

DATA SHEET

Form 1047-080710

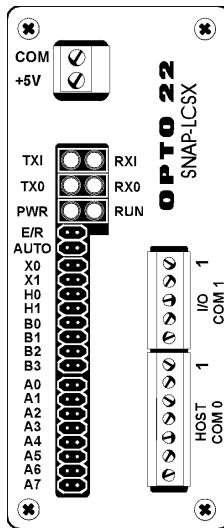
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Description

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.

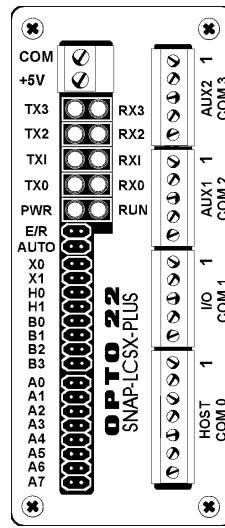
SNAP-LCSX



The SNAP-LCSX has two COM ports.

The SNAP-LCSX-PLUS has four COM ports.

SNAP-LCSX-PLUS

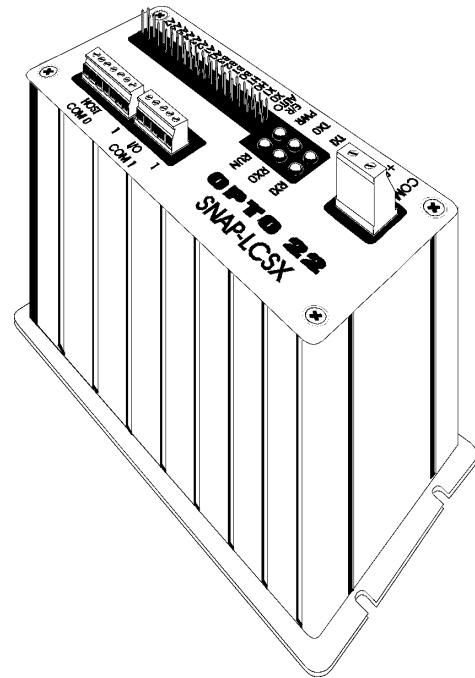


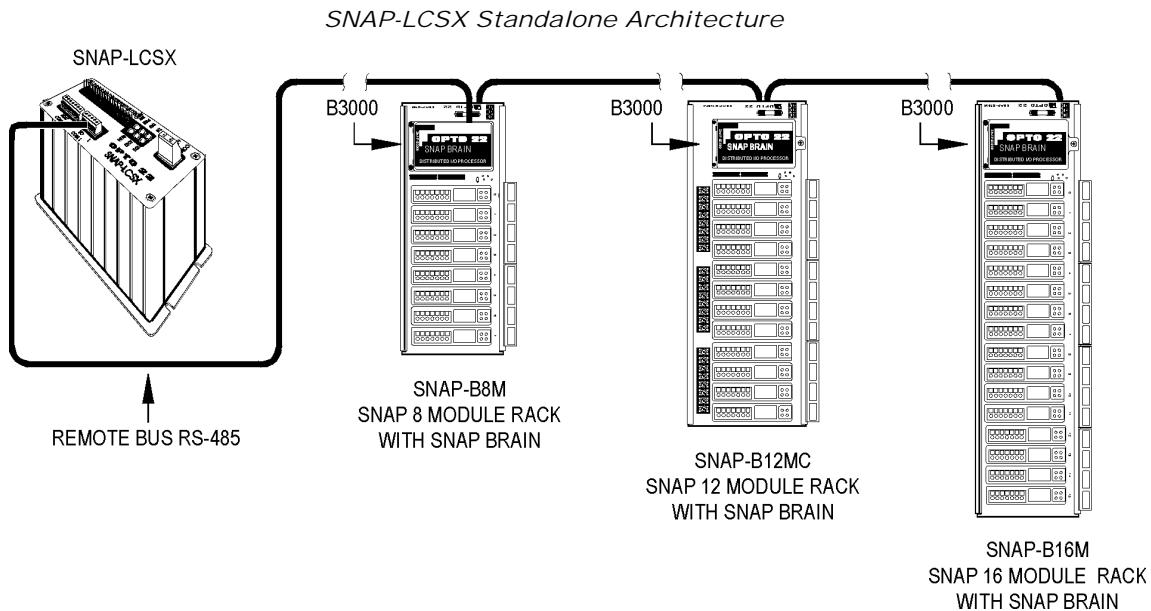
Software

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



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 115.2kBa
- 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.

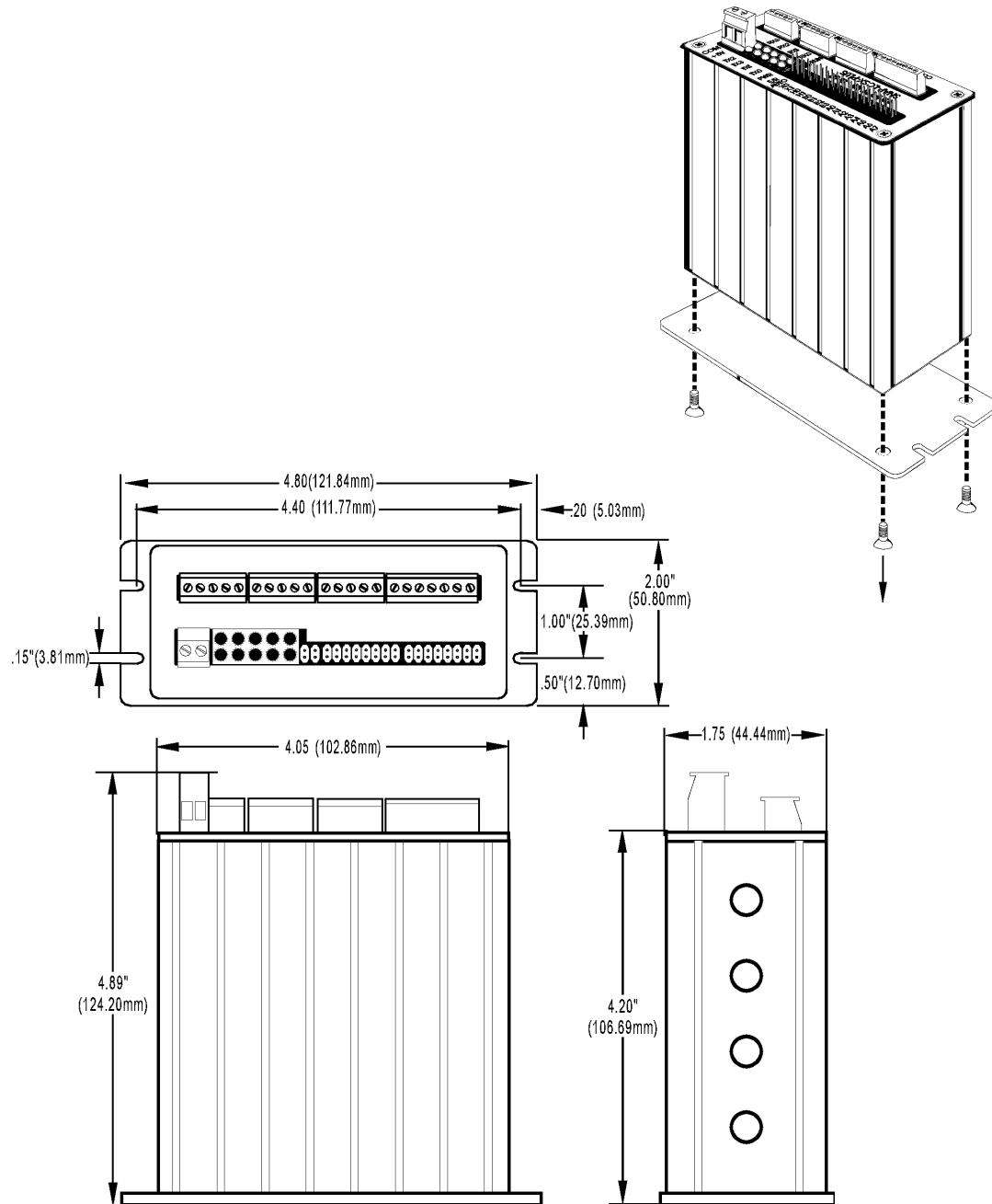
- RAM: 1M, not expandable
- ROM: 256K, not expandable

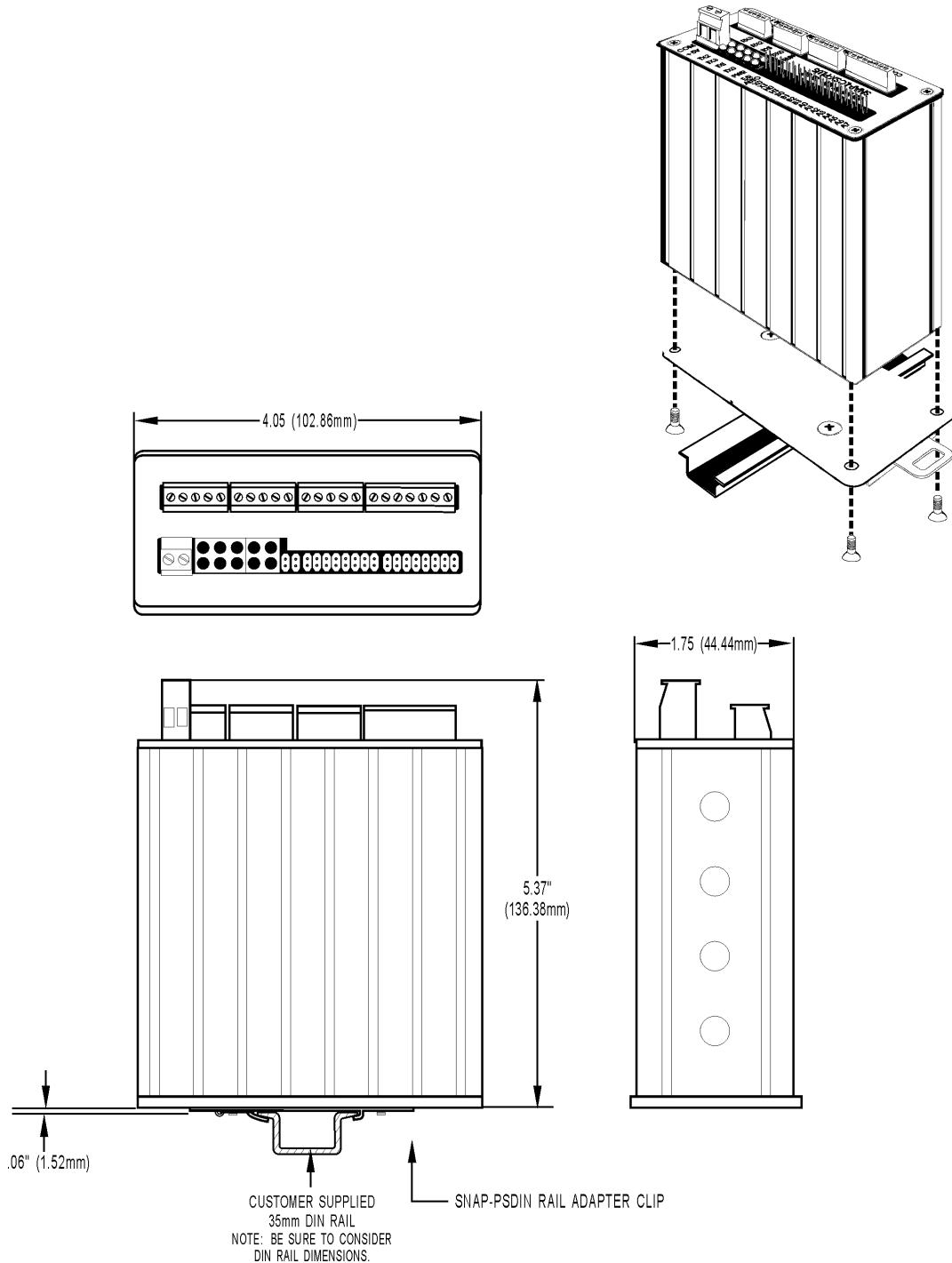
Power Supplies

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	1 MB with battery backup
Flash ROM	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>COM 0: 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>COM 1: dedicated Opto 22 remote I/O port (2-wire RS-485 with interrupt capability)</p> <p>COM 2 and COM 3 (LCSX-PLUS only): 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>Note: 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, Mistic MMI, and MDS)
System monitor	Processor and power watchdog timers

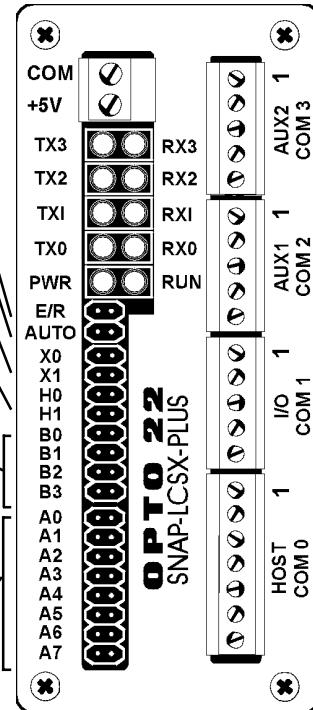
Panel Mounting and Dimensions

Din Rail Mounting and Dimensions

Jumper Settings

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

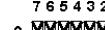
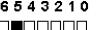
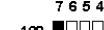
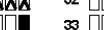
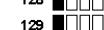
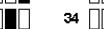
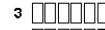
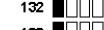
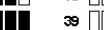
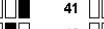
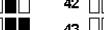
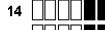
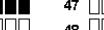
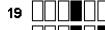
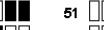
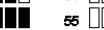
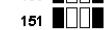
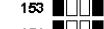
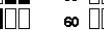
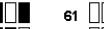
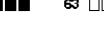
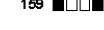
Jumper(s)	Description	Position		Setting
E/R	EEPROM/RAM	In		Run from RAM
		Out		Run from EEPROM
Auto	Autoboot	In		Autoboot enabled
		Out		Autoboot disabled
X0	Communication	In		Binary
		Out		ASCII
X1	Boot Loader	In		Boot to kernel
		Out		Boot to loader
H0, H1	Host Port	H0	H1	
		In	In	COM0
		Out	In	COM1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

*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  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 	9  41  73  105  137  169  201  233 	10  42  74  106  138  170  202  234 	11  43  75  107  139  171  203  235 	12  44  76  108  140  172  204  236 	13  45  77  109  141  173  205  237 	14  46  78  110  142  174  206  238 	15  47  79  111  143  175  207  239 	16  48  80  112  144  176  208  240 	17  49  81  113  145  177  209  241 	18  50  82  114  146  178  210  242 	19  51  83  115  147  179  211  243 	20  52  84  116  148  180  212  244 	21  53  85  117  149  181  213  245 	22  54  86  118  150  182  214  246 	23  55  87  119  151  183  215  247 	24  56  88  120  152  184  216  248 	25  57  89  121  153  185  217  249 	26  58  90  122  154  186  218  250 	27  59  91  123  155 <img alt="Jumper Pattern

More About Opto 22

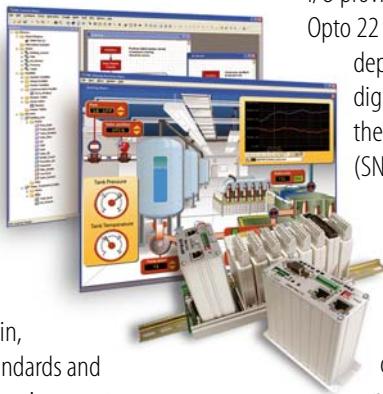
Products

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. 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, for more information or email 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.

www.opto22.com