

## Welcome to PAC Project 9.4

Welcome to version 9.4 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 SNAP PAC controller and can also be downloaded for free from our website, [www.opto22.com](http://www.opto22.com). PAC Project Basic is all you need for most monitoring and control needs. It includes the following software applications:

- **PAC Control™** for developing control programs (*strategies*) to automate processes, monitor equipment, and acquire data from processes and equipment
- **PAC Display™** for creating HMIs (human-machine interfaces) for technicians and operators to use
- **PAC Manager™** for configuring hardware and troubleshooting

### PAC Project Professional

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

PAC Project Professional can be purchased as a suite or as individual applications to suit your needs. The suite includes the following software applications:

- **PAC Control Professional** for developing control programs
- **PAC Display Professional** for creating HMIs
- **PAC Manager** for configuration
- **OptoOPCServer™**, an OPC 2.0-compliant server for serving SNAP PAC System I/O and variable data to OPC clients, including PAC Display. OptoOPCServer is strongly recommended for multiple seats of PAC Display.
- **OptoDataLink™** for exchanging SNAP PAC System data with databases (including Microsoft SQL Server, Microsoft Access, and MySQL), and text files
- **SoftPAC™**, software-based programmable automation controller (PAC) for PC-based control.

### More Information on PAC Project Basic and Pro

Free product support is included with both PAC Project Basic and Professional. Free training and free pre-sales engineering help are also available. For product support,

see [“For Help” on page 7](#). For training, see our website under Support > Training or email [training@opto22.com](mailto:training@opto22.com). For pre-sales engineering, call 1-800-321-6786 or 1-951-695-3000.

All PAC Project 9.4 software components run on Microsoft® Windows® XP, Vista, Windows 7, and Windows 8.1 workstations. See [“Installation Requirements” on page 5](#).

PAC Project works with all SNAP PAC controllers, SNAP PAC brains, SNAP PAC racks, and SNAP I/O modules.

For more information about PAC Project Basic and Professional, see the following documents. The easiest way to find a document on our website, [www.opto22.com](http://www.opto22.com), is to search on its form number.

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

## New Features and Enhancements

There are new features and enhancements in PAC Control, PAC Display, PAC Manager, and OptoOPCServer.

### PAC Control

**New commands for HART SNAP I/O Modules.** PAC Control now includes commands developed for use with the HART® SNAP I/O modules. These analog current input and output modules provide communication with other Highway Addressable Remote Transducer (HART) current loop devices. For more information, see form 2080, the *HART SNAP Modules Data Sheet*.

HART-specific commands:

- Get HART Unique Address  
Retrieves the unique address of a HART device in order to use other HART commands to talk to the device.

- **Send/Receive HART Command**  
Sends a HART command and receives its response in a single operation.
- **Receive HART Response**  
Receives the response to a command that was sent previously. This is useful if you want to send a series of commands to multiple HART devices without waiting for a response, then go back to pick up those responses.
- **Receive HART Burst Response**  
Receives a response from a HART command burst—a special mode where periodic data is sent asynchronously from a sensor.

In addition, the following commands are designed to pack data into HART parameter strings, but they can also be used with other types of data not intended to be used with HART modules.

- Pack Float into String
- Pack Integer 32 into String
- Pack Integer 64 into String
- Pack String into String
- Unpack String

**New point type for SNAP-AIRTD modules.** The new lead compensated point type for the SNAP-AIRTD, SNAP-AIRTD-10, and SNAP-AIRTD-1K analog temperature input modules provides a more accurate Ohm measurement. See the description under [“PAC Manager” on page 4](#).

**Improved loading of archived strategies.** When a strategy is loaded and all of its subroutines cannot be found in their original location—but they are all found in the Subs directory—you are asked if PAC Control should use the subroutines in the Subs directory. This simplifies loading an archived strategy; instead of being asked about the location of each subroutine, you’re only asked once about using the Subs directory.

**Better support for Windows 8.1.** Control engine definitions are now handled differently so that PAC Control works better in Windows 8.1.

## PAC Display

**Logging to ODBC database** (PAC Display Pro only). Now you can configure an ODBC database for logging SuperTrend, Historic Log, and Runtime Operator Logging data files. Supported databases include MySQL, Microsoft SQL Server, and Microsoft Access.

**Support for Unicode text.** Now you can use international characters in the following PAC Display items for improved localization of your PAC Display Runtime projects:

- Objects created with the text tool
- Alarm point names and comments
- SuperTrend pen names
- Window names
- Historic log names and point names

- Table control
- Refresh group names
- Recipe managers
- Window managers
- Application managers
- XY plot titles
- Button and PID button text
- Combo box control items
- View > Dynamic Attributes file
- Project export file
- Alarm point comma delimited file
- Operator Runtime logging file
- Alarm History file

**Support for the Portable Network Graphics (PNG) file format.** PNG images are a good choice for use in your PAC Display project because the PNG file format provides transparency and supports lossless data compression resulting in better looking images without a white background.

**Improved recipe file uploading and downloading.** When uploading or downloading recipe files, PAC Display Runtime now looks for the strategy file in the PAC Display project folder as well as the folder where the strategy file was originally configured in Configurator.

## PAC Manager

**Flash memory images can now be imported and exported for SNAP-PAC-SB1 and SNAP-PAC-SB2 serial brains.** This feature lets you copy the configuration image from a serial I/O unit directly to the flash memory of another SB-series I/O unit. It also allows you to keep copies of I/O images for all of your SNAP-PAC-SB1 and SNAP-PAC-SB2 brains so that if a brain's flash memory is accidentally erased, you can send the backed-up image to the brain. Previously this capability was only available for Ethernet brains such as the SNAP-PAC-EB1 and SNAP-PAC-EB2.

**Support added for new SNAP HART I/O modules.** The SNAP-AIMA-iH analog current input module and the SNAP-AOA-23-iH analog output module provide communication with other Highway Addressable Remote Transducer (HART) current loop devices. Also see the description under [“PAC Control” on page 2](#).

**New point type for SNAP-AIRTD modules.** The new lead compensated point type (0x0F) for the SNAP-AIRTD, SNAP-AIRTD-10, and SNAP-AIRTD-1K analog temperature input modules provides a more accurate Ohm measurement. Previously, the generic input point type (0x01) Ohm measurement for these modules included the RTD resistance and 1/2 of the lead resistance.

## Bug Fixes

For a complete list of bug fixes in the 9.4 version of PAC Project, see the PAC Project Readme file or the Readme file for individual products (PAC Control, PAC Display, and so on).

In addition, see the readme file for your control engine or brain firmware, available on our website at [www.opto22.com](http://www.opto22.com). To find firmware, click Support > Downloads and filter by Firmware. When you locate the firmware file for your device, 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 OptoKnowledgeBase to find articles by Article Number, Title, Text, or Product.
- **OptoSubscriptions**—Use your [my.opto22.com](http://my.opto22.com) account to subscribe to updates on the Knowledgebase, products, downloads, and documents.

## Installation

**CAUTION:** *If you are upgrading to version 9.4 from a version of ioProject older than 7.0, do NOT uninstall ioProject before running the PAC Project version 9.4 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 9.4 software:

- A computer with at least the minimum processor and memory required for your version of Microsoft Windows, and Ethernet capability. Additional memory may be required for some configurations.
- VGA or higher resolution monitor (Super VGA recommended). Minimum size: 800x600 with small fonts.
- Mouse or other pointing device
- Installed Windows printer (optional)
- Microsoft Windows 8.1 Pro (32-bit or 64-bit), Windows 7 Professional (32-bit or 64-bit), Windows Vista® Business (32-bit), or Windows XP Professional (32-bit, with Service Pack 2 or higher), Windows Server 2008 R2 (OptoOPCServer and OptoDataLink only).

*NOTE: Other versions of Microsoft Windows server and embedded Windows operating systems are not supported. In addition, Windows Server 2008 is the only Windows Server version supported and it is only supported by OptoOPCServer and OptoDataLink.*

- Available hard disk space as shown in the following table:

Application	PAC Project Professional	PAC Project Basic
PAC Control	58.6 MB	57.4 MB
PAC Display	90.0 MB	84.1 MB
OptoOPCServer	14.5 MB	(not included)
OptoDataLink	11.3 MB	(not included)
SoftPAC	16.2 MB	(not included)
PAC Manager	46.8 MB	46.8 MB
Tools	9.8 MB	9.8 MB
EtherNet/IP Configurator	17.9 MB	17.9 MB
Total	190.4 MB*	141.5 MB*

\* Installing both Pro and Basic requires a total of 268 MB of hard disk space.

### Important Note for Windows XP Users

Due to a legacy Microsoft bug involving how Themes are handled in Windows XP (either with Service Pack 2 or with no Service Pack), a resource leak may eventually cause PAC Project applications to crash.

To resolve this problem, install Windows XP Service Pack 3. Or, you can set the Windows XP Desktop Theme to Windows Classic. For more information, see Opto 22 [KB49838](#), an OptoKnowledgeBase article on our website. Either click on the link here or search in the OptoKnowledgeBase on the article number, KB49838, including the KB without any spaces.

Although Microsoft has officially ended support for Windows XP, Opto 22 will continue to make every effort to provide current and future Opto 22 software updates that are compatible with Windows XP Pro.

### Important Notes on Firmware

Opto 22 hardware is shipped with the most recent firmware, but you should check the website for additional updates that may be available.

For details on the features each firmware version includes, see the firmware readme file for your device. To find the readme, go to [www.opto22.com](http://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 9.4. 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 newer. If you want to use PAC Project software version 8.1 or newer, you must use SNAP PAC controllers instead.*

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

## PAC Project Examples Location

In order to comply with Microsoft's rules regarding directory structure, starting in PAC Project version 9.1 we place all PAC Project application examples in a new location on your hard drive. You'll find PAC Project 9.4 examples here:

- For Windows 8.1, Windows 7 or Vista—C:\Users\Public\Public Documents\Opto 22\PAC Project 9.4
- For Windows XP—C:\Documents and Settings\All Users\Shared Documents\Opto 22\PAC Project 9.4

## 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)  
951-695-3080  
(Hours are 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](mailto:support@opto22.com)

**Opto 22 website:** [www.opto22.com](http://www.opto22.com)

In addition, the OptoKnowledgeBase (OptoKB) provides the latest information on support issues and workarounds. Visit [www.opto22.com](http://www.opto22.com) and click on the Support tab and then click on OptoKnowledgeBase for more information.

## Sign Up for My.Opto 22

We recommend signing up at [My.Opto22](http://My.Opto22) to receive news about Opto 22 products. With a My.Opto22 account you can receive notification of software and firmware upgrades and new or revised documentation such as data sheets, OptoKB articles, and white papers.

### **Get Tech Tips and Find Out about New Products with OptoNews**

An email newsletter that comes to you once every two weeks, OptoNews gives you tech tips plus news about new products, videos, and training. Sign up through your My.Opto22 account or on the [OptoNews subscription page](#).

### **Checking for Updates Manually**

To manually check for new releases or patches for your Opto 22 software, firmware, or documentation, go to the Support > Downloads section of the Opto 22 website.