SNAP Reed Relay Modules

Features

- Four channels per module
- Convenient pluggable wiring terminals; accepts up to 14 AWG wire
- Powered by a single 5-volt supply
- Channel-specific LEDs
- Operating temperature: -20 to 70 °C
- Factory Mutual approved (part numbers ending in FM)

SNAP ODC5R

Description

The SNAP Reed Relay modules use reed relays and do not provide optical isolation. Current rating depends on the voltage the module is used with.

Typical applications for these modules include analog signal and communication line multiplexing.

Because of their low 10 VA rating, these modules are not recommended for inductive or capacitive loads (even very small loads), because the inrush current is likely to exceed the 10 VA rating.

IMPORTANT: Applications using 120 VAC are typically NOT suited to this module. If you are considering using this module for any application other than low-voltage purely resistive loads, see the detailed notes and rating curve on the following pages, and call Pre-sales Engineering for specific guidance.

NOTE: For many applications a better choice is the SNAP-OMR6-C module, which can handle a full 6 A at 0–250 VAC or 0–30 VDC.

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. Such an I/O unit is also well suited for PC-based control or for use as intelligent remote I/O for an Allen-Bradley MicroLogix or other RSLogix-based PLC system, such as ControlLogix or CompactLogix.

For easier, faster wiring, see SNAP TEX cables and breakout boards.

The SNAP-ODC5RFM and SNAP ODC5R5FM modules are Factory Mutual (FM) approved.

I/O Processor Compatibility

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

Notes for legacy hardware: SNAP digital output 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 B3000HA. These modules can also be used on B-series and M-series mounting racks.

Part Numbers

Part	Description
SNAP-ODC5R*	SNAP 4-channel dry contact output, normally open
SNAP-ODC5RFM*	SNAP 4-channel dry contact output, normally open
SNAP-ODC5R5*	SNAP 4-channel dry contact output, normally closed
SNAP-ODC5R5FM*	SNAP 4-channel dry contact output, normally closed

*Not UL approved

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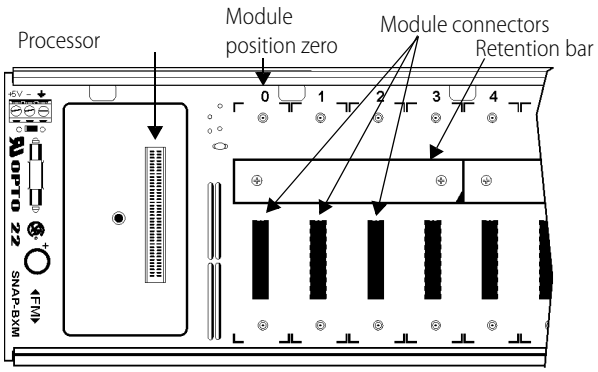
Installation

The following diagram shows part of a SNAP mounting rack. The rack is shown without screw connectors.

Modules snap securely into place in the row of connectors on the rack. Each module connector has a number. Digital output modules and other types of SNAP I/O modules are mounted on the module connectors starting at module position zero.

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



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.)
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 to secure both sides of each module. **CAUTION:** Do not over-tighten screws.
5. Follow the wiring diagram on page 5 to attach modules to the devices they monitor.

Modules require a special tool (provided) for removal.

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SNAP Reed Relay Modules

Specifications

	SNAP-ODC5R	SNAP-ODC5R5
Key Feature	Dry contact Normally open	Dry contact Normally closed
Torque, hold-down screws	4 in-lb (0.45 N-m)	4 in-lb (0.45 N-m)
Torque, connector screws	5.26 in-lb (0.6 N-m)	5.26 in-lb (0.6 N-m)
Field Side Ratings (each channel)		
Line Voltage - Range	0–100 VDC 0–130 VAC*	0–100 VDC 0–130 VAC*
Line Voltage - Nominal	--	--
Current Rating	0.5 amps switching*	0.5 amps switching*
Surge Current	0.5 amps*	0.5 amps*
Minimum Load	0 mA	0 mA
Output Voltage Drop	0 volts	0 volts
Off-state Leakage	0 mA	0 mA
Peak Blocking Voltage	100 VDC / 130 VAC	100 VDC / 130 VAC
Fuse (Common to all Channels)	Has four isolated channels. User must provide own fusing.	Has four isolated channels. User must provide own fusing.
Channel-to-channel isolation	300 VAC (1500 V transient)	300 VAC (1500 V transient)
Logic Side Ratings		
Pickup Voltage	4 V @ 5.5 mA	4 V @ 5.5 mA
Dropout Voltage	1 VDC	1 VDC
Control Resistance	220 ohms	220 ohms
Logic Supply Voltage	5 VDC ± 0.25 VDC	5 VDC ± 0.25 VDC
Logic Supply Current	50 mA maximum	50 mA maximum
Module Ratings		
Number of Channels Per Module	4	4
Turn-on Time	500 usec	500 usec
Turn-off Time	500 usec	500 usec
Isolation (Field Side to Logic Side)	1,500 volts (transient)	1,500 volts (transient)
Mechanical Life	200,000,000 cycles	200,000,000 cycles
Temperature	-20 to 70 °C, operating -30 to 85 °C, storage	-20 to 70 °C, operating -30 to 85 °C, storage
Agency Approvals	CE, CSA, RoHS, DFARS	CE, RoHS, DFARS
Warranty	30 months or mechanical life, whichever comes first	30 months or mechanical life, whichever comes first

* The current of the dry contact module must not exceed 10 VA power limit under steady state or momentary in-rush conditions. For voltages at or below 20 volts, the current limit is 0.5 amps. For voltages above 20 volts, the maximum allowable current is determined by the following equation:
Current Maximum = 10 VA / Voltage.

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Specifications (continued)

	SNAP-ODC5RFM	SNAP-ODC5R5FM
Key Feature	Factory Mutual approved	Factory Mutual approved
Torque, hold-down screws	4 in-lb (0.45 N-m)	4 in-lb (0.45 N-m)
Torque, connector screws	5.26 in-lb (0.6 N-m)	5.26 in-lb (0.6 N-m)
Field Side Ratings (each channel)		
Line Voltage - Range	0–100 VDC 0–130 VAC*	0–100 VDC 0–130 VAC*
Line Voltage - Nominal	--	--
Current Rating	0.5 amps switching*	0.5 amps switching*
Surge Current	0.5 amps*	0.5 amps*
Minimum Load	0 mA	0 mA
Output Voltage Drop	0 volts	0 volts
Off-state Leakage	0 mA	0 mA
Peak Blocking Voltage	100 VDC / 130 VAC	100 VDC / 130 VAC
Fuse (Common to all Channels)	Has four isolated channels. User must provide own fusing.	Has four isolated channels. User must provide own fusing.
Logic Side Ratings		
Pickup Voltage	4 V @ 5.5 mA	4 V @ 5.5 mA
Dropout Voltage	1 VDC	1 VDC
Control Resistance	220 ohms	220 ohms
Logic Supply Voltage	5 VDC ± 0.25 VDC	5 VDC ± 0.25 VDC
Logic Supply Current	50 mA maximum	50 mA maximum
Module Ratings		
Number of Channels Per Module	4	4
Turn-on Time	500 usec	500 usec
Turn-off Time	500 usec	500 usec
Isolation (Field Side to Logic Side)	1,500 volts (transient)	1,500 volts (transient)
Mechanical Life	200,000,000 cycles	200,000,000 cycles
Temperature	-20 to 70 °C, operating -30 to 85 °C, storage	-20 to 70 °C, operating -30 to 85 °C, storage
Agency Approvals	CE, FM, RoHS, DFARS	CE, FM, RoHS, DFARS
Warranty	30 months or mechanical life, whichever comes first	30 months or mechanical life, whichever comes first

* The current of the dry contact module must not exceed 10 VA power rating under steady state or momentary in-rush conditions. For voltages at or below 20 volts, the current limit is 0.5 amps. For voltages above 20 volts, the maximum allowable current is determined by the following equation:
Current Maximum = 10 VA / Voltage.

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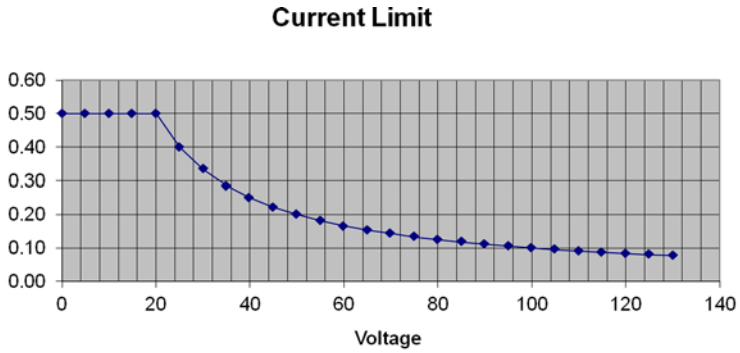
SNAP Reed Relay Modules

Schematic

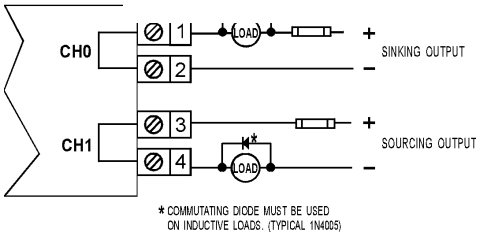
Current Limit at Key Voltages	
VDC	mA
5	500
12	500
24	416
48	206
100[1]	100

[1] Maximum DC voltage is 100 VDC.

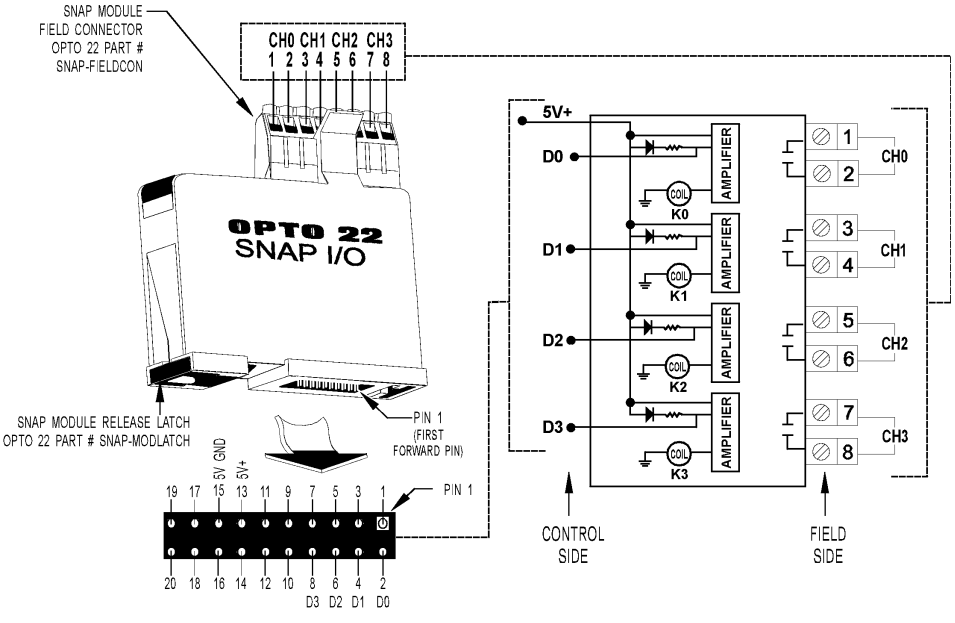


NOTE: Commutating diode* must be used on inductive loads. Typical wiring examples:

TYPICAL WIRING EXAMPLES



FIELD WIRING DRY CONTACT OUTPUT



SNAP DIGITAL MODULE BASE CONTROL CONNECTOR (BOTTOM VIEW)

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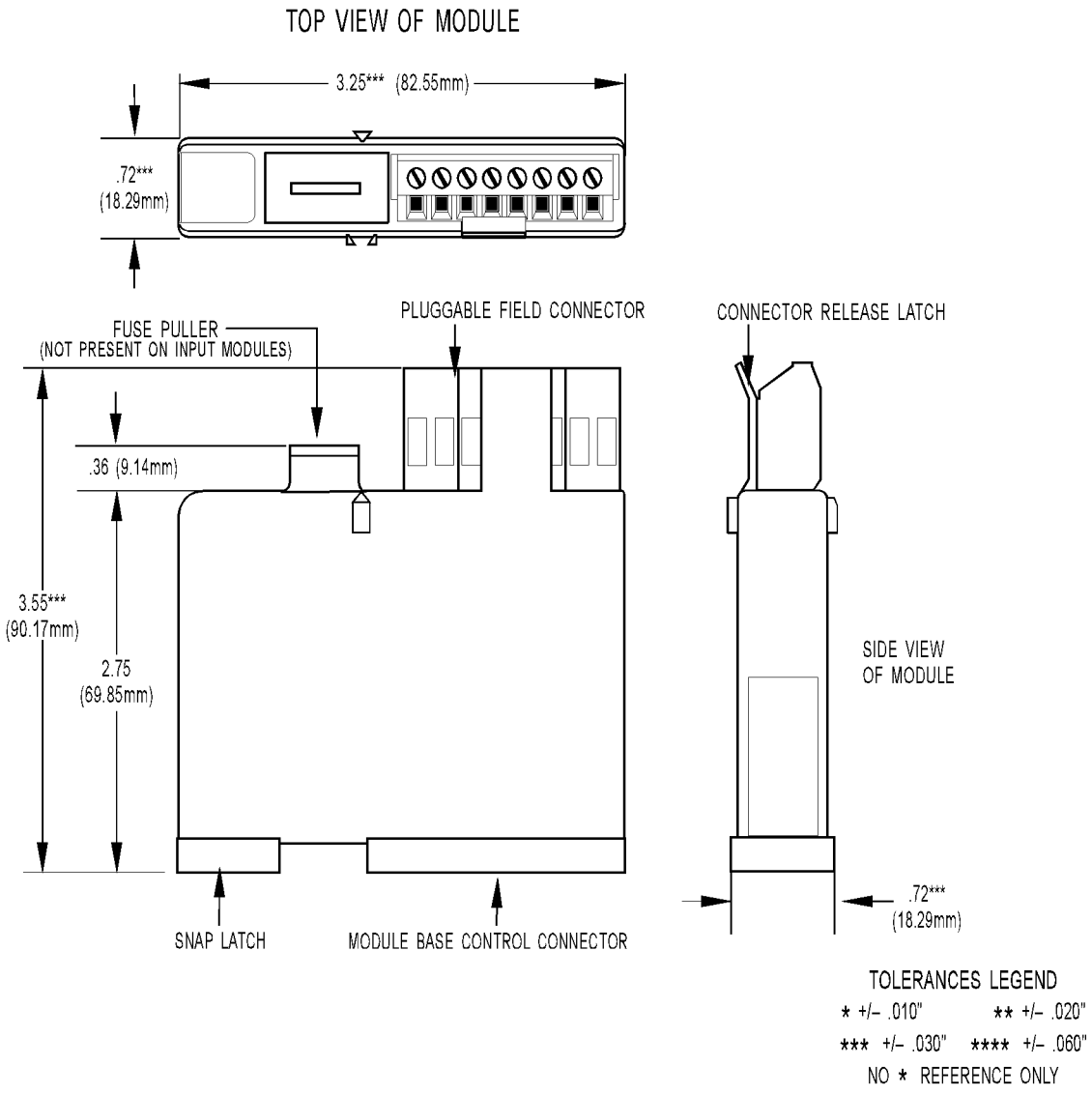
Dimensional Drawing



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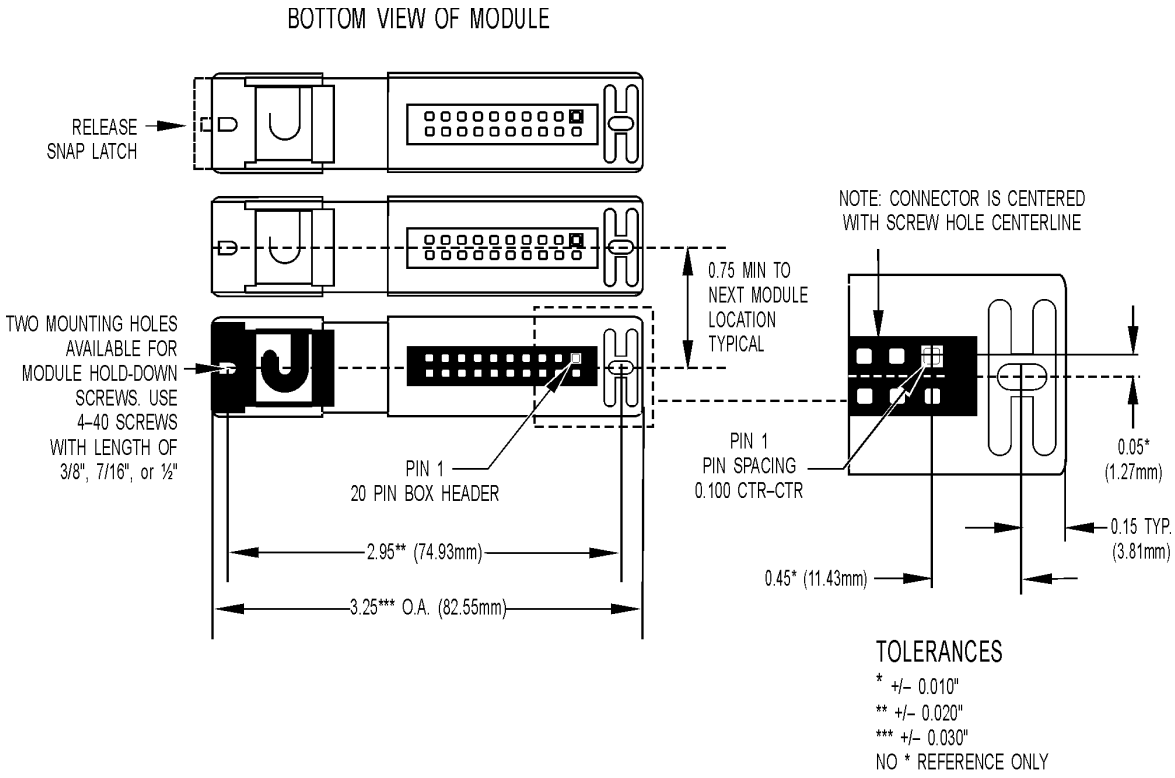
Dimensional Drawing



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.

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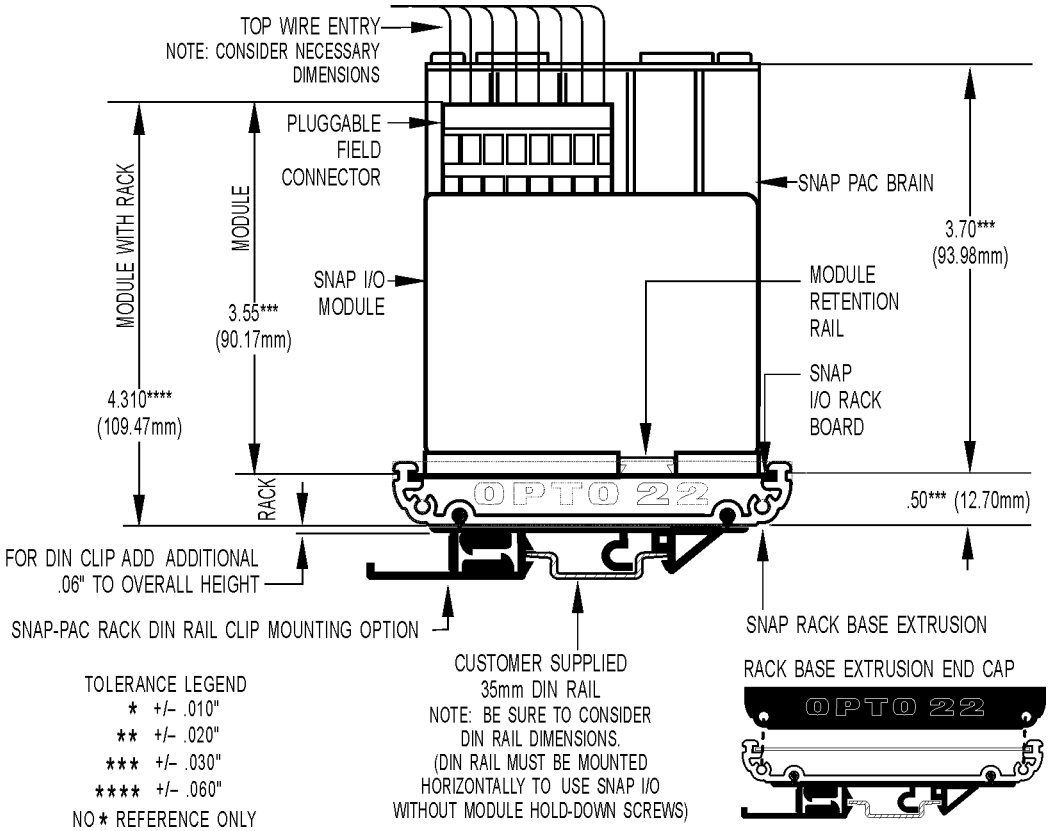
Dimensional Drawing

SNAP Digital Module Mounted on SNAP Rack



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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.

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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.

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