



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



Channel	INPUT							OUTPUT			
	Discrete		Voltage	Current	Analog			Discrete	Analog	Mechanical Relay	
	Discrete	Switch Input, Powered			ICTD	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage	Form C-NO	Form C-NC
Ch 0	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	BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 1			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 2			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 3			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 4			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 5			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 6			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 7			BLK + ICTD WHT	Thermistor/Resistor	Thermocouple/Millivolt	DC Sinking	Current / Voltage				
Ch 8										-NC	
										-COM	-COM
											-NO
Ch 9										-NC	
										-COM	-COM
											-NO

**Thousands of Unique Field I/O Combinations.** Learn more at: [info.opto22.com/thousands](http://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)



**OPTO 22**  
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# 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](http://info.opto22.com/introducingRIO)

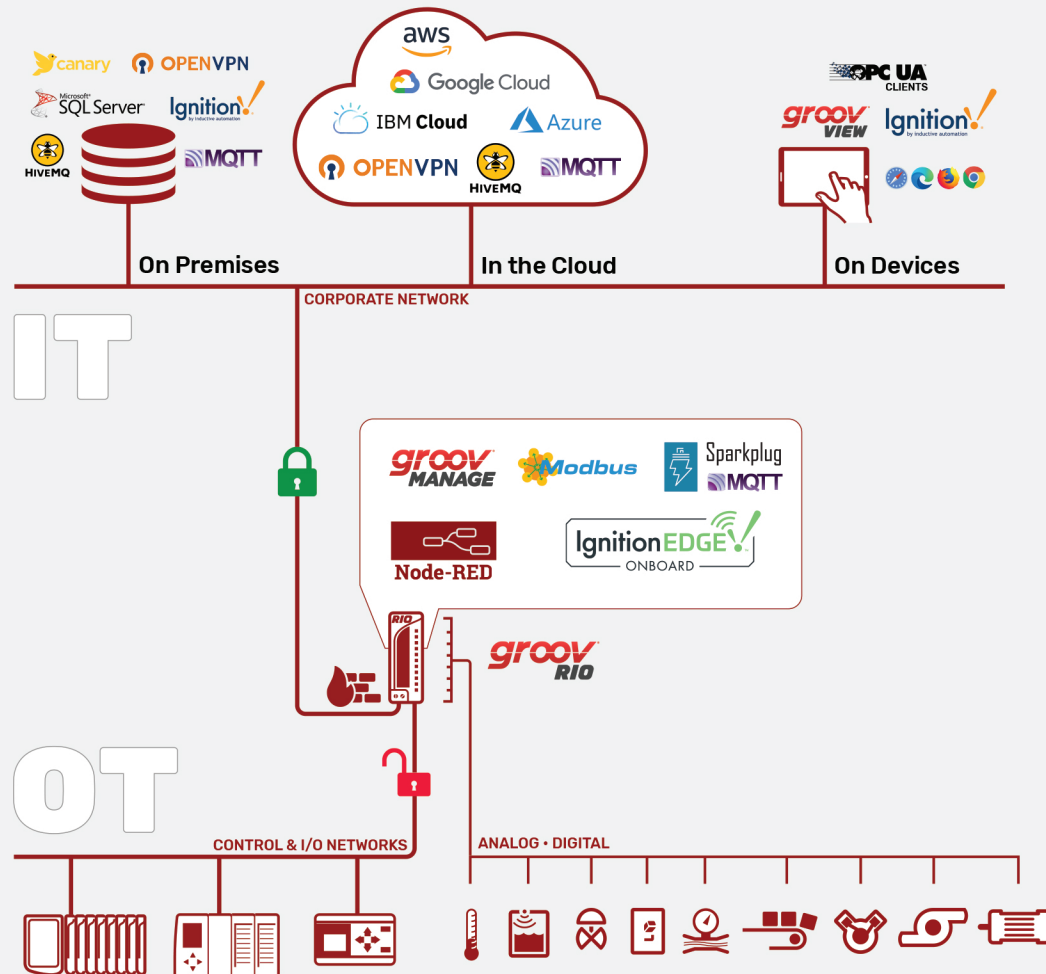


10-32 V DC power

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.



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.



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 states.



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.



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.



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

**OPTO 22**  
Your Edge in Automation.™