

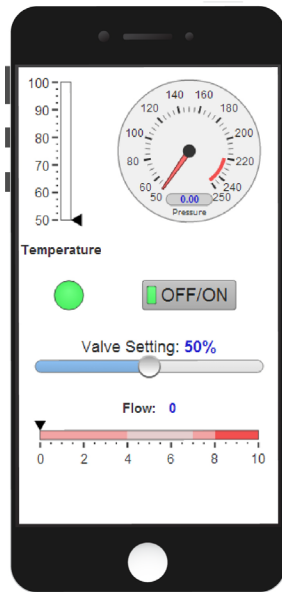
Features

- 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 OPC UA (Unified Architecture) server. When connected to a OPC UA 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	<i>groov</i> Solo: <i>groov</i> Box for one Modbus/TCP device or one SNAP PAC
GROOV-SVR-WIN-BASE	<i>groov</i> Solo: <i>groov</i> Server for Windows for one Modbus/TCP device or one SNAP PAC
GROOV-LIC-PLUS	<i>groov</i> Plus: Add to <i>groov</i> Solo for multiple Modbus/TCP devices and SNAP PACs
GROOV-LIC-ENT	<i>groov</i> Enterprise: Add to <i>groov</i> Solo for systems that support OPC UA, in addition to multiple Modbus/TCP devices and SNAP PACs
GROOV-LIC-OPE	<i>groov</i> Enterprise: Add to <i>groov</i> 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

In addition you can use *groov* with databases, SNMP devices, weather stations, OPC-DA servers, or any device or system supported by your OPC UA 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/JA.)

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 server) many other companies' systems, devices, and databases. *groov Build* also allows you to manage user accounts and to import tags from multiple devices to use in the operator interface.

groov View runs a *groov* operator interface that resides on a *groov Box* or *groov Server* and can be accessed using the *groov View* app on an iOS or Android smartphone or tablet, or on other devices with a web browser and a network connection to *groov*.

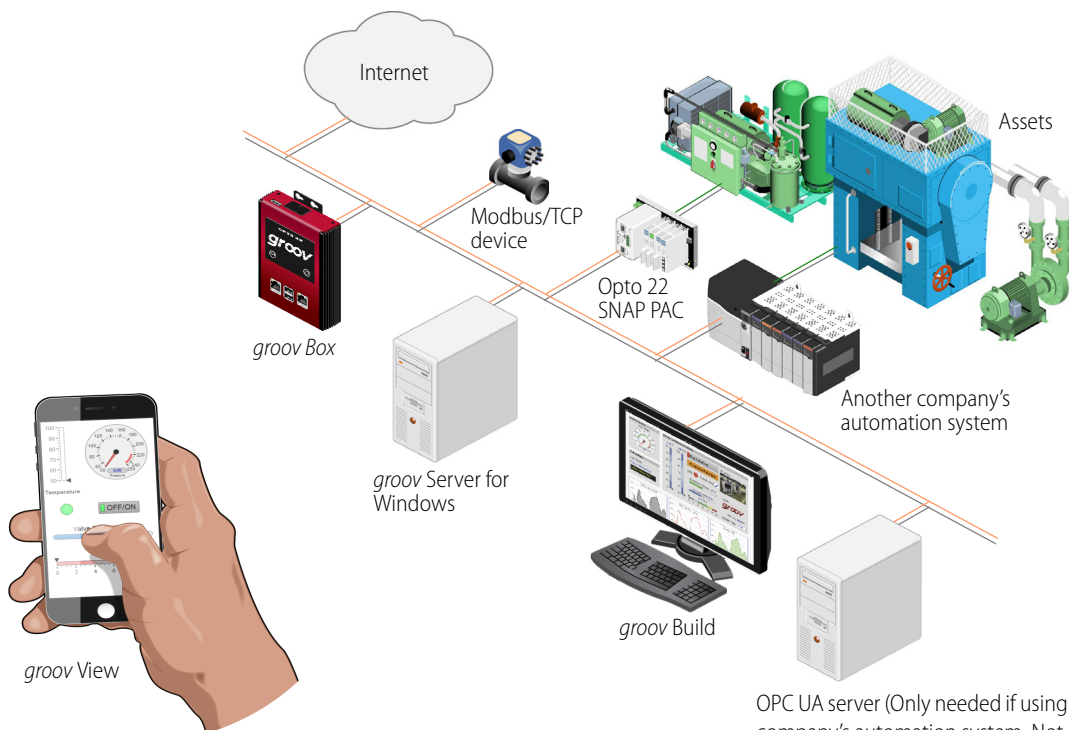


View on a tablet and a smartphone

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



OPC UA server (Only needed if using another company's automation system. Not needed for Opto 22 or Modbus/TCP devices.)

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

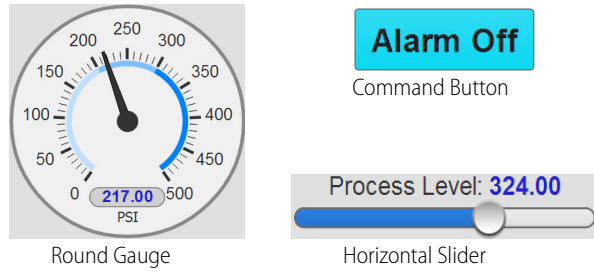
The iOS and Android apps are also ideal for OEMs and machine builders who want to use a tablet in kiosk mode as an operator interface to a machine. Kiosk mode locks the device to only run *groov*.

[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.

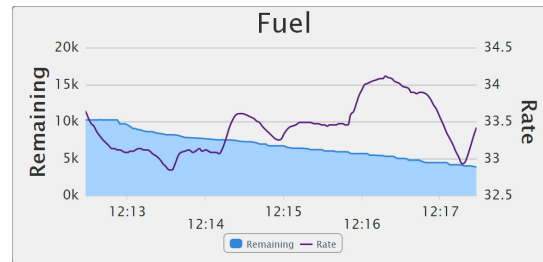
- A Round Gauge displays a value using a rotating needle and decimal numerical display.
- A Command Button sends a command.
- A Horizontal Slider adjusts a variable.
- A Trend shows how a variable changes in real time. (*groov* does not support historical trending).



Round Gauge

Alarm Off
Command Button

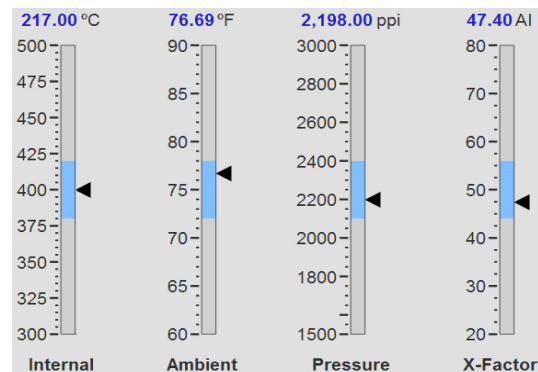
Process Level: 324.00
Horizontal Slider



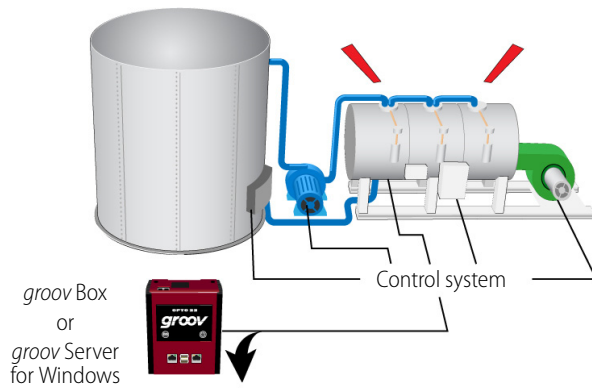
Trend

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 Opto 22 [form 2061](#), *Building an HMI that Works*.



Range Indicators



Event Notifications

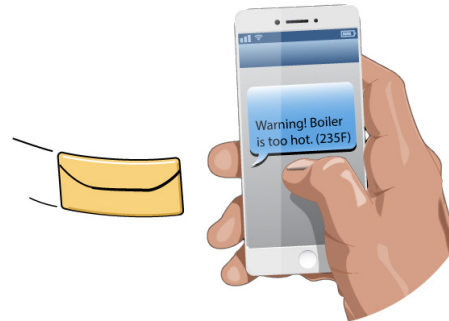
All control system data is available for configuring notifications.

Tank level

If Full → Email me
If Empty → Email me

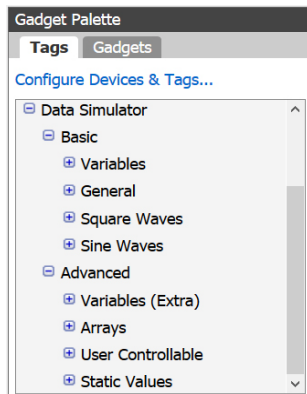
Boiler Temperature

If Too Hot! → Text me



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.



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 (local area network), or both.



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.

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 Opto 22 [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 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 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 ideal 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 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 want to connect to real data from an OPC UA server, 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, with firmware R9.2a or newer or SoftPAC, running a PAC Control strategy)
 - Another manufacturer's automation system with tags accessible by your OPC UA server, 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 OPC UA 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 server, this can be the same computer where the OPC UA server is installed, or a separate computer.
 - Windows® 10 Professional (32-bit or 64-bit)
 - Windows 8 Professional (32-bit or 64-bit)
 - Windows 7 Professional (32-bit or 64-bit)
 - Windows Server 2012
 - Windows Server 2008 R2

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 Opto 22 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



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

