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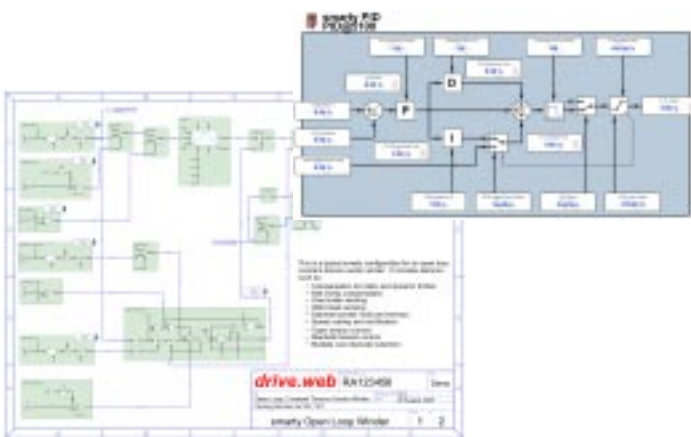
Getting started with *savvy*

Thank you for downloading *savvy*, the leading drive systems design and control tool.

We would welcome an opportunity to have you join in one of our product training courses at our plant in Stevensville, Maryland but in the meantime I hope you will find the following "getting started with savvy" information to be useful.

Once you have had a chance to familiarize yourself with *savvy's* many great features you may also wish to consider getting the new graphical signal flow diagram (SFD) option which is a powerful design and documentation aid and sells for only $199. [link to SFD info at end]

Welcome to the world of *drive.web*

drive.web is an entirely new Internet accessible distributed control technology for machine or process controls. It uses TCP/IP over Ethernet to provide robust connectivity between drives, remote i/o, PLCs, operator stations and SCADA systems and it incorporates a powerful library of drive control function blocks for a wide range of applications such as PIDs, winder controls, position controls, drive coordination, arithmetic, logic, etc. It is infinitely scaleable and the distributed control concept ensures that it is cost effective for systems of any size or complexity.

The *drive.web savvy* software you have just downloaded is the most comprehensive drive system design and configuration tool available. *savvy* enables you to design, document, configure, monitor and control either single drives or complex multi-drive systems. It runs on most OS platforms and can provide complete system access across the Internet.

You can either create "Phantoms" and start to design systems or you can connect to individual drives via the serial port or connect to multiple drives and devices across Ethernet and the Internet.

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savvy basics

To create "Phantoms" and start to design a system:

To create "phantom" drives and devices in the "Device Directory" window (top level) open the "Directory" menu and select from the "Create Phantom Device" sub-menu. You can edit and save "phantom" configurations then import them later into real drives and devices. To import or export configurations to or from a device or phantom, right click on it's icon in the "Device Directory" window and select as needed.

To connect to a drive via the serial port:

1. From the "Directory" menu go to "Discover on serial port" > and select the drive model
2. Accept the default communications set up and you should see an image of the drive appear in the "Device Directory" window. (Note, with a PL-Series DC drive you will first need to turn on the drive serial communications via the drive keypad and display)

To connect to multiple drives via Ethernet

For the first time you will need to set the drive IP addresses. From the "File" menu select "Administrate" > "Set IP address". Enter each drive's serial number into the MAC address and give each device an IP address. On a machine dedicated local network it is recommended that you use the IP address format 192.168.1.XXX Each XXX number must be different. Otherwise consult your IT manager. As you enter each device address its image will appear in the "Device Directory" window.

Once you have given each drive its IP address you can access them in future from the "Directory" menu > "Discover all local devices" or simply turn on the "Auto-Discovery" feature.

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Finding your way around *savvy* basic features:

1. Always remember that the *savvy* manual is easily accessible at all times from the "Help" menu.

2. Right click on any object, device, function block or parameter to get information about it.

3. Left click drills you down from the device to its block diagram, to its function blocks, to its parameters, to its parameter setters.

4. The Left and Right arrows in the top left of the window enable you to browse backwards and forwards.

5. The Up arrow in the top left of the window enables you to jump up a level at a time in the drive or system hierarchy.

6. Zoom in or out with your + or - keys. Pan with your up, down, left, right keys. Hit the "H" key at any time to get the optimum "Home" view. (see the User Manual for other techniques)

7. Pass your cursor over any object and it's identity and key data will appear in the header of the window.

8. Left click on a parameter to open a "Parameter Setter" and change its value.

9. Right click on a parameter to "add to parameter dock" - a useful organizer.

10. The parameter dock can be converted into a trend plotter (and vice versa) from the "Dock" menu.

11. Make connections between parameters either within a drive or between parameters in different devices by dragging the "from" parameter on top of the "to" parameter.

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Playing with "Phantoms":

Create a "phantom" *smarty* and a "phantom" E-Series AC drive in the "Device Directory" window (from the "Directory" menu select "Create Phantom Device"). Select a *smarty* and add "I/O + Encoders", "FBE + Winders" and "ModbusTCP+RTU". Enter a meaningful IP address format such as 192.168.1.101 and hit OK. Select any model E-Series AC Vector drive and add "FBE + Winders" and "ModbusTCP", give it an IP address such as 192.168.1.102 and hit OK.

1. Right click on the *smarty* and see how easy it is to get detailed info about an object, change its name, import/export data, clone and set password protection.

2. Left click on the *smarty* icon and you will drill down to the overview diagram. Left click on the "Function Block Engine" and drill down to the engine room.

3. Open the FBE menu and select "I/O" > "UIP1 Analog". Repeat for "UIP2 Analog" then select "Control" > "PID"

4. Your "Function Block Engine" window will now be overflowing so hit "H" on your keyboard (Home) to optimize the view.

5. Pass your cursor over each FB icon and note how the key data is displayed in the window header.

6. Right click on the "UIP1 Analog" FB icon and change its name to "PID Setpoint"

7. Left click on the same icon and drill down to the detail FB level. Note that you can set the range (100mV to 200V), offset and scale for the input value. Left click on a parameter to open the "Setter" and change its value. Note that parameters showing a pencil with a red line through it are "read only". Note also that *savvy* has assigned parameter numbers. The Modbus address is 40,000 + the parameter number.

8. Right click on the "Output" parameter and select "Add to parameter dock". A new "Dock" window will open with the parameter displayed.

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9. Resize your windows so that you can see both conveniently and hit "H" to optimize.

10. In the UIP1 Analog" window click the Up arrow to get back up to the FBE level then left click on the "PID" FB to drill down to the PID details. Note the powerful features in the PID that make it easy to use in either simple applications or sophisticated adaptive control systems.

11. To connect the UIP1 input to the PID go back to the "Dock" window, place your cursor over the "Output" parameter, hold the left click down and drag the parameter box over to the "PID setpoint" parameter on the far left of the "PID" window. The blue arrows which appear at the ends of the parameter box indicate that a connection has been made.

> Pass your cursor over the blue arrows and see the connection information displayed in the window header.

> Left click on a blue arrow to jump to the source or destination of the connection

12. Drag the "PID Output" parameter (on the far right side of the PID FB) and the "PID Feedback" (far left of the PID FB) into an empty space in the "Dock" window.

13. Click on the up arrow in the "PID" window to return to the "FBE" level, left click on the "UIP2 Analog" icon and drag its output into an empty space in the "dock" window.

14. In the "Dock" window, drag and drop the "UIP2 Output" onto the "PID feedback" parameter to make a connection.
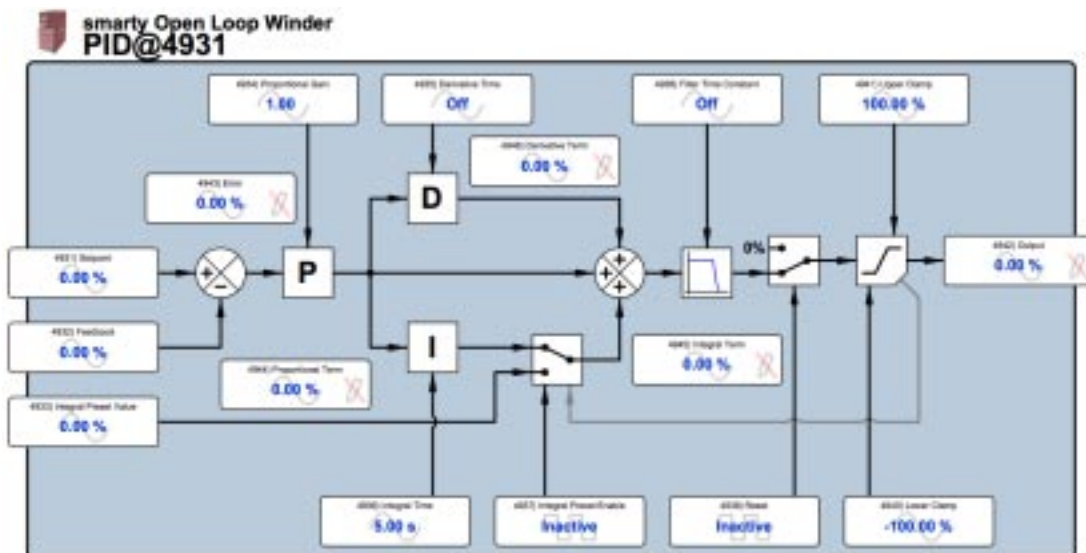
15. In the "UIP2 Analog" window click the "Up" arrow three times to get back up to the top "Device Directory" level and then left click on the E-Series AC vector drive icon to drill down to its "Engineering Info" window.

    Note:
        All the I/O blocks appear on the left
        Local References and Drive Status Information is shown along the top
        Drive control function blocks and information are shown in the lower half of the diagram

16. From the "Dock" window, drag the "PID Output" parameter over to the "Local Speed Reference" parameter near the top left corner of the drive "Engineering Info" block.

With these few simple moves you have now created a PID control system in a *smarty* and connected it to the speed reference of a drive! You can export and save the design you have created and import it into the system once built. (Export and Import configurations from the "Directory" menu at the top "Device Directory" level)

17. To see the connections you have created for the *smarty* click the "Up" arrow in the drive window to get to the "Device Directory" level, right click on the smarty icon and select "Show Connections"


... and this is just the basics!

You can use *savvy* to create, document and operate drive systems of any complexity cost effectively. With it's multi-user remote access capability for configuration, monitoring and control it is an unbeatable drive systems design and management tool.

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savvy graphical Signal Flow Diagram option

There are many more features in savvy and the drive.web environment including a graphical signal flow diagram option that adds powerful system design and documentation features including:

• an editable graphical signal flow diagram of any drive.web device configuration.
• multiple page drawing organization for complex configurations of drives or complete systems
• clear indication of page to page and unit to unit connections
• the ability to annotate drawings
• the ability to export, import and print graphical configurations and produce great system documentation
• the ability to import old drive.web configurations and update to graphical presentation
• the ability to choose from a selection of ANSI or ISO drawing size and border formats
• a selectable "snap to grid" drawing feature
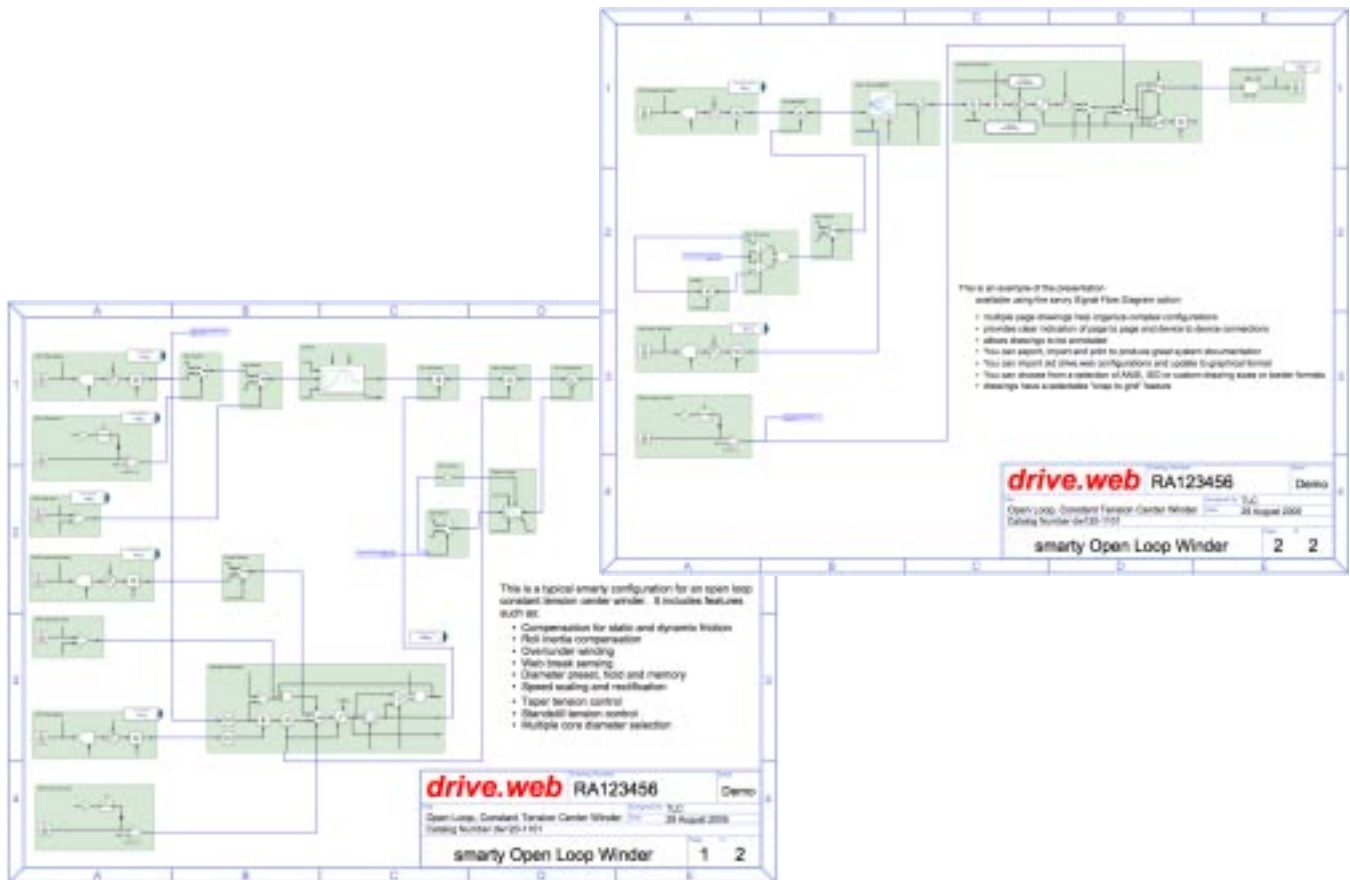
You can add this powerful feature to savvy for only $199. Either go to the "Commerce" menu or call us toll free in the US at 888-667-7333 or 410-604-3400.

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drive.web products

Currently there are two basic *drive.web* product groups that interface to the *savvy* tools:

smarty - is a DIN rail mounted distributed control processor with a variety of i/o options that can either work as a stand alone programmable systems processor or can be integrated into an Ethernet LAN with drives, operator stations, PLCs and SCADA systems.

speedy - is a range of high speed drive.web processor boards that interface directly with a drive microbus. These are available for our E-Series AC vector drives and our PL-Series Digital DC drives for high performance applications.

To get *savvy* or a free *savvy* update ...

Go to www.driveweb.com, click on "get savvy" and choose the version you need for your computer operating system.

We hope this is a useful introduction to savvy and the drive.web technology. If you would like someone to go through a more detailed presentation of savvy please do not hesitate to call us at 410-604-3400.

For more information, please visit: www.bardac.com & www.driveweb.com

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