

Form 1047-080710

Part Number	Description
SNAP-LCSX	Opto 22 SNAP Controller with 2 COM ports
SNAP-LCSX-PLUS	Opto 22 SNAP Controller with 4 COM ports

### Description

The SNAP-LCSX and SNAP-LCSX-PLUS controllers are the cost-effective answer to applications requiring small, powerful, real-time industrial control. These compact members of a field-tested and time-proven family of controllers offer tight integration with Opto 22's successful SNAP I/O™ line of intelligent, industrial input/output systems and the Opto 22 FactoryFloor® software suite for industrial automation. At one-third the price and one-sixth the footprint of previous controllers, the SNAP-LCSX and LCSX-PLUS deliver on-the-spot control for distributed automation.

The two controllers have identical dimensions and share similar features, such as a single 5-volt power requirement and both DIN rail and panel mounting options. Both contain powerful 32-bit processors capable of a wide range of computing functions. SNAP-LCSX provides two COM ports and SNAP-LCSX-PLUS provides four. For simplification, the LCSX-PLUS is shown in most of the diagrams in this data sheet. Both the SNAP-LCSX and the SNAP-LCSX-PLUS are Factory Mutual approved.

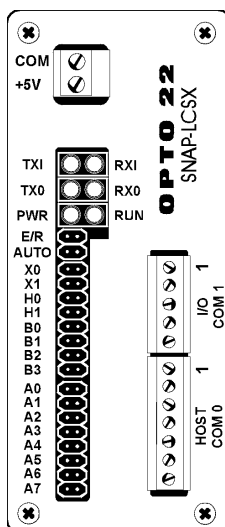
### Software

The SNAP-LCSX and LCSX-PLUS controllers are designed to work in combination with FactoryFloor, Opto 22's suite of Windows 32-bit software. FactoryFloor consists of four integrated components:

- OptoControl™, a graphical, flowchart-based development environment for machine control and process applications
- OptoDisplay™, an intuitive, shared database, HMI and trending package
- OptoServer™, a robust, OPC-compliant data server that connects the controller network with the PC network
- OptoConnect™, a bidirectional link between the SNAP controller database and Microsoft's SQL Server and Access databases.

SNAP-LCSX and LCSX-PLUS are configured and developed using OptoControl on a PC workstation. OptoControl is an easy

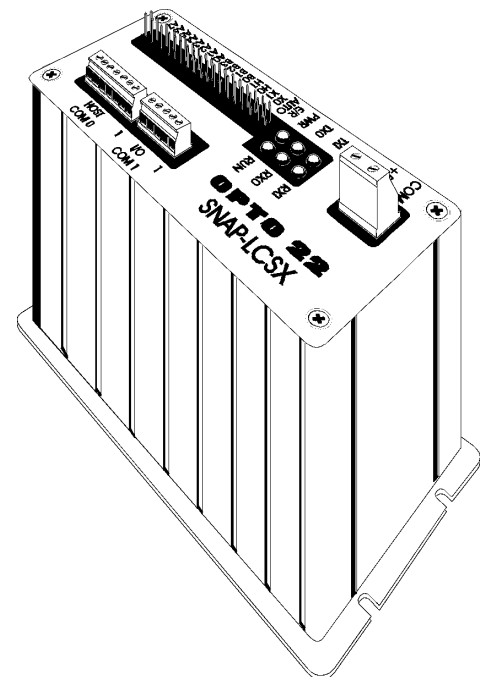
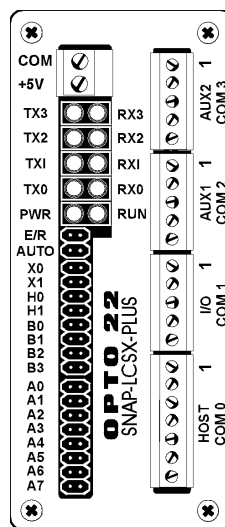
SNAP-LCSX



The SNAP-LCSX has two COM ports.

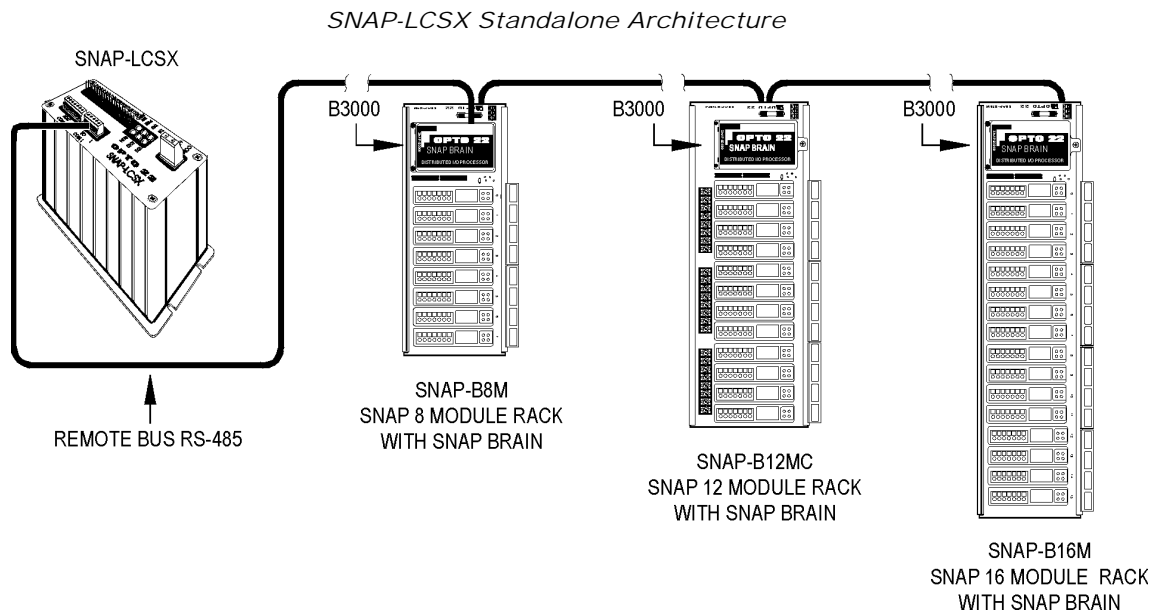
The SNAP-LCSX-PLUS has four COM ports.

SNAP-LCSX-PLUS



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### Description (Continued)



to use, self-documenting control environment that uses a plain English command set and a long tagname database shared by all FactoryFloor components. SNAP-LCSX and LCSX-PLUS also work with Opto 22's Classic 16-bit software: Cyrano, Mistic MMI, and Mistic Data Server (MDS).

#### Communication Options (Standard)

Serial ports are top-mounted on the controller and feature removable European-style screw terminals.

The SNAP-LCSX has the following communication ports:

- One RS-232 or RS-485 serial port (2-wire or 4-wire), up to 115.2kBd
- One dedicated Opto 22 remote I/O port (2-wire RS-485 with interrupt capability)

The LCSX-PLUS includes two additional communication ports, RS-232 or RS-485 (2-wire or 4-wire).

#### Interface Options (Adapter Cards)

The SNAP-LCSX and SX-PLUS are not expandable.

#### I/O Connectivity

The RS-485 ports can be used as a serial link to communicate with remote digital and analog I/O units. Up to 4,096 I/O points can be connected to each communication port.

#### Memory Expansion Options

The RAM is used to store a user's control strategy (program) and data. The flash memory (ROM) stores a kernel (operating system) and can be used to store a control strategy permanently. The use of flash technology allows the user to remotely download new firmware offered by Opto 22.

- RAM: 1M, not expandable
- ROM: 256K, not expandable

#### Power Supplies

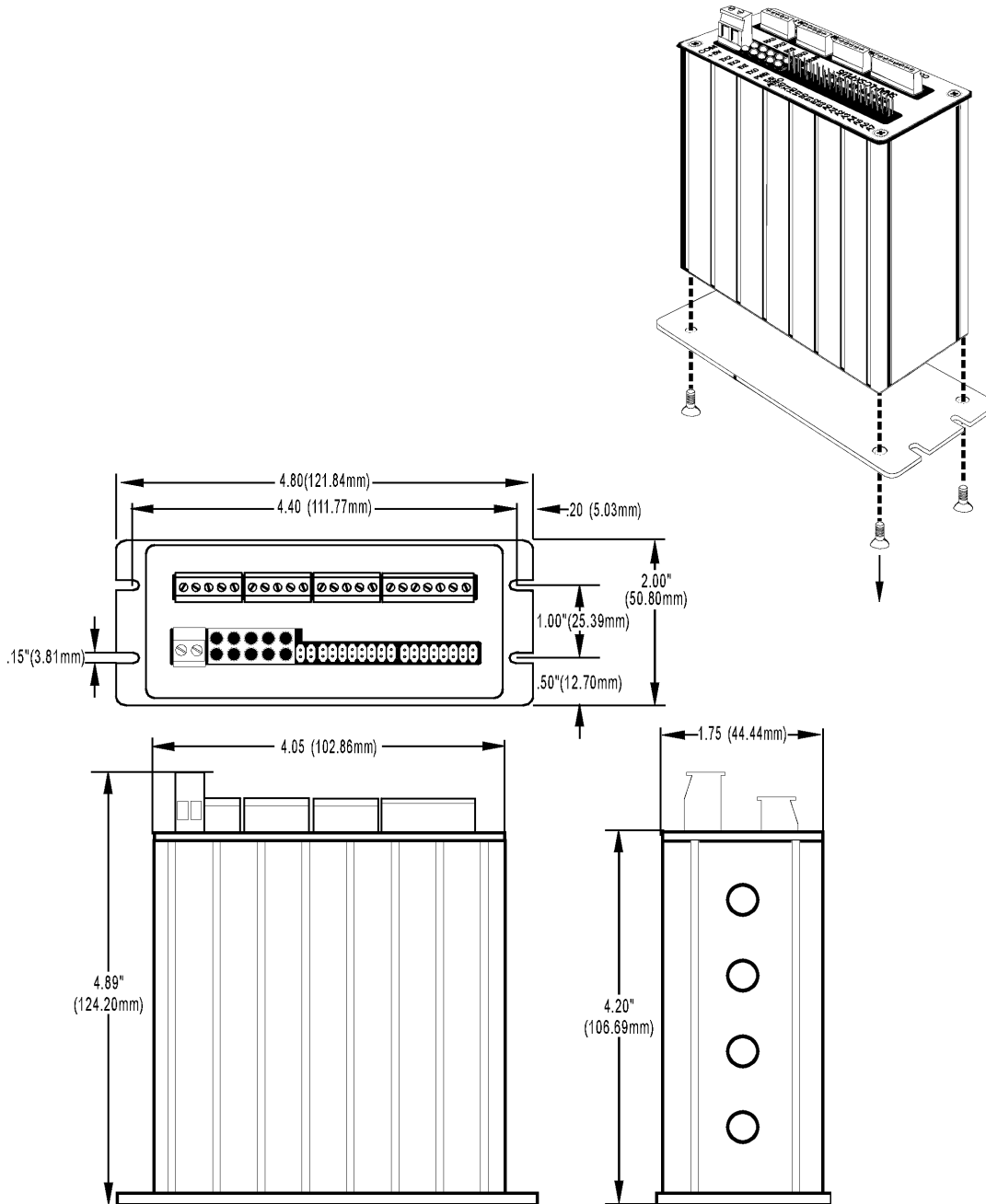
A 5VDC power supply is required. The Opto 22 SNAP PS5 power supply can provide sufficient power for the controller, a B3000 brain, 32 digital I/O points, and up to 8 analog I/O points.

### Specifications

Item	Specification
CPU	32-bit Motorola 68EC020 processor
CPU clock frequency	16.67 MHz
Memory RAM Flash ROM	1 MB with battery backup 256 KB
RAM/clock battery	3.6-volt lithium, non-rechargeable, user replaceable, p/n G4BATT32
I/O	Opto 22 remote I/O using RS-485
Communication	<p><b>COM 0:</b> jumper selectable as RS-232 or RS-485, 2-wire or 4-wire. Modem control signals are present for RS-232 (RTS, CTS, DTR, DCD, and RI). Pull-up, pull-down, and termination are jumper selectable for RS-485 operation, allowing multidrop operation.</p> <p><b>COM 1:</b> dedicated Opto 22 remote I/O port (2-wire RS-485 with interrupt capability)</p> <p><b>COM 2 and COM 3 (LCSX-PLUS only):</b> jumper selectable RS-232 or RS-485. RS-232 signals include TX, RX, RTS, and CTS. RS-485 is either 2-wire or 4-wire, with selectable termination and biasing.</p> <p><b>Note:</b> All ports use low-noise slew-rate-limited drivers and are transient protected to 400W.</p>
Real-time clock	Clock/calendar, Epson 64613 with battery backup
Power requirements	5VDC +/- 5% at 500 mA (maximum)
Typical operating temperature	0° C to 70° C
Storage temperature	-40° C to 85° C
Humidity	5% to 95% relative humidity, non-condensing
Software	FactoryFloor (OptoControl, OptoDisplay, OptoServer, and OptoConnect) and Classic software (Cyrano, Mystic MMI, and MDS)
System monitor	Processor and power watchdog timers

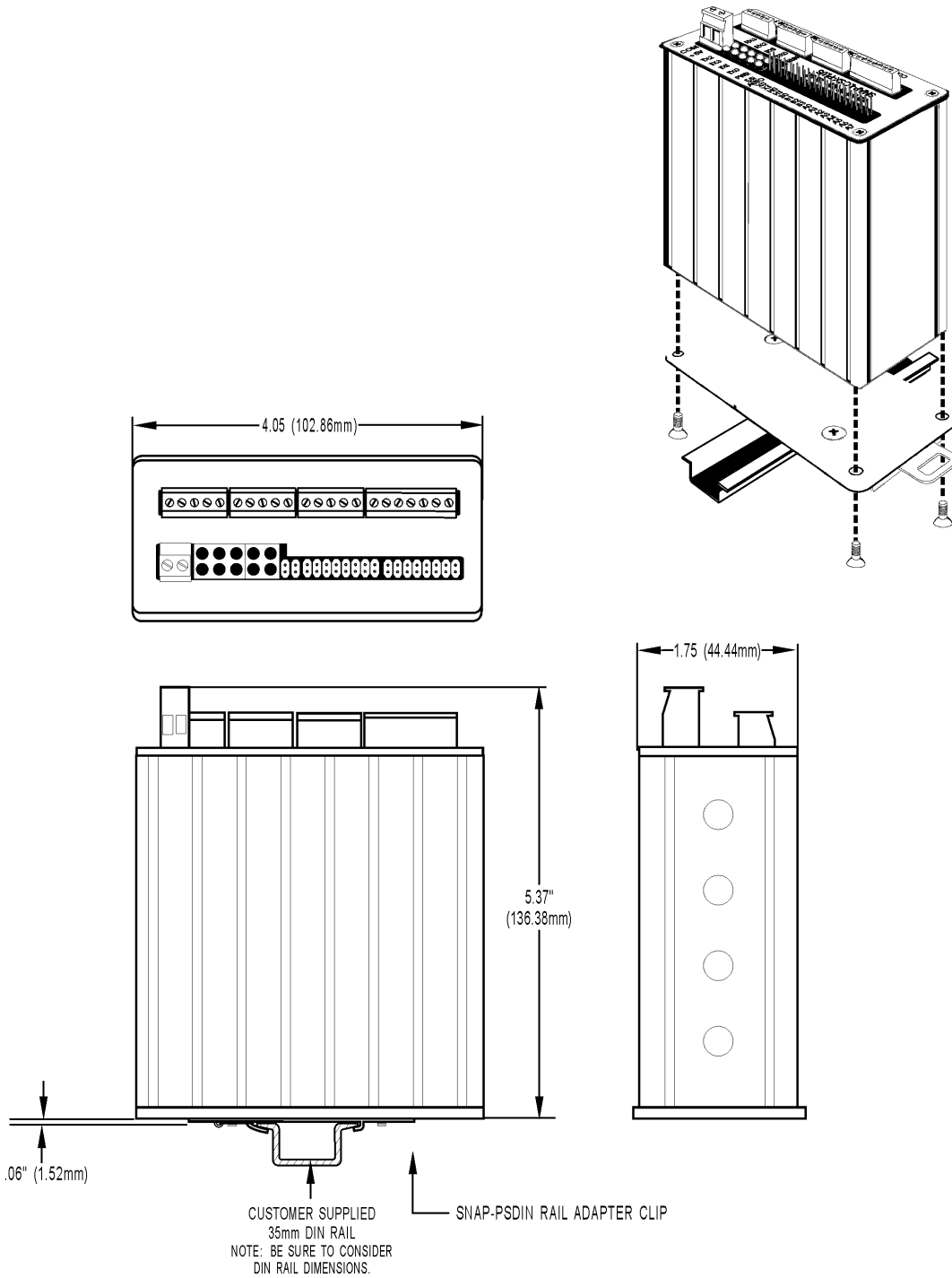
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### Panel Mounting and Dimensions



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### Din Rail Mounting and Dimensions

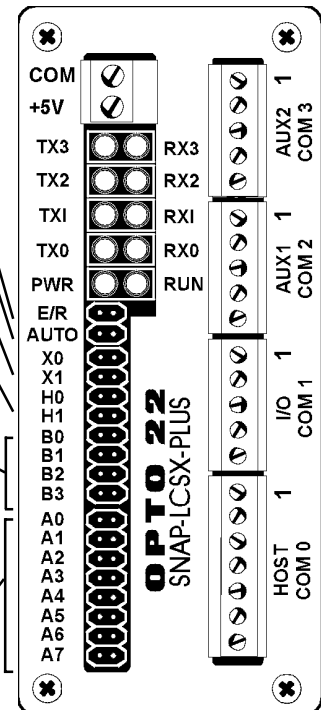


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### Jumper Settings

Shaded entries show default settings. For more information, see the *SNAP-LCSX and LCSX-PLUS Installation Guide*, Opto 22 form number 1061.

Jumper(s)	Description	Position				Setting
E/R	EEPROM/RAM	In				Run from RAM
		Out				Run from EEPROM
Auto	Autoboot	In				Autoboot enabled
		Out				Autoboot disabled
X0	Communication	In				Binary
		Out				ASCII
X1	Boot Loader	In				Boot to kernel
		Out				Boot to loader
H0, H1	Host Port	H0	H1			
		In		In		COM0
		Out		In		COM1
Baud 0-3	Baud Rate	0	1	2	3	
		Out	In	In	In	115.2 KBd
		In	Out	In	In	76.8 KBd
		Out	Out	In	In	57.6 KBd
		In	In	Out	In	38.4 KBd
		Out	In	Out	In	19.2 KBd
		In	Out	Out	In	9600 Bd
		Out	Out	Out	In	4800 Bd
		In	In	In	Out	2400 Bd
		Out	In	In	Out	1200 Bd
		In	Out	In	Out	600 Bd
		Out	Out	In	Out	300 Bd
		Address 0-7	Address Bits	Bit 0 In		
Bit 1 In				2		
Bit 2 In				4		
Bit 3 In				8		
Bit 4 In				16		
Bit 5 In				32		
Bit 6 In				64		
Bit 7 In				128		



See next page for additional information on address jumpers.

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### Jumper Settings

#### Address

#### Address Jumpers (Address 0-7)

Use these jumpers to select an 8-bit address from 0 to 255 (0 to FF hexadecimal). The factory default is 1. The most significant bit is 7 and the least significant bit is 0.

7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
0	X	X	X	X	X	X	X	32								64								96					128					160					192					224																			
1								33								65								97					129					161					193					225																			
2								34								66								98					130					162					194					226																			
3								35								67								99					131					163					195					227																			
4								36								68								100					132					164					196					228																			
5								37								69								101					133					165					197					229																			
6								38								70								102					134					166					198					230																			
7								39								71								103					135					167					199					231																			
8								40								72								104					136					168					200					232																			
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28								60								92								124					156					188					220					252																			
29								61								93								125					157					189					221					253																			
30								62								94								126					158					190					222					254																			
31								63								95								127					159					191					223					255																			

■ = JUMPER INSTALLED   □ = NO JUMPER

## More About Opto 22

### Products

Opto 22 develops and manufactures reliable, flexible, easy-to-use hardware and software products for industrial automation, remote monitoring, and data acquisition applications.

#### SNAP PAC System

Designed to simplify the typically complex process of understanding, selecting, buying, 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, multidomain, modular controllers based on open standards and providing an integrated development environment.

Opto 22 has been manufacturing PACs for many years. The latest models include the standalone SNAP PAC S-series and the rack-mounted SNAP PAC R-series. Both handle a wide range of digital, analog, and serial functions and are equally suited to data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

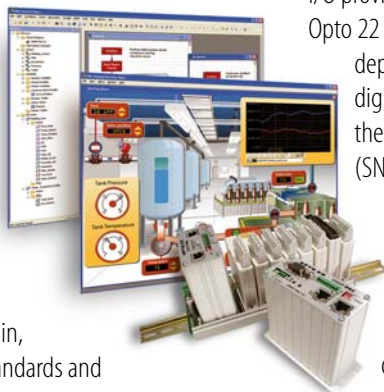
SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system without the expense and limitations of proprietary networks and protocols.

#### PAC Project Software Suite

Opto 22's PAC Project Software Suite provides full-featured and cost-effective control programming, HMI (human machine interface) development and runtime, OPC server, and database connectivity software to power your SNAP PAC System.

These fully integrated software applications share a single tagname database, so the data points you configure in PAC Control™ are immediately available for use in PAC Display™, OptoOPCServer™, and OptoDataLink™. 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](http://www.opto22.com). PAC Project Professional, available for separate purchase, adds OptoOPCServer, OptoDataLink, options for Ethernet link 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, serial, and special-purpose 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 and with over 85 million devices sold, 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 do no statistical testing and each part is tested twice before leaving our factory, we can guarantee most solid-state relays and optically isolated I/O modules for life.

### Free Product Support

Opto 22's Product Support Group offers free, comprehensive technical support for Opto 22 products. Our staff of support engineers represents decades of training and experience. Product support is available in English and Spanish, by phone or email, Monday through Friday, 7 a.m. to 5 p.m. PST.

### Free Customer Training

Hands-on training classes for the SNAP PAC System are offered at our headquarters in Temecula, California. Each student has his or her own learning station; classes are limited to nine students. Registration for the free training class is on a first-come, first-served basis. See our website, [www.opto22.com](http://www.opto22.com), for more information or email [training@opto22.com](mailto:training@opto22.com).

### 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 or 951-695-3000, or visit our website at [www.opto22.com](http://www.opto22.com).

[www.opto22.com](http://www.opto22.com)