

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. Because the SNAP-LCE controller offers powerful, real-time industrial control in a compact, low-cost package, you can design a highly flexible system to meet your industrial control, monitoring, or data acquisition needs.

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.

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.

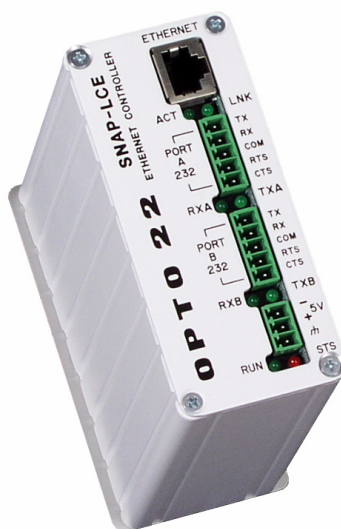
The SNAP-LCE simultaneously runs up to 16 ioControl flowcharts, plus the host task. The control strategy can contain a much larger number of flowcharts, however; the total number is limited only by the 8 MB of controller memory available for strategy storage.

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.

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.



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

Form 1471-051115

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 included on the CD that comes with the SNAP-LCE controller and is also available for download from our

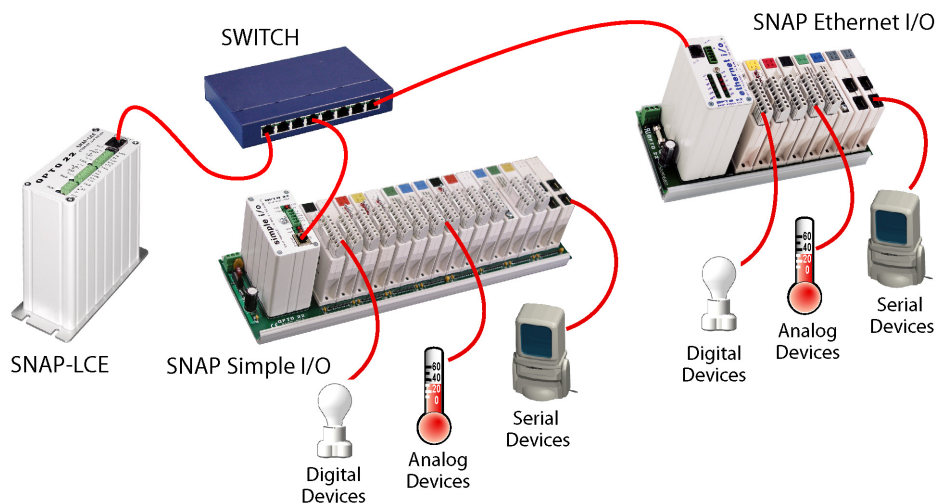
Web site at www.opto22.com. For communication using OLE for Process Control (OPC), you can purchase OptoOPCServer™, Opto 22's OPC 2.0-compliant server, separately. For additional information, see the ioProject data sheet, Opto 22 form #1473.

Specifications: SNAP-LCE

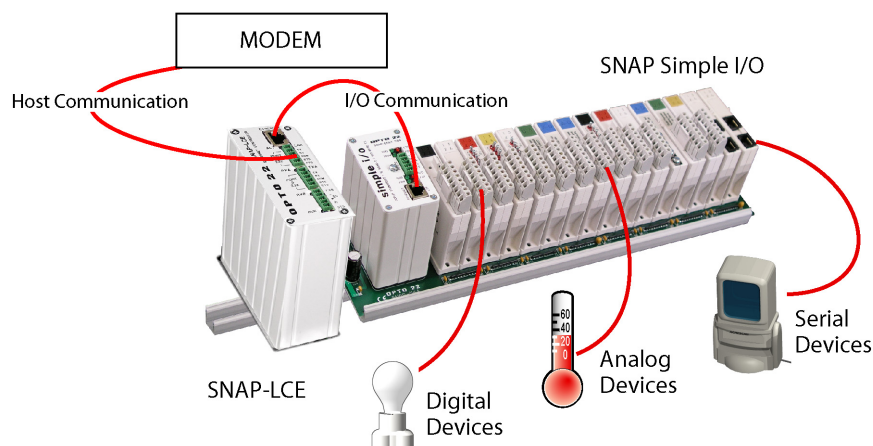
Processor	32-bit ColdFire® 5407
Memory:	
Total RAM	16 MB
Battery-backed RAM	512 KB
Flash EEPROM	8 MB
Backup battery	3-volt CR2032 Lithium, user replaceable. Typical service life with power off: 5 years.
Host communication	Ethernet (10/100 Mbps) or PPP (dial-up and radio modem)
I/O communication	Ethernet (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 to 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.

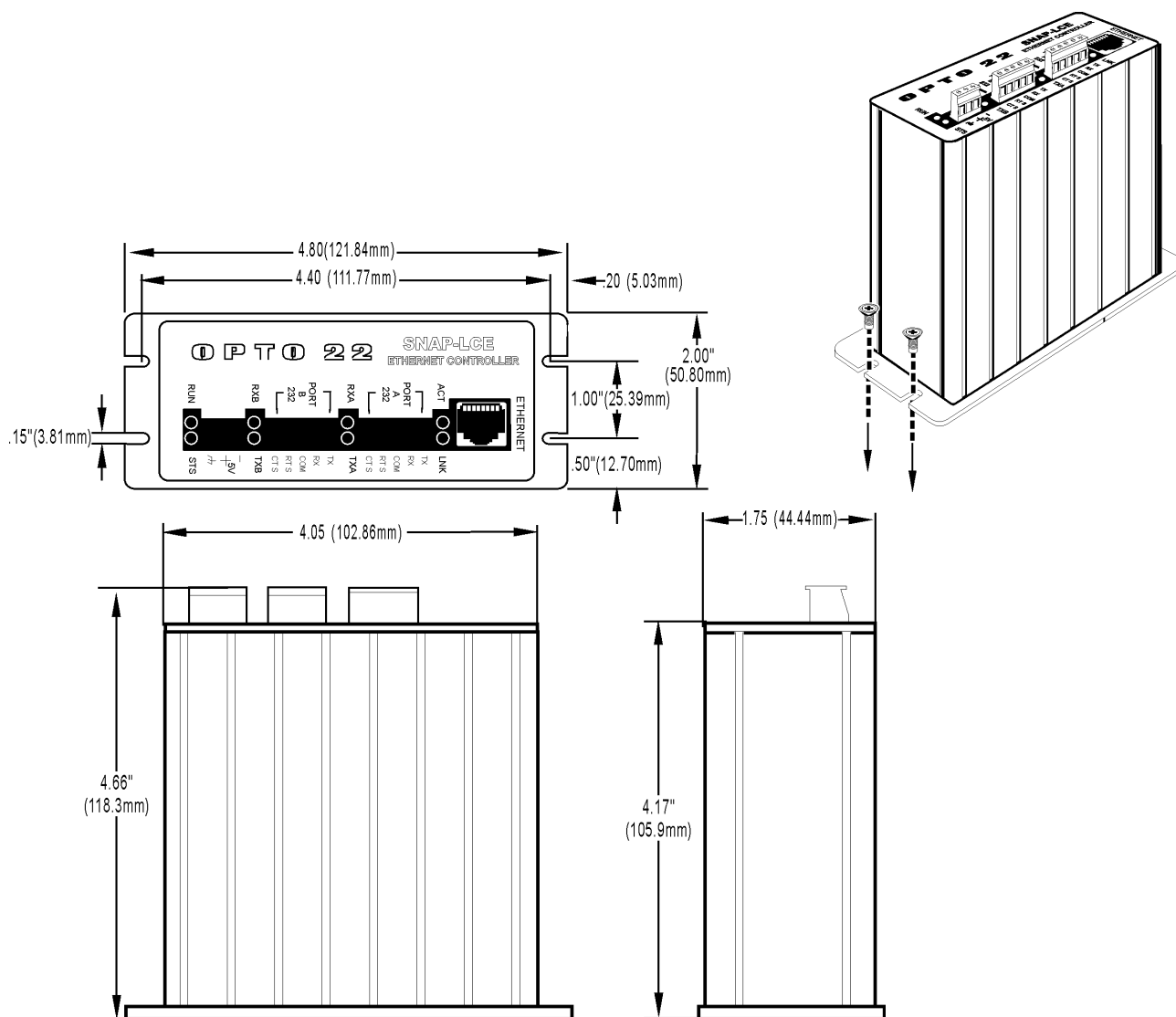


For remote monitoring and control, you can use the SNAP-LCE directly with a SNAP Ethernet-based I/O unit such as the SNAP Simple I/O unit shown in the diagram below. For this use, the SNAP-LCE communicates using a modem over the Point-to-Point Protocol (PPP, supported in firmware version 5.1c and newer).



Dimensions

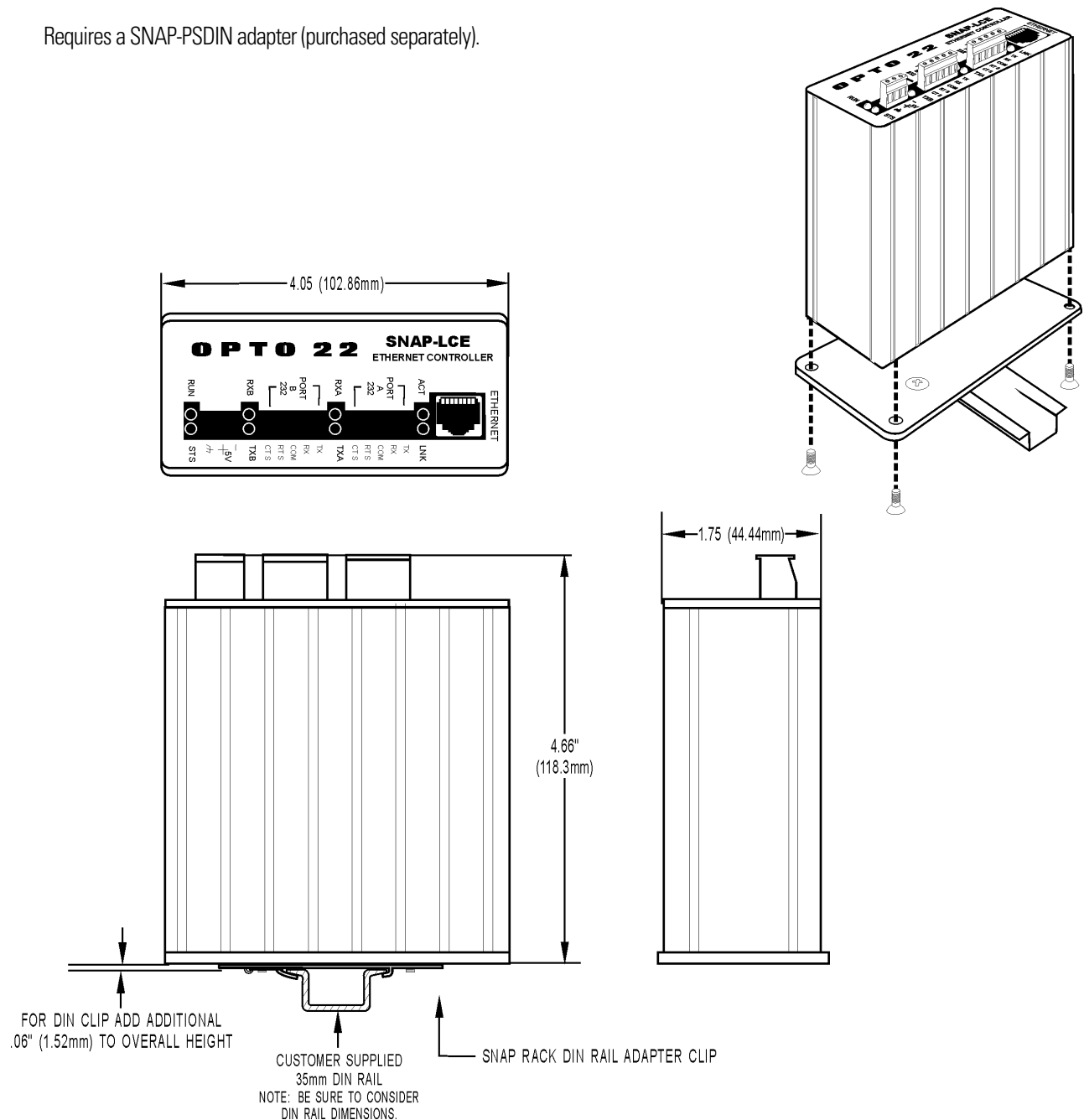
Panel Mounting and Dimensions



Dimensions (continued)

DIN-Rail Mounting and Dimensions

Requires a SNAP-PSDIN adapter (purchased separately).



Products

Opto 22 produces a broad array of reliable, flexible hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications.

SNAP Ethernet Systems

Based on the Internet Protocol (IP), SNAP Ethernet systems offer flexibility in their network connectivity and in the software applications they work with. The physical network may be a wired Ethernet network, a cellular wireless network, or a modem. A wide variety of software applications can exchange data with SNAP Ethernet systems, including:

- Opto 22's own ioProject™ suite of control and HMI software
- Manufacturing resource planning (MRP), enterprise management, and other enterprise systems
- Human-machine interfaces (HMIs)
- Databases
- Email systems
- OPC client software
- Custom applications
- Modbus/TCP software and hardware.

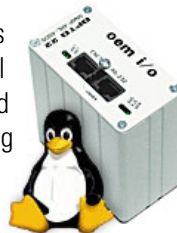


SNAP Ethernet system hardware consists of controllers and I/O units. Controllers provide central control and data distribution. I/O units provide local connection to sensors and equipment.

SNAP OEM Systems

Opto 22 SNAP OEM I/O systems are highly configurable, programmable processors intended for OEMs, IT professionals, and others who need to use custom software with Opto 22 SNAP I/O modules.

Linux® applications running on these systems can read and write to analog, simple digital, and serial I/O points on SNAP I/O modules using easily implemented file-based operations. Applications can be developed using several common development tools and environments, including C or C++, Java, and shell scripts.



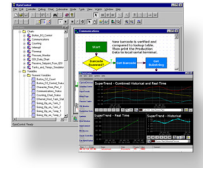
M2M Systems

Machine-to-machine (M2M) systems connect your business computer systems to the machines, devices, and environments you want to monitor, control, or collect data from. M2M systems often use wireless cellular communications to link remote facilities to central systems over the Internet, or to provide monitoring and control capability via a cellular phone.

Opto 22's Nvivo™ systems include everything you need for M2M—interface and communications hardware, data service plan, and Web portal—in one easy-to-use package. Visit nvio.opto22.com for more information.

Opto 22 Software

Opto 22's ioProject and FactoryFloor® software suites provide full-featured and cost-effective control, HMI, and OPC software to power your Opto 22 hardware. These software applications help you develop control automation solutions, build easy-to-use operator interfaces, and expand your manufacturing systems' connectivity.



Quality

In delivering hardware and software solutions for worldwide device management and control, Opto 22 retains the highest commitment to quality. We do no statistical testing; each product is made in the U.S.A. and is tested twice before leaving our 160,000 square-foot manufacturing facility in Temecula, California. That's why we can guarantee solid-state relays and optically-isolated I/O modules *for life*.

Product Support

Opto 22's Product Support Group offers comprehensive technical support for Opto 22 products. The staff of support engineers represents years of training and experience, and can assist with a variety of project implementation questions. Product support is available in English and Spanish from Monday through Friday, 7 a.m. to 5 p.m. PST.

Opto 22 Web Sites

- www.opto22.com
- nvio.opto22.com
- www.internetio.com (live Internet I/O demo)

Other Resources

- OptoInfo CDs
- Custom integration and development
- Hands-on customer training classes.



About Opto 22

Opto 22 manufactures and develops hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's input/output and control systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, and electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel.

Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability.