Features

- Ready-made gadgets let you quickly create a browser-based operator interface to monitor and control your company's assets
- A *groov* operator interface runs on any device with a modern web browser—regardless of manufacturer or operating system
- Secure Sockets Layer (SSL) encryption protects data

Description

groov is Opto 22's simple way to build, deploy, and view effective and scalable operator interfaces to monitor and control systems and equipment using computers and mobile devices. Using only a modern web browser, *groov* lets you quickly and securely build and deploy browser-based interfaces for automation, monitoring, and control applications. These operator interfaces can then be viewed on almost any computer or mobile device regardless of its manufacturer or operating system, including PCs, tablets, smartphones, and even smart high-definition televisions.

An operator interface developed in *groov* takes the regular HMI in a different direction: towards the tablets, smartphones, and other mobile devices that have become part of our home and professional lives. *groov* was developed with proven HMI best practices in mind, providing the tools necessary to build high-performance, intelligible information and control screens. *groov* is not intended to directly replace an HMI, but to augment traditional HMIs by making important information available at any time and in any location.

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)

groov is available in two versions:

***groov* Box** (p/n GROOV-AT1) is an industrially hardened appliance that comes preloaded with *groov* software, including *groov* Build for building HMIs, *groov* View for using the HMIs you've built, and *groov* Admin for administering the Box itself. The *groov* Box communicates over a standard Ethernet network or wireless LAN (local area network), or both. For more information about the *groov* Box, see form 2077, the *groov Box and Admin User's Guide*.

***groov* Server for Windows** (p/n GROOV-SVR-WIN) includes *groov* software (*groov* Build for building HMIs 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 the *groov* Box or on a computer using *groov* Server for Windows, an operator interface you develop with *groov* can be viewed on almost any computer or mobile device.

groov Build

Provides a collection of gadgets for developing a graphical, on-screen operator interface to monitor and manage SNAP PAC controllers and OptoEMU energy monitoring units running PAC Control *strategies*. Build also allows you to manage user accounts and to import multiple strategies to use in the operator interface.

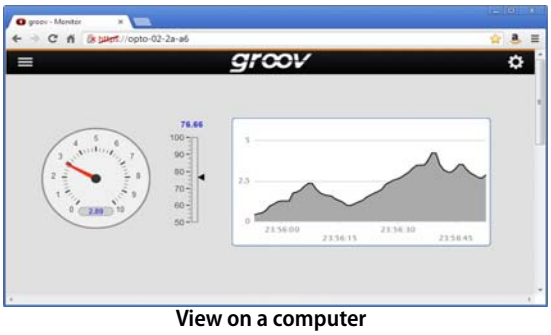
Part Numbers

Part	Description
GROOV-AT1	*groov* Box preloaded with *groov* software
GROOV-SVR-WIN	*groov* Server for Windows, including *groov* software

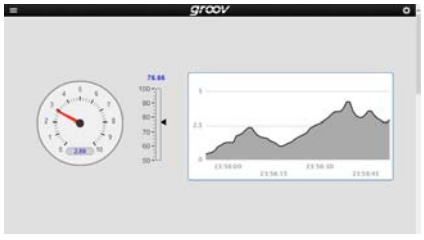
Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • **www.opto22.com**
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • **SUPPORT** 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com

groov View

Runs a *groov* operator interface that resides on a *groov* Box or *groov* Server and can be accessed using View on a computer, smartphone, tablet, or other device with a network connection to the *groov* Box.



View on a computer



View on a tablet

View on a Smartphone

groov Admin

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 included with a *groov* Box.

Optional Mobile Device Apps

***groov* View for iOS** and ***groov* View for Android** are optional apps for your tablet or smartphone that allow you to use View in full-screen mode without the address bar, toolbars, and other things you see in a browser. Also, you can bypass the login screen once you have configured the app with your username and password.

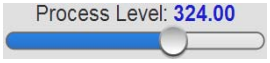
These optional apps are ideal for OEMs and machine builders who want to use a tablet in kiosk mode as an operator interface to a machine.

Using Gadgets

To build your project, you use *groov*'s ready-made gadgets such as the Round Gauge for monitoring data, the Command Button to send a command, and the Horizontal Slider to adjust a variable. Many other gadgets are included.

Round Gauge

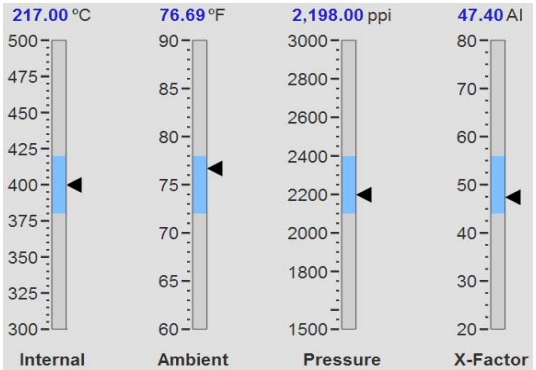
Command Button



Horizontal Slider

To set up a gadget, you import one or more controller strategies, select one of the imported strategy's tags, 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

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • **www.opto22.com**
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • **SUPPORT** 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com

System Requirements

For *groov*

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

- A SNAP PAC S-series, SNAP PAC R-series, or SoftPAC controller with firmware R9.2a or newer, running a control strategy developed in Opto 22's PAC Control.
- Any computer with a modern web browser; Chrome or Firefox recommended. (If you're using *groov* Server, this can be the same computer where Server is installed, or a separate computer. The computer used to build interfaces does not have to be a Windows PC.)

For *groov* Server

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

- A PC on the same network as your SNAP PAC controller, with one of the following Microsoft® operating systems:
  - Windows® 7 Professional (32-bit and 64-bit)
  - Windows 8 Professional (32-bit and 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.

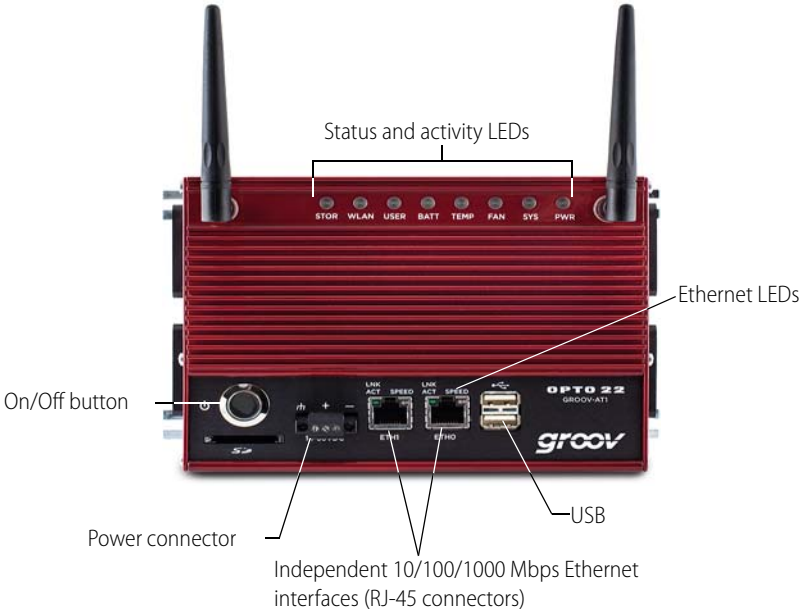
- A minimum of 250 MB available disk space to install *groov* Server. Additional disk space is required to create projects. (Projects may be created on this PC or on another computer.)

groov Box Specifications

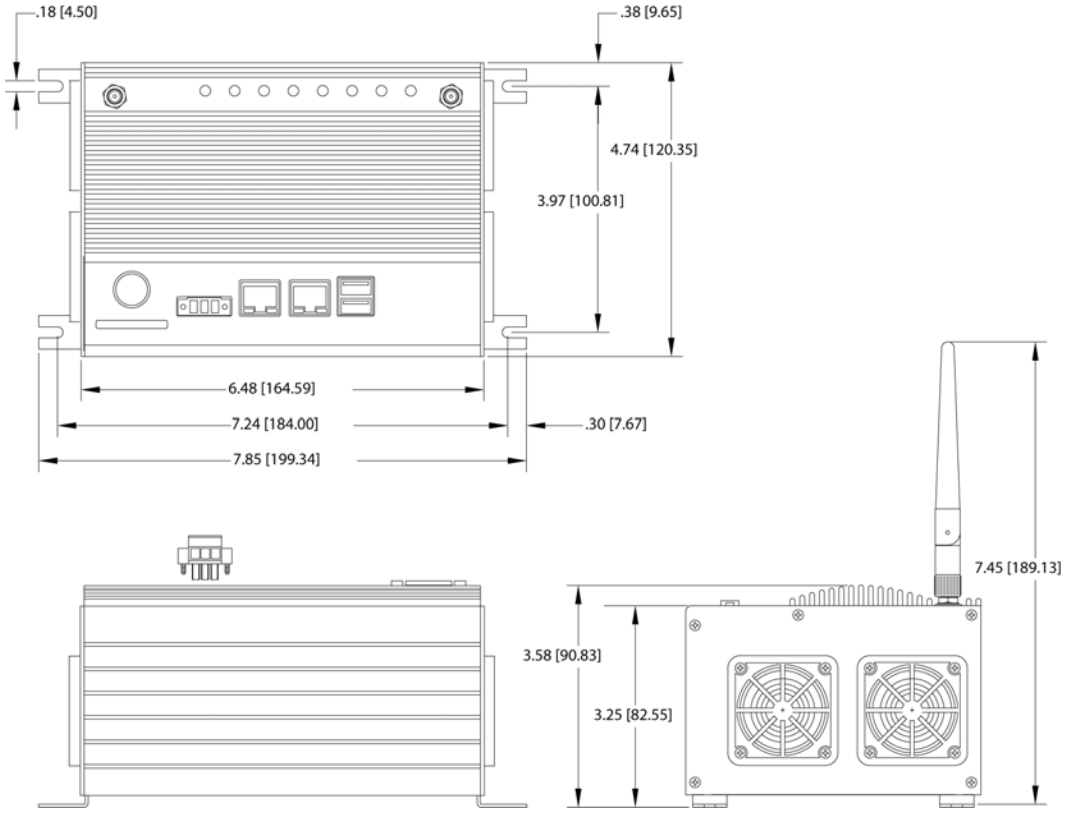
Ethernet Communication (wired)	Two independent 10/100/1000 Mbps RJ-45 connectors, each with a separate IP address (separate subnets)
Ethernet Comm (wireless)	802.11 b/g/n
Security (wireless)	WEP 64 WEP128 WPA PSK (also known as WPA Personal) WPA2 PSK (also known as WPA2 Personal)
Antenna Connector	Reverse polarity SMA (RP-SMA or RSMA)
Power Consumption	14-36 VDC, 24 VDC @ 1 amp (Power supply included; input 100-240 VAC. Use international adapter if needed.)
Enclosure	Sturdy metal case
USB	USB 2.0 (two)
Indicators	Ethernet interfaces(2): Link/Activity and Speed System: STOR, WLAN, USER, BATT, TEMP, FAN, SYS, & PWR
Operating Temperature	0 to 50 °C (32 to 122° F)
Storage Temperature	-20 to 60 °C (-4 to 140° F)
Operating Humidity	10% to 90% relative humidity, non-condensing
Storage Humidity	5% to 95% relative humidity, non-condensing
Agency Approvals	CE, RoHS, DFARS Wireless: U.S., FCC Part 15 Subpart C; Canada, IC RSS-210
Warranty	30 months

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • **www.opto22.com**
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • **SUPPORT** 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com

groov Box Connectors and Indicators



groov Box Dimensions



Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • **www.opto22.com**
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • **SUPPORT** 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com

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.

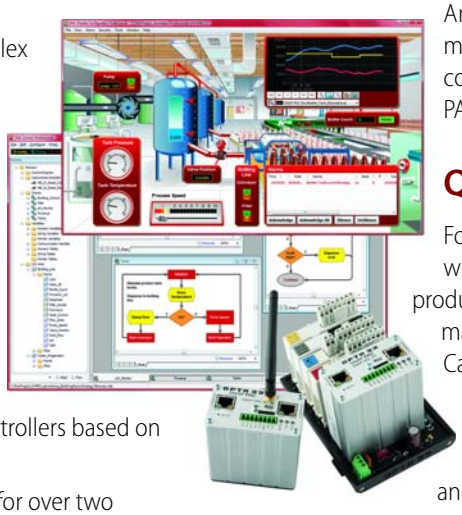
OptoEMU Energy Management System

The easy-to-use OptoEMU Sensor monitors electrical energy use in your facility and delivers detailed, real-time data you can see, analyze, and use in building and control systems. The Sensor can monitor energy data from pulsing meters, electrical panels or subpanels, and equipment. View energy data online using a software service or incorporate the data into your control system for complete energy management.

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.

www.opto22.com

www.opto22.com • Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Form 1335-130530
SALES 800-321-6786 • 951-695-3000 • FAX 951-695-3095 • sales@opto22.com • SUPPORT 800-835-6786 • 951-695-3080 • FAX 951-695-3017 • support@opto22.com