

# SNAP PAC Learning Center

## Features

- Complete package of fully functional Opto 22 hardware and software
- Full, step-by-step assembly and configuration instructions
- Nine-lesson, self-guided tutorial
- FREE technical support and pre-sales engineering

## Description

The SNAP PAC Learning Center delivers a complete package for learning, demonstrating, and examining the capabilities of the powerful and versatile SNAP PAC system.

Not just a sample, the SNAP PAC Learning Center includes the field-proven, real hardware and software used by Opto 22 customers all over the world. Use the SNAP PAC Learning Center to explore Opto 22's industrial controllers, reliable I/O, and full-featured automation software. Configure the I/O, develop a control program (called a *strategy*) to run on the SNAP PAC controller, and create an HMI (human-machine interface) for your PC. And then use the same hardware and software in your own industrial control, remote monitoring, or data acquisition application.

Developed in part as a response to the success of our free *Introduction to the SNAP PAC System* training program, the SNAP PAC Learning Center provides lessons applicable to any industrial or commercial application but tailored to this standalone system and its panel of input and output devices. With the learning center you get industrial automation software, controller and I/O, mounting rack, sample instruments, and self-guided training.

## SNAP PAC Learning Center Guide

The content of our popular instructor-based training is now available in a self-paced, nine-lesson tutorial, which is included with the SNAP PAC Learning Center. Step-by-step instructions guide you in assembling your hardware, configuring your I/O unit and points, programming the SNAP PAC controller, and building a human-machine interface. Instruction is split into nine easily managed lessons. Each lesson targets a certain aspect of the system, such as configuration, flowcharts, scripting, analog points, and so on, and each lesson provides easy-to-find concept sections to review and apply what you have learned.



The course uses a learning scenario of a fictional convenience store, with digital input and output devices (lights and door contacts), and analog inputs and outputs (fuel sensors and displays).

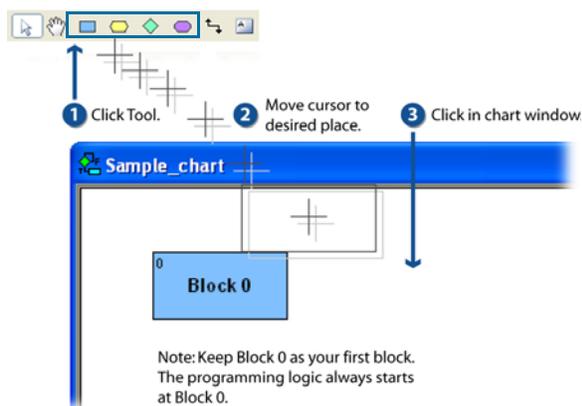
## Learning Center Software

The SNAP PAC Learning Center includes the PAC Project Basic software suite. Use this software with your system as part of the Learning Center or deployed in your application:

- **PAC Control Basic**—a graphical, flowchart-based programming tool for machine control and process applications. Includes subroutines plus a powerful scripting language for easy math, string handling, and control loops.
- **PAC Display Basic**—an intuitive HMI package for building operator interfaces for your Microsoft® Windows®-based clients communicating with PAC Project controllers. PAC Display includes advanced alarming, trending, and security as well as a built-in library of 3,000 industrial automation graphics.
- **PAC Manager**—a configuration and maintenance utility provided with the SNAP PAC System.

## Part Numbers

Part	Description
SNAP-PACLC	SNAP PAC Learning Center, <i>SNAP PAC Learning Center Guide</i> (printed), and PAC Project 9.0 software with PAC Project documentation in PDF format.

**Placing Blocks:**

Excerpt from the *SNAP PAC Learning Center Guide*—Numerous illustrations demonstrate procedures and describe concepts, so any computer user can succeed in this independent, self-guided course.

## Learning Center Hardware

### SNAP-PAC-R1

The SNAP-PAC-R1 programmable automation controller provides control, communication, and I/O processing in a compact, rack-mounted package. The SNAP-PAC-R1 runs the control strategy you build; interfaces with analog, digital, and serial modules; and communicates with the HMI and other networked computers. It has two, independent Ethernet network interfaces for network segmenting or Ethernet link redundancy.

Because this intelligent, flexible PAC can be used in several ways, it continues to be useful as your system grows and changes. The SNAP-PAC-R1 can provide complete cell control on its own rack with I/O modules, as it is used in the Learning Center. It can also control other SNAP PAC I/O units at the same time, as part of a larger system. Or the R1 can be used in a more extensive distributed control system as an I/O unit controlled by a SNAP PAC S-series standalone controller.

### SNAP-PAC-RCK8 Mounting Rack

The SNAP-PAC-RCK8 rack mounts the controller and up to a total of eight SNAP digital, analog, and serial modules.

### SNAP I/O Modules

- SNAP-IDC5D: Digital DC Input, 2.5–28 VDC, 5 VDC Logic
- SNAP-ODC5SRC: Digital DC Output, 5–60 VDC Source, 5 VDC Logic
- SNAP-AOV-27: Analog Output, Dual, -10 to +10 VDC
- SNAP-AICTD: Analog Input, Dual, ICTD Temperature
- SNAP-AIV: Analog Input, Dual,  $\pm 10$  or  $\pm 5$  VDC (configurable)

# SNAP PAC Learning Center

## Learning Center Load Panel

- Two toggle switches, two momentary switches, one SonAlert buzzer, three LEDs, one DC panel meter, one potentiometer, one temperature sensor

## Accessories:

- Power cable. Input voltage range for the Learning Center is 120–300 VAC. The appropriate power cable is included, based on your location (U.S., international, or UK); if you need to specify a different cable, please call Opto 22 at 800-321-6786 (toll-free in the U.S.) or 951-695-3000.
- Ethernet category 5 crossover cable

## Computer Requirements

To use the SNAP PAC Learning Center with your PC, you must have the following minimum computer configuration:

- A computer with at least the minimum processor and memory required for your version of Microsoft Windows, and Ethernet capability. Additional memory may be required for some configurations.
- VGA or higher resolution monitor (Super VGA recommended). Minimum size: 800x600 with small fonts.
- Mouse or other pointing device
- Installed Windows printer (optional)
- Microsoft Windows 7 Professional (32-bit or 64-bit), Windows Vista<sup>®</sup> Business (32-bit), or Windows XP Professional (32-bit, with Service Pack 2 or higher)

*NOTE: Microsoft Windows server and embedded Windows operating systems are not supported.*

- At least 187 MB of available hard drive space

## Learning Center Product Support

Opto 22's product support services are available to assist you with any problems relating to your work with the Learning Center. Call **(800) 832-6786** or **(951) 695-3080**, or email [support@opto22.com](mailto:support@opto22.com).

# 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](http://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](http://www.opto22.com), for more information or email [training@opto22.com](mailto: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](http://www.opto22.com).

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