

groov RIO LEARNING CENTER

Features

- > Complete package of fully functional Opto 22 *groov*® RIO hardware and software
- > Ideal for demonstrating extensive capabilities and enlivening Proof of Concept projects
- > GRV-RIO-LC includes *groov* Manage, Node-RED, and more
- > GRV-RIO2-LC includes everything in GRV-RIO-LC plus Ignition software from Inductive Automation®
- > Designed to work with downloadable examples and Opto 22's free online, self-guided learning courses
- > FREE technical support and pre-sales engineering



DESCRIPTION

The *groov* RIO® Learning Center provides a hands-on experience and the opportunity for more in-depth exploration. It also functions as a complete demonstration unit, providing a live experience for your pilot and Proof of Concept projects. Available in two models:

- **GRV-RIO-LC**—Includes a [GRV-R7-MM1001-10](#), the first module in the *groov* RIO family, revolutionary remote I/O that offers hundreds of thousands of unique, software-configurable I/O combinations in a single, PoE-powered industrial package with web-based configuration, commissioning, and flow logic software built in, plus support for multiple OT and IT protocols
- **GRV-RIO2-LC**—Includes a [GRV-R7-MM2001-10](#), providing the same hardware and software capabilities as GRV-R7-MM1001 and adding pre-installed Ignition and Ignition Edge software, plus increased memory and storage capacity to handle Ignition requirements.

What's Included?

groov RIO Module

1 *groov* RIO mixed-signal multifunction module, as follows:

- **GRV-RIO-LC:** [GRV-R7-MM1001-10](#)
- **GRV-RIO2-LC:** [GRV-R7-MM2001-10](#)

Operator Load Panel

Mounted on a plexiglass stand:

- 1 DIN rail (mount the *groov* RIO module on the rail)
- 2 illuminated pushbuttons
- 1 potentiometer
- 1 temperature probe connector
- 1 single-color backlight LED

Accessories

- 1 ICTD temperature probe with resistor (for PID loop control)

Software on both Learning Centers

- **groov Manage**—to configure, commission, and troubleshoot the module
- **MQTT with Sparkplug**—a secure, bi-directional, lightweight publish/subscribe protocol built into *groov* Manage to publish Sparkplug B payloads
- **Node-RED**—an open-source, multi-platform IIoT tool to connect databases, cloud apps, and APIs
- **Secure Shell (SSH)**—Add the free [GROOV-LIC-SSH](#) license to run custom programs on *groov* RIO's Linux® operating system (firmware 3.0.0 or higher)

Additional Software on GRV-RIO2-LC

Ignition and Ignition Edge—Ignition and Ignition Edge software is pre-installed. You can use both for a trial period of two hours and can restart the trial as often as you wish.

To remove the time limit for Ignition Edge, add the [GROOV-LIC-EDGE8](#) license. Ignition Edge lets you:

- Connect to PLCs via Ignition Edge OPC UA drivers (limited to 2 device drivers)

Part Numbers

Part	Description
GRV-RIO-LC	<i>groov</i> RIO Learning Center, temperature probe
GRV-RIO2-LC	<i>groov</i> RIO Learning Center, temperature probe; Ignition software

- Publish Sparkplug B payloads via the Ignition Edge MQTT Transmission module

To remove the time limit and run full Ignition on GRV-RIO2-LC, [contact Opto 22](#) for licensing information. Full Ignition adds:

- External access to the OPC-UA server
- Scripting
- Database support
- A wide array of Ignition modules

LEARN & EXPLORE

The Learning Center is designed to work with the [groov RIO Learning Center Package](#)—available for download from www.opto22.com—as well as the free online training provided at training.opto22.com.

Follow the directions in *groov* RIO Learning Center Setup (form 2361), included in the box with your Learning Center, to get it up and running.

Then follow instructions in the *groov* RIO Learning Center Package Installation technical note (form 2362), included in the Package download, to learn how to:

- Create user IDs & passwords and learn about the different access levels you can create
- Configure and deploy Node-RED flows to send an email, read a temperature, and control I/O
- Create a dashboard for browsers and mobile devices with Node-RED
- Work with a PID control loop
- Write data to a file on *groov* RIO

Free online training courses at training.opto22.com are being added every week. Check back frequently and learn how to:

- Establish network connectivity and see other ways you can connect the module to a network
- Navigate through *groov* Manage on a computer browser
- Compare and practice different ways to configure I/O through *groov* Manage
- Publish data or subscribe to data with MQTT/Sparkplug

SHOW & PROVE

Not just a product sample, the *groov* RIO 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. Show how *groov* RIO can be:

- Installed in a machine to control standalone equipment or acquire data for analysis
- Set up as a remote I/O unit

With the GRV-RIO2-LC, you can also demonstrate its ability to integrate with Ignition SCADA applications.

COMPUTER REQUIREMENTS

The *groov* RIO Learning Center does not require any special computer software or hardware, other than a web browser to access *groov* Manage.

To demonstrate Ignition software on the GRV-RIO2-LC, you'll want to review the requirements information provided by Inductive Automation on their website (www.inductiveautomation.com).

LEARNING CENTER REQUIREMENTS

To power the LEDs on the panel buttons, you will need to provide a USB Type-C to USB Type-A cable and attach it to a USB Type-A wall charger.

The *groov* RIO module that comes with the Learning Center can be powered by PoE or an external power supply. Choose one of the two methods, but don't use both methods at the same time.

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 even write an IEC 61131-3 compliant control program to run on groov RIO, using CODESYS. 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.

