OPTO 22

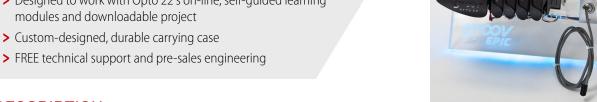## *groov* EPIC LEARNING CENTER

> Complete package of fully functional Opto 22 *groov*© EPIC hardware and suite of software

> Ideal for demonstrating extensive capabilities and enlivening Proof of Concept projects

> Designed to work with Opto 22's on-line, self-guided learning modules and downloadable project

> Custom-designed, durable carrying case

> FREE technical support and pre-sales engineering

DESCRIPTION

The *groov* EPIC© Learning Center plays an integral role in the free OptoU Online Training (https://training.opto22.com) offered by Opto 22, providing hands-on experience and the opportunity for more in-depth exercises. It also functions as a complete demonstration unit, providing a live experience for your pilot and Proof of Concept projects.

What's Included?

Hardware (load panel, I/O modules) and software (pre-developed software projects, strategies, flows, and more) designed to work in concert with online training.

groov EPIC Parts

Mounted on a plexiglass operator load panel are:

• 1 *groov* EPIC processor, GRV-EPIC-PR1
• 1 power supply, GRV-EPIC-PSPT
• 1 DC input module, GRV-IACDCTTL-24
• 1 DC output module, GRV-ODCI-12
• 1 ICTD temperature input module, GRV-IICTD-12
• 1 analog VDC input module, GRV-IV-24
• 1 four-position chassis, GRV-EPIC-CHS4

Operator Load Panel

• 2 illuminated pushbuttons
• 1 potentiometer
• 1 ICTD temperature probe with resistor
• 1 Sonalert alarm
• 3 Multi-color LEDs: red, blue, and green

Software on the GRV-EPIC-PR1

• *groov* **Manage**—to configure, commission, and troubleshoot the processor
• **PAC Control Engine**—a real-time control engine to run flowchart-based control programs

• **CODESYS Runtime Engine**—a real-time control engine to run IEC-61131-3 compatible control programs
• *groov* **View**—to build and view mobile and browser-based operator interfaces
• **Ignition Edge**®—from Inductive Automation®, provides drivers to PLCs
• **MQTT with Sparkplug**—a secure, bi-directional, lightweight publish/subscribe protocol
• **Node-RED**—an open-source, multi-platform IIoT tool to connect databases, cloud apps, and APIs
• **SSH**—to download and run your custom application written in languages like Python, C/C++, and others, on an open, Linux®-based automation system

Software for Control Program and HMI Development

Download these free software packages to your computer to develop flowchart-based or IEC-61131-3 compatible control programs, as well as HMIs:

• **PAC Control**—a flowchart-based industrial automation programming tool
• **PAC Display**—to build HMI operator interfaces for Microsoft® Windows®-based computers
• **CODESYS Development System**—a software platform for factory automation, providing IEC-61131-3 support
• **Opto 22 Library Package for CODESYS**—a library package to add to CODESYS Development System

Part Numbers

Part	Description
GRV-EPIC-LC	*groov* EPIC Learning Center, carrying case, power supply cord, and temperature probe

MADE IN THE
USA

OPTO 22 • 800-321-6786 • 1-951-695-3000 • www.opto22.com • sales@opto22.com

Training Resources

Online, self-guided learning modules available at
https://training.opto22.com/series/groov-epic-training-series

Throughout the course, you'll find links to reference materials and learning tools, and be able to check your knowledge with quizzes.

In addition to online training, you can download the *groov* EPIC Learning Center Package, which contains functional project files designed to run on the Learning Center. These project files demonstrate the broad range of functionality of *groov* View, Node-RED, CODESYS, PAC Control, and PAC Display. The installation instructions in form 2315 help you get the projects installed and running quickly.

Additional Accessories

- Pelican™ 1557 Air Case; watertight, crushproof, and dustproof
- AC/DC Adapter and power cable, input 100-240 VAC, 50-60 Hz @ 1.6 A, output 12 VDC @ 6 A
- Screwdriver to release or tighten module terminal connector

Learn & Examine

Not just a product sample, the *groov* EPIC Learning Center includes the field-proven, real hardware and full-featured software used by customers all over the world.

Create and powerfully demonstrate Proof of Concept projects:

- Demonstrate how *groov* EPIC processor can be installed in a machine and be connected to an external monitor.
- Demonstrate how the unit can be set up as a controller and display HMI screens on the touchscreen, as well as a mobile device or computer.
- Demonstrate how easily you can set up the Ignition Edge Gateway, connect to legacy PLCs, and begin collecting and publishing tag information to cloud services.

The Learning Center is also designed to work with the online training program on the Opto 22 website. With the training program, you will learn how to configure the processor, create control programs and HMIs, and share data with other systems and software.

Initialize and Configure the *groov* EPIC Processor

After you turn on your Learning Center, you'll:

- Create user IDs & passwords and learn about the different access levels you can create
- Establish network connectivity and learn about the other ways you can connect the processor to a network
- Calibrate the integrated touchscreen and learn how you can connect the processor to external monitors

- Navigate through *groov* Manage both on the touchscreen and through a computer browser
- Compare and practice the different ways to configure I/O modules through *groov* Manage, PAC Control, and CODESYS

Create Control Programs and Choose Programming Options

- Create a comprehensive control program with PAC Control that monitors and controls a fictional convenience store
- Download the CODESYS Development System and learn to create, download, and run a simple IEC61131-3 compliant program on the *groov* EPIC processor
- Learn how to access the optional SSH, Linux shell to download and run a custom program

Create Human-Machine Interfaces (HMIs)

- Create an HMI for browsers and mobile devices with *groov* View
- Create an HMI for a Windows-based PC that includes graphics and trends with PAC Display

Collect Data from Cloud Services, Databases, and Other PLCs

- Obtain weather data from a cloud service and then display it on the HMIs, all through Node-RED
- Create a communication path between your control program and a third-party PLC with Ignition Edge software
- Publish data or subscribe to data with MQTT/Sparkplug

Computer Requirements

The *groov* EPIC processor does not require any special computer software or hardware, other than a web browser to access *groov* Manage and *groov* View.

The PAC Project Basic software has requirements listed in the Specifications tab of the product web page, PACPROJECTBAS.

You can download the CODESYS Development System from the CODESYS Store. The computer requirements for this product are listed in the System Requirements tab of the CODESYS Development System V3 product page. You will also need to download the Opto 22 Library Package for CODESYS Development System, which is available on www.opto22.com.

LEARNING CENTER PRODUCT SUPPORT

Opto 22's free 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.

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
- 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.

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