

SNAP-IT-PM Installation Guide

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 several models:

- The **SNAP-IT-PM-ADS** includes a SNAP-B3000-ENET analog/digital/serial Ethernet brain, a 12-module mounting rack, a power supply, and a 24 V loop power supply, all built in and pre-wired.
- The **SNAP-IT-PM-UADS** is identical to the SNAP-IT-PM-ADS but adds programming capability by including a SNAP-UP1-ADS Ultimate brain instead of the Ethernet brain. With this unit you receive ioControl™ software, an easy-to-use flowchart-based environment for developing machine and process control applications.
- The **SNAP-IT-PM-ADS-PLUS** (with an Ethernet brain) and **SNAP-IT-PM-UADS-PLUS** (with an Ultimate brain) come ready for a dial-up connection and include the brain, a 12-module mounting rack, a power supply, a modem, a digital input module to monitor AC power to the unit, and a 12 V backup battery.
- The **SNAP-IT-PM-ADS-PLUS24V** and **SNAP-IT-PM-UADS-PLUS24V** are identical to the PLUS models but with a 24 V battery backup.

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.

The SNAP-IT unit requires no special software or programming. You can easily configure modules and manage devices using any authorized computer and included software. If you need programming capability, the SNAP-IT-PM-UADS units provide the control capability and the software to easily build your own control programs.

All SNAP-IT-PM units can use analog and special-purpose modules (such as serial communication modules and high-density digital modules) in any position on the rack. Standard digital modules can be used in the first eight positions only.

What's in this Guide?

This brief guide shows you how to insert modules in the unit, connect power, and mount the unit.

For SNAP-IT-PM-ADS, SNAP-IT-PM-ADS-PLUS, and SNAP-IT-PM-ADS-PLUS24V: To configure modules and communicate with the unit, you will also need Opto 22 form #1460, the *SNAP Ethernet-Based I/O Units User's Guide*, and form #1440, the *ioManager User's Guide*, which are included in this binder.

For SNAP-IT-PM-UADS, SNAP-IT-PM-UADS-PLUS, and SNAP-IT-PM-UADS-PLUS24V: To configure modules and write control programs for the unit, you will also need the following Opto 22 forms:

- #1460, the *SNAP Ethernet-Based I/O Units User's Guide*
- #1440, the *ioManager User's Guide*
- #1300, the *ioControl User's Guide*
- #1301, the *ioControl Command Reference*
- #1314, the *ioControl Commands Quick Reference Card*

Forms #1440 and #1460 are included in this binder. The other forms are in Adobe® Acrobat® PDF format on the CD that came with your SNAP-IT unit. They are also available on our Web site at www.opto22.com. (The easiest way to find a form is to search on its form number.)

For all SNAP-IT-PM units—Wiring information and specifications for modules can be found in the Opto 22 documents listed below. All are included in this binder and are also available in Adobe Acrobat PDF format on the Opto 22 Web site at www.opto22.com.

| | |
|-------------------------------|------------|
| Digital input modules | Form #773 |
| Digital output modules | Form #1144 |
| Analog input modules | Form #1065 |
| Isolated analog input modules | Form #1182 |
| Analog output modules | Form #1066 |
| Serial communication modules | Form #1191 |

If your unit contains the optional modem, you can find complete modem documentation on our Web site at www.opto22.com. Search on the word `Cermetek` to find the documents.

For Help

If you have problems installing or using your SNAP-IT unit and cannot find the help you need in the product 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

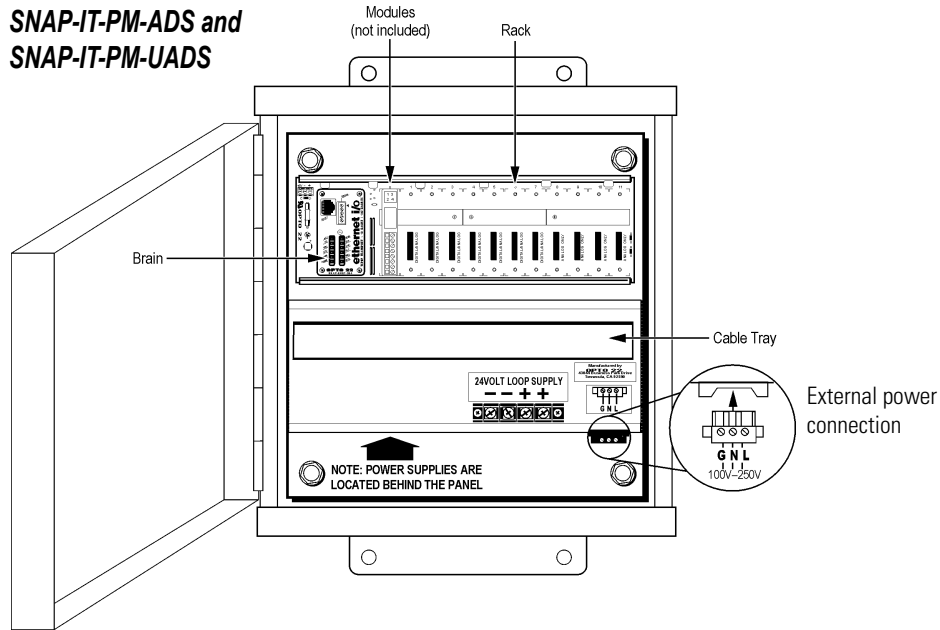
Opto 22 Web site: support.opto22.com

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

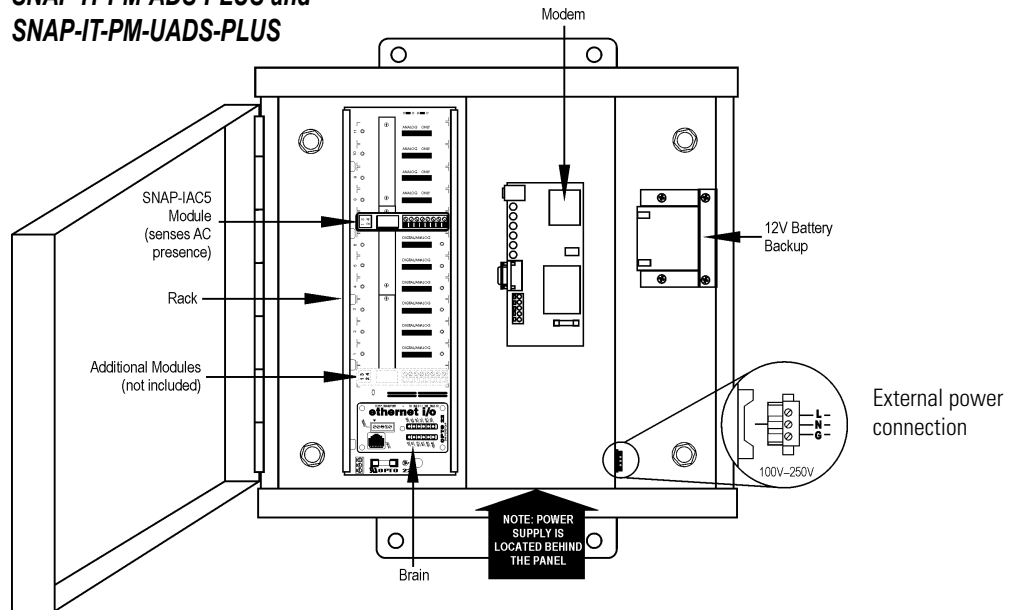
Quick Start

The following diagrams show the parts inside the SNAP-IT panel-mount models and wiring for attaching external AC power.

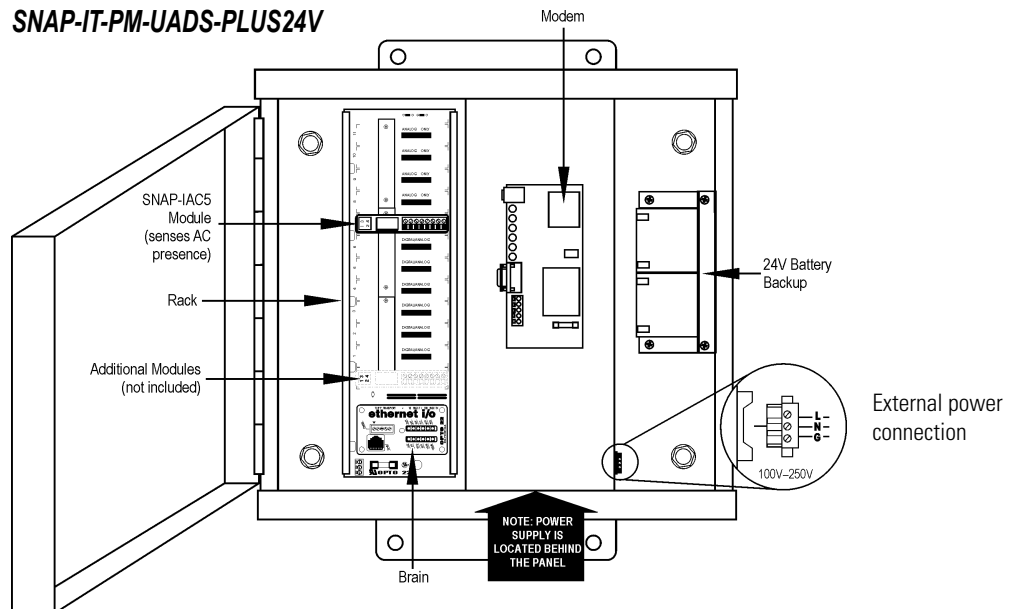
SNAP-IT-PM-ADS and SNAP-IT-PM-UADS



SNAP-IT-PM-ADS-PLUS and SNAP-IT-PM-UADS-PLUS



SNAP-IT-PM-ADS-PLUS24V and SNAP-IT-PM-UADS-PLUS24V



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 three basic types:

- **Digital modules** monitor and 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. Standard digital modules contain four points. These points are used either as an inputs to report a device's on/off status, or as outputs to turn a device on and off remotely. Standard digital modules can be placed in any of the first eight positions on the rack.
- **Analog modules** monitor devices that have a range of possible values, such as temperature or pressure sensors. Analog modules contain either two or four input or output points. Analog modules can be placed in any position on the rack.
- **Special-purpose modules** provide specific functionality. Special-purpose modules can be placed in any position on the rack; check the module's data sheet for limitations on the total number of modules on a rack.
 - *Serial modules* communicate with serial devices, such as chart recorders, barcode readers, and security devices, by sending and receiving ASCII characters via a serial port. Each module has two serial ports.
 - *High-density digital modules* offer 32 digital points in a compact input or output module. Each module contains four banks of eight points. High-speed counting is not available, and points within each bank are not isolated from each other. These modules are ideal for applications in confined space where isolation and high-speed counting are not required.

Inserting Modules

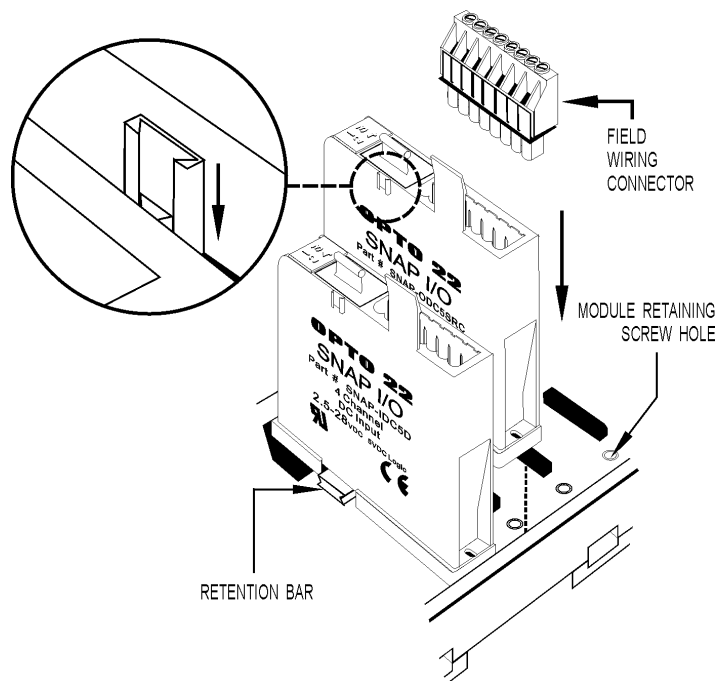
Up to 12 modules snap into place in the row of connectors inside the SNAP-IT unit.

1. Make sure all power to the SNAP-IT unit is off. 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. Open the unit's door and notice that each connector position has a number, beginning with zero on the far left (or at the bottom, depending on the SNAP-IT model).
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 below) 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 10](#) for instructions.

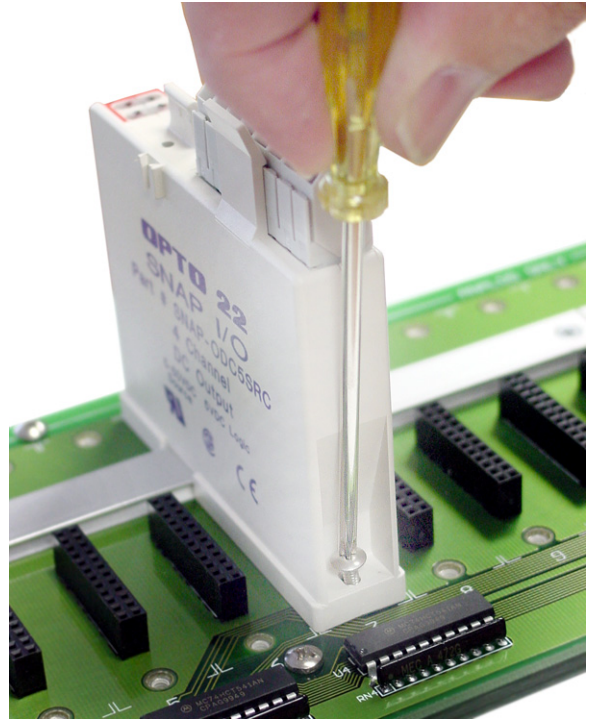
Optionally, you can also use the provided hold-down screws to secure modules in position.

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

CAUTION: *Do not over-torque 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.

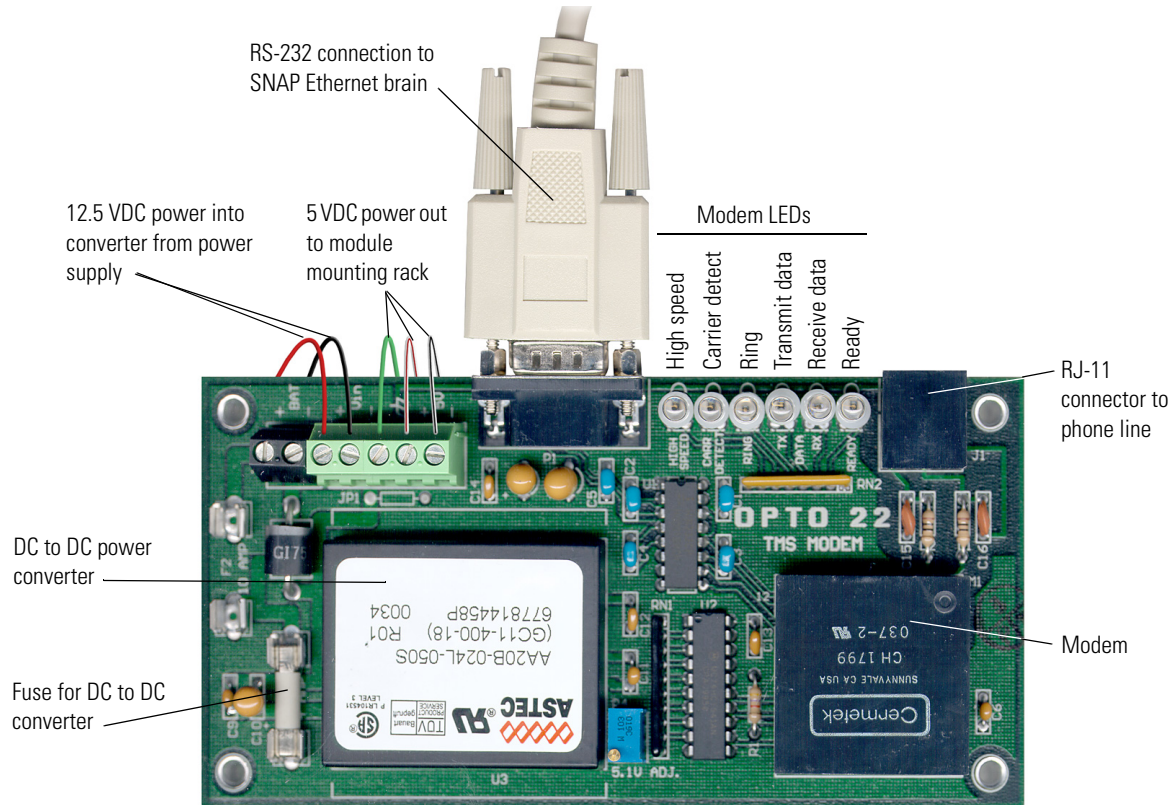
Mounting the Unit and Connecting Power



1. Mount the SNAP-IT-PM unit on a convenient wall or piece of equipment.
2. Inside the unit, connect external AC power to the unit as shown in the diagrams starting on [page 4](#).

Optional Modem

Your SNAP-IT-PM unit may contain an optional modem. The modem card is shown in the following diagram:



The modem card contains a Cermetek modem; for complete documentation on the modem's features and function commands, consult the Cermetek manuals on our Web site at www.opto22.com. To locate the manuals, search documentation for "Cermetek".

Optional Access Control

The SNAP-IT-PM unit may also contain an isolation circuit board used with the OptoGateLock access control option. For more information, see Opto 22 form #1276, the *OptoGateLock Installation Guide*.

Using the SNAP-IT Unit on the Ethernet Network

Follow instructions in the *ioManager User's Guide* to assign an IP address to the SNAP-IT unit 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. |
| Modem | V.34 (PLUS models only) |
| Other Specifications | |
| Power Supply | 100–250 VAC (48 VDC and other options available by special order) |
| Power Consumption | 30 W |
| Temperature | 0° to 70° C operating |
| Humidity | 0–95% humidity, non-condensing |

LED Indicators

The following table describes system LEDs located on the top of the SNAP Ethernet or SNAP Ultimate brain:

| LED | Description |
|-------|-------------------------------------|
| ACT | Network Activity |
| FD | Full Duplex Mode |
| ERD | Ethernet—Receive Data |
| ETD | Ethernet—Transmit Data |
| 10MB | Ethernet Link Detection at 10 Mbps |
| 100MB | Ethernet Link Detection at 100 Mbps |

| LED | Description |
|-----|----------------------|
| RUN | Normal Operation |
| 3VF | 3 Volt Fault |
| 5VF | 5 Volt Fault |
| FLT | Microprocessor Fault |
| SRD | Serial—Receive Data |
| STD | Serial—Transmit Data |

LEDs for Standard Digital I/O Modules

In addition to the system LEDs shown in the table above, 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 Special-Purpose Modules

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

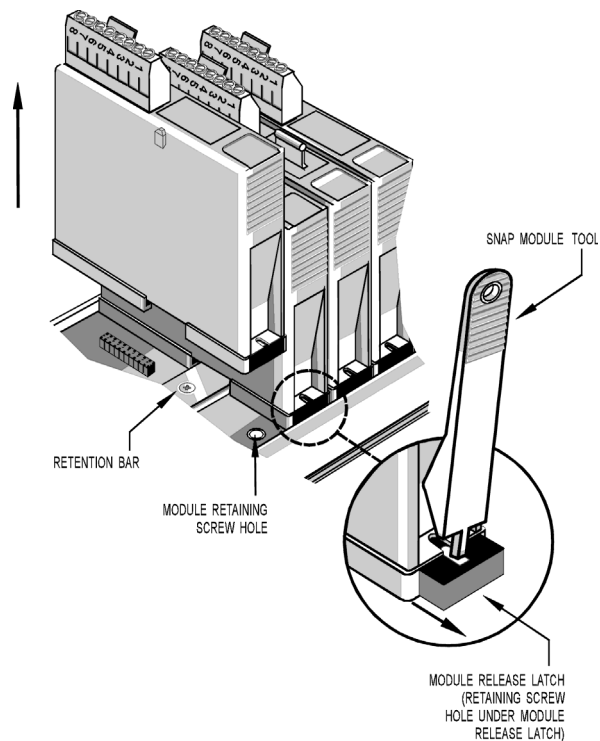
Removing a Module

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 up on the module 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

Instructions for maintenance are in the *SNAP Ethernet-Based I/O Units User's Guide*. If you need to change the SNAP-IT unit's IP address, reset it to factory defaults, or download new firmware, you will need to use instructions in the user's guide.

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