminal strip for field-wiring common connections such as loop power distribution.

SNAP N-racks can accommodate several different types of remote communication adapters, depending on the network and features your application requires.. Remote communication adapters include a modem as well as standard GSM or CDMA wireless
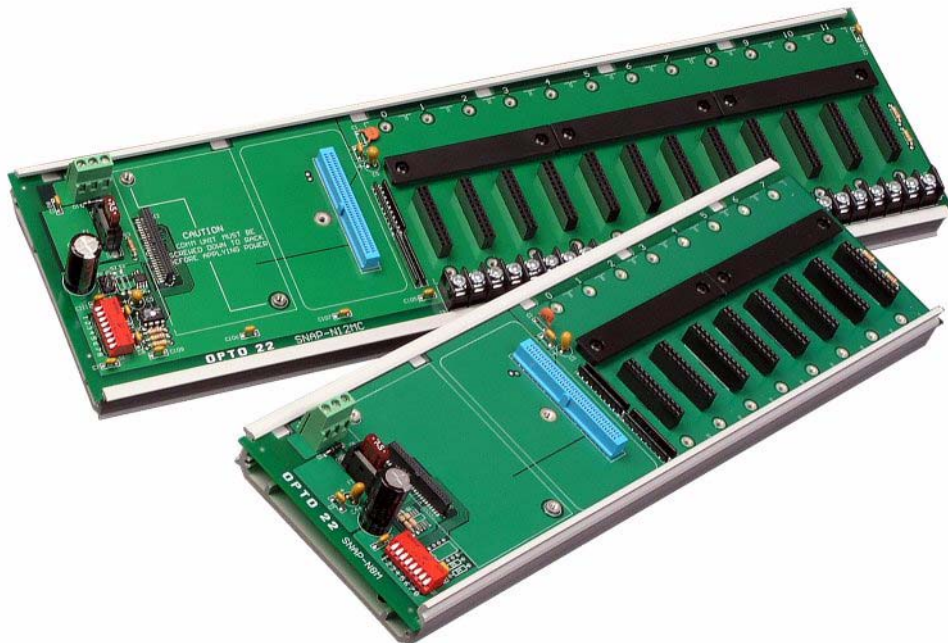
Part Number	Description
SNAP-N8M	8-module M2M rack
SNAP-N12MC	12-module M2M rack with extra terminal block for field wiring
SNAP-FUSE7.5AB	7.5-amp fuse, 25-pack
SNAP-RACKDIN	SNAP rack DIN-rail adapter clip
SNAP-RACKDINB	SNAP rack DIN-rail adapter clip, 25-pack

network adapters. For details on remote comm adapters to use with N-series racks, see Opto 22 form #1508, the Remote Communications Interfaces data sheet.

The SNAP Ultimate brain model SNAP-UP1-ADS (manufactured on or after June 18, 2004, indicated by a silver top) is used with all N-series racks. This brain provides special capabilities for use with remote comm adapters and N-series racks.
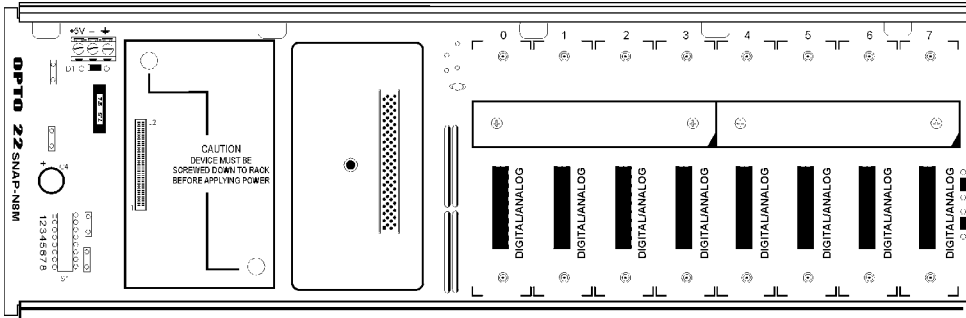
The remote comm unit can be reset in an ioControl strategy running on the brain by simply writing to a digital output point on the rack, point 31 (the last point in module position 7). A module is not required for this use. (See for more information.)

All SNAP racks offer panel mounting and the option of DIN-rail mounting. SNAP racks require a 5 VDC power source.

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: 951-695-3000 • 800-321-OPTO • Fax: 951-695-3095 • www.opto22.com

Inside Sales: 800-321-OPTO • Product Support: 800-TEK-OPTO • 951-695-3080 • Fax: 951-695-3017 • E-mail: sales@opto22.com

OPTO 22

DATA SHEET

Form 1419-041216

Description (Continued)

SNAP-N8M 8-Module Position I/O Mounting Rack

SNAP-N12MC 12-Module Position I/O Mounting Rack with Terminal Block

OPTO 22

DATA SHEET
Form 1419-041216

RACKS
SNAP N-SERIES
page 3/12
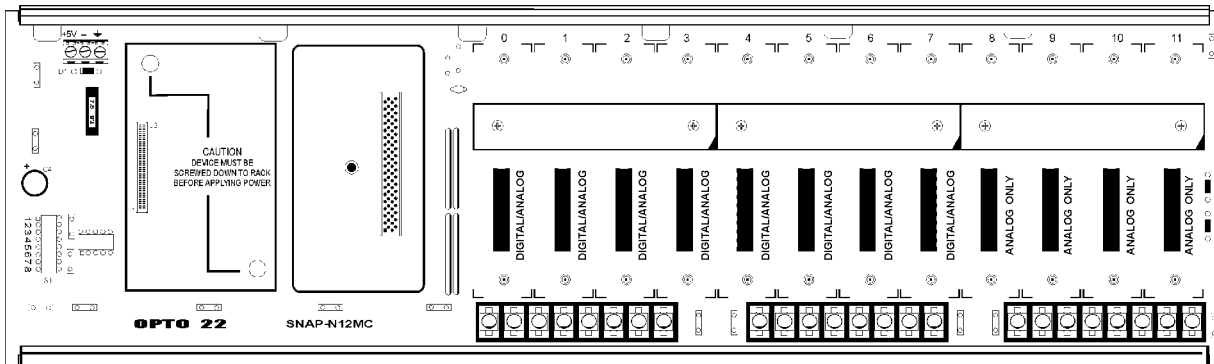
Specifications

The SNAP-N12MC rack is illustrated; the SNAP-N8M rack is the same except that it does not have the extra terminal strip at bottom.

Power schematic

7.5A FUSE
OPTO 22 PART # SNAP-FUSE 7.5AB
LittelFuse # 29707.5

CAUTION
DEVICE MUST BE
SCREWED DOWN TO RACK
BEFORE APPLYING POWER

OPTO 22   SNAP-N12MC

Module holding screw
4-40 typical
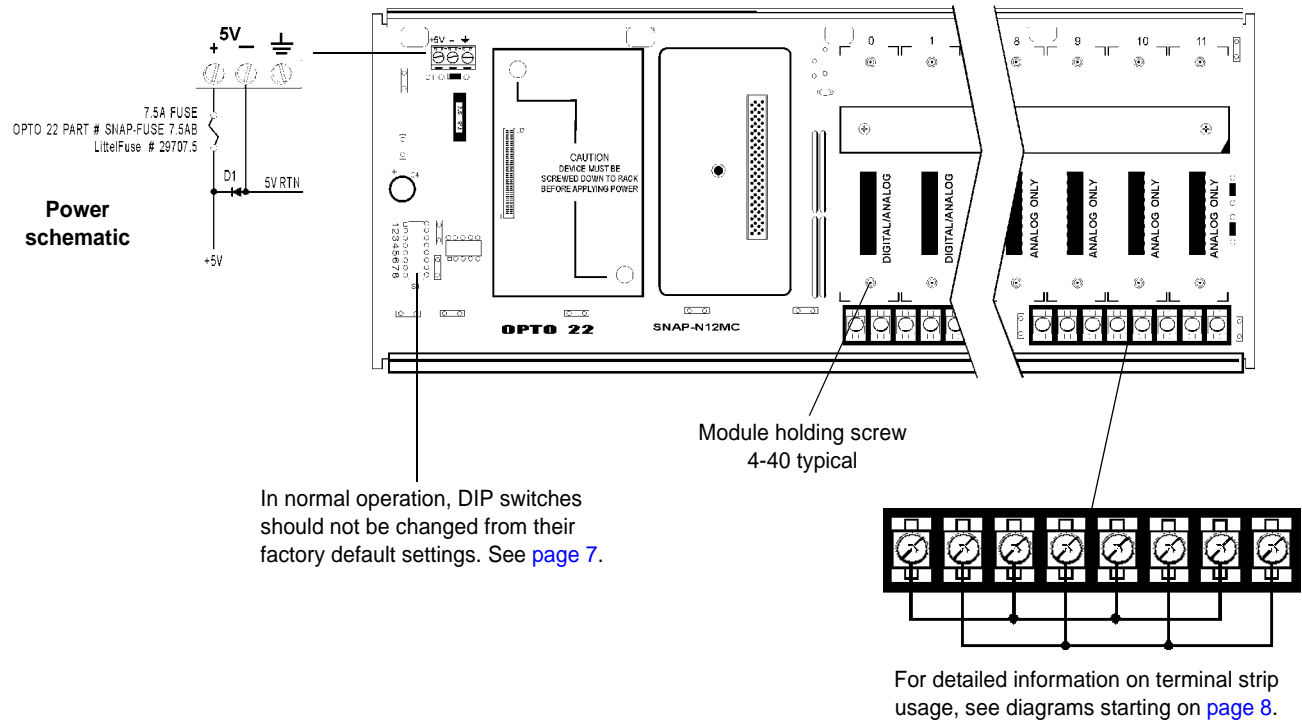
In normal operation, DIP switches should not be changed from their factory default settings. See page 7.

For detailed information on terminal strip usage, see diagrams starting on page 8.

Operating Requirements

Part Number	Description	Power Requirements*	Operating Temperature Range	Relative Humidity
SNAP-N8M	8-module rack	5 VDC ± 3.8 Amps max.	0 to 70 °C	95%, non-condensing
SNAP-N12MC	12-module rack**	5 VDC ± 4.6 Amps max.	0 to 70 °C	95%, non-condensing

* Power requirements shown are for a rack, a brain, a remote communication adapter, and a full load of isolated analog modules. Power requirements for SNAP serial modules are higher; requirements for some analog and most digital modules are lower. Requirements for remote comm adapters vary by manufacturer. For help in figuring power requirements for your configuration, see the worksheets in Opto 22 form #1120, the SNAP Power Supplies data sheet.
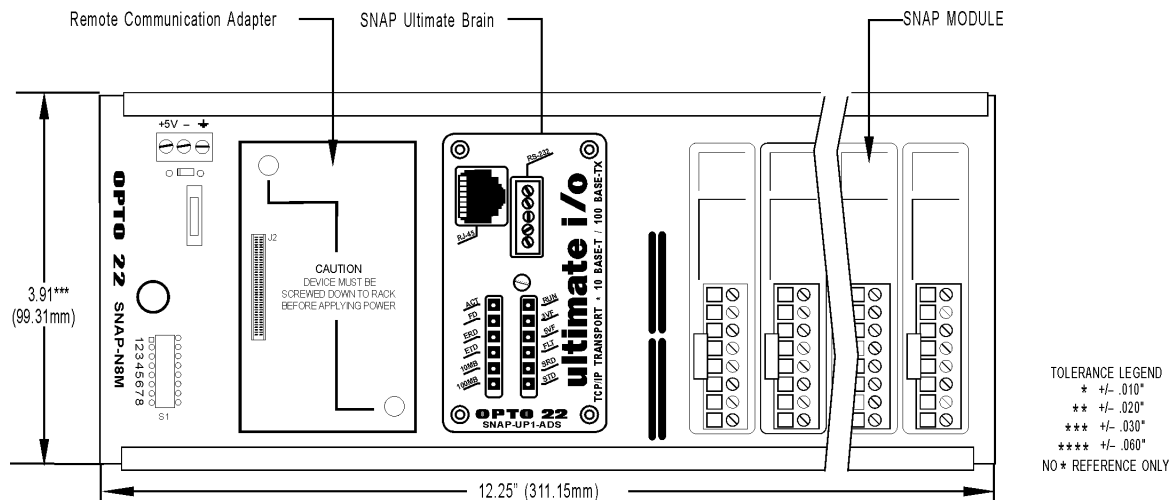** Rack module positions 8 and above are for analog or serial modules only.

OPTO 22
DATA SHEET
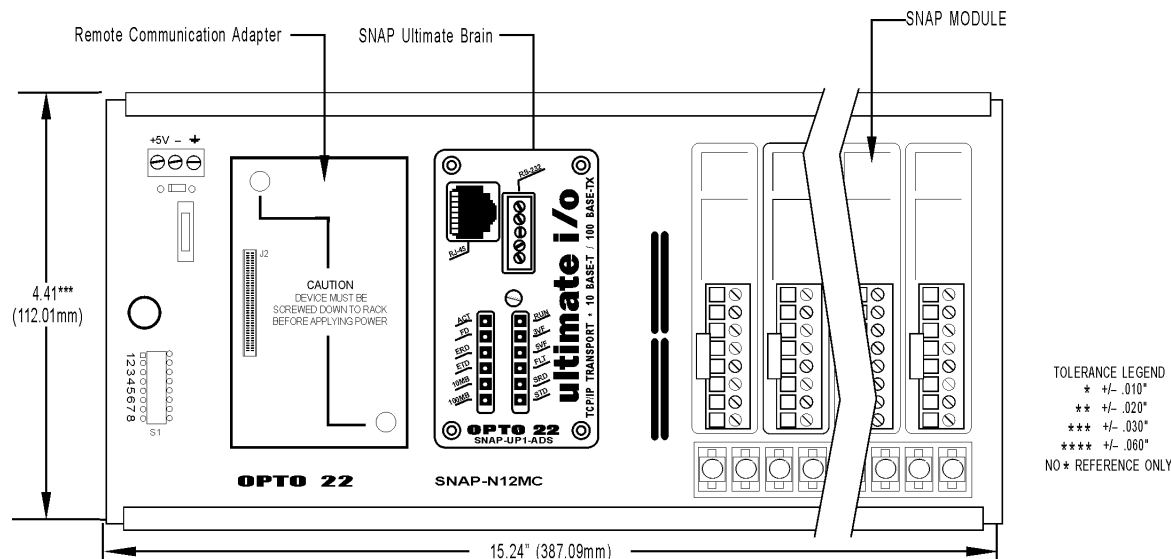Form 1419-041216

Dimensional Drawing

Front View (when mounted)
Purchase remote communication adapter, brain, and modules seaprately.

SNAP-N8M

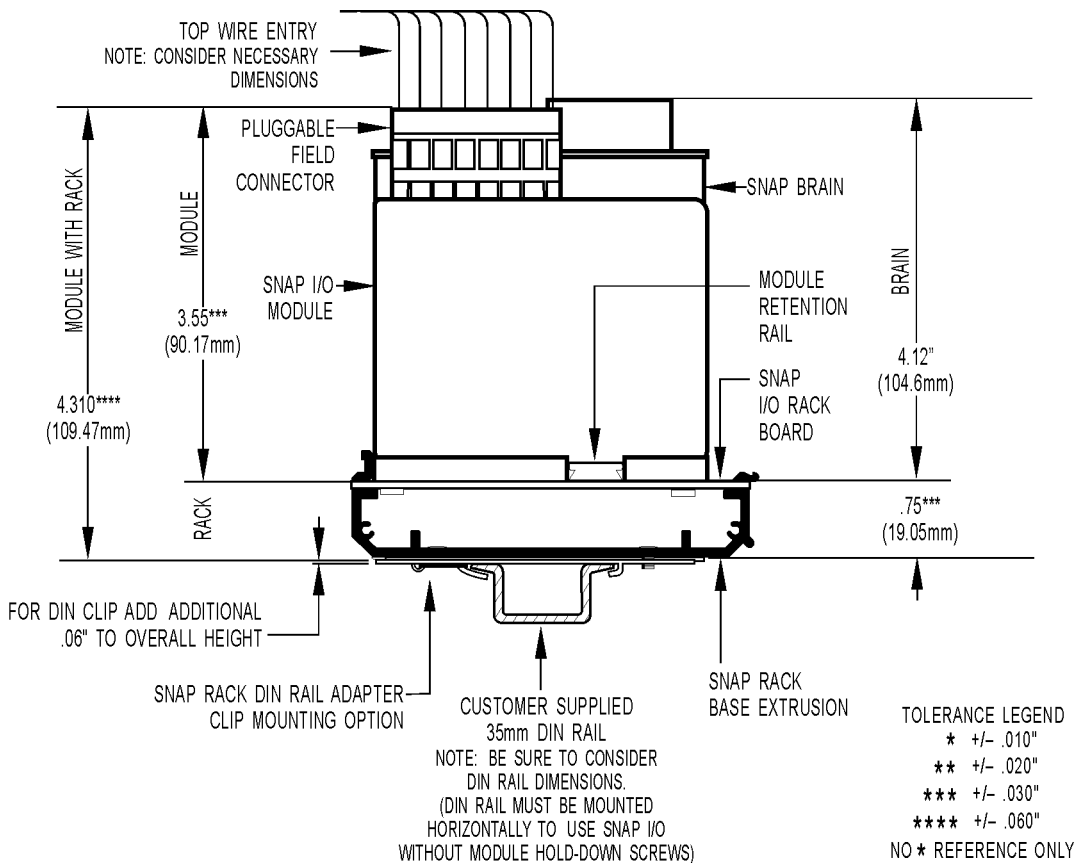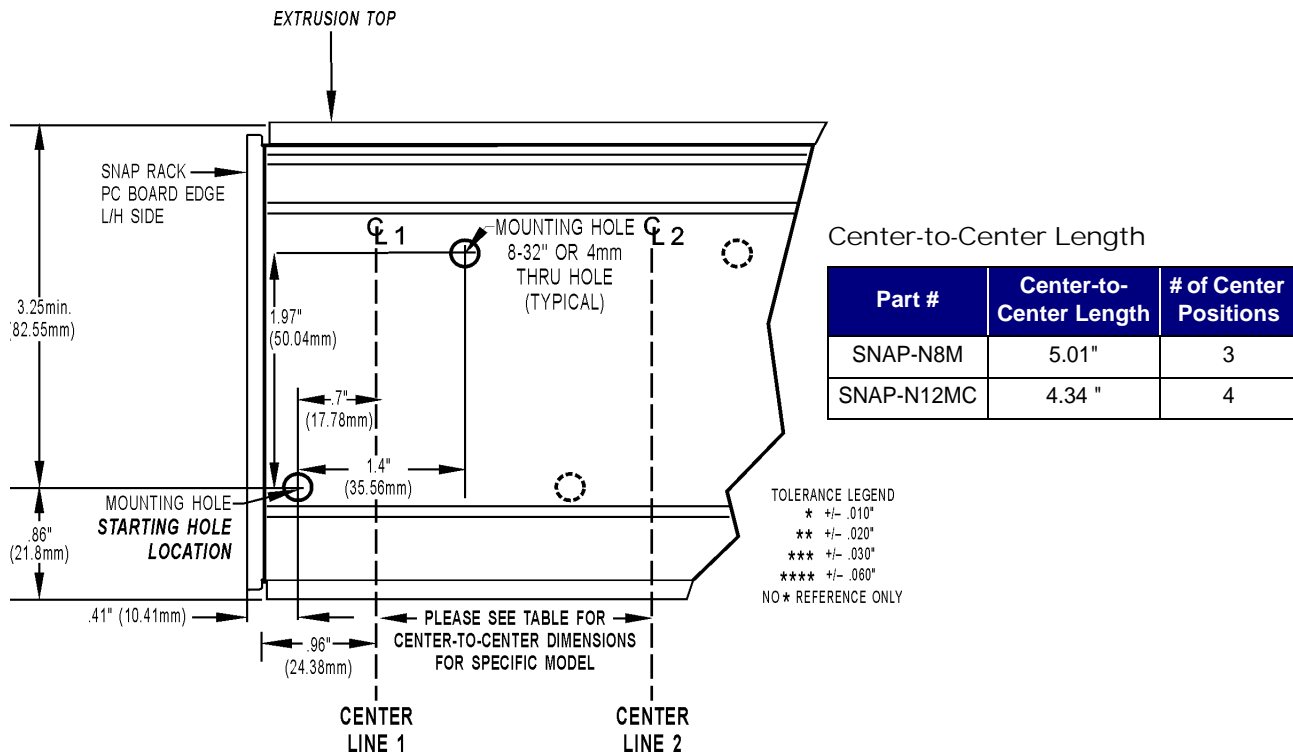### SNAP-N12MC

OPTO 22
DATA SHEET
Form 1419-041216

Dimensional Drawing

Right Side View (with DIN Rail Option Installed)

TOP WIRE ENTRY
NOTE: CONSIDER NECESSARY DIMENSIONS

PLUGGABLE FIELD CONNECTOR

SNAP BRAIN

MODULE WITH RACK

MODULE

SNAP I/O MODULE

MODULE RETENTION RAIL

BRAIN

3.55***
(90.17mm)

SNAP I/O RACK BOARD

4.12"
(104.6mm)

4.310****
(109.47mm)

RACK

.75***
(19.05mm)

FOR DIN CLIP ADD ADDITIONAL .06" TO OVERALL HEIGHT

SNAP RACK DIN RAIL ADAPTER CLIP MOUNTING OPTION

CUSTOMER SUPPLIED 35mm DIN RAIL
NOTE: BE SURE TO CONSIDER DIN RAIL DIMENSIONS.
(DIN RAIL MUST BE MOUNTED HORIZONTALLY TO USE SNAP I/O WITHOUT MODULE HOLD-DOWN SCREWS)

SNAP RACK BASE EXTRUSION

TOLERANCE LEGEND
★ +/- .010"
★★ +/- .020"
★★★ +/- .030"
★★★★ +/- .060"
NO ★ REFERENCE ONLY

OPTO 22
DATA SHEET
Form 1419-041216

Dimensional Drawing and Mounting Instructions

Typical Plain View of SNAP Mounting Extrusion

Center-to-Center Length

Part #	Center-to-Center Length	# of Center Positions
SNAP-N8M	5.01"	3
SNAP-N12MC	4.34 "	4

TOLERANCE LEGEND
* +/– .010"
** +/– .020"
*** +/– .030"
**** +/– .060"
NO * REFERENCE ONLY

General Mounting Instructions

If you are 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, mounting hole positions. (CL, 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.

OPTO 22
DATA SHEET
Form 1419-041216

RACKS
SNAP N-SERIES
page 7/12

DIP Switch Settings

Each SNAP N-series rack contains a group of eight DIP switches. In normal operation, these switches should not be changed from their factory default settings. Factory default settings are shown below; switches 1–4 should be up (open) and switches 5–9 should be down (closed).

Up (open)
Down (closed)
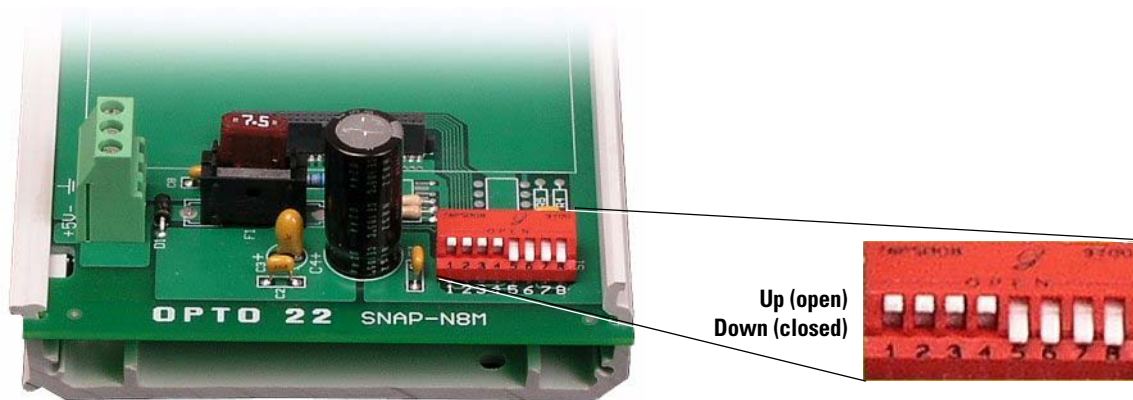
Automatic Resetting Feature

Because N-series racks are used for remote monitoring and control, the ability to reset the remote communication adapter is included. If the comm adapter becomes unresponsive, the SNAP Ultimate brain can automatically reset it.

To use this feature, configure point 31 (the last point in module position 7), as a digital output point. Include logic in your ioControl strategy to turn on point 31 if there is no successful communication with the remote comm adapter for a predetermined length of time.

It is not necessary to have a digital output module in position 7 to use this feature. However, do not use a digital input module in position 7, as any off-to-on transition on point 31 will cause the remote comm adapter to reset. If position 7 is used for an analog or a serial module, the reset feature is not available.

OPTO 22
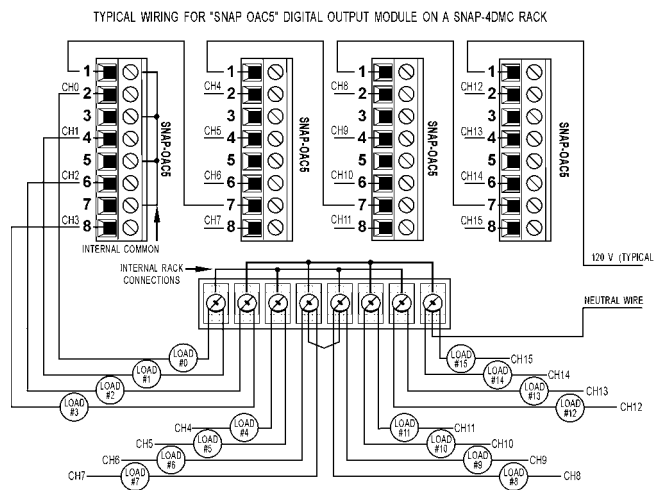
Wiring Diagrams (SNAP-N12MC only)

Terminal Strip Usage—Digital

NOTE: Consult the SNAP module datasheet for your specific module for additional wiring information.

Example: Digital Input Using Terminal Strip
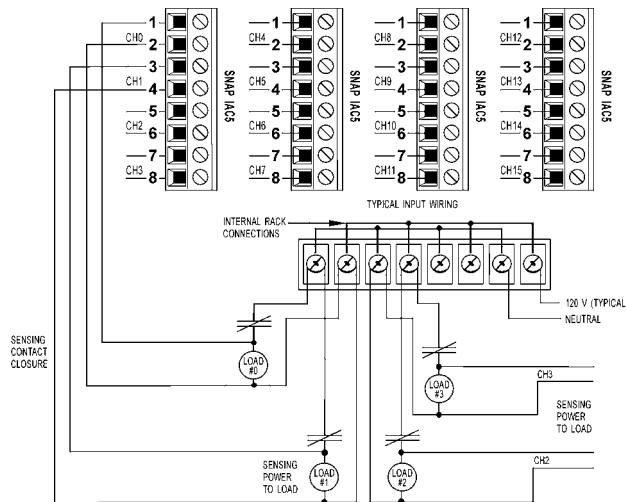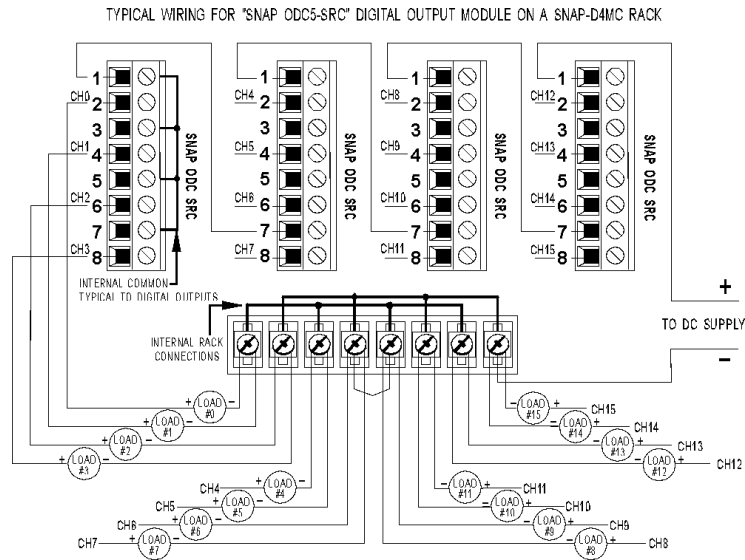

Example: Digital AC Output Using Terminal Strip

OPTO 22
DATA SHEET
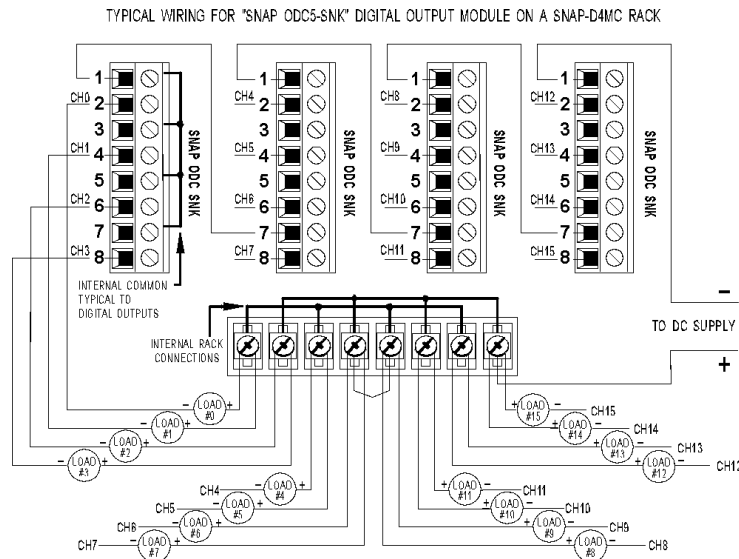Form 1419-041216

Wiring Diagrams (SNAP-N12MC only)

Terminal Strip Usage—Digital (Continued)

Example: Digital DC Output (Sourcing) Using Terminal Strip

NOTE: Consult the SNAP module datasheet for your specific module for additional wiring information.

TYPICAL WIRING FOR "SNAP ODC5-SRC" DIGITAL OUTPUT MODULE ON A SNAP-D4MC RACK

Example: Digital DC Output (Sinking) Using Terminal Strip

TYPICAL WIRING FOR "SNAP ODC5-SNK" DIGITAL OUTPUT MODULE ON A SNAP-D4MC RACK

OPTO 22
DATA SHEET
Form 1419-041216

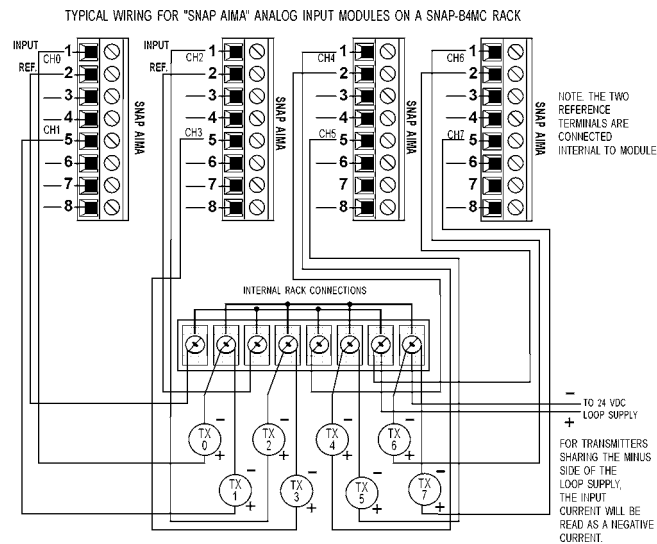# RACKS
SNAP N-SERIES
page 10/12

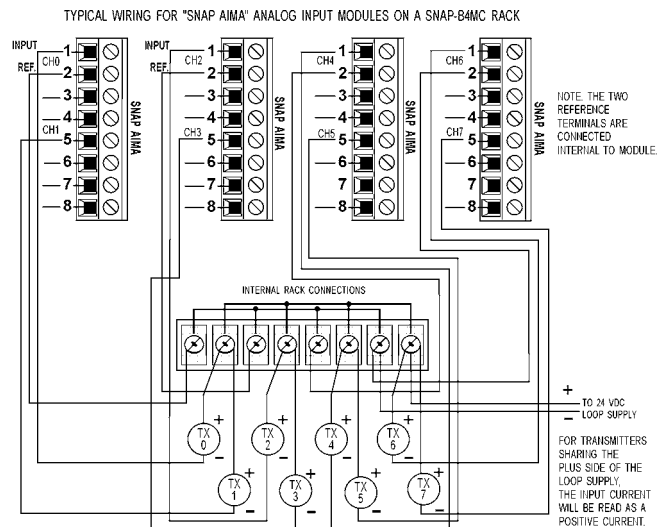## Wiring Diagrams (SNAP-N12MC only)

Terminal Strip Usage—Analog

Example: Analog Input (Current: Negative) Using Terminal Strip

NOTE: Consult the SNAP module datasheet for your specific module for additional wiring information.

TYPICAL WIRING FOR "SNAP AIMA" ANALOG INPUT MODULES ON A SNAP-B4MC RACK

Example: Analog Input (Current: Positive) Using Terminal Strip

TYPICAL WIRING FOR "SNAP AIMA" ANALOG INPUT MODULES ON A SNAP-B4MC RACK
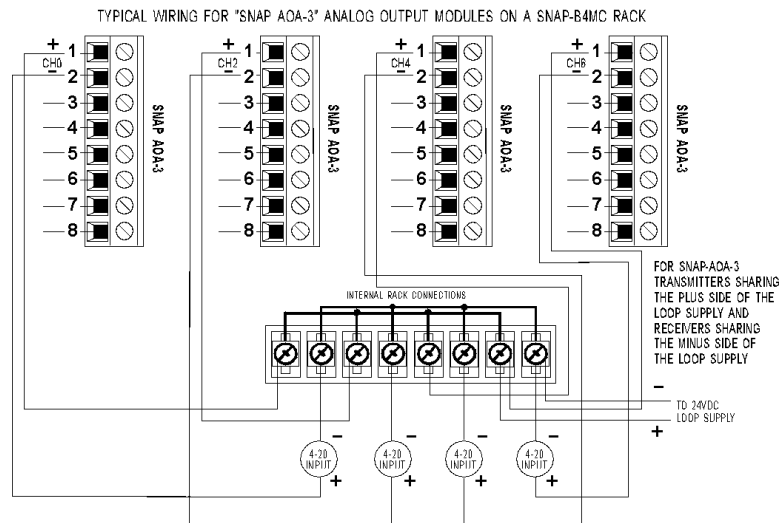
OPTO 22
DATA SHEET
Form 1419-041216

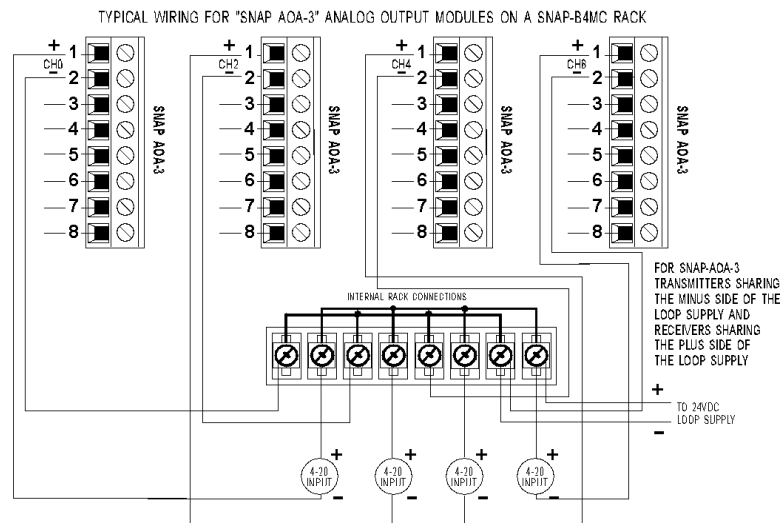## Wiring Diagrams (SNAP-N12MC only)

Terminal Strip Usage—Analog (Continued)

Example: Analog Output (4–20 mA Current: Sourcing) Using Terminal Strip

NOTE: Consult the SNAP module datasheet for your specific module for additional wiring information.

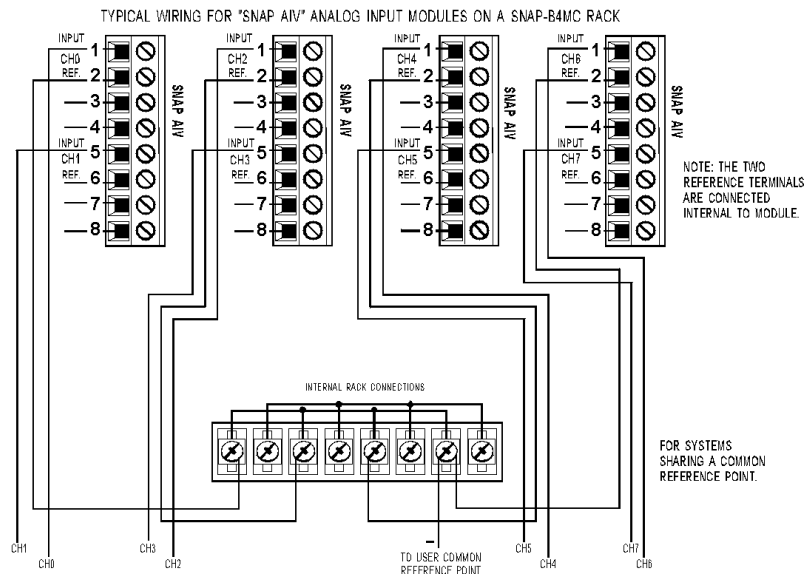**Example: Analog Output (4–20 mA Current: Sinking) Using Terminal Strip**

OPTO 22
DATA SHEET
Form 1419-041216

Wiring Diagrams (SNAP-N12MC only)

Terminal Strip Usage—Analog (Continued)

Example: Typical Analog Input (Voltage) Using Terminal Strip

NOTE: Consult the SNAP module datasheet for your specific module for additional wiring information.

Products

Opto 22 produces a broad array of reliable, flexible hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications.

SNAP Ethernet Systems

Based on the Internet Protocol (IP), SNAP Ethernet systems offer flexibility in their network connectivity and in the software applications they work with. The physical network may be a wired Ethernet network, a cellular wireless network, or a modem. A wide variety of software applications can exchange data with SNAP Ethernet systems, including:

- Opto 22's own ioProject™ suite of control and HMI software
- Manufacturing resource planning (MRP), enterprise management, and other enterprise systems
- Human-machine interfaces (HMIs)
- Databases
- Email systems
- OPC client software
- Custom applications
- Modbus/TCP software and hardware.

SNAP Ethernet system hardware consists of controllers and I/O units. Controllers provide central control and data distribution. I/O units provide local connection to sensors and equipment.

SNAP OEM Systems

Opto 22 SNAP OEM I/O systems are highly configurable, programmable processors intended for OEMs, IT professionals, and others who need to use custom software with Opto 22 SNAP I/O modules.

Linux® applications running on these systems can read and write to analog, simple digital, and serial I/O points on SNAP I/O modules using easily implemented file-based operations. Applications can be developed using several common development tools and environments, including C or C++, Java, and shell scripts.

M2M Systems

Machine-to-machine (M2M) systems connect your business computer systems to the machines, devices, and environments you want to monitor, control, or collect data from. M2M systems often use wireless cellular communications to link remote facilities to central systems over the Internet, or to provide monitoring and control capability via a cellular phone.

Opto 22's Nvio™ systems include everything you need for M2M—interface and communications hardware, data service plan, and Web portal—in one easy-to-use package. Visit nvio.opto22.com for more information.

Opto 22 Software

Opto 22's ioProject and FactoryFloor® software suites provide full-featured and cost-effective control, HMI, and OPC software to power your Opto 22 hardware. These software applications help you develop control automation solutions, build easy-to-use operator interfaces, and expand your manufacturing systems' connectivity.

Quality

In delivering hardware and software solutions for worldwide device management and control, Opto 22 retains the highest commitment to quality. We do no statistical testing; each product is made in the U.S.A. and is tested twice before leaving our 160,000 square-foot manufacturing facility in Temecula, California. That's why we can guarantee solid-state relays and optically-isolated I/O modules *for life*.

Product Support

Opto 22's Product Support Group offers comprehensive technical support for Opto 22 products. The staff of support engineers represents years of training and experience, and can assist with a variety of project implementation questions. Product support is available in English and Spanish from Monday through Friday, 7 a.m. to 5 p.m. PST.

Opto 22 Web Sites

- www.opto22.com
- nvio.opto22.com
- www.internetio.com (live Internet I/O demo)

Other Resources

- OptoInfo CDs
- Custom integration and development
- Hands-on customer training classes.

About Opto 22

Opto 22 manufactures and develops hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's input/output and control systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, and electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel.

Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability.

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: (951) 695-3000 • (800) 321-OPTO • Fax: (951) 695-3095 • www.opto22.com

Inside Sales: (800) 321-OPTO • Product Support: (800) TEK-OPTO • (951) 695-3080 • Fax: (951) 695-3017 • Email: sales@opto22.com • Form 1335-050601