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

SNAP-LCE

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 (HMIs), 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 (Please note that SNAP Simple, Ethernet, and Ultimate I/O units have been replaced by SNAP PAC I/O units.)

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

PAGE

1

SNAP-LCE Controller

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 included on the CD that comes with the SNAP-LCE controller and is also 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.
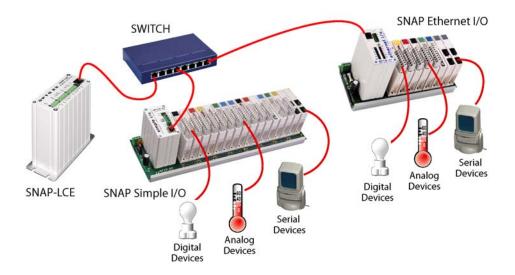
Specifications:

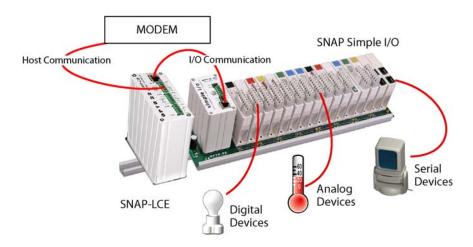|	
Processor	32-bit ColdFire® 5407

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

SNAP-LCE Controller

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).
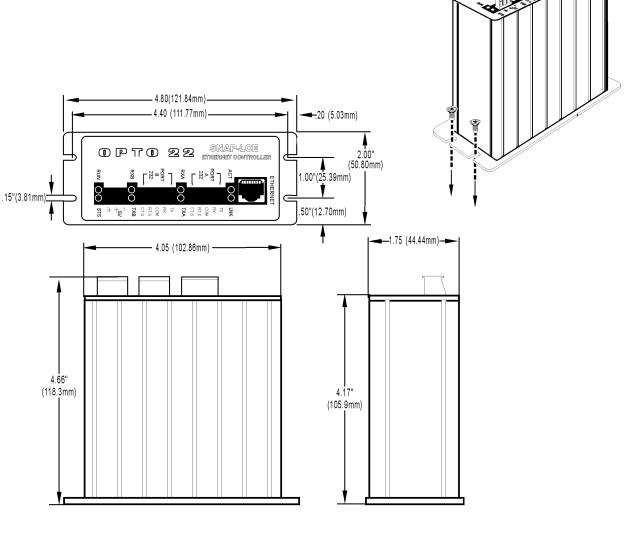
Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • www.opto22.com
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • SUPPORT 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com
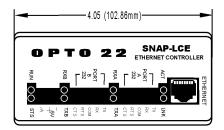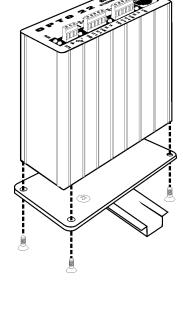
Dimensions

Panel Mounting and Dimensions

SNAP-LCE Controller

Dimensions (continued)

DIN-Rail Mounting and Dimensions

Requires a SNAP-PSDIN adapter (purchased separately).

FOR DIN CLIP ADD ADDITIONAL
.06" (1.52mm) TO OVERALL HEIGHT

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

SNAP RACK DIN RAIL ADAPTER CLIP

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.

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