OPTO 22

CONTROLLERS
SNAP

DATA SHEET

Form 1047-210107

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.[*]
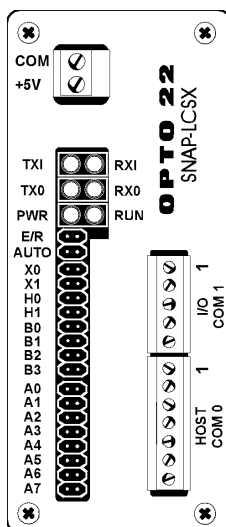
Software

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
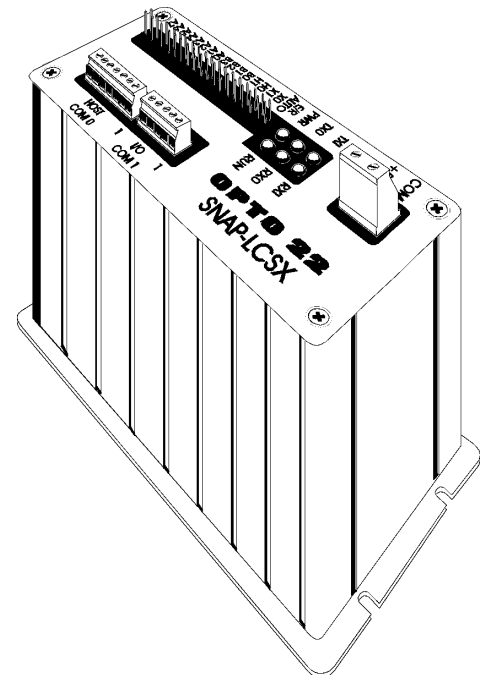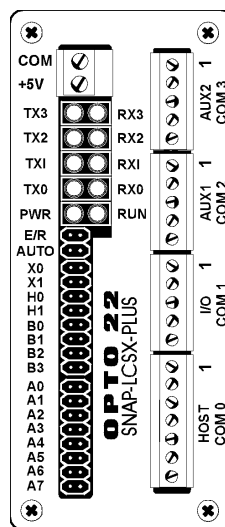
SNAP-LCSX

SNAP-LCSX-PLUS

The SNAP-LCSX has two COM ports.

The SNAP-LCSX-PLUS has four COM ports.

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: (951) 695-3000 • (800) 321-OPTO • Fax: (951) 695-3095 • www.opto22.com

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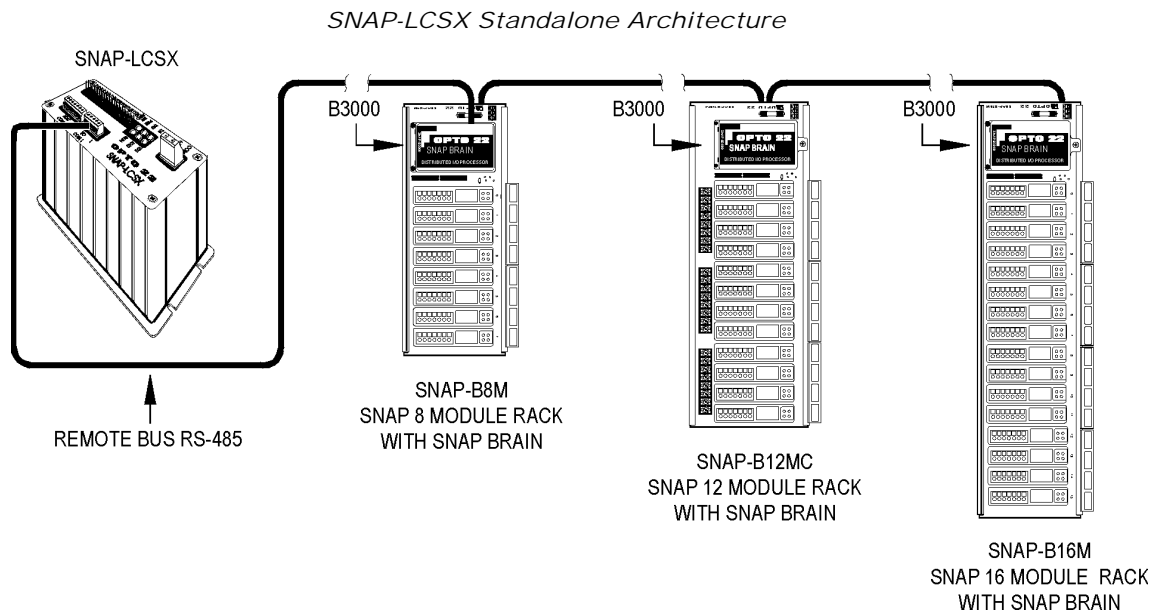[*] For use in hazardous locations, equipment must be mounted in an enclosure that meets the requirements of the National Electrical Code, ANSI/NFPA 70, and ANSI/ISA-61010-1 (82.02.01).

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Description (Continued)

SNAP-LCSX Standalone Architecture

SNAP-LCSX

B3000

B3000

B3000

REMOTE BUS RS-485

SNAP-B8M
SNAP 8 MODULE RACK
WITH SNAP BRAIN

SNAP-B12MC
SNAP 12 MODULE RACK
WITH SNAP BRAIN

SNAP-B16M
SNAP 16 MODULE RACK
WITH SNAP BRAIN

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
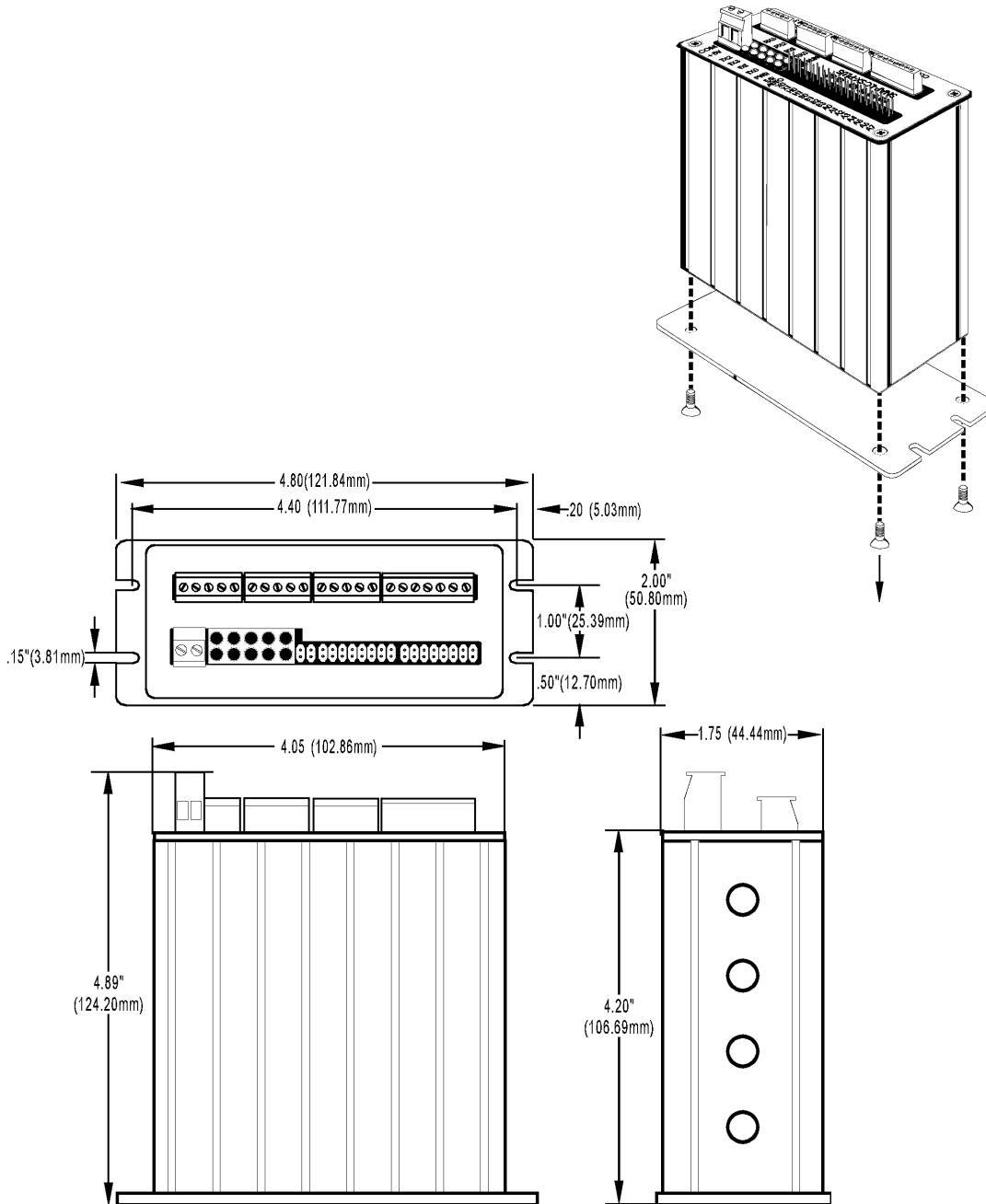- ROM: 256K, not expandable

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.

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Specifications

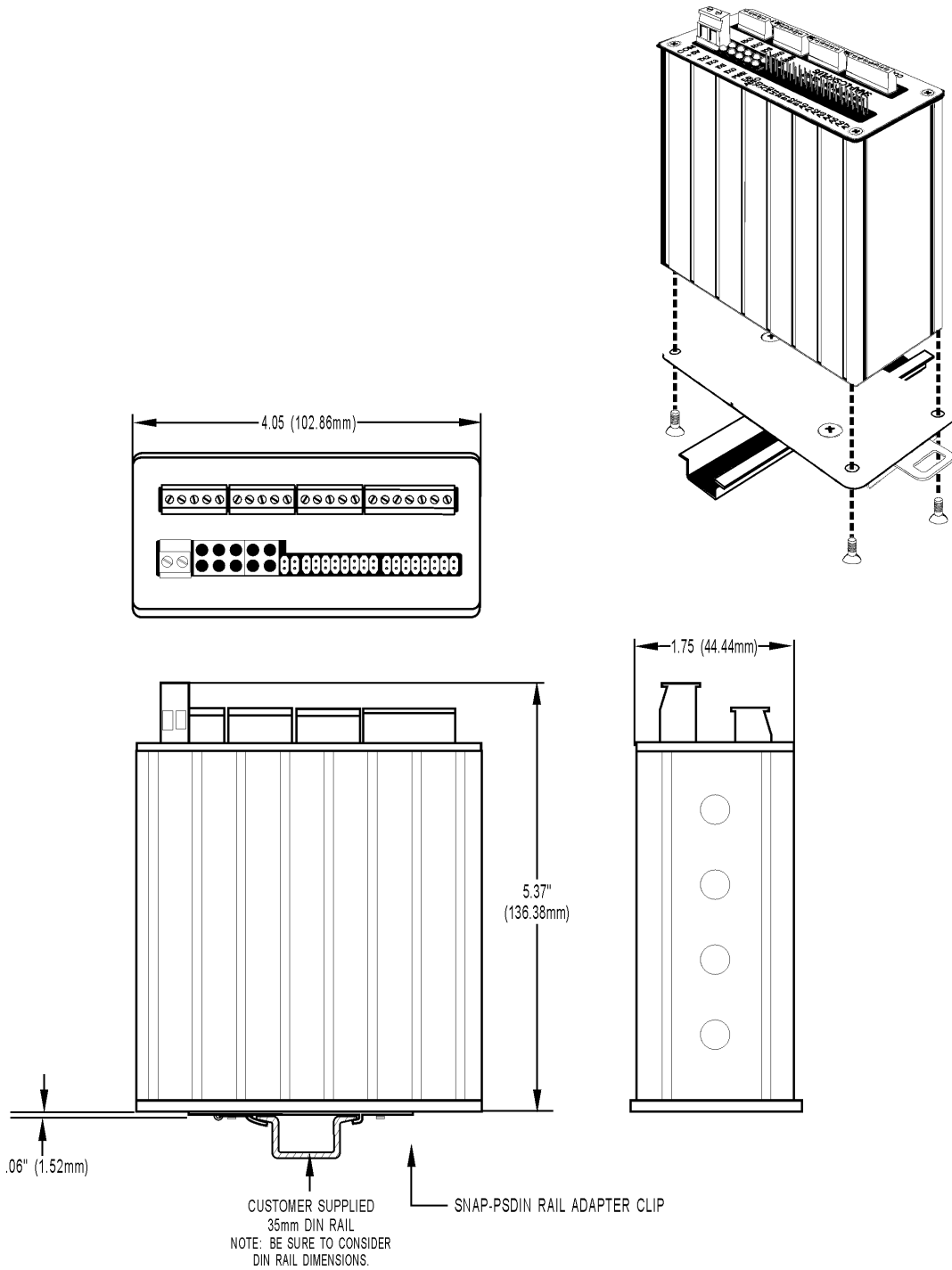| Item	Specification
CPU	32-bit Motorola 68EC020 processor
CPU clock frequency	16.67 MHz

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	**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. **COM 1:** dedicated Opto 22 remote I/O port (2-wire RS-485 with interrupt capability) **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. **Note:** All ports use low-noise slew-rate-limited drivers and are transient protected to 400W.
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

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Panel Mounting and Dimensions

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Din Rail Mounting and Dimensions

4.05 (102.86mm)

1.75 (44.44mm)

5.37" (136.38mm)

.06" (1.52mm)

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

SNAP-PSDIN RAIL ADAPTER CLIP

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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**				**1**
		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
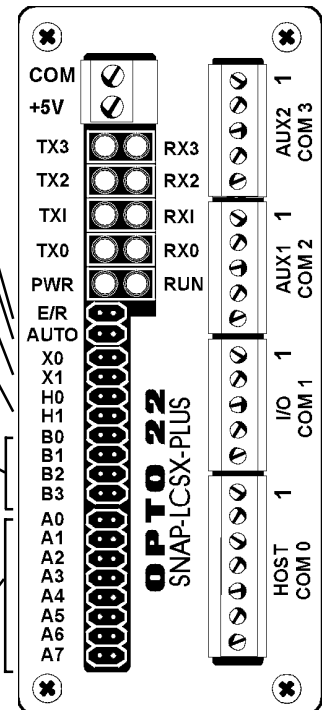
See next page for additional information on address jumpers.

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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.

Jumper setting diagram for addresses 0 through 255, each showing the 8-bit pattern (bits 7 6 5 4 3 2 1 0).

▌ = JUMPER INSTALLED   ☐ = NO JUMPER

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 gives you an industrially hardened system with guaranteed-for-life I/O, a flexible Linux®-based processor with gateway functions, and software for your automation and IIoT applications.

groov EPIC I/O

groov I/O connects locally to sensors and equipment with up to 24 channels on each I/O module. Modules have a spring-clamp terminal strip, integrated wireway, swing-away cover, and LEDs indicating module health and discrete channel status.

groov I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

groov EPIC Processor

The heart of the system is the *groov* EPIC processor. 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, and online services, both on premises and in the cloud.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution color touchscreen. Authorized users can manage the system locally on the touchscreen or on a monitor connected via the HDMI or USB ports.

groov EPIC Software

Software included in the *groov* EPIC processor:

- PAC Control engine to run PAC Control and PAC Display
- CODESYS Runtime engine to run IEC61131-3 compliant programs built with CODESYS Development System
- Optional access to the Linux operating system through a secure shell (SSH) to download and run custom applications
- *groov* View for building your own device-independent HMI, viewable on the touchscreen, PCs, and mobile devices
- 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 communications with Sparkplug for efficient IIoT data transfer

groov RIO®

groov RIO revolutionizes remote I/O by offering a single, compact, PoE-powered industrial package with web-based configuration, commissioning, and flow logic software built in, plus support for multiple OT and IT protocols.

Standing alone, it meets the needs of small, variable I/O count applications, especially those that require data logging or data communications, commonly found in IIoT applications. *groov* RIO can also be used with a Modbus/TCP master or as remote I/O for a *groov* EPIC system.

Older products

From solid state relays (our first products) to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and still doing the job at thousands of installations worldwide. You can count on us to give you the reliability and service you expect, now and in the future.

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 afford to 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 free online training at OptoU, how-to videos, user's guides, the Opto 22 KnowledgeBase, troubleshooting tips, and OptoForums. In addition, instructor-led, hands-on Premium Factory Training is available 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 **+1-951-695-3000**, or visit our website at www.opto22.com.

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