

SNAP-LCE CONTROLLER

Features

- > Runs up to 16 ioControl flowcharts simultaneously
- > Works with all Opto 22 SNAP Ethernet-based I/O units
- > Two serial ports for direct connection to serial devices
- > Communicates on standard Ethernet networks or over a modem using PPP
- > Includes FTP server/client capability and file system

DESCRIPTION

The SNAP-LCE Ethernet-based, stand-alone industrial controller is designed for use with Opto 22's ioControl™ Basic software, part of the ioProject™ Basic software suite. **Please note that SNAP-LCEs and ioProject are not recommended for new development.** The last released version of ioProject Basic is version 7.1. This software will remain available on our website for some time to support customers who have existing SNAP-LCE controllers. **For new development, we recommend SNAP-PAC controllers (either standalone or on-the-rack) and PAC Project software.** See form #1688, the *SNAP PAC System Migration Technical Note*, for guidelines on mixing older and newer hardware and software.

The SNAP-LCE provides real-time control and communication to SNAP Ethernet-based input/output (I/O) systems and computer networks. Independently running a control program you build with the included ioControl development software, the SNAP-LCE monitors and controls all kinds of devices and equipment. It also communicates data about these devices and equipment directly to Opto 22's ioDisplay™ and third-party human-machine interfaces (HMI's), to databases, and to other information technology (IT) systems.

The controller communicates over standard TCP/IP Ethernet networks at 10 or 100 Mbps. It can be attached to existing wired or wireless Ethernet networks or be used in an independent control network built with standard, off-the-shelf Ethernet hardware. Communication with a SNAP-LCE controller can also be established via a modem connection using Point-to-Point Protocol (PPP), with firmware version 5.1c and newer. Wireless or wireline modem connections are ideal for remote locations where an Ethernet network is not practical.

The SNAP-LCE controller includes a 10/100 Mbps Fast Ethernet port for networking through an Ethernet switch to SNAP Simple, SNAP Ethernet, and SNAP Ultimate I/O units, which provide the connections to digital and analog sensors and actuators as well as serial devices. (Please note that SNAP Simple, Ethernet, and Ultimate I/O units have been replaced by SNAP PAC I/O units.)



SNAP-LCE

The controller also includes two serial ports for use with a modem connection using PPP or for general-purpose communication with serial devices (requires firmware version 5.1c or newer). Using this option, you can send and receive data from one or two serial devices connected directly to the controller, rather than requiring a SNAP serial communication module on an attached I/O unit. Your ioControl strategy controls communication with the devices and uses the data as needed in control logic. Note that these two ports are not isolated from each other.

The SNAP-LCE simultaneously runs up to 16 ioControl flowcharts, plus the host task. The control strategy can contain a much larger number of flowcharts, however; the total number is limited only by the 8 MB of controller memory available for strategy storage.

Since the SNAP-LCE and the I/O units it controls have IP addresses like other devices on an Ethernet network, the number of points the controller can address is theoretically unlimited. The SNAP-LCE can control many SNAP Ethernet-based I/O units. Because the controller scans I/O only when your strategy logic requests it, the exact number of I/O points it can scan—and the scanning performance—depend on the architecture of your strategy.

Part Numbers

Part	Description
SNAP-LCE	Small-footprint Ethernet-based industrial controller
SNAP-PSDIN	SNAP Controller DIN-Rail Adapter

Software

The SNAP-LCE controller is compatible with Opto 22's ioProject Basic software suite, which consists of three components:

- **ioControl Basic**—a graphical, flowchart-based programming tool for machine control and process applications. Using ioControl, you create, download, and run control programs on the SNAP-LCE controller. In addition to flowchart programming (with subroutine capability), ioControl includes a powerful, built-in scripting language based on C and other procedural languages.
- **ioDisplay Basic**—an intuitive HMI package for building operator interfaces for your Microsoft® Windows®-based clients communicating with a SNAP-LCE controller. ioDisplay offers a full-featured HMI including alarming, trending, and a built-in library of 3,000 industrial automation graphics.

- **ioManager™**—a utility application used to assign an IP address to the SNAP-LCE, read or change basic controller configuration, and more. In addition, you can use ioManager to configure the I/O units that communicate with the controller and to read from or write to I/O units.

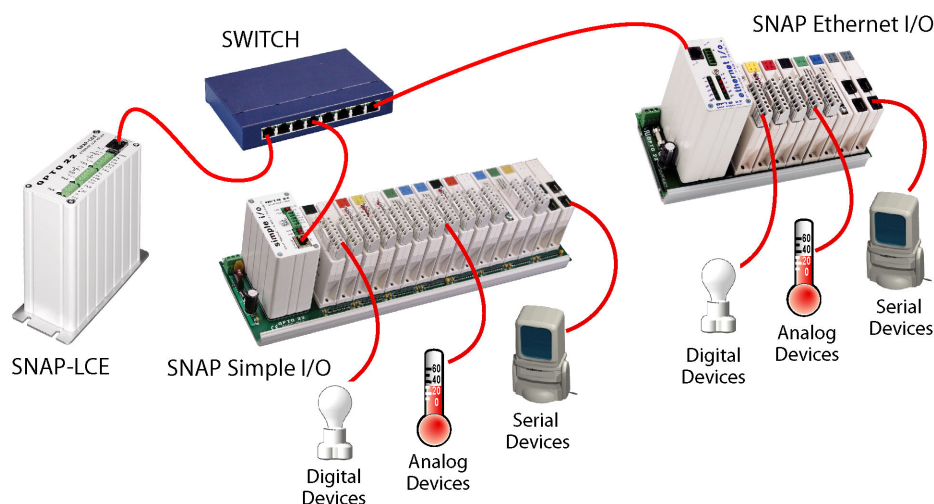
ioProject Basic is available for download from our website at www.opto22.com. For communication using OLE for Process Control (OPC), you can purchase OptoOPCServer™, Opto 22's OPC 2.0-compliant server, separately.

Specifications:

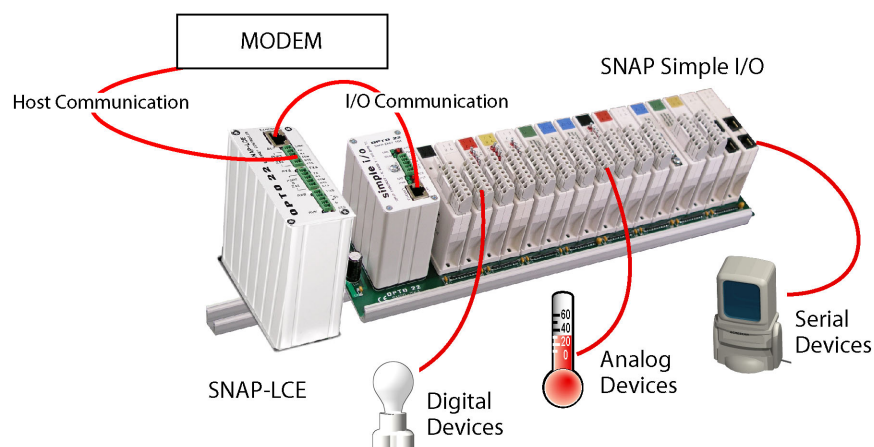
Processor	32-bit ColdFire® 5407
Memory Total RAM Battery-backed RAM Flash EEPROM	16 MB 512 KB 8 MB (7 MB with firmware version 7.2)
Backup battery	3-volt CR2032 Lithium, user replaceable. Typical service life with power off: 5 years.
Host communication	Ethernet (10/100 Mbps) or PPP (dial-up and radio modem)
I/O communication	Ethernet (10/100 Mbps)
I/O unit compatibility	Opto 22 SNAP Simple I/O, SNAP Ethernet I/O, and SNAP Ultimate I/O units
Serial ports	Two RS-232 ports. Baud rate is soft-selectable from 150–115,200 kBd.
Power requirements	5.0–5.2 VDC at 1.2 A
Operating temperature	0 °C to 60 °C
Storage temperature	-40 °C to 85 °C
Humidity	0% to 95% relative humidity, non-condensing
Software	ioProject software suite (ioControl, ioDisplay, ioManager) Purchase OptoOPCServer separately to communicate using OPC.
Other features	FTP server/client with file system Real-time clock

Architectural Diagrams.

To use the SNAP-LCE with multiple SNAP Ethernet-based I/O units, use a standard Ethernet hub or switch. This architecture can be designed for control only, as shown below, or be part of a larger Ethernet network that includes computers and other Ethernet-based equipment.

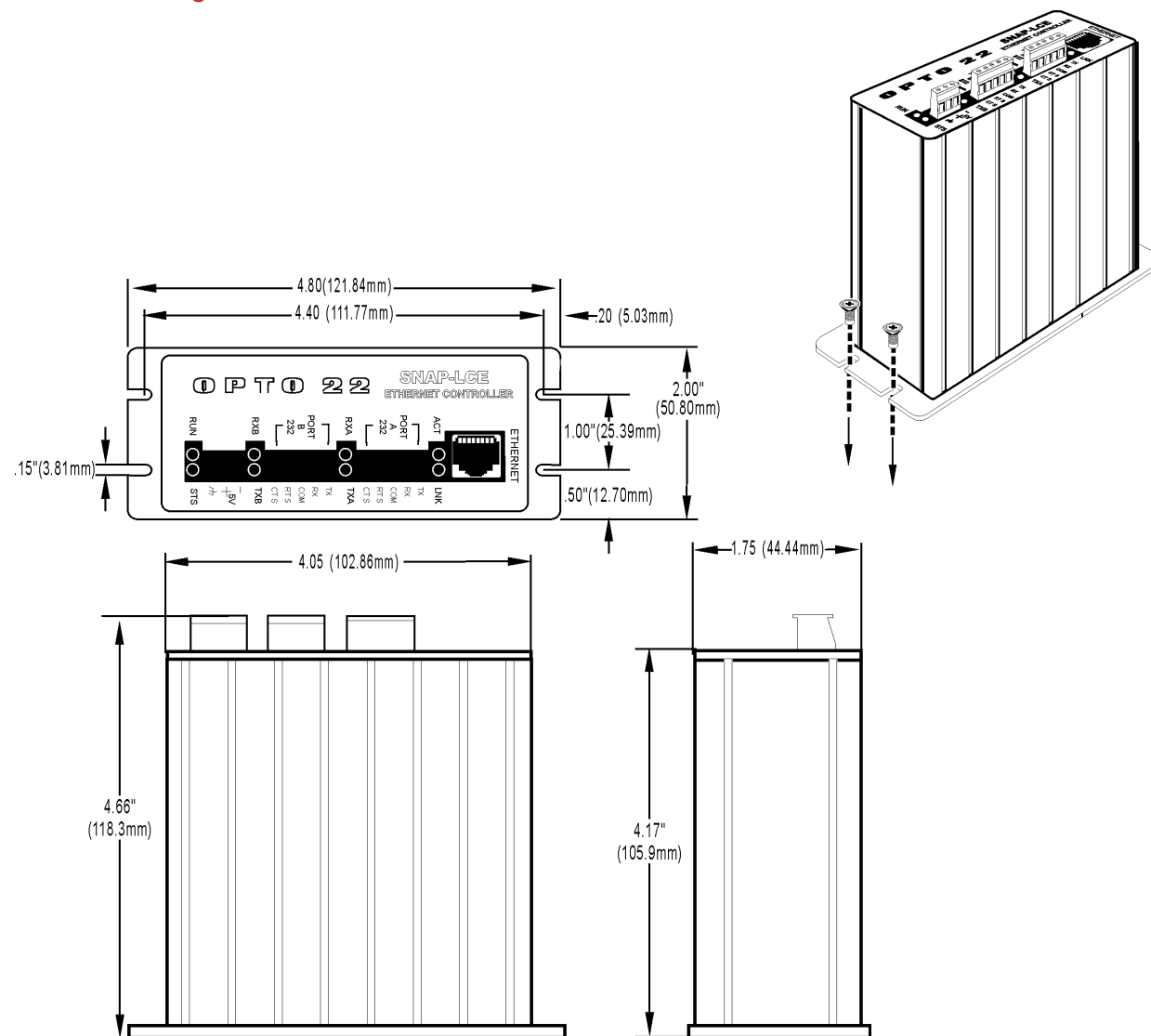


For remote monitoring and control, you can use the SNAP-LCE directly with a SNAP Ethernet-based I/O unit such as the SNAP Simple I/O unit shown in the diagram below. For this use, the SNAP-LCE communicates using a modem over the Point-to-Point Protocol (PPP, supported in firmware version



DIMENSIONS

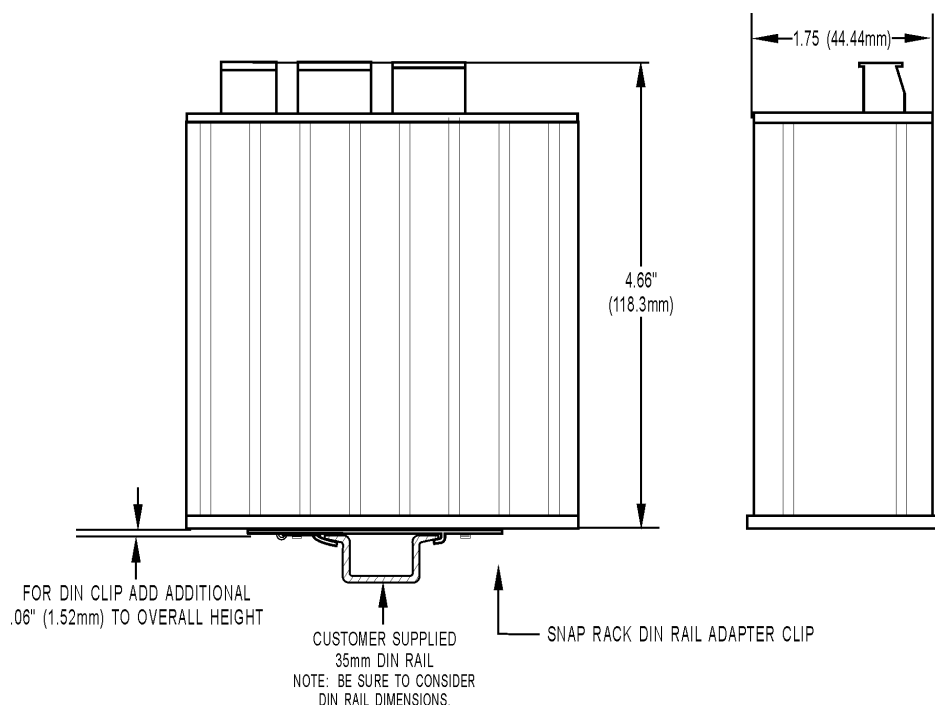
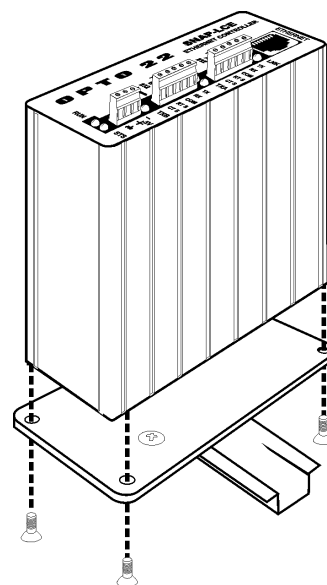
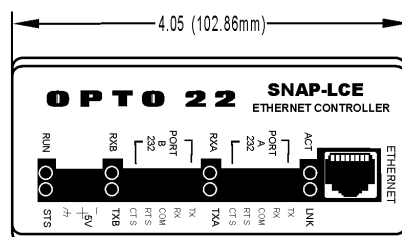
Panel Mounting and Dimensions



DIMENSIONS (CONTINUED)

DIN-Rail Mounting and Dimensions

Requires a SNAP-PSDIN adapter (purchased separately).



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 processor with gateway functions, and software that meets the needs of your automation and IIoT applications.

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, swing-away cover, and LEDs indicating module health and digital channel status.

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

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, 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 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 controller:

- PAC Control engine to run PAC Control strategies and PAC Display projects
- 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/Sparkplug communications for efficient IIoT data transfer

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.