

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

NOTE: Due to the unavailability of essential parts, the SNAP-PACLC is obsolete as of April 2022. Learning Centers are available on our website for groov RIO edge I/O (GRV-RIO-LC and GRV-RIO2-LC) and the groov EPIC system (GRV-EPIC-LC).

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 *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

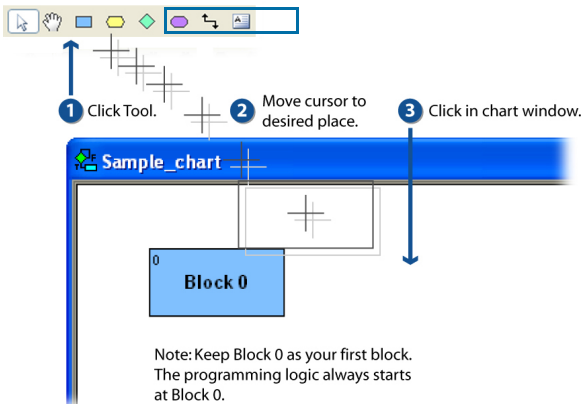
The SNAP PAC Learning Center includes the PAC Project Basic software suite. Use this software with your system as part of the Learning Center or deployed in your application:

- **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 [Obsolete]	[Obsolete] SNAP PAC Learning Center, SNAP PAC Learning Center Guide (printed), and PAC Project 9.x 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, ± 10 or ± 5 VDC (configurable)

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. and Canada) 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 and a better CPU may be required for some configurations. We recommend staying away from low-end CPUs and using one of the following operating systems:
 - Microsoft® Windows® 10 Professional (32-bit or 64-bit) or Windows 11 Professional
 - (OptoOPCServer and OptoDataLink) Windows Server® 2012 R2, 2016, 2019, and 2022; however, you must install .NET Framework 4.0 prior to installing PAC Project on these operating systems

NOTE: PAC Project cannot be installed on Windows XP or older Windows operating systems. Other versions of Windows operating systems and embedded Windows operating systems are not supported.

- Ethernet capability
- VGA or higher resolution monitor. Minimum size: 800x600 with small fonts
- Mouse or other pointing device
- (Optional) Installed Windows printer
- 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** (toll-free in the U.S. and Canada) or **(951) 695-3080**, or email support@opto22.com.

This product is obsolete

PRODUCTS

Opto 22 develops and manufactures reliable, easy-to-use, open standards-based hardware and software products. Industrial automation, process control, remote monitoring, data acquisition, and industrial internet of things (IIoT) applications worldwide all rely on Opto 22.

groov RIO®

groov RIO edge I/O offers a single, compact, PoE-powered industrial package with web-based configuration and IIoT software built in, support for multiple OT and IT protocols, and security features like a device firewall, data encryption, and user account control.

Standing alone, *groov RIO* connects to sensors, equipment, and legacy systems, collecting and securely publishing data from field to cloud. Choose a universal I/O model with thousands of possible field I/O configurations, with or without Ignition from Inductive Automation®, or a *RIO EMU energy monitoring unit* that reports 64 energy data values from 3-phase loads up to 600 VAC, Delta or Wye.

You can also use *groov RIO* with a Modbus/TCP master or as remote I/O for a *groov EPIC* system.

groov EPIC® System

Opto 22's *groov Edge Programmable Industrial Controller (EPIC) system* gives you industrially hardened control with a flexible Linux®-based processor with gateway functions, guaranteed-for-life I/O, and software for your automation and IIoT applications.

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. No industrial PC needed.

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, on a monitor connected via the HDMI or USB ports, or on a PC or mobile device with a web browser.

groov EPIC I/O

groov I/O connects locally to sensors and equipment. 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 Software

The *groov EPIC* processor comes ready to run the software you need:

- Programming: Choose flowchart-based PAC Control, CODESYS Development System for IEC61131-3 compliant programs, or secure shell access (SSH) to the Linux OS for custom applications
- Node-RED for creating simple IIoT logic flows from pre-built nodes
- Efficient MQTT data communications with string or Sparkplug data formats
- Multiple OPC UA server options
- HMI: *groov View* to build your own HMI viewable on touchscreen, PCs, and mobile devices; PAC Display for a

Windows HMI; Node-RED dashboard UI

- Ignition or Ignition Edge® from Inductive Automation (requires license purchase) with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT communications

Older products

From solid state relays, to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and working hard at thousands of installations worldwide. You can count on us for 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 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, and [OptoForums](#).

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.

