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 *groov* EPIC processors, SNAP PAC controllers, and SNAP PAC brains.

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.
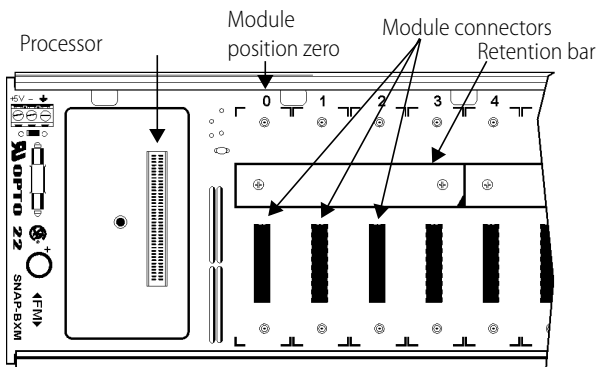
1. Place the rack so that the module connector numbers are right-side up, with zero on the left, as shown in the diagram above. (If your rack has screw connectors, the screw connectors will be at the bottom.)

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. 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. See Specifications.

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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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.

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.

Current Limit
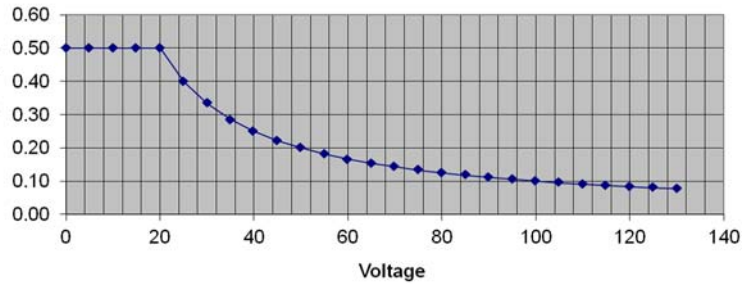
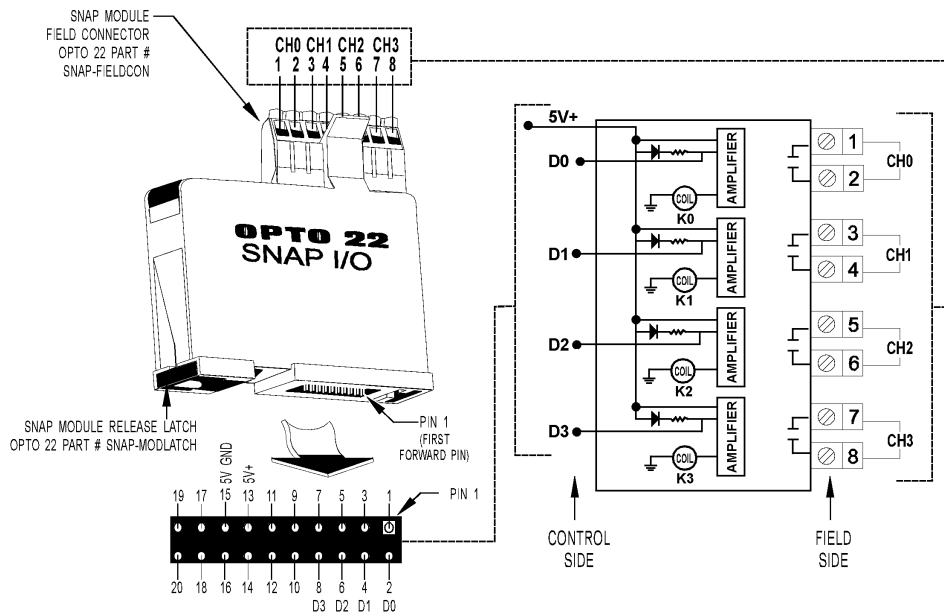## TYPICAL WIRING EXAMPLES
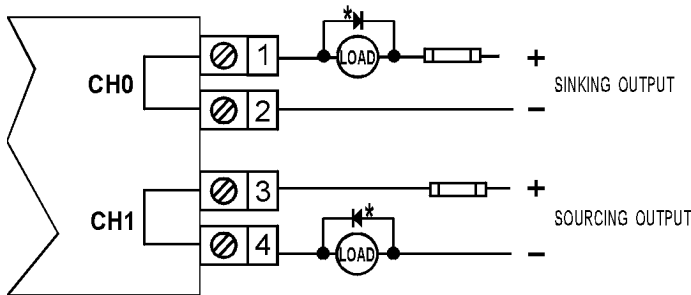
NOTE: * Commutating diode* must be used on inductive loads (Typical: 1N4005).

FIELD WIRING DRY CONTACT OUTPUT

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DIMENSIONAL DRAWING

TOP VIEW OF MODULE

3.25*** (82.55mm)

.72***
(18.29mm)

FUSE PULLER
(NOT PRESENT ON INPUT MODULES)

PLUGGABLE FIELD CONNECTOR

CONNECTOR RELEASE LATCH

.36 (9.14mm)

3.55***
(90.17mm)

2.75
(69.85mm)

SIDE VIEW
OF MODULE

SNAP LATCH

MODULE BASE CONTROL CONNECTOR

.72***
(18.29mm)
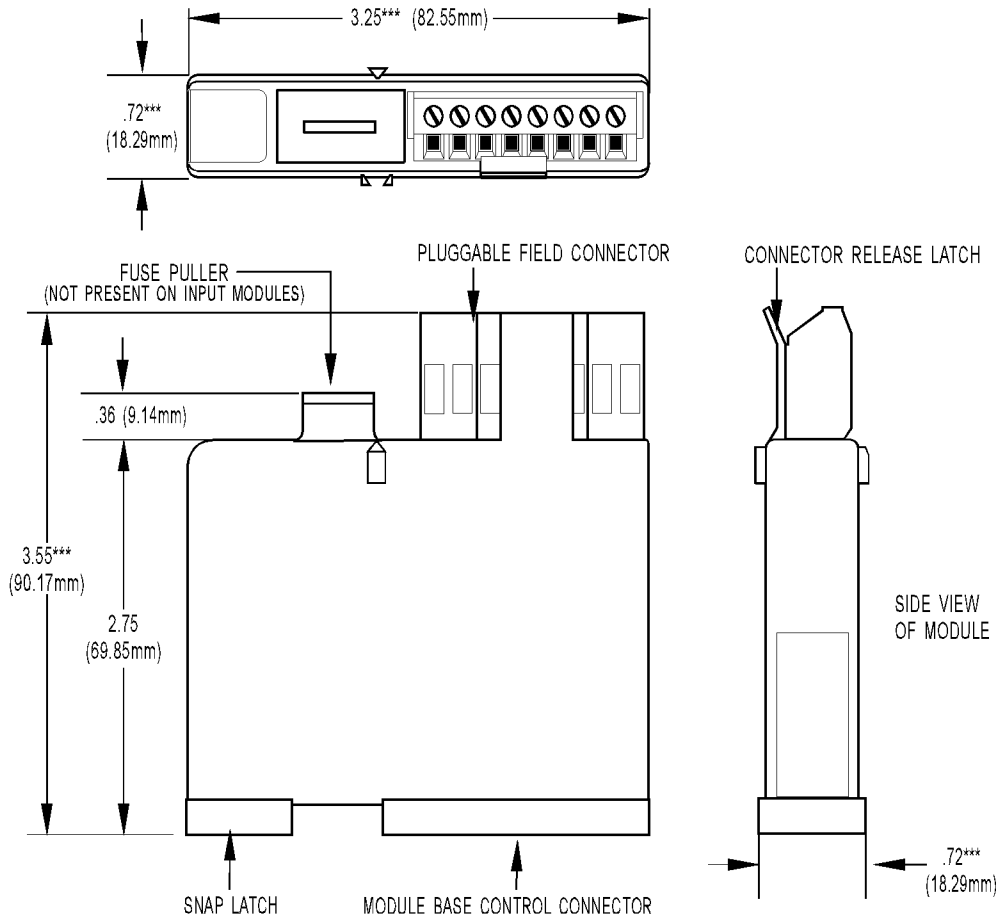
TOLERANCES LEGEND
* +/– .010"   ** +/– .020"
*** +/– .030"   **** +/– .060"
NO * REFERENCE ONLY

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DIMENSIONAL DRAWING

BOTTOM VIEW OF MODULE

RELEASE
SNAP LATCH

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

PIN 1
20 PIN BOX HEADER

2.95** (74.93mm)

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

0.75 MIN TO
NEXT MODULE
LOCATION
TYPICAL

NOTE: CONNECTOR IS CENTERED
WITH SCREW HOLE CENTERLINE

PIN 1
PIN SPACING
0.100 CTR–CTR

0.45* (11.43mm)

0.05*
(1.27mm)

0.15 TYP.
(3.81mm)
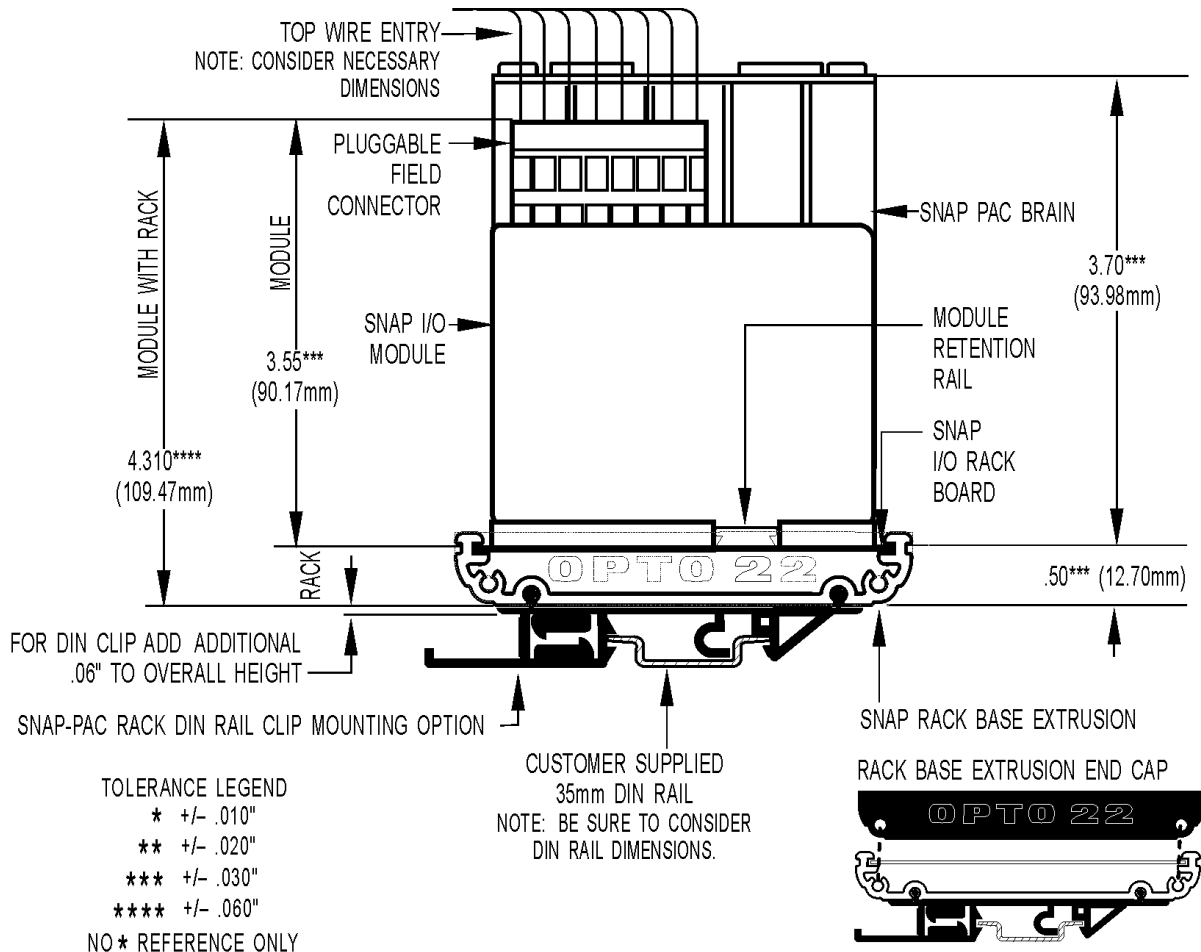
TOLERANCES
* +/– 0.010"
** +/– 0.020"
*** +/– 0.030"
NO * REFERENCE ONLY
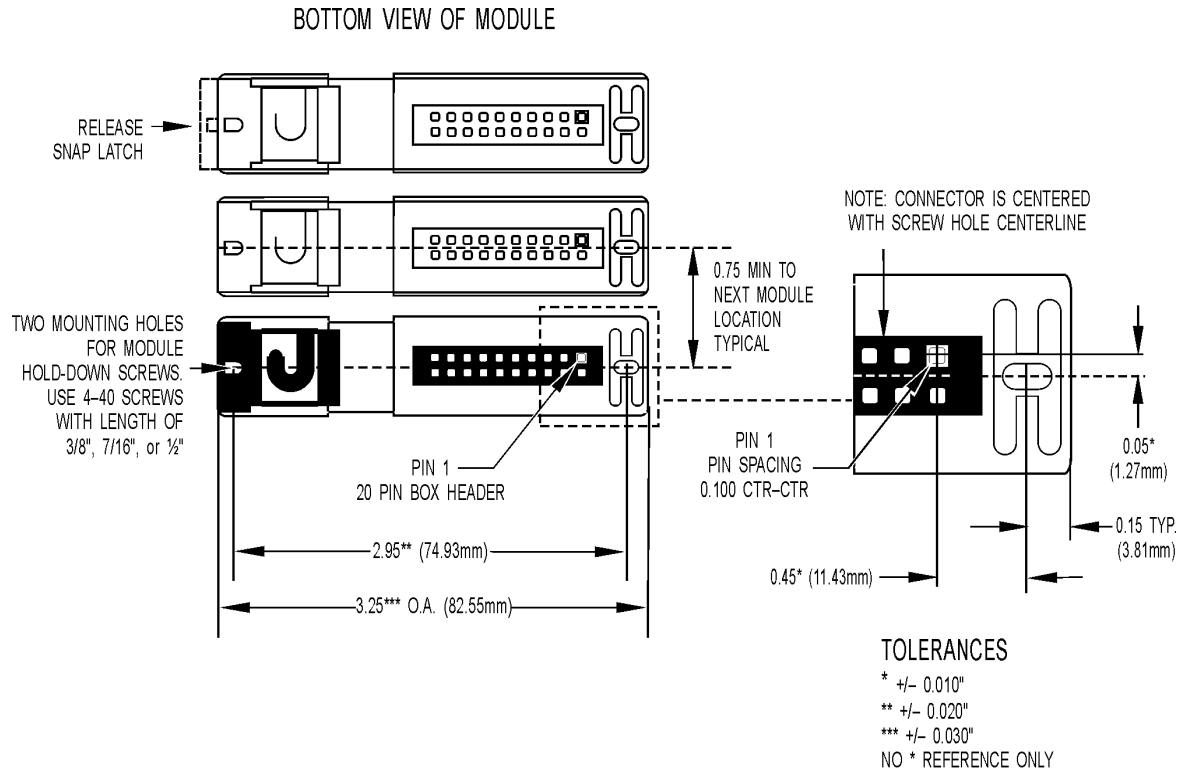
IMPORTANT: The mounting rack connector has 24 pins; the module connector has 20 pins. The extra pins on the mounting rack connector prevent misalignment of the module during installation.

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DIMENSIONAL DRAWING

SNAP Digital Module Mounted on SNAP Rack

TOP WIRE ENTRY
NOTE: CONSIDER NECESSARY
DIMENSIONS

PLUGGABLE
FIELD
CONNECTOR

SNAP PAC BRAIN

MODULE WITH RACK

MODULE

SNAP I/O
MODULE

3.55*** (90.17mm)

MODULE
RETENTION
RAIL

SNAP
I/O RACK
BOARD

3.70*** (93.98mm)

4.310**** (109.47mm)

RACK

.50*** (12.70mm)

FOR DIN CLIP ADD ADDITIONAL
.06" TO OVERALL HEIGHT

SNAP-PAC RACK DIN RAIL CLIP MOUNTING OPTION

CUSTOMER SUPPLIED
35mm DIN RAIL
NOTE: BE SURE TO CONSIDER
DIN RAIL DIMENSIONS.

SNAP RACK BASE EXTRUSION

RACK BASE EXTRUSION END CAP

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

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PRODUCTS

Opto 22 develops and manufactures reliable, easy-to-use, open standards-based hardware and software products.

Industrial automation, process control, building automation, industrial refrigeration, remote monitoring, data acquisition, and industrial internet of things (IIoT) applications worldwide all rely on Opto 22.

groov EPIC® System

Opto 22's *groov* Edge Programmable Industrial Controller (EPIC) system is the culmination of over 40 years of experience in designing products for the automation industry.

groov EPIC gives you an industrially hardened system with guaranteed-for-life I/O, a flexible Linux®-based controller with gateway functions, and software for your IIoT application or any application.

groov EPIC I/O

I/O provides the local connection to sensors and equipment. *groov* I/O offers up to 24 channels on each I/O module, with a spring-clamp terminal strip, integrated wireway, and swing-away cover.

Opto 22 I/O is so reliable, we can afford to guarantee it for life. *groov* I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

groov EPIC Controller

The heart of the system is the *groov* EPIC controller. It handles a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

In addition, the EPIC provides secure data communications among physical assets, control systems, software applications, online services, and more, both on premises and in the cloud.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution touchscreen. Authorized users can see your *groov* View HMI locally on the touchscreen or on a monitor connected via the HDMI or USB ports.

groov EPIC Software

Software includes:

- Flowchart-based PAC Control for control programming, or build your own custom application with optional secure shell access
- *groov* View for building and viewing your own device-independent HMI
- Node-RED for creating simple logic flows from pre-built nodes

- Ignition Edge® from Inductive Automation®, with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT/Sparkplug communications for efficient IIoT data transfer

groov Edge Appliance

Visualization, data handling, and connectivity in a compact, industrial box: that's the *groov* Edge Appliance. Included are:

- *groov* View for building and viewing operator interfaces on PCs and mobile
- Node-RED for building simple logic flows
- Ignition Edge® from Inductive Automation®, for OPC-UA drivers and MQTT/Sparkplug IIoT communications

Older products

From solid state relays (our first products) to world-famous G4 and SNAP I/O, to SNAP PAC controllers, Opto 22 products last a long time. You can count on us to give you the reliability and service you expect.

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 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 from engineers with 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.

Support is always available on our website, including how-to videos, user's guides, the Opto 22 KnowledgeBase, troubleshooting tips, and OptoForums. In addition, free hands-on training is available at our Temecula, California headquarters, and you can register online.

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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 **+1-951-695-3000**, or visit our website at www.opto22.com.

OPTO 22 • www.opto22.com
43044 Business Park Dr. Temecula, CA 92590-3614

SALES • sales@opto22.com
800-321-6786 • 1-951-695-3000

SUPPORT • support@opto22.com
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