SNAP PAC SNAP-IT-PM Installation Guide

OPTO 22

Introduction

The Opto 22 SNAP-IT™ panel-mount unit is a packaged solution for attaching electrical, electronic, and mechanical devices to an Ethernet network. Once attached to a network through the SNAP-IT unit, these devices can be monitored and controlled from anywhere in the world.

The panel-mount unit comes in multiple models.

The **SNAP-IT-PM-R1ADS** and **SNAP-IT-PM-R2ADS** include a SNAP PAC R-series rack-mounted controller, a 12-module mounting rack, a power supply, and a 24 V loop power supply, all built in and pre-wired. The controller provides I/O processing, communications, and programming capability. With this unit you receive the PAC Project Basic software suite, which includes control programming, human-machine interface (HMI) development, and configuration software.

Other models provide a modem for remote communication, or offer a SNAP PAC brain instead of a controller. The brain does not include programming capability, but provides local intelligence for I/O processing and communications.

With any SNAP-IT model, you add the analog, digital, and special-purpose input/output (I/O) modules necessary for your application.

Packaged in a sturdy NEMA 3R metal housing for mounting on walls or equipment, SNAP-IT units are suitable for use in indoor or outdoor environments. Typical applications include monitoring and controlling facilities, machines for manufacturing and processing, communication towers, tanks, pipelines, and other equipment. For example, you can:

- Detect machine jams and shutdowns
- Control processes
- Report production counts
- Track machine throughput to plan preventative maintenance
- Manage temperature, humidity, and security in facilities
- Control fans, lights, pumps, and compressors

- Monitor flow, pressure, and leaks in tanks and pipelines
- Monitor lights and line voltages on towers

You can easily configure modules and manage devices using any authorized computer and the included software.

All SNAP-IT-PM units can use analog, digital, serial, and special-purpose modules mixed on the same rack.

What's in this Guide?

This brief guide shows you how to insert modules in the unit, connect power, and mount the unit. You may also need the following documents, depending on your application. Some of these documents are included in the CD that came with the unit. All documents can be found on our website, www.opto22.com. The easiest way to find a document is to search on its form number.

For this purpose...	Use this document...	Form #
Wire I/O modules or find out module specifications	*SNAP Digital Input Modules Data Sheet* *SNAP Digital Output Modules Data Sheet* *SNAP Analog Input Modules Data Sheet* *SNAP Isolated Analog Input Modules Data Sheet* *SNAP Analog Output Modules Data Sheet* *SNAP Serial Communication Module User's Guide*	0773 1144 1065 1182 1066 1191
Assign an IP address and configure I/O points and features	*PAC Manager User's Guide*	1704
Use and maintain the SNAP PAC R-series controller	*SNAP PAC R-Series Controllers User's Guide*	1595
Develop control programs to run on the R-series controller	*PAC Control User's Guide* PAC Control Command Reference PAC Control Commands Quick Reference	1700 1701 1703
Develop operator interfaces (HMIs) for the system	*PAC Display User's Guide*	1702
Use and maintain the SNAP PAC brain	*SNAP PAC Brain User's Guide*	1690

For Help

If you have problems installing or using your SNAP-IT unit and cannot find the help you need in the product data sheets or guides, you can contact Opto 22 Product Support.

Phone: 800-TEK-OPTO (835-6786)
951-695-3080
(Hours are Monday through Friday, 7 a.m. to 5 p.m. Pacific Time)

Fax: 951-695-3017

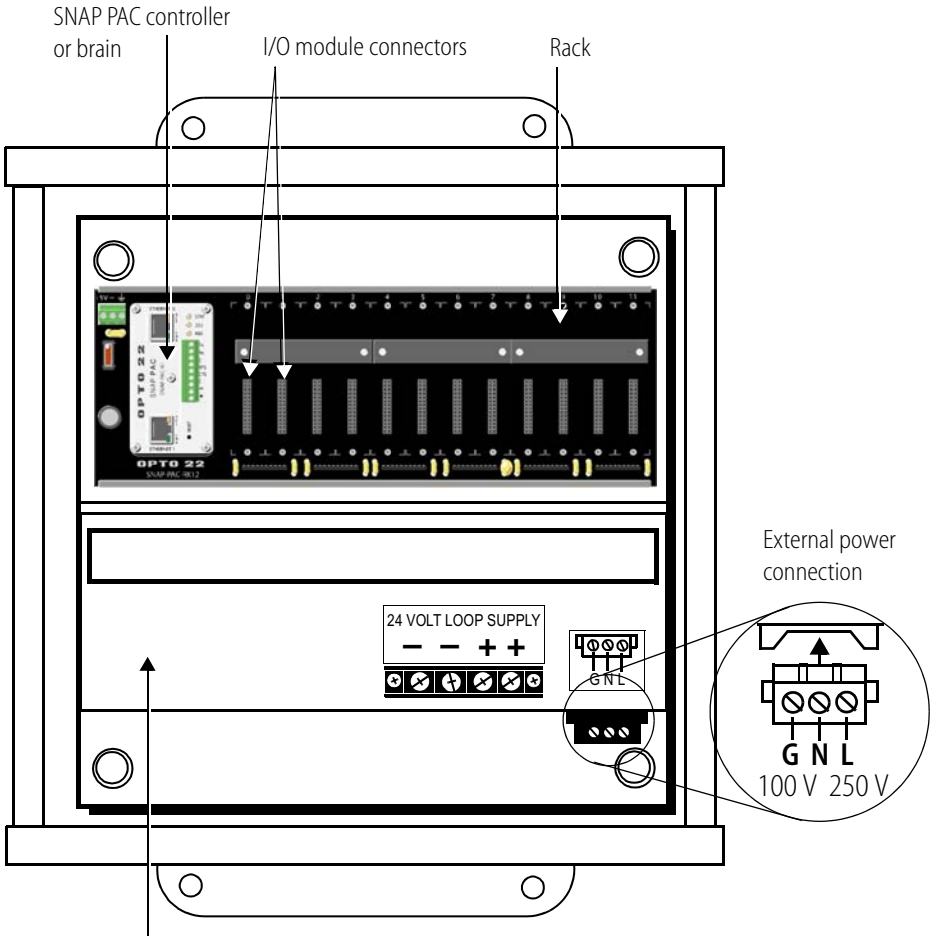
Email: support@opto22.com

Opto 22 website: www.opto22.com

NOTE: Email messages and phone calls to Opto 22 Product Support are grouped together and answered in the order received.

Quick Start

The following diagram shows the parts inside the SNAP-IT unit and wiring for attaching external AC power.



NOTE: Power supplies are located behind the panel.

About Modules

Input/output (I/O) modules are sold separately from the SNAP-IT unit so you can choose the modules you need from the wide variety available. Modules come in four basic types:

- **Digital modules** monitor or control electrical, mechanical, and electronic devices that can be in one of only two states: either on or off. Dry contacts and door sensors are examples of digital devices. Four-channel modules each have four points; high-density digital modules have more than four points, usually 16 or 32. These points are used either as inputs to report a device's on/off status, or as outputs to turn a device on and off remotely.
- **Analog modules** monitor or control devices that have a range of possible values, such as temperature or pressure sensors. Analog modules contain 1 to 32 input or output points.

- **Serial modules** provide communication with serial devices—such as chart recorders, barcode readers, and security devices—or serial-based networks, such as Profibus® DP. Each module has one or two serial ports.
- **Special-purpose modules** provide specific functionality, such as motion control or power monitoring.

Inserting Modules

Up to 12 modules snap into place in the row of connectors inside the SNAP-IT unit. A maximum of eight serial modules can be used in one SNAP-IT unit. All types of modules can be mixed in any position on the rack.

EXCEPTION: SNAP-PAC-R1 controllers with serial numbers less than 600000 can use 4-channel digital modules in module positions 0–7 only. All other module types can be in any position.

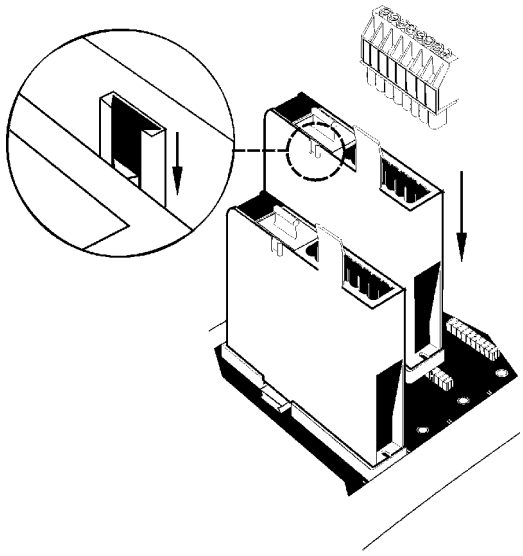
1. Make sure all power to the SNAP-IT unit is off. Open the unit's door and remove the small white fuse from the module mounting rack.

   WARNING: *Make sure there is no power to the rack before continuing, or you may severely damage the module.*

2. Notice that each connector position on the mounting rack has a number, beginning with zero on the far left.
3. Position the module over the connector, aligning the small slot at the base of the module with the retention bar on the rack.
4. With the module correctly aligned over the connector, push on the module to snap it into position.

   When positioning modules next to each other, be sure to align the male and female module keys (shown in the detailed view in the illustration at right) before snapping a module into position.

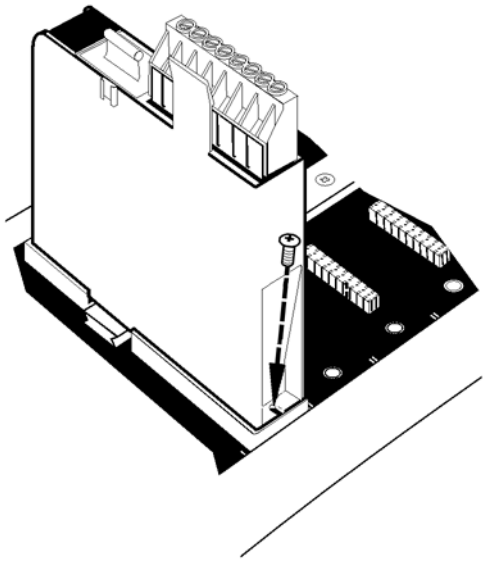
   Modules snap securely into place and require a special tool (provided) to remove them. If you need to remove a module, see page 7 for instructions.



5. As shown in the photo at right, use the hold-down screws to secure both sides of each module.

   CAUTION: *Do not over-tighten screws.*

6. Plug the wiring connector into each module to attach modules to the devices they monitor.
7. Replace the small white fuse on the module mounting rack.



Mounting the Unit

Mount the SNAP-IT-PM unit securely on a convenient wall or piece of equipment.

Using the SNAP-IT Unit on the Ethernet Network

1. Before connecting power to the SNAP-IT unit, read instructions in the *PAC Manager User's Guide* about assigning an IP address.
2. Inside the unit, connect external AC power to the unit as shown in the diagram on page 3.
3. Use PAC Manager to assign the IP address and configure I/O points and features.

Specifications

The following table lists specifications for SNAP-IT units.

Enclosure	
SNAP-IT-PM (all models)	Standard enclosure meets NEMA 3R. NEMA 3 or NEMA 4 is recommended for exterior use. Dimensions: 16.19" W, 18.25" H, 6.57" D
Communications	
Protocols	SNMP, SMTP, FTP, and Modbus/TCP over TCP/IP, UDP/IP, and PPP
Ethernet Port	10/100 Mbps Fast Ethernet, using Category 5 or superior solid UTP cable with RJ-45 connector
Serial Port	RS-232. Default rate is 19,200 Kbd; baud rate is soft-selectable from 2400 to 115,200 Kbd.
Other Specifications	
Power Supply	100–250 VAC (48 VDC and other options available by special order)
Power Consumption	30 W
Temperature	0° to 60° C operating
Humidity	0–95% humidity, non-condensing

LED Indicators

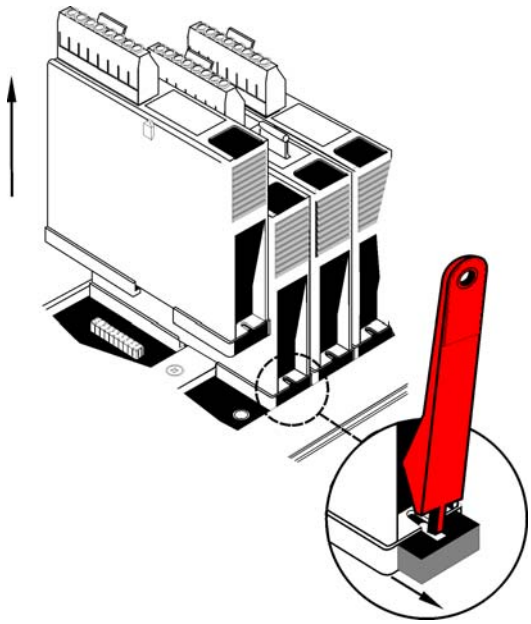
LEDs for SNAP PAC controllers or brains. LEDs on the top of the SNAP PAC R-series controller or the SNAP PAC brain show system and communication status and activity. See the controller or brain user's guide for details.

LEDs for 4-channel digital I/O modules. In addition to the system LEDs shown on the controller or brain, numeric LEDs are also provided on each standard digital module to indicate the status of its points. A lighted LED indicates that the digital point is on. (High-density digital modules do not have status LEDs.)

LEDs for other modules. LEDs are provided on some other modules, usually to indicate status or diagnostic information. See the module's user's guide for details.

Removing a Module

To remove a module from the SNAP-IT unit, you must use the SNAP module tool (provided).



1. Unplug power to the SNAP-IT unit. Remove the small white fuse from the module mounting rack.

   WARNING: *Make sure there is no power to the rack before continuing, or you may severely damage the module.*

2. If the modules are held in place with screws, remove them.
3. Holding the SNAP module tool as shown in the illustration at right, insert it into the notch at the base of the module.
4. Squeeze the module tool against the module to open the release latch. Pull straight out on the module (the opposite direction from the rack) to remove it.
5. When you have finished removing and installing modules, replace the small white fuse on the module mounting rack and plug power back into the SNAP-IT unit.

Notes on Maintenance and Troubleshooting

Instructions for maintenance and troubleshooting are in the *PAC Manager User's Guide* and in the controller or brain user's guide.

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