OPTO 22

groov SERVER FOR WINDOWS

Features

> Serve an easy-to-build, web-based HMI from a Microsoft® Windows® computer

> Mix data from different manufacturers' systems, devices, and software on the same page

> Authorize users to access your operator interface from computers and mobile devices

> Incorporate trending, event logging, and operator notifications

DESCRIPTION

Opto 22's *groov*® Server for Windows (GROOV-SVR-WIN-BASE) runs on a Microsoft® Windows® computer and provides *groov* View software for building and viewing operator interfaces. The interface you build in *groov* View gives your authorized users visualization into automation systems, software, databases, and devices of all kinds.

From pumps and processes, to production data, to the weather, your world is full of things you need to control, view, or monitor. With browser-based *groov* View, you can easily build an operator interface to see and interact with exactly what you need. Show data from sensors and automation systems, cloud applications, databases, web services, and more. View the interface you build on any brand device, from a smartphone to a computer to a web-enabled big-screen TV.

To build your interface, just drag, drop, and tag. No tag limits; no user licenses required. Authorize users and groups. Define events based on one or more conditions, and automatically alert selected personnel anywhere when events occur. *groov* View can augment existing human-machine interfaces (HMIs) and SCADA systems by making specific data visible to authorized users at any time, anywhere.

groov Server for Windows is ideal for OEMs (original equipment manufacturers) or others who already have a Windows PC in place and want to use it for IIoT (industrial internet of things) projects.* Once installed, *groov* Server runs as a service on the computer. It can be used in conjunction with your own IIoT software, such as Ignition Edge® (available from Inductive Automation®) and Node-RED (available from nodered.org). You will need to provide your own security for the PC and its network.

groov Server brings data from process control, OEM machines, manufacturing and building systems, and the IoT to the people and systems that need it.

* NOTE: If you don't have a Windows PC in place, you may find a groov EPIC edge programmable industrial controller more useful for your IIoT projects. EPIC serves a groov View HMI while also providing real-time control, built-in IIoT software, and additional security features.

Security

When you're sending data to and receiving data from automation equipment and devices, security is critical. In addition to the security you provide in your PC, network, and firewall, *groov* View offers four important ways to keep your data safe.

Encryption. All communications between your users and *groov* Server are encrypted using the latest TLS/SSL methods. This is the same encryption your bank uses.

Authentication. Usernames and passwords (or API keys for software users) are required for all users and are set up in *groov* View by an Admin user. Make sure your users understand the importance of keeping their passwords and API keys secret.

Access limitations. In *groov* View, security levels for users (Admin, Editor, Operator, and Kiosk User) determine what each of your users can and cannot see and do in the operator interface. You also have the option to hide gadgets for users on phones while showing them to users on desktops and tablets, or vice versa.

In addition, you can assign your users to groups and limit each group's access to specific pages in your *groov* View interface. For example,

Part Numbers

Part	Description
GROOV-SVR-WIN-BASE	*groov* Server for Windows for Modbus/TCP devices, *groov* EPIC processors, *groov* RIO units, SNAP PAC controllers and I/O units, and *groov* View Data Stores; includes *groov* View only.
GROOV-MNT-10YR	*groov* View ten-year maintenance (free)
GROOV-MNT-3YR	*groov* View three-year maintenance (free)
GROOV-MNT-1YR	*groov* View one-year maintenance (free)

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pages for a group called Supervisors could show KPIs for production, while pages for a group called Operators might include controls.

Passcodes for mobile apps. If you use the free mobile device apps *groov* View for iOS and *groov* View for Android, you can also set up a passcode. Even if an unauthorized person has the phone or tablet, they have to know the passcode to see the *groov* View interface.

groov VIEW: BUILD AND VIEW YOUR INTERFACE

To build your *groov* View operator interface, you have a library of pre-built gadgets you can simply drag and drop onto the screen. Then you import and use tags from systems and equipment, including Modbus/TCP devices, Opto 22 *groov* EPIC processors and *groov* RIO units, SNAP PAC controllers and I/O units, and many other manufacturers' systems, equipment, and databases. You can also manage user accounts and set up email or text message event notifications in Build mode.

The *groov* View operator interface you build resides on a *groov* EPIC controller, *groov* Server, or a legacy *groov* Box. Your human users access the interface using any device with a web browser and a network connection to *groov* View running on one of those *groov* devices, or using the free *groov* View app on an iOS or Android smartphone or tablet.

Using Gadgets

To build your project, you use *groov* View's ready-made gadgets. Here are just a few examples; 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 Slider adjusts a variable.
- A Trend shows how variables change in real time.

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

groov Server for Windows Features

Feature	GROOV-SVR-WIN-BASE
Format:	
Software that runs on Windows PC	●
Connect to:	
Multiple Modbus/TCP devices, *groov* EPIC processors, groov RIO units, SNAP PAC controllers and I/O units, and *groov View* Data Stores	●
OPC-UA devices (external OPC-UA server required)	●
Handle data:	
API to *groov* View Data Stores	●
Data simulator	●
Visualize:	
Browser-based operator interface creation for PCs and mobile devices	●
Drag-drop-tag construction with built-in gadget library	●
Users and groups	●
Event logging with email and text notifications	●
Trending (up to 5 years)	●
Interface viewable on all sizes/brands	●
Security: HTTPS/TLS encryption & authentication	●
Self-signed or Certificate Authority certificates	●
Unlimited users	●

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Round Gauge

Command Button

Slider

Trend
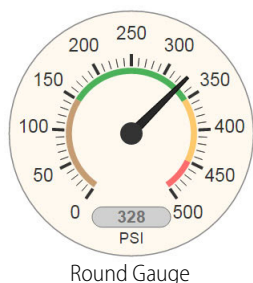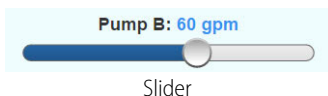
Many useful drawings (manufacturing, processing, building, and commercial equipment; field sensors and devices; and much more) are available in the free SVG Image Library on the Opto 22 website (follow link or search on Demo: SVG Image Library). Select the drawing you want, choose colors, rotate if necessary, and download it ready to use in your *groov* View interface.

Event Logging and Notifications

groov View logs events you configure, and you can view the current status of events as well as the event log. You can sort and filter what you want to see in the log and also download it as a text file. The log holds 200 MB of the most recent events (typically over a million entries).

Each event you configure is based on one or more conditions, such as a value equal to a value you specify, or a value outside a range you determine. When you set up multiple conditions for one event, the event can be configured to occur when all of them are true or when any one is true.
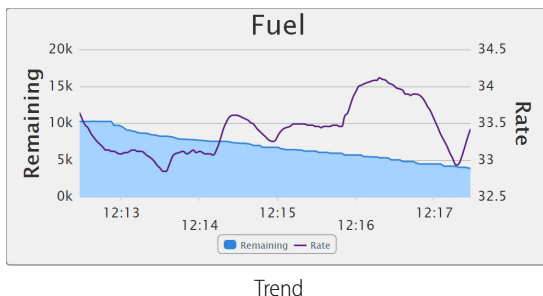
A number of gadgets give you display choices. For example, a button can be skinned with an image. Or a link to another page or a URL can appear as a text link, a button, or an image. The Image Indicator gadget uses multiple images to display current status or value.

Gadgets and text in your interface default to usable sizes and colors, so you can build rapidly. But you also have full control over graphic and text sizes and appearance. You can alter layouts to suit a PC/tablet or a smartphone. You can also brand your operator interface with your own logo and colors.

Changing the interface is as easy as building it, and both interface changes and software updates are automatically pushed out to users.

.Image Library

All images used in your *groov* View project are stored in the Image Library. The same image can be used in multiple places, and if you change the image, it is updated everywhere it is used.

It's easy to add images to the Library or delete them when no longer needed. The Image Library accepts many kinds of image files, including photos, drawings, and logos with file types BMP, GIF, PNG, JPG, and SVG. For each image, the Library includes the image itself plus filename, size, and date added. You can also add notes if you wish.

groov View operator interfaces work on computers, phones, tablets, even web-enabled HDTVs, and can be branded with your own logo and colors.

You can also choose to alert selected personnel when an event occurs. These event-based notifications are sent via email (or text message, through most carriers). Event messages can be customized and sent to groups or individuals.

Messages can include equipment data, time/date stamps, other key information, and even links back to the *groov* View 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, a maintenance technician can receive a notification and click right to the *groov* View screen for more data.

With email available at almost any time or location thanks to mobile devices, notifications can get critical data into the right hands right away.

Trending

Trending in *groov* View is real time, but can extend over a long period of time. When you create a trend, you choose Classic or Interactive. Both types of trends can include up to 4 pens on 2 axes.

- *Classic* trends show up to 7 days' worth of data.
- *Interactive* trends can show much more data over a period of up to 5 years, with the ability to zoom in on a smaller set of data to see details.

Trend data can be downloaded for logging.

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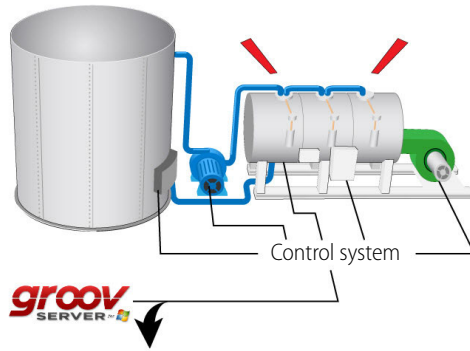
Event Logging and Notifications

All control system data is available for configuring events. You can base an event on one or multiple conditions. When an event occurs, you can optionally notify selected users by email (or text message, through some carriers).

groov Server for Windows logs the events you configure.

See, sort, filter, and download the Events Log in *groov* View.

Tank level
If Full → *Email me*
If Empty → *Email me*
Boiler Temperature
If Too Hot! → *Text me*

Control system

Warning! Boiler is too hot. (235F)

Mobile Device Apps

***groov* View for iOS** and ***groov* View for Android** are free native apps for your tablet or phone. You can run *groov* View in your browser, but these apps display your interface in full-screen mode.

View in browser   View in app

These native apps add other advantages as well. You can add another layer of security by setting up passcodes in the app. If you have more than one *groov* View project, you can easily access all of them from the app. The iOS app is also ideal for OEMs and machine builders who

want to use a tablet as an operator interface to a machine. You can lock the device so it runs only *groov* View.
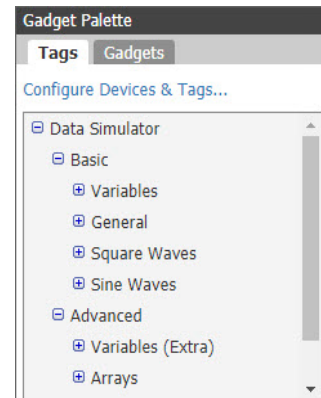
Get groov View for iOS.
Get groov View for Android.

DATA SIMULATOR

A Data Simulator built into *groov* View provides simulated dynamic and fixed values for onscreen gadgets, so you can explore or test before connecting to real-world systems and equipment.

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.

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groov View on a tablet and a smartphone

DATA STORE

Another way to visualize and use data from IoT devices, databases, cloud services, and more in your *groov* View operator interface is to use a Data Store. You can create a Data Store device in *groov* View and securely place or access data there using the Data Store's RESTful API and the programming language of your choice.

Your *groov* View users can then view, control, see trends, and receive notifications on this data. You can also use Node-RED as an easy way to wire these data sources together.

TRY BEFORE YOU BUY

See the Demo

See *groov* in action at demo.groov.com. Log in using the username `trial` and password `opto22`. Explore the demo and then download the *groov* Demo Project for examples and help building your own interface elements.

Try it yourself

A fully functional version of *groov* Server for Windows is available to download and try, so you can see your system data on your phone, tablet, or computer. Connect to a Modbus/TCP device, *groov* RIO unit, SNAP PAC controller, SNAP PAC I/O unit, or *groov* Data Store; or use the built-in Data Simulator to evaluate *groov* View without connecting to a live machine or system.

If you want to connect to real data from an external OPC-UA server and don't have one, Kepware Technologies' KEPServerEX® communication platform is available for trial at www.kepware.com.

To try *groov* View, download and install groov Server for Windows. Simple instructions walk you through software setup, connecting to

one or more systems, and building a simple interface so you can quickly see realtime data on a mobile device.

NOTE: You must log into your computer as an administrator to install groov Server for Windows.

groov Server operates for two hours without a license key. You can restart it as needed. When you purchase a *groov* product, the project you built during the trial will continue to work. You can also develop your *groov* View operator interface on *groov* Server and later move your project to a *groov* EPIC.

SYSTEM REQUIREMENTS

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

- Any computer with a web browser (does not have to be a Windows PC)
- One of the following:
  - *groov* EPIC
  - *groov* Server for Windows
  - a legacy *groov* Box Edge Appliance

You can connect to any of the following devices or services to get and send data:

- A Modbus/TCP device
- A database, online service, or software program to get data from or put data into a Data Store using the *groov* View API
- An Opto 22 *groov* EPIC processor or SNAP PAC controller (SNAP PAC S-series, R-series, or SoftPAC, with firmware R9.2a or newer), running a PAC Control strategy
- An Opto 22 *groov* EPIC I/O unit
- An Opto 22 *groov* RIO unit
- An Opto 22 SNAP PAC I/O unit
- (*groov* EPIC or legacy *groov* Box only) A database, cloud application, API, or serial device accessible via a Node-RED node. (For a *groov* Box, see requirements in the user's guide.)
- OPC UA-compatible automation system or equipment. Ignition Edge supplies an internal server and drivers for *groov* EPIC or a legacy *groov* Box. An external OPC-UA server is required for *groov* Server; an external server and additional drivers may be required for your equipment.

groov **Server for Windows requirements**

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, it can be on the same or a different computer.
  - Windows® 10, 8, or 7 Professional (32-bit or 64-bit)

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– Windows Server® 2012 or 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 for the project you build.

If you are using *groov* Server to build an interface for an OPC UA compatible system and don't have an OPC UA server installed, the KEPServerEX communication platform from Kepware Technologies is recommended by Opto 22 and tested to work with *groov* Server. For more information: www.kepware.com/Products/products_OPCServers.asp. Also see: www.kepware.com/Support_Center/doc_auto_tag.asp

groov VIEW MAINTENANCE

Maintenance lets you get *groov* View updates, including new features, enhancements, and bug fixes. One year of maintenance is included with your purchase of *groov* Server for Windows. You can renew maintenance for free, for up to 10 years. For more information about *groov* View maintenance, see the *groov View Maintenance Technical Note* (form 2130).

PRODUCTS

Opto 22 develops and manufactures reliable, easy-to-use, open standards-based hardware and software products. Industrial automation, process control, remote monitoring, data acquisition, and industrial internet of things (IIoT) applications worldwide all rely on Opto 22.

groov RIO®

groov RIO edge I/O offers a single, compact, PoE-powered industrial package with web-based configuration and IIoT software built in, support for multiple OT and IT protocols, and security features like a device firewall, data encryption, and user account control.

Standing alone, groov RIO connects to sensors, equipment, and legacy systems, collecting and securely publishing data from field to cloud. Choose a universal I/O model with thousands of possible field I/O configurations, with or without Ignition from Inductive Automation®, or a RIO EMU energy monitoring unit that reports 64 energy data values from 3-phase loads up to 600 VAC, Delta or Wye.

You can also use groov RIO with a Modbus/TCP master or as remote I/O for a groov EPIC system.

groov EPIC® System

Opto 22's groov Edge Programmable Industrial Controller (EPIC) system gives you industrially hardened control with a flexible Linux®-based processor with gateway functions, guaranteed-for-life I/O, and software for your automation and IIoT applications.

groov EPIC Processor

The heart of the system is the groov EPIC processor. It handles a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

In addition, the EPIC provides secure data communications among physical assets, control systems, software applications, and online services, both on premises and in the cloud. No industrial PC needed.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution color touchscreen. Authorized users can manage the system locally on the touchscreen, on a monitor connected via the HDMI or USB ports, or on a PC or mobile device with a web browser.

groov EPIC I/O

groov I/O connects locally to sensors and equipment. Modules have a spring-clamp terminal strip, integrated wireway, swing-away cover, and LEDs indicating module health and discrete channel status. groov I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

groov EPIC Software

The groov EPIC processor comes ready to run the software you need:

- Programming: Choose flowchart-based PAC Control, CODESYS Development System for IEC61131-3 compliant programs, or secure shell access (SSH) to the Linux OS for custom applications
- Node-RED for creating simple IIoT logic flows from pre-built nodes
- Efficient MQTT data communications with string or Sparkplug data formats
- HMI: groov View to build your own HMI viewable on touchscreen, PCs, and mobile devices; PAC Display for a Windows HMI; Node-RED dashboard UI

- Ignition or Ignition Edge® from Inductive Automation (requires license purchase) with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT communications

Older products

From solid state relays, to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and working hard at thousands of installations worldwide. You can count on us for the reliability and service you expect, now and in the future.

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 testing a sample of each batch, we can afford to 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 technical support for Opto 22 products from engineers with 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.

Support is always available on our website, including free online training at OptoU, how-to videos, user's guides, the Opto 22 KnowledgeBase, and OptoForums.

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** (toll-free in the U.S. and Canada) or **+1-951-695-3000**, or visit our website at www.opto22.com.

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