groov®

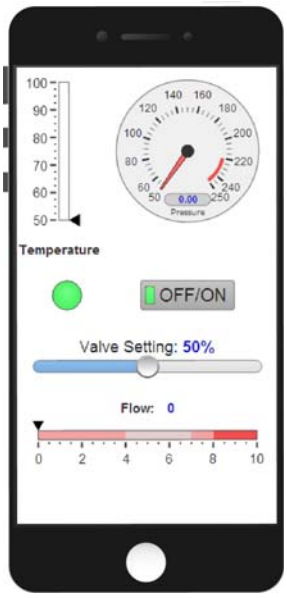
Features

- Provides a mobile operator interface for automation systems, OEM machines, and other equipment
- Ready-made gadgets let you create a browser-based operator interface in minutes
- Scalable operator interface runs on any mobile device or computer regardless of manufacturer, operating system, or screen size
- No programming required
- Email-based event notifications provide immediate system alerts
- Data Simulator allows project testing without connecting to live machines or systems
- Secure Sockets Layer (SSL) encryption protects data
- No tag limits and no client licenses required

Description

groov is Opto 22's web-based operator interface system that is *simple*, *mobile*, and *connects easily* to almost everything.

Simple: *groov* requires only a web browser to build mobile interfaces. Because it puts ready-made gadgets at your fingertips and requires zero programming, it's simple to build, deploy, and view effective and 100% scalable operator interfaces. Using tags from a built-in Data Simulator you can test project ideas without connecting to a live machine or system.



groov operator interfaces work on smartphones, tablets, and other mobile devices.

Mobile: Get the free *groov* View app for Android or iOS for a native experience on your iPhone, iPad, or Android phone or tablet. If you have a different brand device you want to use, from a smartphone to a web-enabled big-screen TV, you can do that, too. You can view your *groov* interface on virtually any device or computer that has a modern web browser. *groov* can augment existing human-machine interfaces (HMIs) and SCADA systems by making important information available at any time and in any location. Using event notification, selected personnel can be alerted anywhere by email or a text message about system events based on multiple conditions.

Connects easily: You can connect *groov* to Modbus/TCP devices and Opto 22 SNAP PAC controllers directly, or to devices from other manufacturers through a tag server that supports OPC UA (Unified Architecture). When connected to a tag server you can monitor and control PLCs and PACs such as Allen-Bradley ControlLogix and CompactLogix, Siemens SIMATIC S7, Schneider Electric Modicon, GE PACSystems, and many more.

Part Numbers

Part	Description
GROOV-AR1-BASE	*groov* Solo: *groov* Box for one Modbus/TCP device or one SNAP PAC
GROOV-SVR-WIN-BASE	*groov* Solo: *groov* Server for Windows for one Modbus/TCP device or one SNAP PAC
GROOV-LIC-PLUS	*groov* Plus: Add to *groov* Solo for multiple Modbus/TCP devices and SNAP PACs
GROOV-LIC-ENT	*groov* Enterprise: Add to *groov* Solo for systems that support OPC UA, in addition to multiple Modbus/TCP devices and SNAP PACs
GROOV-LIC-OPE	*groov* Enterprise: Add to *groov* Plus for systems that support OPC UA, in addition to multiple Modbus/TCP devices and SNAP PACs
Maintenance	
GROOV-MNT1Y	One-year maintenance
GROOV-MNT3Y	Three-year maintenance

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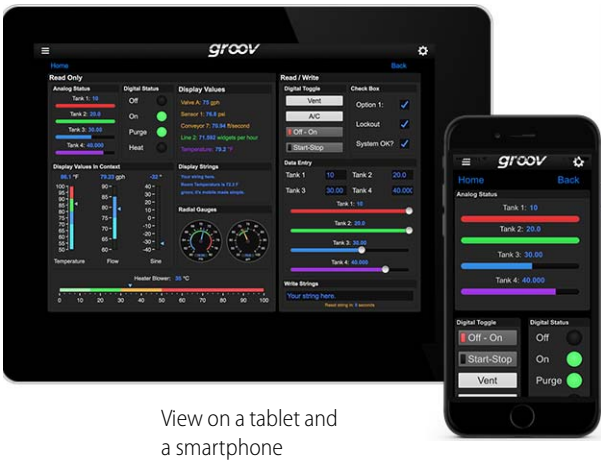
In addition you can use *groov* with databases, SNMP devices, weather stations, OPC-DA servers, or any device or system supported by your tag server. *groov* gets important data from process control, OEM machines, and manufacturing systems into operators' hands. (For more information about OPC UA, go to opcfoundation.org/UA.)

Build and View Your Interface

***groov* Build** provides a collection of gadgets for developing a graphical, on-screen operator interface. It comes with the built-in ability to use tags from a variety of systems and equipment, including Modbus/TCP devices, Opto 22 SNAP PAC controllers, OptoEMU energy monitoring units, and (using an OPC UA tag server) many other companies' systems, devices, and databases. *groov* Build also allows you to manage other devices with a web browser and a network connection to *groov*.

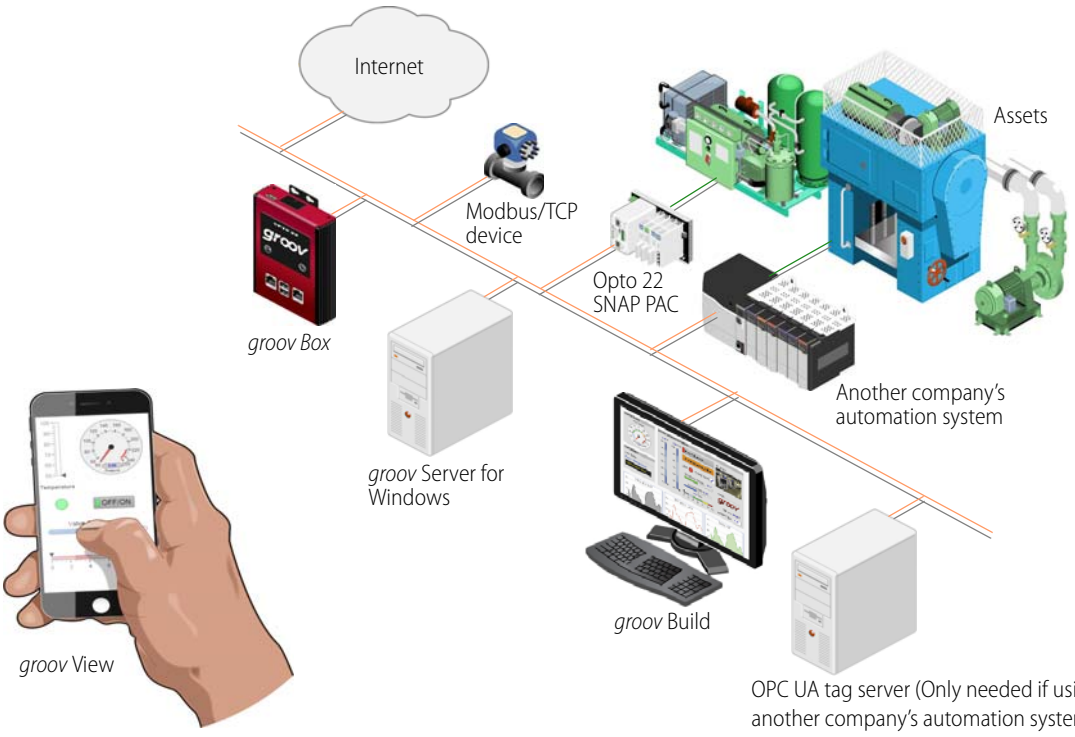


View on a tablet and a smartphone

***groov* Admin** is included with a *groov* Box and provides the tools to back up and restore your project, update software and firmware, set up wired and wireless networking, and more. *groov* Admin is not needed for *groov* Server for Windows because those functions are provided by the Windows PC.

Mobile Device Apps

***groov* View for iOS** and ***groov* View for Android** are free native apps for your tablet or smartphone. You can just use



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your browser to run *groov,* but these apps display View in full-screen mode without the address bar, toolbars, and so on. Also, you can configure the app with your username and password in order to skip the login screen.

View in browser

View in app

The iOS and Android apps are also ideal for OEMs and machine builders who want to use a tablet in kiosk mode as an operator interface to a machine. Kiosk mode locks the device to only run *groov.*

Get *groov* View for iOS.
Get *groov* View for Android.

Using Gadgets

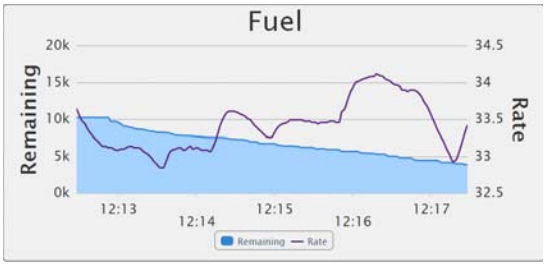
To build your project, you use *groov*'s ready-made gadgets such as the following. Many other gadgets are included.

- A Round Gauge displays a value using a rotating needle and decimal numerical display.
- A Command Button sends a command.
- A Horizontal Slider adjusts a variable.
- A Trend shows how a variable changes in real time. (*groov* does not support historical trending).

Round Gauge

Command Button

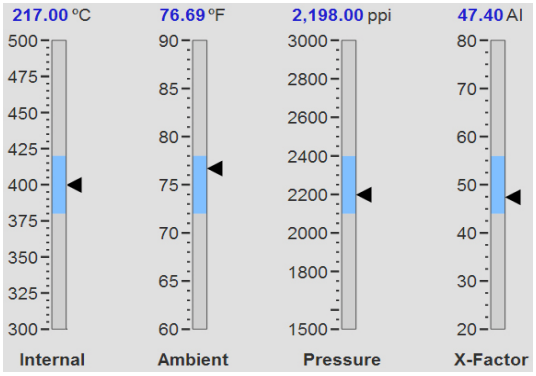
Horizontal Slider



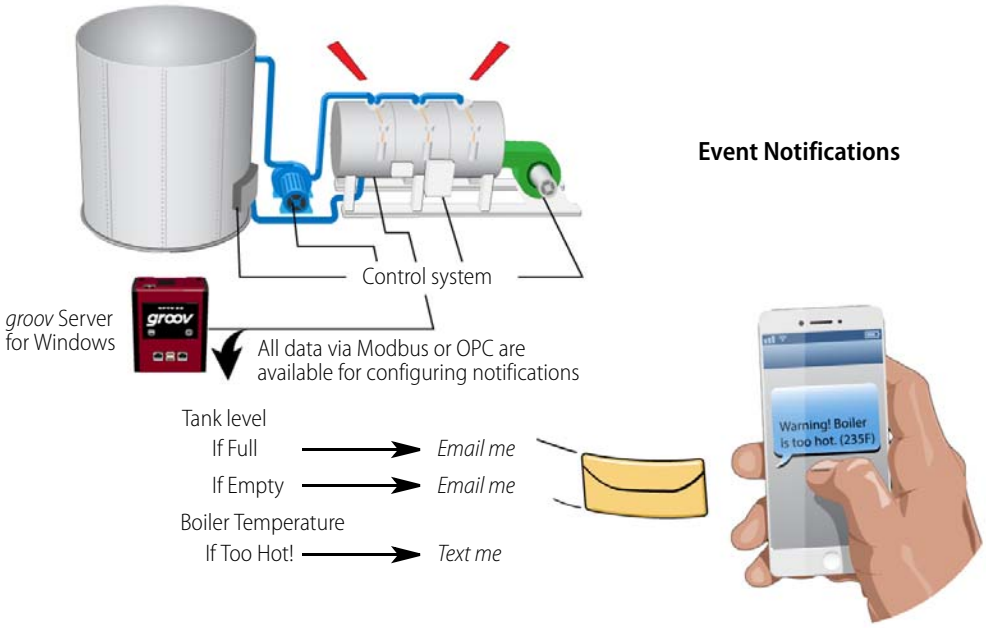
Trend

To set up a gadget, you import tags from your system or device, select one of the imported tags from your tag database, and then associate it with a gadget available for that tag. Once you have set some gadget-specific properties and saved your project, a gadget is immediately ready to use in View.

By building good HMI design into your View project, the *groov* interface helps operators work more effectively. For example, multiple Range Indicator gadgets that clearly show the normal range tell an operator at a glance whether a system is running as it should. For more information on good HMI design, see form 2061, *Building an HMI that Works*.

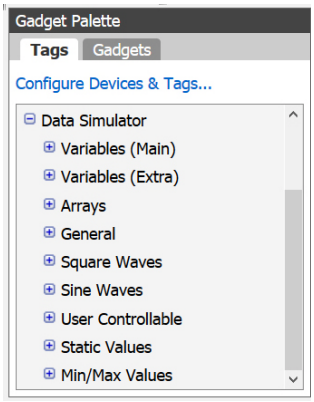


Range Indicators



Data Simulator

A Data Simulator is built in to *groov* that provides simulated dynamic values for onscreen gadgets; for instance, a Graph gadget can use a simulator tag that provides changing values for a sine wave, or a gauge can use a simulator tag with an integer moving between high and low values. This feature can help test onscreen gadgets or simulate tags and variables during screen development.



Event Notifications

groov's event-based notifications alert selected personnel by email or a text message about the status of a device based on one or more parameters.

Email messages can be customized and sent to groups or individuals, and messages can include equipment data, time/date stamps, other key information, and even links back to the *groov* operator interface for one-click access to real-time, visual data for further investigation.

For example, if a machine overheats, stops working, or otherwise meets or exceeds one or more predefined criteria that trigger a notification, a maintenance technician can be notified via email or text message, and can click right to the *groov* screen with more data. With email available at almost any time or location thanks to mobile devices such as smartphones, email notifications get critical data into the right hands right away.

Choose Your *groov*

groov is available as either the standalone *groov* Box hardware appliance or the PC-based *groov* Server for Windows software,.

***groov* Box** (p/n GROOV-AR1-BASE) is an industrially hardened appliance that comes preloaded with *groov* software, including *groov* Build for building operator interfaces, *groov* View for using the interfaces you've built, and *groov* Admin for administering the Box itself. The *groov* Box communicates over a standard Ethernet network or wireless LAN

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(local area network), or both. For more information about the *groov* Box, see form 2104, the *groov Box User's Guide for GROOV-AR1*.

***groov* Server for Windows** (p/n GROOV-SVR-WIN-BASE) includes *groov* software (*groov* Build for building operator interfaces and *groov* View for using them) and is ready for installation on a Microsoft® Windows® PC. Once installed, *groov* Server runs as a service on your computer. For more information on *groov* Server, see form 2078, the *groov Server for Windows User's Guide*.

Whether you store and serve *groov* software on a *groov* Box or on a computer using *groov* Server for Windows, an operator interface you develop with *groov* can be viewed on almost any mobile device or computer.

Cost-effective Options

groov provides a cost-effective way to select the right *groov* platform for your application. Platform choice depends on how many Modbus/TCP-ready devices or Opto 22 SNAP PAC controllers will be connected to *groov*, and if an OPC UA tag server or OPC UA compatible hardware device will be used.

The *groov* platforms are:

- ***groov* Solo**—Using either the *groov* Box (GROOV-AR1-BASE) or *groov* Server (GROOV-SVR-WIN-BASE), connect to one Modbus/TCP device or one Opto 22 SNAP PAC controller. *groov* Solo is ideal for machine builders and OEMs—who need only one controller or system connection—and offers a new lower price for entry-level customers.
- ***groov* Plus**—Add GROOV-LIC-PLUS to your *groov* Solo Box or Server and connect to multiple Modbus/TCP devices and Opto 22 SNAP PAC controllers. *groov* Plus is deal for multi-machine or system applications, or for monitoring and controlling widely dispersed assets.
- ***groov* Enterprise**—Add GROOV-LIC-ENT to your *groov* Solo Box or Server, or add GROOV-LIC-OPE to your *groov* Plus Box or Server and connect to machines, PLCs, and other equipment and systems that support OPC UA, in addition to multiple Modbus/TCP devices and Opto 22 SNAP PAC controllers.

Applications change, and if more Modbus/TCP devices or Opto 22 SNAP PAC controllers are connected to *groov*, or if an OPC UA tag server or OPC UA compatible hardware device is added to the application, it's easy to quickly upgrade from one *groov* platform to the next.

Try Before You Buy

A fully functional version of the software-based *groov* Server for Windows is available to download and try so you can see your own system's data on a smartphone, tablet, or other mobile device. It includes *groov's* built-in Data Simulator, so while you're evaluating *groov* it doesn't have to be connected to a live machine or system.

Just download and install *groov* Server for Windows (groov.com). Simple instructions walk you through software setup, connecting to one or more systems, and building simple interfaces so you can quickly see realtime system data on a mobile device. *groov* Server operates for two hours without a license key.

NOTE: You must log on as an administrator to install groov Server for Windows.

If you need an OPC UA tag server to connect to a third-party controller, Kepware Technologies' KEPServerEX 5 communication platform is also available for download and trial (www.kepware.com). It also operates for two hours without a license key.

System Requirements

For *groov* Box and *groov* Server for Windows

To build operator interfaces with *groov* you'll need:

- Any computer with a modern web browser. This does not have to be a Windows PC.
- One or more of the following:
  - A Modbus device that communicates over Ethernet
  - An Opto 22 SNAP PAC System (SNAP PAC S-series, R-series, or Opto 22 SNAP PAC controllers with firmware R9.2a or newer, running a PAC Control strategy)
  - Another manufacturer's automation system with tags accessible by your tag server. You'll need a tag server that supports OPC UA plus the appropriate drivers for your system installed on the server computer.

***groov* and KEPServerEX**: If you are building a *groov* interface for an OPC UA-compatible system and don't already have a tag server installed, the KEPServerEX communication platform from Kepware Technologies is recommended by Opto 22 and tested to work with *groov*.

Kepware is a leader in OPC communications and has developed hundreds of device drivers to communicate with automation systems, industrial databases, and other software. For more information, go to www.kepware.com/Products/products_OPCServers.asp. See also, www.kepware.com/Support_Center/doc_auto_tag.asp

For *groov* Server for Windows

To install and run *groov* Server for Windows you'll need:

- A PC on the same network as your control device, with one of the following Microsoft operating systems. If you're using an OPC UA tag server, this can be the same computer where the tag server is installed, or a separate computer.
  - Windows® 7 Professional (32-bit or 64-bit)
  - Windows 8 Professional (32-bit or 64-bit)
  - Windows Server 2008 R2
  - Windows Server 2012

  NOTE: .NET Framework 3.5 or greater is required for all operating systems. Use the "Add roles and features" option for Windows Server 2012.
- A minimum of 250 MB available disk space to install *groov* Server for Windows. Additional disk space is required to create projects. (Projects may be created on this PC or on another computer.)

groov Maintenance

groov maintenance lets you get *groov* updates for free, including new features, enhancements, and bug fixes. One year of maintenance is included with your purchase of either a *groov* Box or *groov* Server for Windows. You can purchase additional maintenance for one year (part #GROOV-MNT1Y) or for three years (part #GROOV-MNT3Y). For more information about *groov* maintenance, see form 2130, the *groov Maintenance Technical Note*.

groov Box (GROOV-AR1-BASE) Specifications

Ethernet Communication (wired)	Two independent 10/100/1000 Mbps RJ-45 connectors, each with a separate IP address (separate subnets)
Ethernet Comm (wireless)	(Optional) 802.11 b/g/n provided by a commercial USB WiFi adapter that has been tested and approved by Opto 22
Security (wireless)	WEP64 WEP128 WPA PSK (also known as WPA Personal) WPA2 PSK (also known as WPA2 Personal)
Backup battery	BR2032 button cell lithium battery with a nominal voltage of 2.8 volts. Lasts 8 years at 25 °C. This battery maintains the date and time.
Power Consumption	8-36 VDC, 24 VDC @ 500mA (Power supply included; input 100-240 VAC. Use international adapter if needed.)
Enclosure	Compact and sturdy metal. Fanless operation.
USB	USB 2.0 (three)
Indicators	Ethernet interfaces (2): Link/Activity and Speed System: SYS & PWR
Operating Temperature	0 to 70 °C (32 to 158° F)
Storage Temperature	-20 to +80 °C (-4 to 176° F)
Operating Humidity	10% to 90% relative humidity, non-condensing
Storage Humidity	5% to 95% relative humidity, non-condensing
Agency Approvals	CE, RoHS, DFARS
Warranty	30 months

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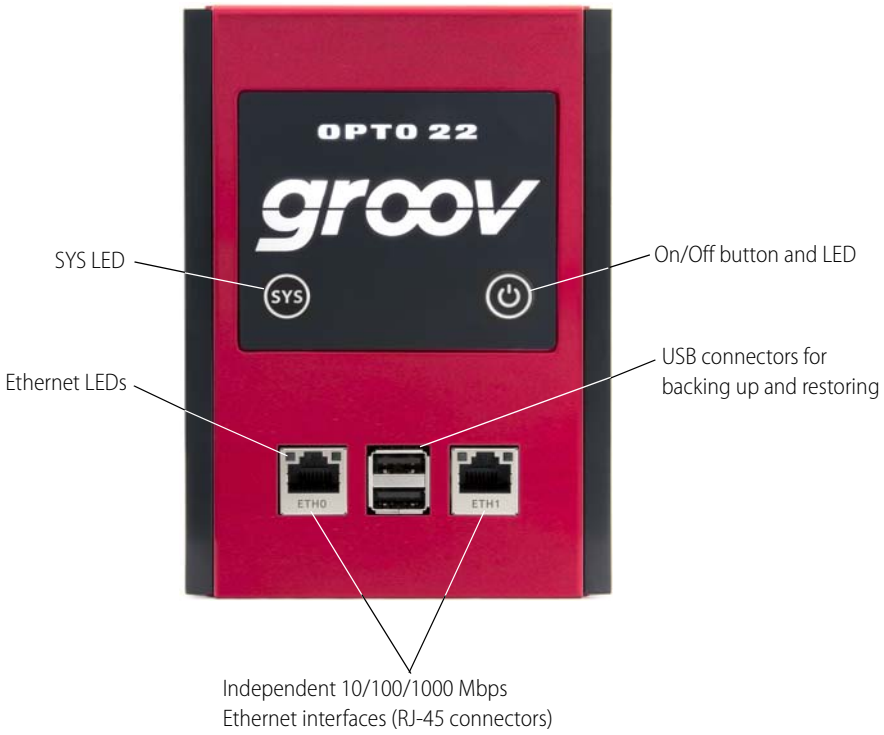
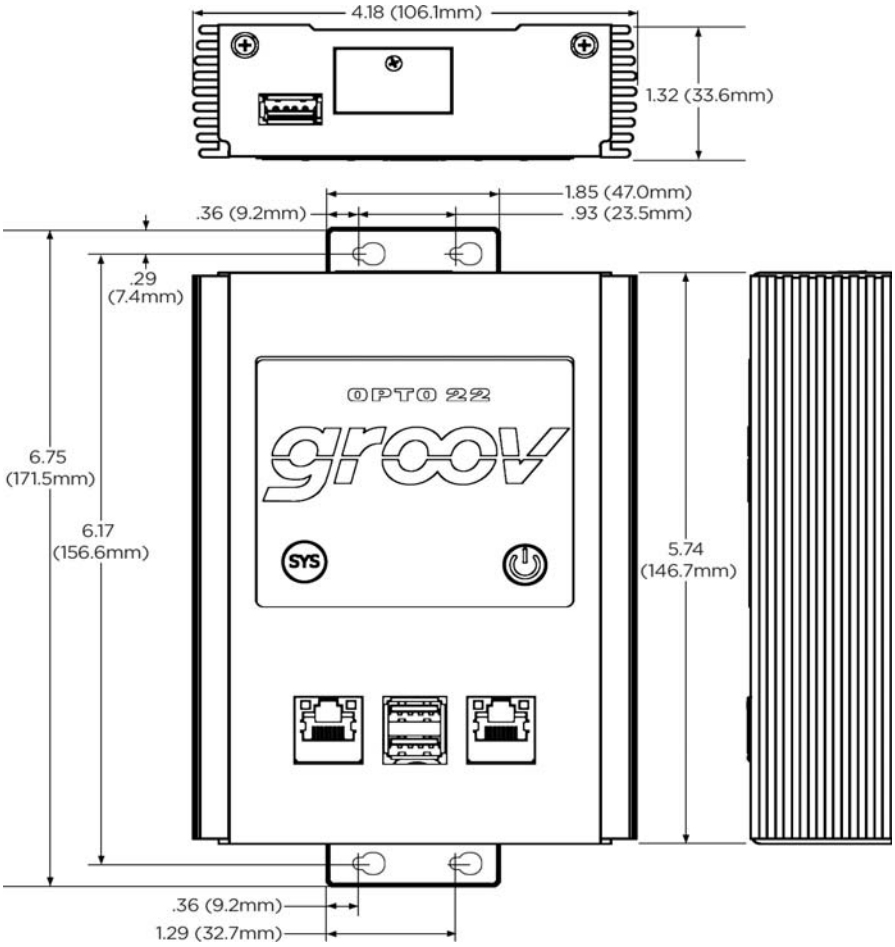
groov Box Connectors and Indicators



* For a list of approved WiFi adapters, see form 2104, the *groov* Box User's Guide for GROOV-AR1.

groov Box Dimensions



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More About Opto 22

Products

Opto 22 develops and manufactures reliable, flexible, easy-to-use hardware and software products for industrial automation, energy management, remote monitoring, and data acquisition applications.

groov

groov puts your system on your mobile device. With zero programming, you can build mobile operator interfaces to monitor and control systems from Allen-Bradley, Siemens, Schneider Electric, Modicon, and many more. Web-based *groov* puts mobile-ready gadgets at your fingertips. Tag them from your existing tag database, and they automatically scale for use on any device with a modern web browser. See groov.com for more information and your free trial.

SNAP PAC System

Designed to simplify the typically complex process of selecting and applying an automation system, the SNAP PAC System consists of four integrated components:

- SNAP PAC controllers
- PAC Project™ Software Suite
- SNAP PAC brains
- SNAP I/O™

SNAP PAC Controllers

Programmable automation controllers (PACs) are multifunctional, modular controllers based on open standards.

Opto 22 has been manufacturing PACs for over two decades. The standalone SNAP PAC S-series, the rack-mounted SNAP PAC R-series, and the software-based SoftPAC™ all handle a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system easily, without the expense and limitations of proprietary networks and protocols. Wired+Wireless™ models are also available.

PAC Project Software Suite

Opto 22's PAC Project Software Suite provides full-featured, cost-effective control programming, HMI (human machine interface) development and runtime, OPC server, and database connectivity software for your SNAP PAC System.

Control programming includes both easy-to-learn flowcharts and optional scripting. Commands are in plain English; variables and I/O point names are fully descriptive.

PAC Project Basic offers control and HMI tools and is free for download on our website, www.opto22.com. PAC Project Professional, available for separate purchase, adds one SoftPAC, OptoOPCServer, OptoDataLink, options for controller redundancy or segmented networking, and support for legacy Opto 22 serial *mistic*™ I/O units.

SNAP PAC Brains

While SNAP PAC controllers provide central control and data distribution, SNAP PAC brains provide distributed intelligence for I/O processing and communications. Brains offer analog, digital, and serial functions, including thermocouple linearization; PID loop control; and optional high-speed digital counting (up to 20 kHz), quadrature counting, TPO, and pulse generation and measurement.

SNAP I/O

I/O provides the local connection to sensors and equipment. Opto 22 SNAP I/O offers 1 to 32 points of reliable I/O per module, depending on the type of module and your needs. Analog, digital, and serial modules are all mixed on the same mounting rack and controlled by the same processor (SNAP PAC brain or rack-mounted controller).

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 only testing a sample of each batch, we can 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, comprehensive technical support for Opto 22 products. Our staff of support engineers represents 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.

Additional support is always available on our website: how-to videos, OptoKnowledgeBase, self-training guide, troubleshooting and user's guides, and OptoForums.

In addition, hands-on training is available for free at our Temecula, California headquarters, and you can register online.

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 or 951-695-3000, or visit our website at www.opto22.com.

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