groov® RIO

Intelligent, multi-signal, multifunction, PoE-powered, remote Ethernet I/O for IIoT and Automation Applications

- **Configure** up to 8 channels of multi-signal, multifunction I/O (temperature, current, voltage, or discrete), plus 2 mechanical relays

- **Power** the unit and connected I/O with 802.3af PoE Class 0 switches or 10-32 V DC power

- **Integrate** I/O data directly with databases, HMIs, SCADA, cloud services, and IoT platforms with embedded Node-RED connectivity suite

- **Connect** to existing control systems or building automation systems with Modbus TCP, OptoMMP, or REST APIs

- **Publish** process data directly into publish-subscribe architectures with MQTT transmitting Sparkplug or string payloads

- **Log** data to internal power fail-safe memory or attached USB mass storage device

- **Protect** with built-in security features, including configurable firewalls, encryption, user accounts, and VPN client

- **Install** anywhere with wide –20 °C to + 70 °C rating, UL Hazardous Locations approved; ATEX compliant
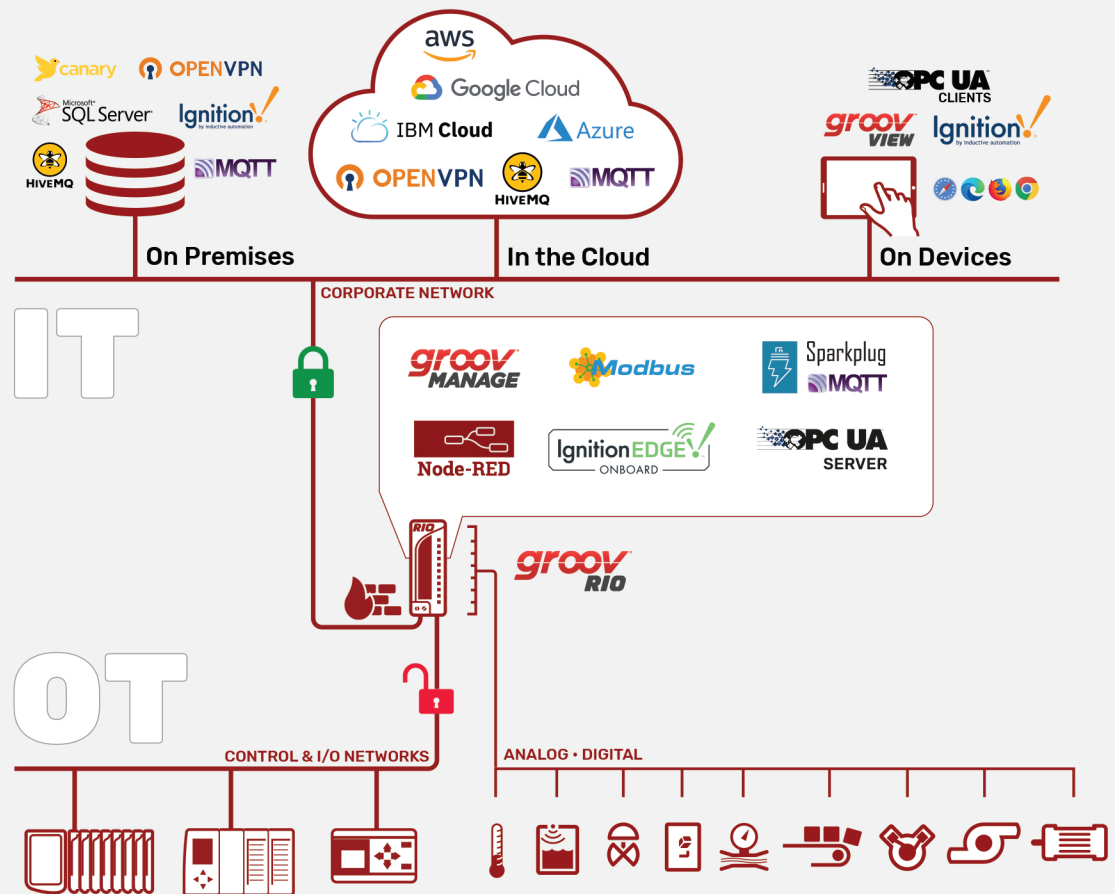
Learn more at **info.opto22.com/introducingRIO**

10-32 V DC power

USB host port

Two, switched Gigabit Ethernet ports, one with 802.3af PoE

- **USB host port** can increase the capabilities of your RIO; connect a USB storage device or supported WiFi adapter.

- **26-pin** removable terminal connector with single hold-down screw and spring-clamp signal wire retention.

- **LED indicators** show power, device, Ethernet and I/O status.

On Premises

In the Cloud

On Devices

IT

OT

CORPORATE NETWORK

CONTROL & I/O NETWORKS

ANALOG · DIGITAL

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groov MANAGE

groov Manage—a web app that gives you command center-like access to your *groov* RIO—helps you configure, troubleshoot, and commission the unit and the attached I/O, like sensors, switches, transmitters, and more.

Sparkplug MQTT

Improve communications efficiency with MQTT, a secure, lightweight transport protocol with a publish/subscribe architecture that decouples devices from applications. The Sparkplug payload definition for industrial applications also manages field device

Node-RED

Build simple data flows to wire together databases, cloud applications, and APIs using Node-RED. This open-source, IIoT development tool gives you a large library of +600 prebuilt nodes, so you can leverage existing software code and use directly in your applications.

Modbus

groov RIO is a Modbus TCP slave out-of-the-box. Use your favorite Modbus TCP master device or software to poll RIO's I/O channels. A Modbus TCP calculator is built into RIO's *groov* Manage application, helping you quickly find the Modbus Unit ID and register for I/O registers.

IgnitionEDGE ONBOARD

Ignition Edge connects to Allen-Bradley®, Siemens®, and Modbus®/TCP devices via OPC UA and offers efficient IIoT communications using MQTT with Sparkplug B payload.

* Ignition Edge is only available on GRV-R7-MM2001-10

OPC UA SERVER

With the OPC UA server on board, *groov* RIO offers a familiar, platform-independent way to exchange data among devices and software within your OT network. Smoothly integrate your I/O tags into SCADA and HMI software using OPC UA–no special drivers required.

OPTO 22
Your Edge in Automation.™

groov RIO

Multi-signal, Multifunction Wiring
Configurable for analog or discrete, input or output

OPTO 22

groov RIO

PWR
STAT
RST   ETH0
ETH1
IN   OUT
0   0
1   1
2   2
3   3
4   4
5   5
6   6
7   7
8
9

	INPUT							OUTPUT			
	Discrete		**Analog**					**Discrete**	**Analog**	**Mechanical Relay**	
Channel	Discrete	Switch Input, Powered	Voltage	Current	ICTD	Thermistor/ Resistor	Thermocouple/ Millivolt	DC Sinking	Current / Voltage	Form C-NO	Form C-NC

Features (ch 0–7):
- On/Off State

Features (ch 0 & 1):
- On/Off Latching
- On/Off Totalization
- Frequency Measurement
- Period Measurement
- Pulse Measurement
- Counting

Features:
- Scaling
- Offset and Gain
- Minimum/Maximum Values
- Average Filter Weight
- Problem Indication

Features:
- On/Off State
- On/Off Totalization
- Output Pulsing/TPO
- Watchdog Timeout Value

Features:
- Scaling
- Ramping
- Clamping
- Watchdog Timeout Value
- Problem Indication

Features:
- On/Off State
- Watchdog Timeout Value

Channels: Ch 0, Ch 1, Ch 2, Ch 3, Ch4, Ch 5, Ch 6, Ch 7, Ch 8, Ch 9

(ICTD: BLK +, WHT)

Ch 8: —NC, —COM —COM, —NO
Ch 9: —NC, —COM —COM, —NO

v14

Thousands of Unique Field I/O Combinations. Learn more at: info.opto22.com/thousands

— Thermocouple inputs and discrete sinking outputs cannot be mixed on channels 0–3.

groov RIO Modules
GRV-R7-MM1001-10   Remote I/O; 8 multi-signal, multifunction ch; 2 form C electromechanical relay output channels
GRV-R7-MM2001-10   Remote I/O; 8 multi-signal, multifunction ch; 2 form C electromechanical relay output channels, Ignition Edge

POWER SUPPLY
(10–32 V DC or 802.3af PoE)