

WELCOME TO PAC PROJECT R10.0

Welcome to version R10.0 of Opto 22's PAC Project™ software suite for industrial automation, remote monitoring, and data acquisition applications.

PAC Project comes in two forms: PAC Project Basic and PAC Project Professional.

PAC Project Basic

PAC Project Basic is included in your purchase of a *groov* EPIC processor or SNAP PAC controller, and can also be downloaded for free from our website, www.opto22.com. PAC Project Basic is all you need for most monitoring and control purposes. It includes:

- **PAC Control Basic™** for developing control programs (*strategies*) to automate processes, monitor equipment, and acquire data from processes and equipment.
- **PAC Display Basic™** for creating HMIs (human-machine interfaces) for technicians and operators to use.
- **PAC Manager™** for configuring and maintaining SNAP PAC controllers, brains, and I/O.

PAC Project Professional

PAC Project Professional is designed for more complex projects, especially those requiring OLE for Process Control (OPC), database connectivity, redundant networks, controller redundancy, and legacy hardware support.

PAC Project Professional can be purchased as a suite or you can purchase its components individually:

- **PAC Control Professional™** for developing control programs.
- **PAC Display Professional™** for creating HMIs.
- **PAC Manager™** for configuring and maintaining SNAP PAC hardware.
- **OptoOPCServer™**, an OPC 2.0-compliant server for serving data from *groov* I/O and SNAP I/O to OPC clients, including PAC Display and OptoDataLink. OptoOPCServer is strongly recommended for multiple seats of PAC Display and OptoDataLink communicating with the same controller(s).
- **OptoDataLink™** for exchanging data between databases (including Microsoft® SQL Server®, MySQL®, and Microsoft Access®), text files, and ODBC-compliant applications such as Microsoft Excel®.
- **SoftPAC™**, a software-based programmable automation controller for PC-based control
- **PAC Project Tools**, a set of utilities that includes OptoVersion, OptoDisplay Converter, PAC Message Viewer, PAC Sim, PAC Terminal, and the PAC Project Installer.

More Information on PAC Project Basic and Pro

PAC Project works with all *groov* EPIC processors, *groov* I/O modules, SNAP PAC controllers and brains, and SNAP I/O modules. Free product support is included with both PAC Project Basic and PAC Project Professional. Free training and free pre-sales engineering help are also available.

- For product support, see [“For Help” on page 6](#).
- For training, see our website at www.opto22.com, or email training@opto22.com.
- For pre-sales engineering, call 1-800-321-6786 (toll-free in the U.S. and Canada) or 1-951-695-3000.

For computer memory and operating system requirements, see [“Installation Requirements” on page 5](#).

For more information about PAC Project Basic and Professional, see:

- [PAC Project Software Suite Data Sheet](#) (Opto 22 form 1699)
- [PAC Project Basic and Professional Comparison Chart](#) (Opto 22 form 1681)

Notes for Customers with Older Systems (ioProject and FactoryFloor)

PAC Project is very similar to older Opto 22 software, but there are important things to know **before you install** and use it. If you're moving to the SNAP PAC System from legacy systems, be sure to read these documents first:

- [PAC Project 8.0 Release Notes](#), form 1680. See the section, "Notes for Current ioProject Customers."
- [SNAP PAC System Migration Technical Note](#), form 1688.
- (FactoryFloor customers only) [FactoryFloor to PAC Project Migration Technical Note](#), form 1692.

NOTE: If you are using a SNAP-LCE or Ultimate controller, do not upgrade to PAC Project R10.0. Instead, use either PAC Project 8.0 or ioProject. In order to use these controllers with PAC Project 8.0, use controller firmware version 7.2 and Ethernet brain firmware version 7.0 or higher. If you want to use PAC Project software version 8.1 or higher, you must use SNAP PAC controllers instead.

NEW FEATURES AND ENHANCEMENTS

PAC Project R10.0 includes a number of new features and enhancements to make creating, maintaining, and running your *groov* EPIC and SNAP PAC systems easier than ever, including **support for IPv6 addresses**¹ (in addition to IPv4 addresses and hostnames). PAC Control, PAC Display, and PAC Manager also include other new features and enhancements:

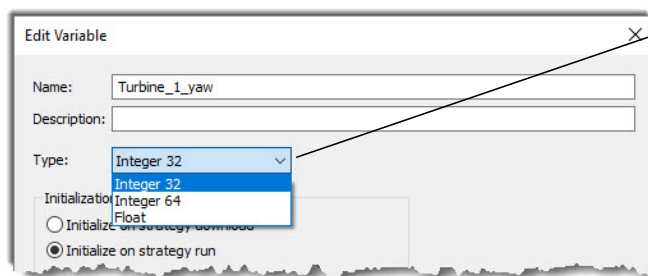
PAC Control

Support for *groov* EPIC. PAC Project now supports Opto 22's new *groov* Edge Programmable Industrial Controller and *groov* I/O modules. This means your PAC Control strategies can now run on *groov* EPIC processors, and can access all the features of *groov* I/O units.

Automatically add *groov* I/O modules and channels to a strategy. To save you time and reduce the risk of configuration errors, PAC Control now automatically detects *groov* I/O units on the same network and subnet as the computer running PAC Control, and can automatically add the I/O modules and channels to the strategy. You can choose to create the channels with a pre-defined name format, or you can customize the naming format.

Change Integer Variable to Float, or Float to Integer.

If you've ever discovered that an integer variable should have been configured as a floating point number, this new enhancement's for you: to change an Int 32 or Int 64 variable to a float (or vice versa), you just select a new Type from the list in the Edit Variable dialog box.

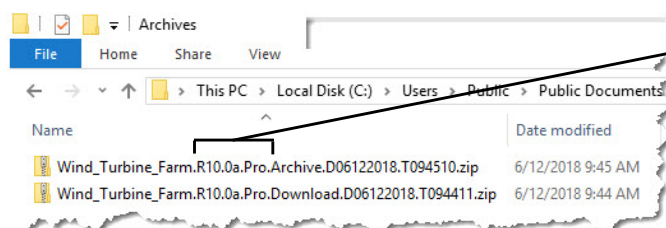


In PAC Control, you can now change integer variables to floats (and floats to ints) by changing the variable's type.

1. IPv6 addresses have a length of 128 bits. Example: aa00::9b00:3c9d:ef47:4e33.
IPv4 addresses have a length of 32 bits. Example: 10.20.30.40

Public tag access. Public tag access is a new option that allows applications using the Sparkplug specification for MQTT (such as Ignition® by Inductive Automation) or the *groov* EPIC and SNAP PAC Driver module by Cirrus Link Solutions® to read and write to PAC Control tags. By default, PAC Control disables public access to tags. You can allow public access when you add or edit a point or variable in a PAC Control strategy. You can make the tag readable, or readable and writable. Some variables also let you select the data type to be represented in the other system. For example, you can choose to send the value of a specific Integer 32 variable to the other system as an Int 32, or as a Boolean (where 0 is False and non-zero is True), or you can send only one of the Int 32's bits to represent a Boolean.

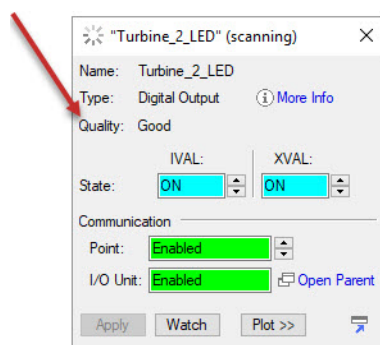
Improvements to strategy archives. To make troubleshooting easier, watch windows are now included in strategy archive files (File > Archive Strategy). And to support backward compatibility, PAC Control now automatically creates a strategy archive file when you open a strategy in a higher (newer) release of PAC Control. This means you have a backup version of the strategy in case you want to open it in an earlier PAC Control release. Also, archive file names now include the PAC Control version and release number, so you can easily tell which version of PAC Control to use when opening the archive.



Strategy archive and download files include the PAC Control release number and version (Basic or Pro)

New commands. PAC Control now offers handy commands to get information you need, such as the number of charts currently running (useful when optimizing your strategy), and the state and status of a redundant controller. Other new commands also help you track down quality errors reported by *groov* I/O modules, get the values for TPO percent and TPO period, and get the strategy's file name.

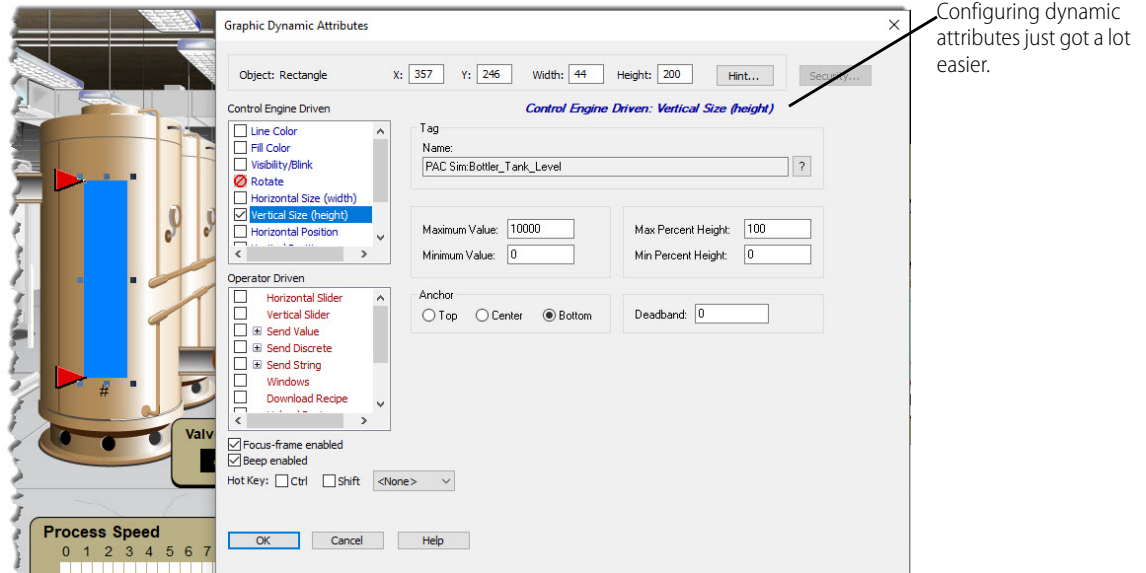
View quality indicators for *groov* I/O channels. When scanning points in Debug mode, PAC Control displays a new Quality field for *groov* I/O modules that support quality indicators. A quality indicator is a brief description of a deviation between the value read by a *groov* I/O channel and the normal range of values for the channel; for example, a quality indicator can report that a digital output is on but current isn't flowing (implying an open circuit or blown fuse). For a list of *groov* I/O modules that support quality indicators, see the *PAC Control User's Guide* (form 1700).



- For more information about the *groov* EPIC and SNAP PAC Driver module, see the Cirrus Link documentation web-site: <https://docs.chariot.io/display/CLD/Opto+22+groov+EPIC+and+SNAP+PAC+Driver>.

PAC Display

Streamlined configuration for graphic dynamic attributes. Dynamic attributes and their configuration options now appear in the same dialog box. Fewer pop-up windows means less time spent configuring graphical objects.



Configuring dynamic attributes just got a lot easier.

Because the process of configuring dynamic attributes has changed a little with this new enhancement, click the Help button on the Graphic Dynamic Attributes dialog box or check out the updates to the “Using Animated Graphic Objects” chapter in the [PAC Display User's Guide](#) (form 1702) for help using the new feature.

Also, you can set PAC Display Configurator to use the old-style dialog boxes to configure dynamic graphics, if you prefer. Or, you can switch between the two styles while you're deciding which method you like better.

Configure scroll bars for PAC Display windows. You can now configure PAC Display draw windows and (PAC Display Pro only) URL windows to have scroll bars for those times when a graphic object extends beyond the borders of the window. You can set this option globally (that is, for all windows in the project) or you can choose individual windows to have scroll bars. This new feature is particularly handy when your HMI is displayed on monitors of varying sizes.

PAC Manager

Warning when I/O coprocessor needs to be updated. If your Opto 22 controller or brain has an I/O coprocessor that needs a firmware update, the Diagnostic Messages button (yellow exclamation mark) is now displayed when you open the Status Read page (Tools > Inspect). I/O coprocessors are explained in the [SNAP PAC I/O Coprocessor Firmware Readme](#); see also “Viewing Diagnostic Messages” in the [PAC Manager User's Guide](#) (form 1704).

BUG FIXES

For a complete list of bug fixes in the R10.0 version of PAC Project, see the [PAC Project Readme](#) file.

In addition, see the readme file for your control engine or brain firmware, available on our website at www.opto22.com. To find firmware, click Support > Downloads and under “Resource Type,” select Firmware.

In addition to downloading the firmware, click the Related Documents tab and download the [readme file](#), too.

Here are some other useful sources of bug information on our website:

- **OptoKB Article Search**—Click the Support tab on our website, and then click KnowledgeBase to search for articles by title, description, KB number, or product.
- **OptoForums**—Use your [MyOpto](#) account to find answers and post messages to OptoForums subscribers.

INSTALLATION

CAUTION: *If you are upgrading to version R10.0 from a version of ioProject older than 7.0, do NOT uninstall ioProject before running the PAC Project version R10.0 installation. If you uninstall first, you will lose all configured control engines.*

Installation Requirements

Here's what you need to install and run PAC Project R10.0 software:

- A computer with a standard or mainstream processor and (at least) the minimum memory required for your version of Microsoft Windows. (Low-end CPUs are not recommended.) Additional memory may be required for some configurations.
- One of the following operating systems:
 - Microsoft® Windows® 10 Professional (32-bit or 64-bit)
 - Windows 7 Professional (32-bit or 64-bit)
 - (OptoOPCServer and OptoDataLink only) Windows Server® 2012 R2 and Windows Server 2008 R2

NOTE: PAC Project will not install on Windows XP or older Windows operating systems. Embedded operating systems are not tested or supported.

- Ethernet capability.
- VGA or higher resolution monitor (Super VGA recommended). Minimum size: 800x600 with small fonts.
- Mouse or other pointing device.
- (Optional) Installed Windows printer.

Hard Disk Space Requirements

Application	PAC Project Professional	PAC Project Basic
PAC Project Software Suite	642.6 MB	356.2 MB
PAC Control	69.1 MB	68.1 MB
PAC Display	530.6 MB	288.1 MB
OptoOPCServer	16.8 MB	(not included)
OptoDataLink	18.4 MB	(not included)
SoftPAC	7.8 MB	(not included)
PAC Manager	26.1 MB	26.1 MB
Tools (PAC Utilities)	6.1 MB	6.1 MB
EtherNet/IP Configurator	16.5 MB	16.5 MB

* Installing both Pro and Basic requires a total of 528 MB of hard disk space.

Important Notes on Firmware

Opto 22 hardware is shipped with the most recent firmware, but you should check the [Support > Downloads](#) page for additional updates that may be available.

For details on the features each firmware version includes, see the [SNAP PAC Controllers and Brains Firmware Readme](#) file for your device. To find the readme, go to www.opto22.com and search on the PAC's or brain's part number. When you get to the product page, look under the Documents tab for the readme. The readme can also be found under the Related Documents tab on the firmware download page.

NOTE: If you are using a SNAP-LCE or Ultimate controller, do not upgrade to PAC Project R10.0. Instead, use either PAC Project 8.0 or ioProject. In order to use these controllers with PAC Project 8.0, use controller firmware version 7.2 and Ethernet brain firmware version 7.0 or higher. If you want to use PAC Project software version 8.1 or higher, you must use SNAP PAC controllers instead.

For additional compatibility information, see the [Legacy and Current Product Comparison and Compatibility Charts](#) (form 1693). To obtain this form, click the link or go to the Opto 22 website, www.opto22.com, and search on the form number, 1693.

PAC Project Examples on Your Hard Drive

In order to comply with Microsoft's rules regarding directory structure, the installation process copies all PAC Project application examples to this folder on your hard drive:

C:\Users\Public\Documents\Opto 22\PAC Project R10.0

For Help

If you have any difficulty using software, documents, or firmware, contact Opto 22 Product Support by email or phone:

Phone: 800-TEK-OPTO (800-835-6786 toll-free in the U.S. and Canada)
951-695-3080
Monday through Friday,
7 a.m. to 5 p.m. Pacific Time

NOTE: Email messages and phone calls to Opto 22 Product Support are grouped together and answered in the order received.

Fax: 951-695-3017

Email: support@opto22.com

Opto 22 website: www.opto22.com

In addition, the Opto 22 KnowledgeBase (KB) provides the latest information on support issues and workarounds. For more information, go to the www.opto22.com website, and then click Support > KnowledgeBase.

Sign Up for My Opto

With a [MyOpto](#) account, you can purchase products online, subscribe and post to our OptoForums, sign up for free training classes, build and save virtual *groov* EPIC and SNAP PAC systems using the [System Configurator](#), and more. To sign up, go to the [Opto 22](#) website, and click Register.

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Checking for Updates Manually

Use these links in the Opto 22 website menu bar to manually check for new releases, updates, and patches:

Software and Firmware	Support > Downloads
Documentation	Support > Documents