SNAP Mechanical Power Relay Output Modules

Features

- Four isolated channels
- Each channel switches up to 6 A at 250 VAC or 30 VDC
- Channel-specific LEDs
- Operating temperature: -20 to 70 °C
- UL approved (approval pending for SNAP-OMR6T-C)

SNAP-OMR6-C

Description

SNAP mechanical power relay output modules offer four channels for switching loads of up to 6 amps at 250 VAC or 30 VDC.

These modules handle more current than other SNAP output modules. Each contact can carry 6 amps, and having more than one channel on at the same time does not reduce the amount of power each channel can carry.

These are form C modules, so each of the four mechanical contacts can be wired as normally open or normally closed. Fusing is not provided; you must provide fusing when wiring the module.

SNAP mechanical power relay output modules provide channel-to-channel isolation. These modules can mechanically switch either AC or DC loads, potentially reducing the number of modules needed.

Additionally, SNAP mechanical power relay output modules offer little or no leakage current when the contacts are open. In contrast, possible leakage current in solid-state SNAP AC output modules might cause an electronic input to stick in the ON state. These modules are suitable for piloting electronic coil contactors.

NOTE: These modules may not be suitable for low-level switching.

NOTE: Transient protection is recommended for inductive loads. For DC loads, install a reverse-biased diode, such as an 1N4005 (or equivalent) at the load.

Two mechanical power relay output modules are available: the **SNAP-OMR6T-C** and the **SNAP-OMR6-C**. They are identical except that the SNAP-OMR6-C does not include integrated transient suppression.

The **SNAP-OMR6T-C** is recommended for most applications, including applications with long wire runs.

NOTE: For very high inductive loads, additional transient protection is recommended.

When using the **SNAP-OMR6-C**, you must provide transient suppression at the load. If long wire runs are used, transient suppression is required at the terminals of the module as well.

NOTE: SNAP-OMR6-C modules manufactured prior to March 2014 have four black field wiring connectors; newer modules have a single large gray connector as shown above. Field connector wiring and module function are identical. Note torque differences in "Specifications" on page 3.

Compatibility

Part of the SNAP PAC System, these modules mount on a SNAP PAC rack with a SNAP PAC brain or rack-mounted controller. Analog, digital, and serial I/O modules can all be on the same rack. This kind of I/O unit is also well suited for PC-based control or for use as intelligent remote I/O for an Allen-Bradley PLC system.

PAC Project—The SNAP-OMR6T-C is supported in PAC Project R9.4009 and higher. The SNAP-OMR6-C is supported in PAC Project R9.2 and higher.

Brains—SNAP mechanical power relay output modules are compatible with all SNAP PAC brains and rack-mounted controllers, including both standard wired models and Wired+Wireless™ models.

Part Number

Part	Description
SNAP-OMR6T-C	SNAP 4-channel Mechanical Power Relay Module, SPDT (Form C), with Integrated Transient Suppression
SNAP-OMR6-C	SNAP 4-channel Mechanical Power Relay Module, SPDT (Form C)

Legacy hardware—These modules are also compatible with SNAP Ultimate, SNAP Ethernet, and SNAP Simple brains, as well as other SNAP brains such as the serial B3000 and the B3000-B. They can be mounted on both B-series and M-series mounting racks.

SNAP-OMR6-A

A previous module, the form A SNAP-OMR6-A, is no longer available. Use the SNAP-OMR6T-C as a pin-identical, drop-in replacement for this obsolete module.

Specifications and wiring diagrams for the obsolete SNAP-OMR6-A are included in this data sheet for reference only.

Installation

The following diagram shows part of a SNAP mounting rack.

Modules snap securely into place in the row of connectors on the rack. Each module connector is numbered, starting with position zero.
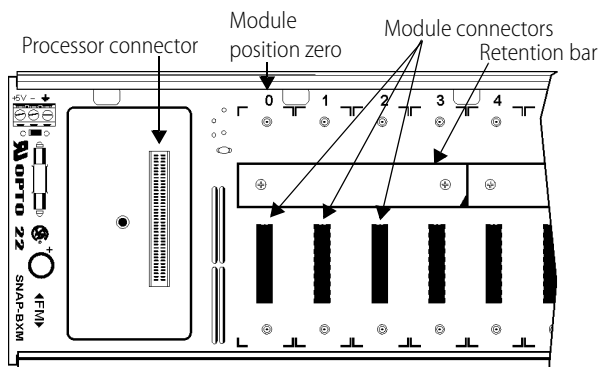
1. Place the rack so that the module connector numbers are right-side up, with zero on the left, as shown in the diagram above. (If your rack has screw connectors, the screw connectors will be at the bottom.)

   NOTE: Check the data sheet or user's guide for the brain or on-the-rack controller you are using to determine any restrictions on module placement.

2. Position the module over the module connector, aligning the small slot at the base of the module with the retention bar on the rack. When positioning modules next to each other, be sure to align the male and female module keys at the tops of the modules before snapping a module into position.

3. With the module correctly aligned, push on the module to snap it into place.

4. (Optional) Use standard 4-40 x 1/2 truss-head Phillips hold-down screws (provided) to secure both sides of each module.
   CAUTION: Do not overtighten screws. Torque for hold-down screws: 4 in-lb (0.45 N-m)

5. Follow the wiring diagrams on page 5 to attach the module to field devices. Torque for connector screws: 1.7 in-lb (0.2 N-m)

Modules require a special tool (provided) for removal.

SNAP Mechanical Power Relay Output Modules

Specifications

	SNAP-OMR6-C	SNAP-OMR6T-C
Field Side Ratings (each channel)		
Contact Configuration	Form C (SPDT, normally open or closed)	Form C (SPDT, normally open or closed)
Line Voltage - Range	0–250 VAC or 5–30 VDC	0–250 VAC or 5–30 VDC
Current Rating	6 amps switching @ 250 VAC / 30 VDC	6 amps switching @ 250 VAC / 30 VDC
Surge Current	6 amps	6 amps
Minimum Load	5 VDC, 10 mA	5 VDC, 10 mA
Contact Resistance	≤ 100 milliohms	≤ 100 milliohms
Leakage Current	none	< 1 microamp @ 250 VAC
Clamping Voltage (for transient suppression)	External transient suppression required	440 V nominal
Duty Cycle	-- Not applicable --	1 Hz
Switching Power	1500 VA / 144 W (DC)	1500 VA / 144 W (DC)
Peak Blocking Voltage	250 VAC @ 360 V_{pk}	250 VAC @ 360 V_{pk}
Channel-to-channel isolation	300 VAC (1500 Vtransient)	300 VAC (1500 Vtransient)
Logic Side Ratings		
Pickup Voltage	1 V @ 2 mA	1 V @ 2 mA
Dropout Voltage	4 VDC	4 VDC
Control Resistance	220 ohms	220 ohms
Logic Supply Voltage	5 VDC ± 0.25 VDC	5 VDC ± 0.25 VDC
Logic Supply Current	160 mA maximum	160 mA maximum
Module Ratings		
Number of Channels Per Module	4	4
Turn-on Time	8 milliseconds	8 milliseconds
Turn-off Time	8 milliseconds	8 milliseconds
Torque, hold-down screws	4 in-lb (0.45 N-m)	4 in-lb (0.45 N-m)
Torque, connector screws	Single gray connector: 5.26 in-lb (0.6 N-m) Black connectors: 1.7 in-lb (0.2 N-m)	5.26 in-lb (0.6 N-m)
Temperature	-20 to 70 °C, operating -30 to 85 °C, storage	-20 to 70 °C, operating -30 to 85 °C, storage
Agency Approvals	UL, CE, RoHS, DFARS	UL*, CE RoHS, DFARS
Mechanical Life	10 x 10^6 operations	10 x 10^6 operations
Operational Life	30 x 10^3 operations	30 x 10^3 operations
Warranty	30 months	30 months

*UL approval pending

SNAP Mechanical Power Relay Output Modules

Specifications (continued)

IMPORTANT: Specifications for the SNAP-OMR6-A are included for reference only. This module is no longer available.

	SNAP-OMR6-A [Obsolete]
Field Side Ratings (each channel)	
Contact Configuration	Form A (SPST, normally open)
Line Voltage - Range	0–250 VAC or 0–30 VDC
Current Rating	6 amps switching @ 250 VAC / 30 VDC
Surge Current	6 amps
Minimum Load	5 VDC, 10 mA
Contact Resistance	$\leq$ 100 milliohms
Switching Power	1500 VA / 144 W (DC)
Peak Blocking Voltage	250 VAC / 30 VDC
Channel-to-channel isolation	300 VAC (1500 Vtransient)
Logic Side Ratings	
Pickup Voltage	1 V @ 2 mA
Dropout Voltage	4 VDC
Control Resistance	220 ohms
Logic Supply Voltage	5 VDC ± 0.25 VDC
Logic Supply Current	160 mA maximum
Module Ratings	
Number of Channels Per Module	4
Turn-on Time	8 milliseconds
Turn-off Time	8 milliseconds
Torque, hold-down screws	4 in-lb (0.45 N-m)
Torque, connector screws	Single gray connector: 5.26 in-lb (0.6 N-m) Black connectors: 1.7 in-lb (0.2 N-m)
Temperature	-20 to 70 °C, operating -30 to 85 °C, storage
Agency Approvals	CE, RoHS, DFARS
Mechanical Life	10×10^6 operations
Operational Life	30×10^3 operations
Warranty	30 months

SNAP Mechanical Power Relay Output Modules

Wiring Diagrams

SNAP-OMR6T-C Field Connections
Note: User must provide own fusing.
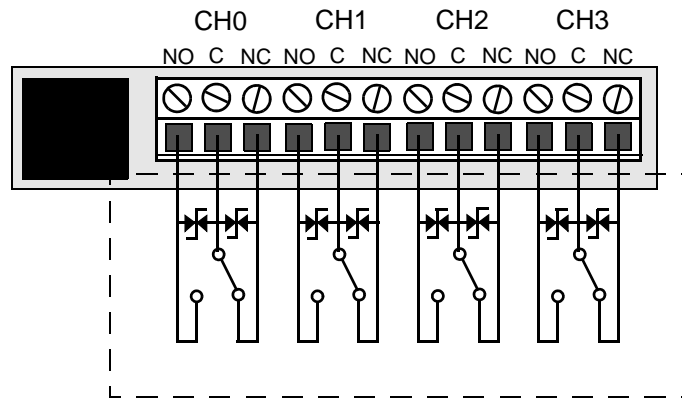
NOTE: External transient protection is recommended for highly inductive loads.

Wiring Diagrams (Continued)

SNAP-OMR6-C Field Connections - Newer Terminal (gray)
Note: User must provide own fusing.
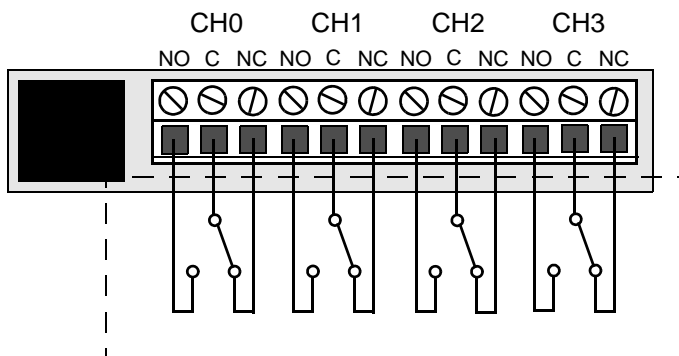
NOTE: Transient protection is recommended for inductive loads.
NOTE: For DC loads, install a reverse-biased diode, such as an 1N4005 (or equivalent) at the load.

SNAP-OMR6-C Field Connections - Older Terminals (black)
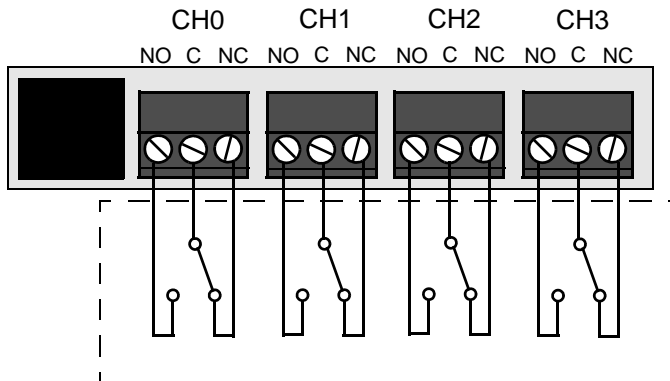Note: User must provide own fusing.

NOTE: Transient protection is recommended for inductive loads.
NOTE: For DC loads, install a reverse-biased diode, such as an 1N4005 (or equivalent) at the load.

SNAP Mechanical Power Relay Output Modules

Wiring Diagrams (Continued)

SNAP-OMR6-A Field Connections - Newer Terminal (gray)
Note: User must provide own fusing.

NOTE: Transient protection is recommended for inductive loads.
NOTE: For DC loads, install a reverse-biased diode, such as an 1N4005
(or equivalent) at the load.

SNAP-OMR6-A Field Connections - Older Terminals (black)
Note: User must provide own fusing.

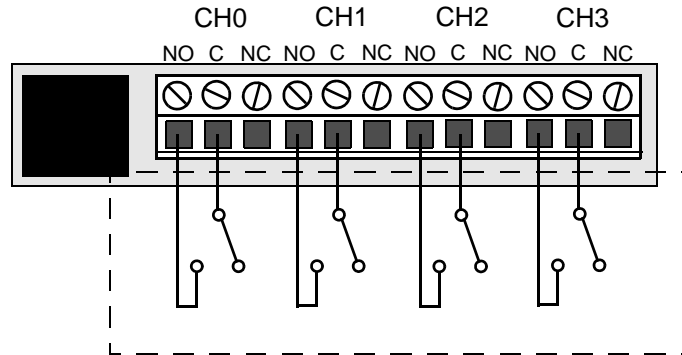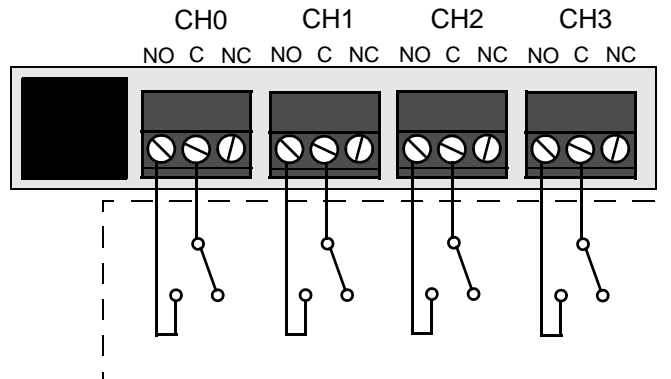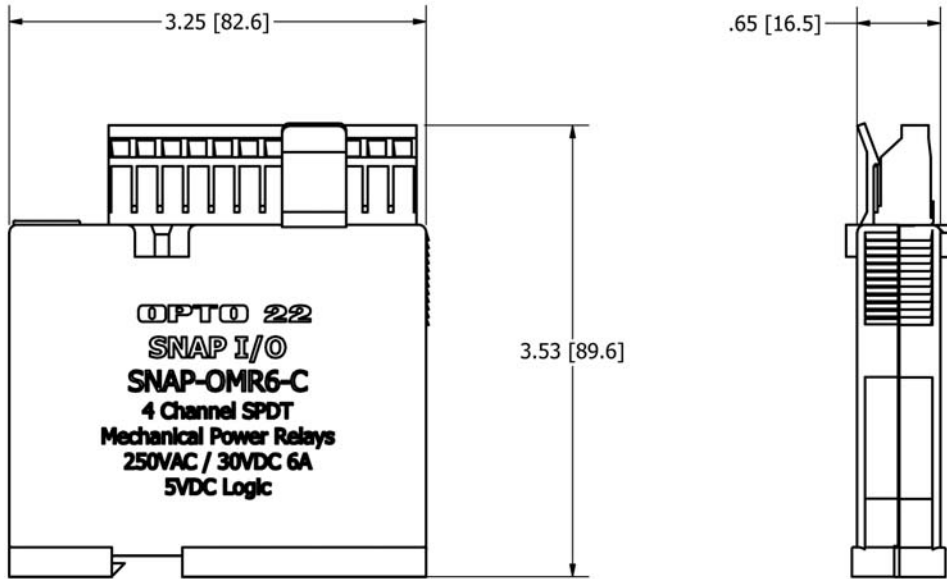*NOTE: Transient protection is recommended for inductive loads.*
NOTE: For DC loads, install a reverse-biased diode, such as an 1N4005
(or equivalent) at the load.

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Dimensional Drawings

Newer field wiring terminal: one 12-position connector

3.25 [82.6]

.65 [16.5]

3.53 [89.6]

OPTO 22
SNAP I/O
SNAP-OMR6-C
4 Channel SPDT
Mechanical Power Relays
250VAC / 30VDC 6A
5VDC Logic

Older field wiring terminals: four 3-position connectors

3.25 [82.6]

.65 [16.5]

3.53 [89.6]

OPTO 22
SNAP I/O
SNAP-OMR6-C
4 Channel SPDT
Mechanical Power Relays
250VAC / 30VDC 6A
5VDC Logic
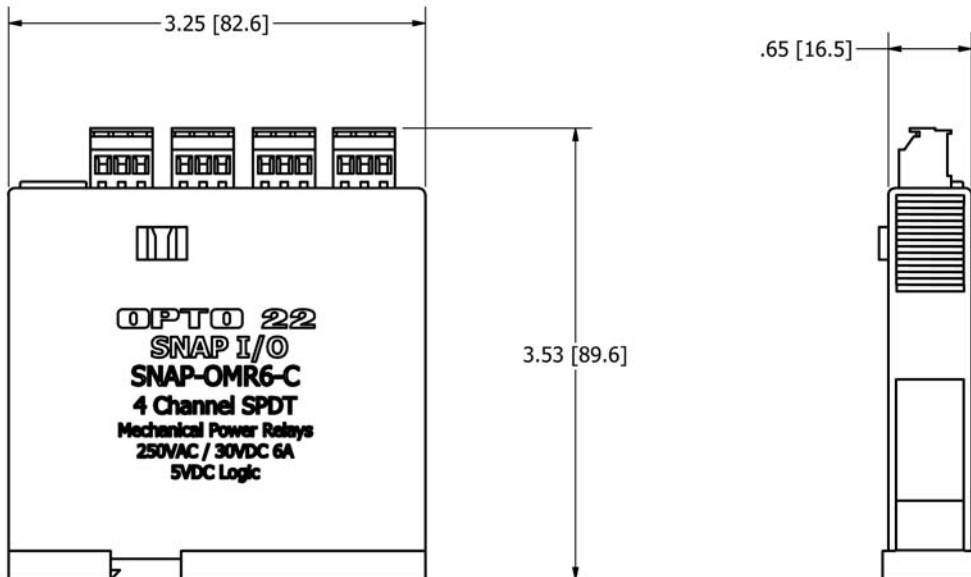
SNAP Mechanical Power Relay Output Modules

Dimensional Drawings (Continued)

BOTTOM VIEW OF MODULE

RELEASE
SNAP LATCH

NOTE: CONNECTOR IS CENTERED
WITH SCREW HOLE CENTERLINE

0.75 MIN TO
NEXT MODULE
LOCATION
TYPICAL

TWO MOUNTING HOLES
AVAILABLE FOR
MODULE HOLD-DOWN
SCREWS. USE
4–40 SCREWS
WITH LENGTH OF
3/8", 7/16", or ½"

PIN 1
20 PIN BOX HEADER

PIN 1
PIN SPACING
0.100 CTR–CTR

0.05*
(1.27mm)

0.15 TYP.
(3.81mm)

2.95** (74.93mm)

3.25*** O.A. (82.55mm)

0.45* (11.43mm)

TOLERANCES
* +/– 0.010"
** +/– 0.020"
*** +/– 0.030"
NO * REFERENCE ONLY
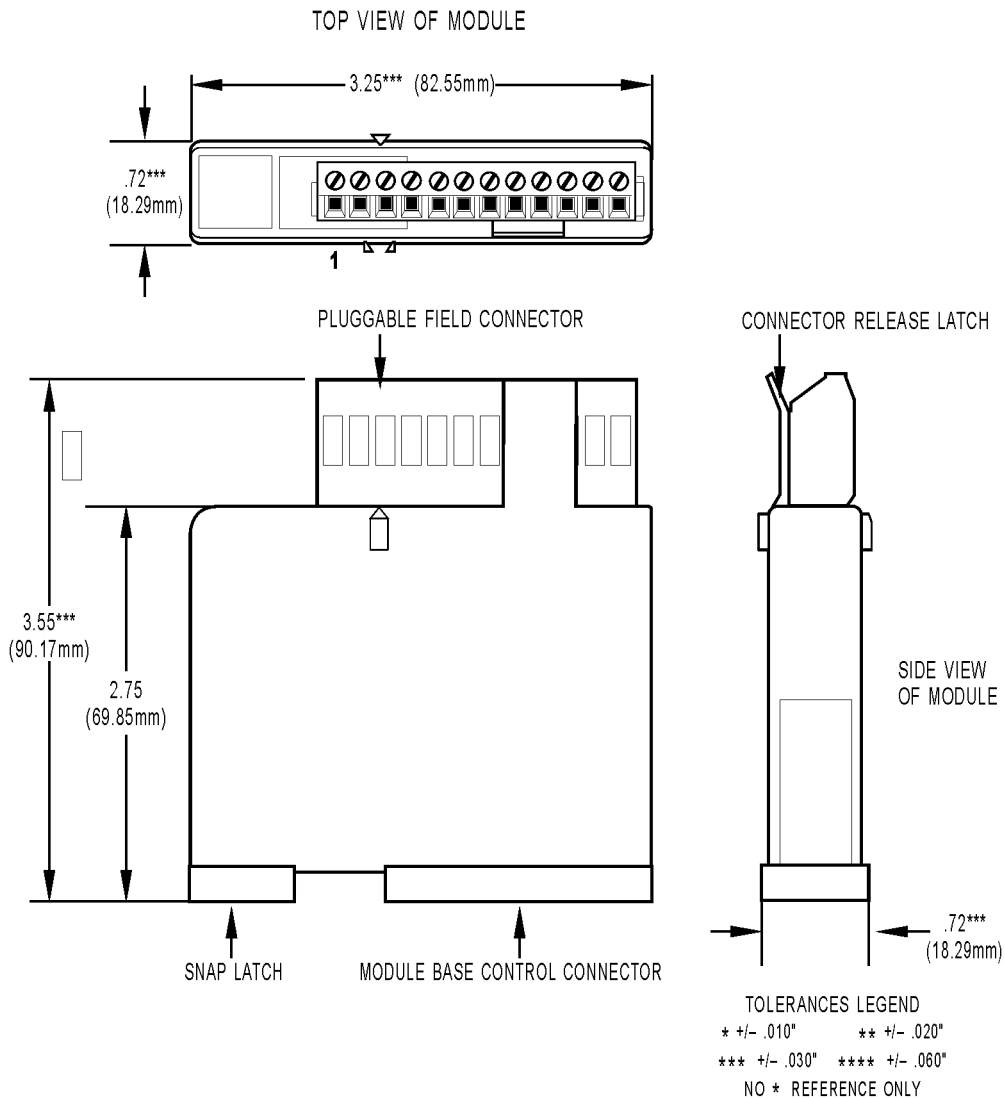
IMPORTANT: The mounting rack connector has 24 pins; the module connector has 20 pins. The extra pins on the mounting rack connector prevent misalignment of the module during installation.

Dimensional Drawings (Continued)

TOP VIEW OF MODULE

3.25*** (82.55mm)

.72*** (18.29mm)

1

PLUGGABLE FIELD CONNECTOR

CONNECTOR RELEASE LATCH

3.55*** (90.17mm)

2.75 (69.85mm)

SIDE VIEW OF MODULE

SNAP LATCH

MODULE BASE CONTROL CONNECTOR

.72*** (18.29mm)

TOLERANCES LEGEND
* +/− .010"   ** +/− .020"
*** +/− .030"   **** +/− .060"
NO * REFERENCE ONLY

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.

groov

groov puts your system on your mobile device. With zero programming, you can build mobile operator interfaces to monitor and control systems from Allen-Bradley, Siemens, Schneider Electric, Modicon, and many more. Web-based *groov* puts mobile-ready gadgets at your fingertips. Tag them from your existing tag database, and they automatically scale for use on any device with a modern web browser. See groov.com for more information and your free trial.

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, the rack-mounted SNAP PAC R-series, and the software-based SoftPAC™ all 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. Wired+Wireless™ models are also available.

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. PAC Project

Professional, available for separate purchase, adds one SoftPAC, 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 test each product twice before it leaves our factory, rather than only testing a sample of each batch, 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.

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 (toll-free in the U.S. and Canada) or 951-695-3000, or visit our website at www.opto22.com.

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