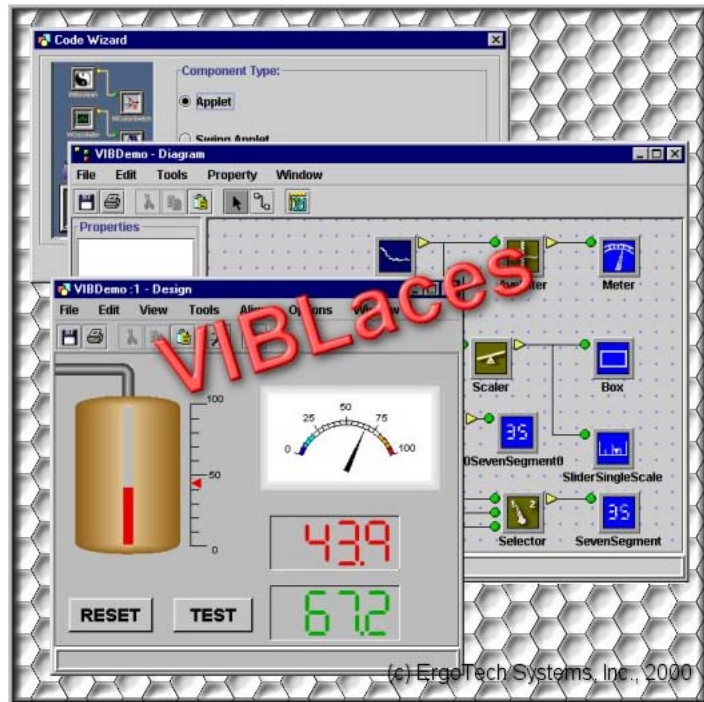


ErgoView VIBLaces

Web Browser HMI Software



- ◆ Web Browser HMI - No runtime installation
- ◆ Built-in Trending Tools
- ◆ Fast and Easy Configuration - build screens in minutes
- ◆ No HTML programming - Point & Click configuration
- ◆ Point-to-point, Ethernet and Internet connectivity
- ◆ Open architecture - Uses open protocols and tools
- ◆ Runs on PCs, Macs, Linux - any Java compatible platform
- ◆ No keys or dongles
- ◆ No Runtime Fees
- ◆ No tag Limits
- ◆ No User Limits

ErgoView VIBLaces

Quick Start Guide

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In This Guide . . .

This guide provides a simple tutorial to get you going quickly and easily with a web browser HMI software package called ErgoView. Whether you are testing out a demo version or you've just purchased a copy and can't wait to see it work, you'll want to read through this guide first. Then when you've gotten the basics down, we encourage you to go back and read the "normal" documentation to take full advantage of the wealth of the features that ErgoView has to offer.

Support

ErgoView has been developed by ErgoTech Systems. Industrial Control Links offers ErgoView with its ScadaFlex Plus and EtherLogic controller products to bring you the advantages of an integrated hardware and software solution. If you have questions or need help, you have several choices:

First, there is a large amount of on-line documentation, both installed on your computer and on the web. On your computer, look in the folder:

C:\ErgoTech\VIBDeveloper\documentation

Your web browser will be able to open the HTML documentation files. You can also get on-line information from ErgoTechs web site:

<http://www.ergotech.com/training>

If you want one-on-one personal assistance, please take advantage of our free technical support. Simply call us at:

(800) 888-1893

If you need to send us a fax, use either:

(530) 888-1300 or (530) 888-7017

For additional technical information including datasheets, manuals and software, visit our web site at:

www.iclinks.com

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Introduction

ErgoView is a web browser based HMI (Human Machine Interface) software package. Graphical screens are developed on a PC, then downloaded to an ICL controller. When a user “links up” to the Controller with a web browser, Java Applets are automatically uploaded to the browser and the user sees colorful graphical screens animated with information from the controller. Tank levels go up and down, pipes show flow, pumps turn, and indicator lights and switches turn On and Off. Users can enter setpoint values (with access controls) and look at past history with built-in trending tools that work with the controller data log storage as well as an SQL database. In short - everything that you would expect from a world class HMI package!

Although ErgoView can communicate over a serial link, most ErgoView systems take advantage of an Ethernet connection. This can be either a local Ethernet network for factory-floor control and data collection, or a connection over the Internet, for low-cost worldwide access.

The ErgoView development software is called VIBLaces (VIB stands for Virtual Instrumentation Bean because of it’s Java roots). This software allows you to simply place pre-drawn graphical elements on the screen, connect them to together with register icons for the controller, and have graphical user interface screens up and running very quickly with no programming. ErgoView also lets you create your own graphical elements with timesaving tools.

Ergoview screens are animated immediately as soon as you draw the first links between icons. As you add elements, your screens come to life, giving you immediate feedback on how things will look. Once you’re done, you simply tell ErgoView to transfer your works-of-art to the Controller, and ErgoView converts your design to Java Applets and downloads them to the controllers flash “disk”. After that, anyone that you give a user name and password to can connect up and use your screens without installing software on their machine. They just use the same browser that they use to access the internet. There’s no special user training required!

And best of all, besides being so easy to use, with ErgoView, there are no restrictions on the number of users, no license fees, no limits on the number of tag names, and no proprietary languages and protocols.

So let’s try it out . . . !

I ErgoView “The Basics”

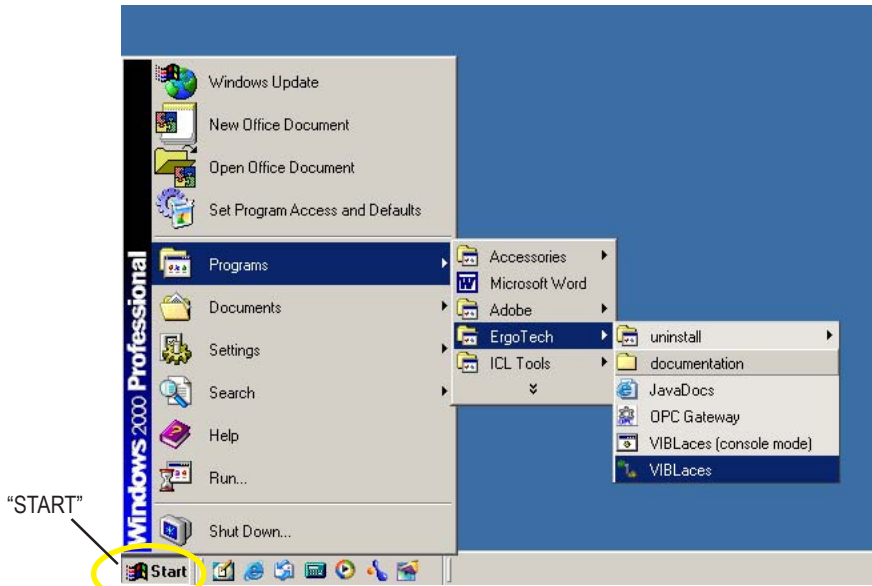
Learn how to build HMI screens, placing elements on the screen and linking them together.



Starting VIBLaces

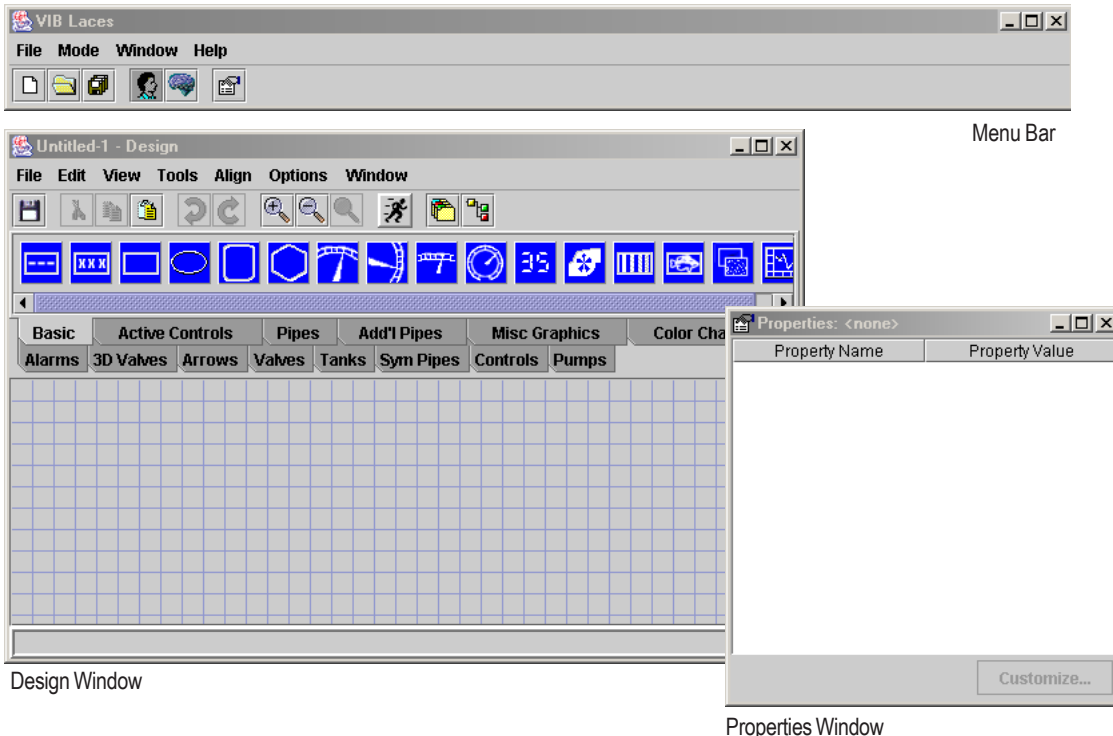


To get started, either double-click on the VIBLaces Icon on your desktop or start VIBLaces through your Windows Start button:



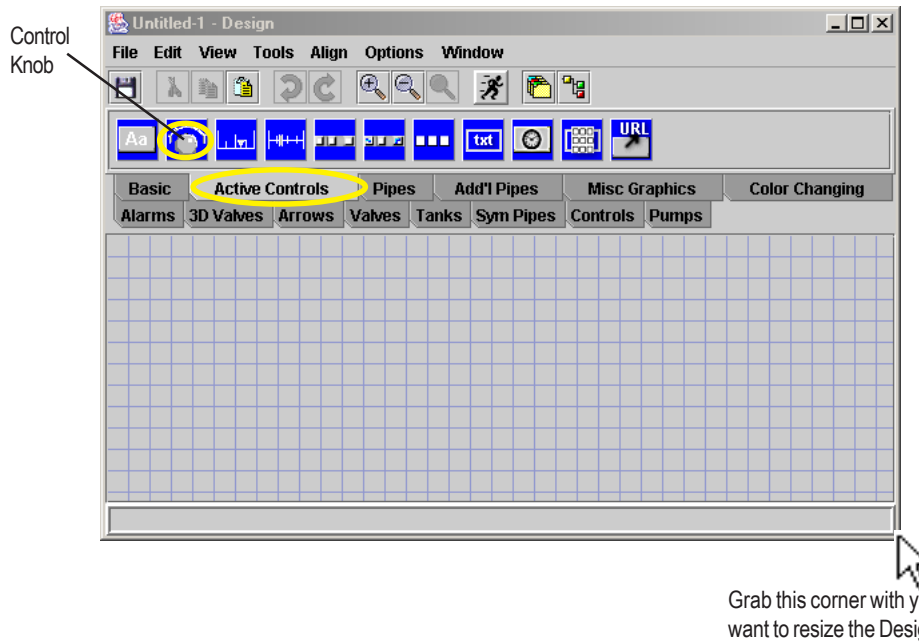
This image was taken on a Windows 2000 machine. If you are using a different version of Windows, such as Windows XP, it will look a little different, but the idea is the same.

This will bring up the Menu Bar, Design Window and Properties Window:

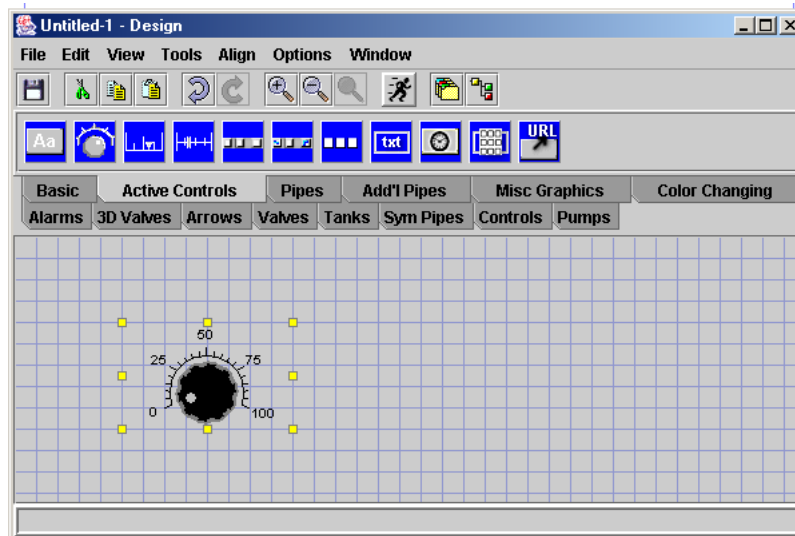


Placing Design Elements

At first, we will not be connected to a controller or other signal source, so we'll place a control knob to “generate a signal” for us. Click on the “Active Controls” tab so that you see the Control Knob icon.

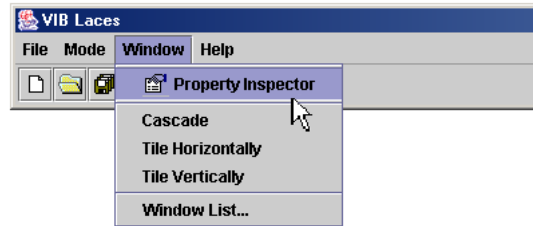


Click on the Control Knob to select it, then click on the design grid to place a copy of the knob (some older instructions would have you drag the icon down, but this will not work in the current versions of ErgoView).

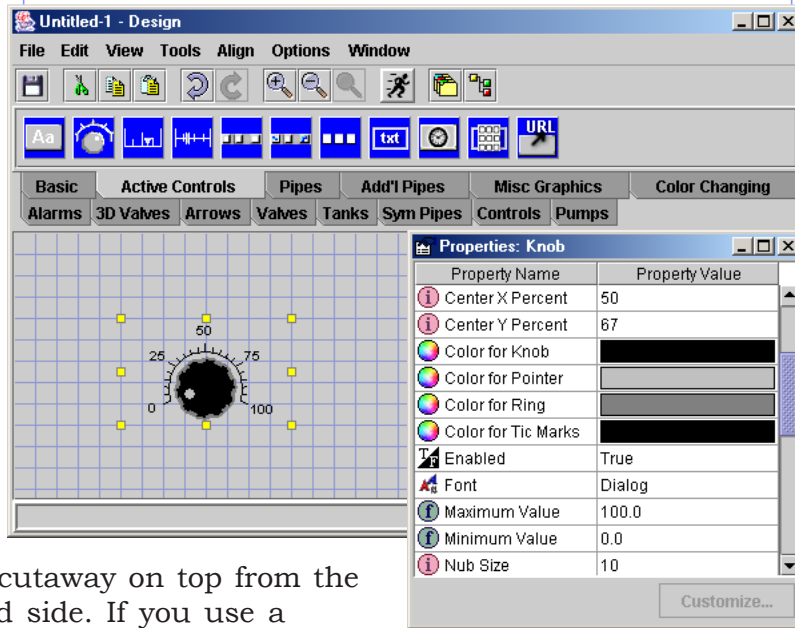


Notice the yellow squares around the knob when it's selected. All graphical elements can be resized by selecting them, grabbing these squares and dragging them with your mouse.

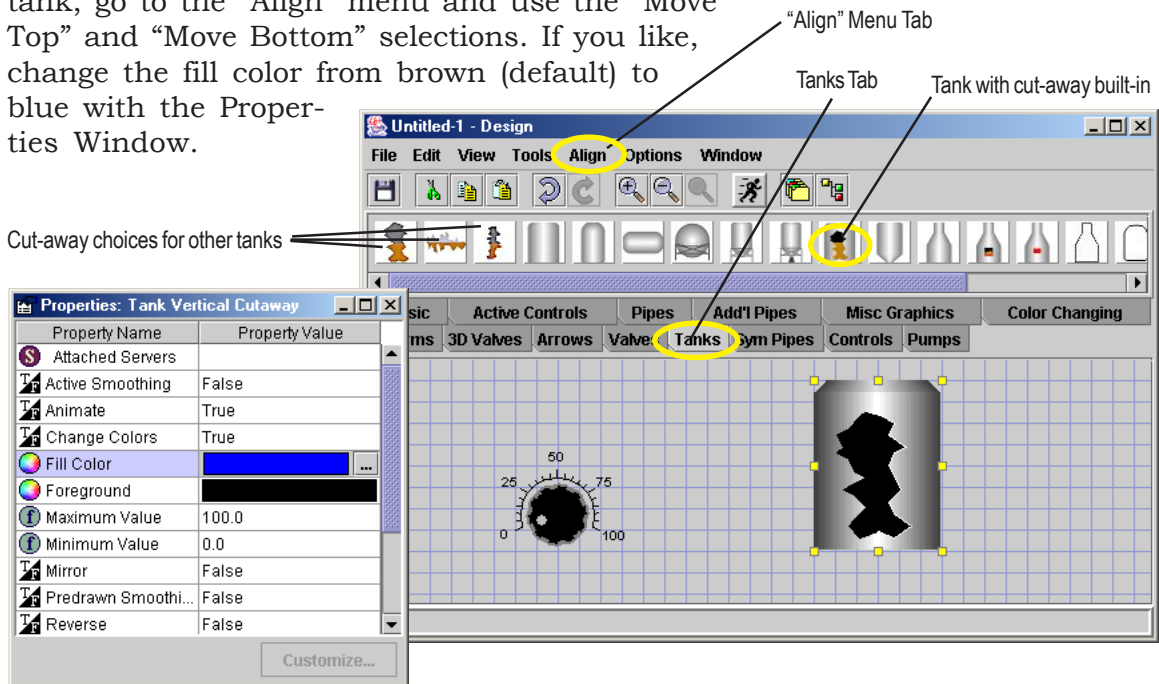
With a design element selected, the knob in this case, you can see its properties in the Properties Window. If the window is hidden or closed, you can bring it up by going to the menu bar and selecting Window and then Property Inspector.



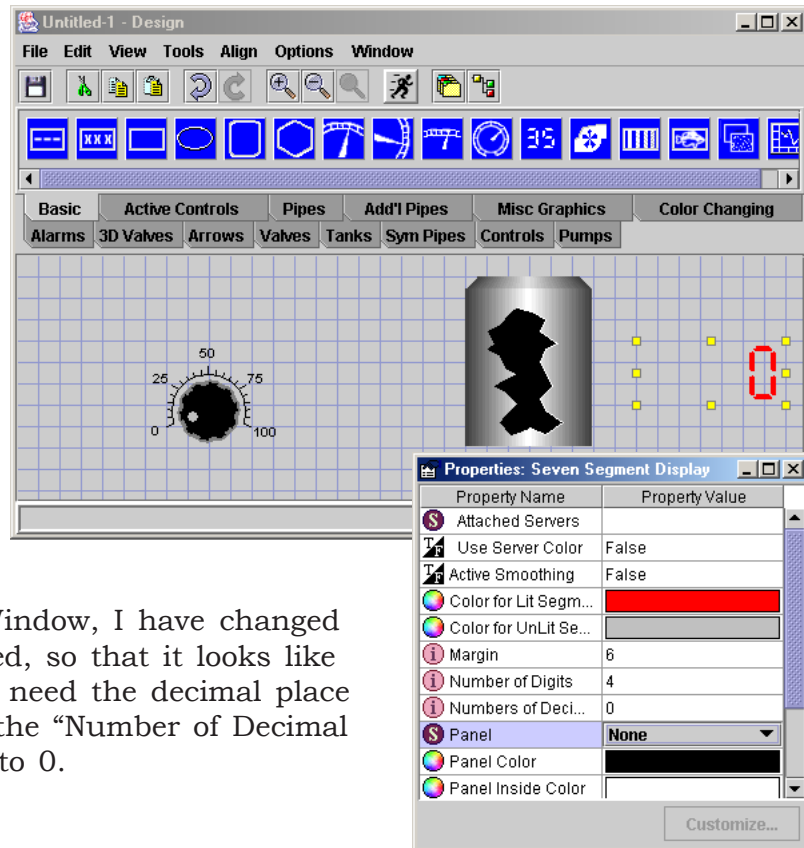
With the Properties Window, you can customize each of the design elements. You can change colors, orientation, minimum and maximum ranges, labeling details, text fonts, etc. Feel free to experiment!



Now let's add a tank. Click on the "Tanks" tab and select the tank with a cutaway, or select any of the other tanks and add a cutaway on top from the choices on the left hand side. If you use a separate cutaway and it ends up "under" the tank, go to the "Align" menu and use the "Move Top" and "Move Bottom" selections. If you like, change the fill color from brown (default) to blue with the Properties Window.



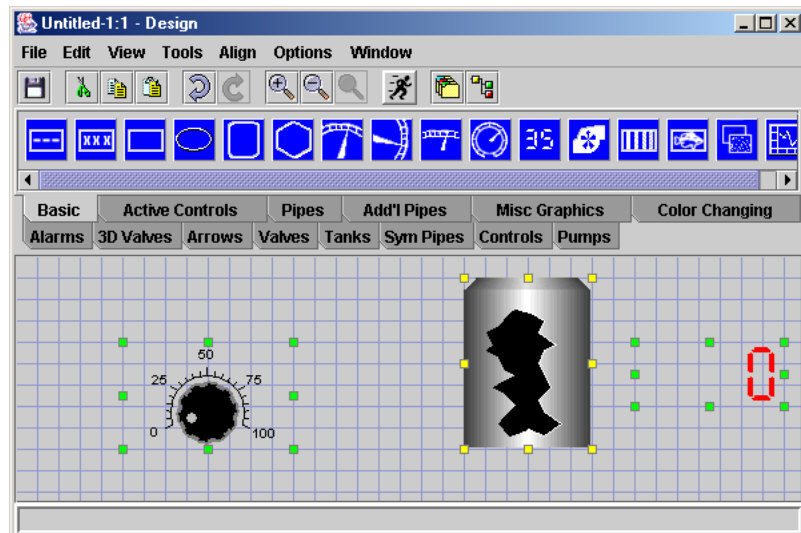
Finally, let's add an LED display to show the exact tank level. The display defaults to smaller digits than I want, so I've resized it with the yellow squares. You'll also find that if you change to a larger number of digits, you may have to resize the display.



Using the Properties Window, I have changed the segment color to red, so that it looks like real LEDs. I also don't need the decimal place for now, so I changed the "Number of Decimal Digits from 1 (default) to 0.

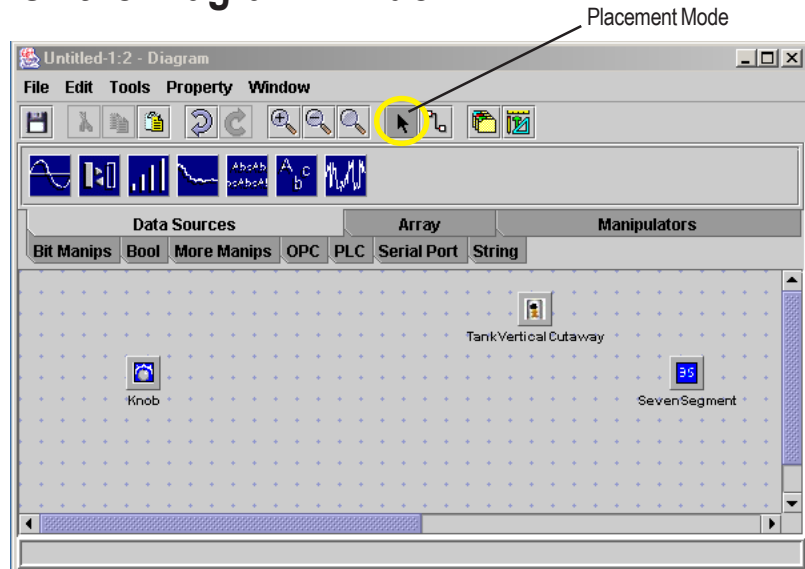
Now it's time to link these elements together with signal connections. To do so, we need to select all of the elements that we've added. Either drag a selection box around all of them, or hold down the Shift key and click on each element.

When all three elements are selected (surrounded with yellow boxes), press Ctrl-D (the CTRL and D key at the same time). This will bring up a new window called the Diagram Window with the icons for the three elements that you had highlighted.



Making Connections - the Diagram Window

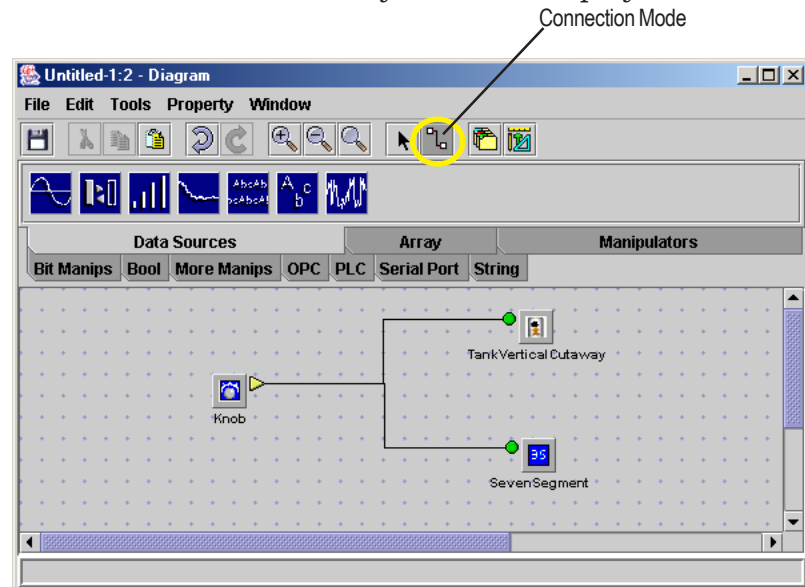
The icons for the design elements are initially just “thrown” into the Diagram Window. In fact, sometimes you’ll need to move the scroll bars to find them all.



The diagram window has two modes of operation selected by clicking on the icons that look like this:




When the Arrow button is selected, you can grab and move the icons around. This is useful to get them into an orderly fashion by dragging them with your mouse. Place input devices and signal sources (like the knob icon) on the left; output devices like the tank cut-away and the display on the right. In this mode, you can also double-click on the icons and rename them.

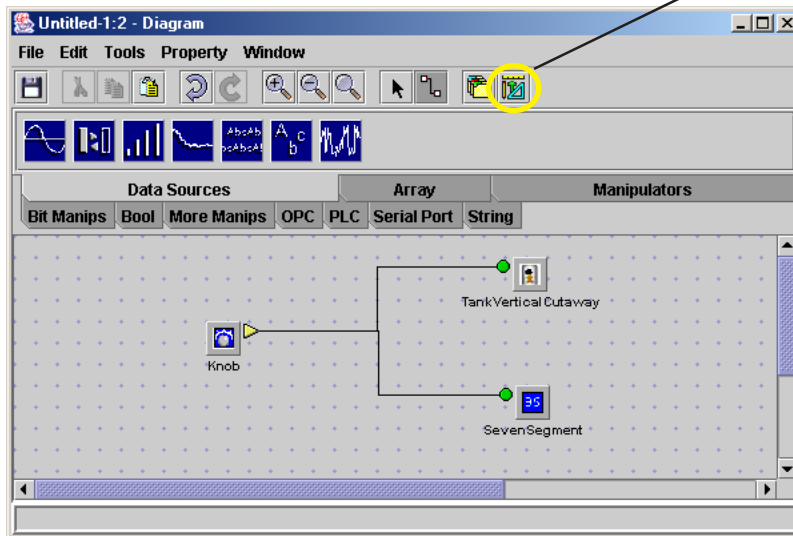


If you select the button with the two square boxes and a connecting line (the “connection tool”), you can draw connecting lines between the icons to show signal paths. Using your mouse, click on the knob icon, and holding down the left mouse button, drag a connection line from the knob icon to the Tank Cut-away Icon. Repeat for the display icon. Your connections are correct if the signal source has a yellow triangle and the signal inputs have green dots.

Trying it Out - the Moment of Truth

Now is the time to try out your first design!

Switch back to the Design Window by clicking on the  icon near the top of the **Diagram Window**.



Return to
Design Window

An icon near the top of the **Design Window** is a running man:

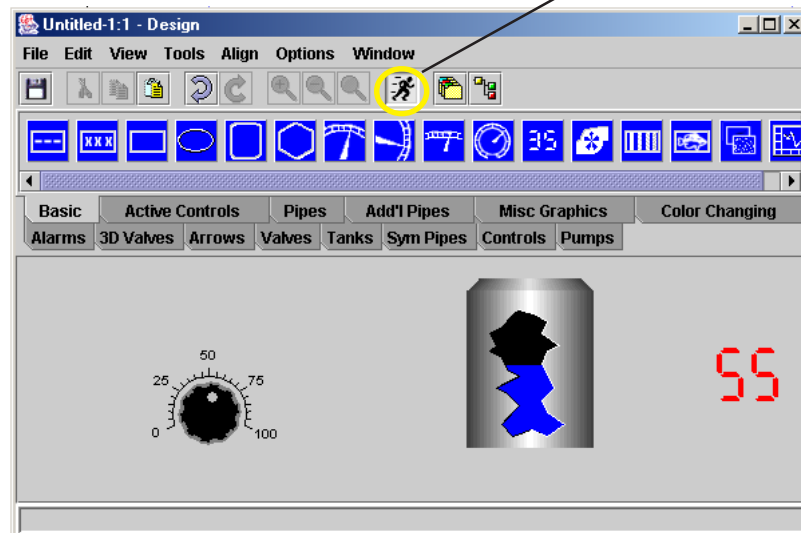


Test Mode
(running man)

If you click on him, you'll see the design grid go away. You can now use your mouse to grab the knob and turn it to see the tank level go up and down and the LED display change.

If you click on the running man again, you'll see that the tank level and display are still active, even with the design grid displayed. In

fact, if we were talking to a controller right now, the tank and display would still follow the controller values with the design grid active. The running man just locks down the design elements so that you can grab them to *operate* the controls instead of repositioning and resizing them!



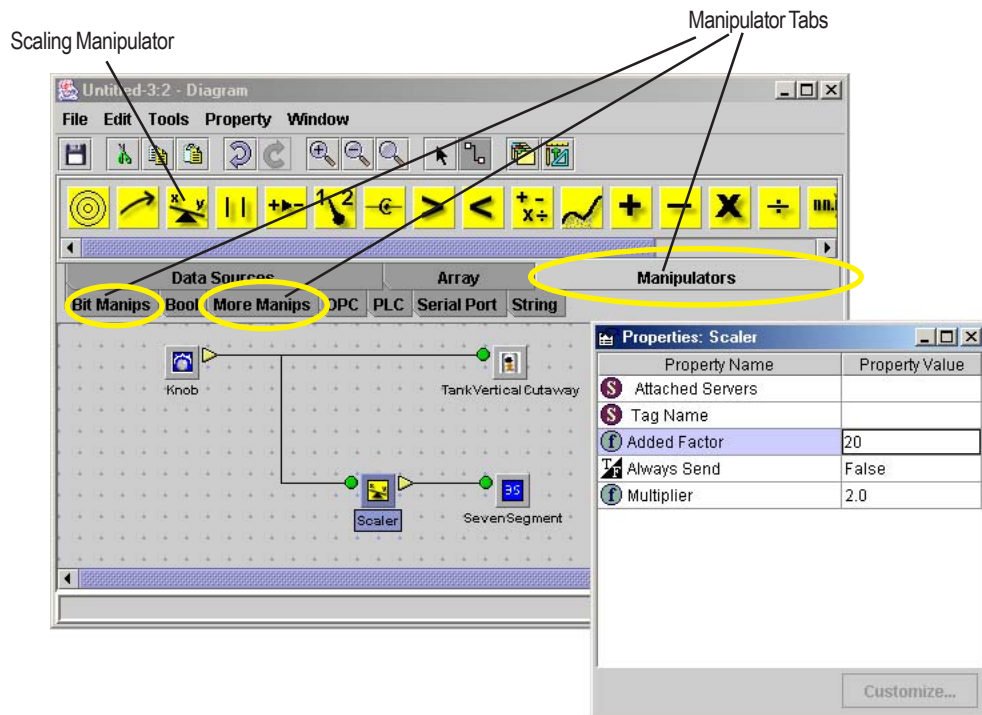
Adding Manipulators - Working with the Data

When you were working in the **Diagram Window**, you may have noticed a set of tabs right above where you were connecting the knob, tank and display icons together. Some of these tabs pertain to connections to the controller which will be discussed in the next section, but three of the tabs are worth mentioning now. These tabs provide access to manipulators; little function blocks that can perform calculations such as scaling, filtering, bit manipulations, selectors and general purpose math.

Manipulators are connected in the data paths just like the design elements that you just used.

To get an idea of how they work, we'll put a scaling block in front of the LED display icon. That way, we can get the display to read out in engineering units, like gallons or feet.

There are three tabs used to access the manipulators. They are labeled "Manipulators", "More Manips" and "Bit Manips". The Scaling Manipulator is under the main Manipulator tab.



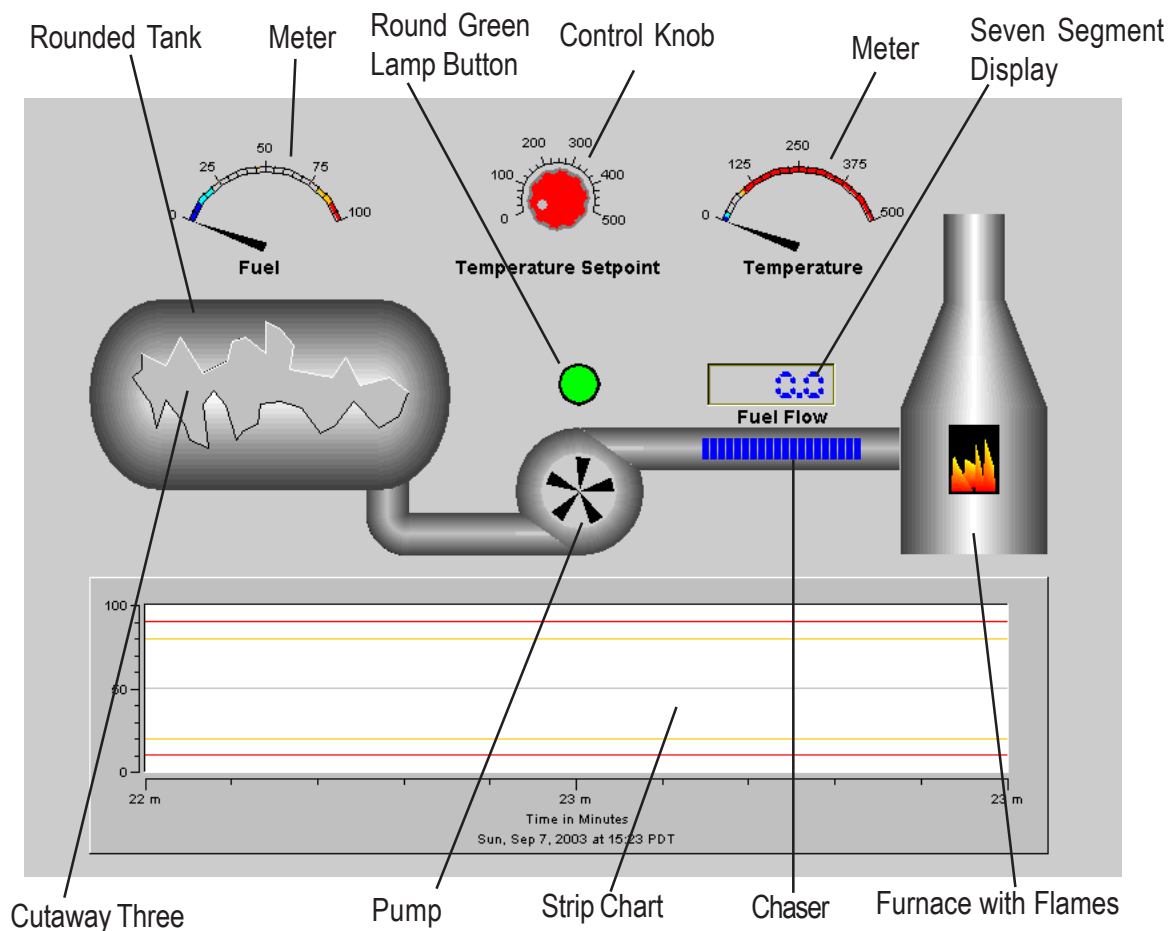
Notice that in the Properties Window for the Scale Manipulator, there is a multiplier and an "added factor" (offset). This block performs the classic $(data \times N) + offset$ scaling calculation. In this example, the readings from the knob will be multiplied by 2, and then a constant of 20 will be added.

Go Back and Experiment

Now that you have the basics down, go back and experiment with some of the other design elements like meters and switches. Some personal favorites are the “Chaser” (great for showing flow when overlaid on a pipe) and the pump. Both of these elements change speed based on a value, creating some pretty cool animation effects!

If you want an explanation of the design element and manipulator properties, check out the documentation that comes with ErgoView. Go to the Windows Start button, and under Ergotech, you'll find a folder called **documentation** with folders labeled **VIBLaces** and **VIBGuide**. In these folders, double-click on the **index.html** files to browse through the documentation.

Below is a sample ErgoView screen using some of the standard design elements with their names called out.



II ErgoView “Going On-line”

The next step: take your ErgoView design and get it connected to a controller and a web browser.



Preparing a Controller for ErgoView

ErgoView maybe used with any ICL Controller that has an Ethernet Port. This includes all of the controllers in the EtherLogic family, as well as the ScadaFlex Plus Controller. These controllers require some basic network communications configuration to support an ErgoView based system.

An ErgoView system utilizes three separate communications protocols, communicating over Ethernet:

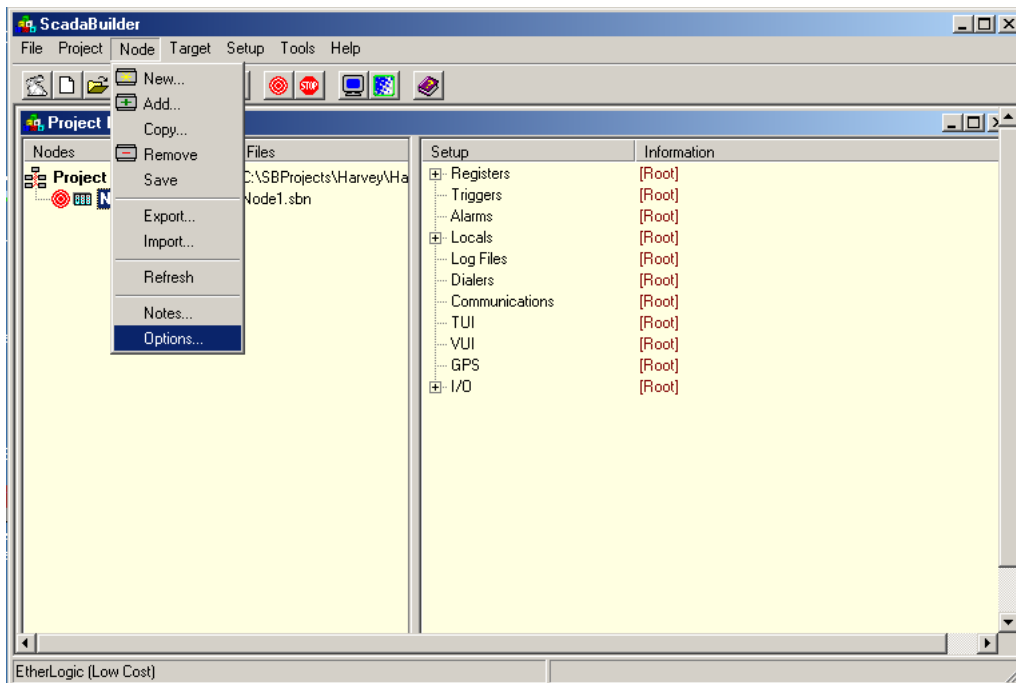
FTP (File Transfer Protocol) - ErgoView uses this protocol to download the Java files to the controllers flash “disk”. This protocol is also used to retrieve large data log files from the controller.

HTTP (Hypertext Transfer Protocol) - This is the standard protocol used to serve web pages to web browsers, and therefore, the protocol used to upload the ErgoView Java applets to users PCs.

Modbus TCP/IP - This is the protocol used to access Boolean and Numeric register data in the controllers for the screen displays and animation.

To use ErgoView, the controller must be set up to accept each of these protocols. With ICL’s ScadaBuilder software, this is a fairly painless process.

Most of the protocol configuration is done under ScadaBuilder **Node Options** menus (click on **Node** along the top menu tabs, then select **Options**).



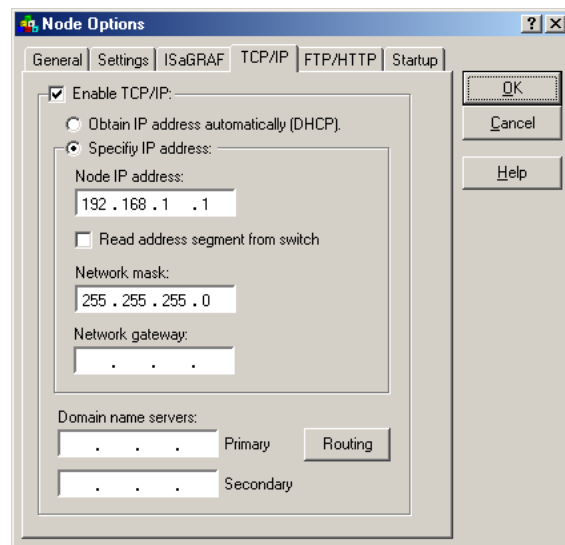
TCP/IP Configuration

TCP/IP is the basic Ethernet/Internet communication protocol on top of which the FTP, HTTP and Modbus protocols are transported. This protocol must be enabled and configured under the TCP/IP tab in the Node options section.

For ErgoView systems, TCP/IP configuration generally means simply setting an IP address and network mask. The address and mask determine how the controller is addressed by other computers over an Ethernet local area network or the Internet. Optionally, the controller can have additional configuration information such as a Network Gateway address (if it is connected through a router or server), and Domain Name Server addresses (if names instead of IP addresses are to be used).

To enable the TCP/IP protocol, the “Enable TCP/IP” box must be checked.

For ErgoView systems, the controller will typically be assigned a “Static IP address”. In some systems, a router or server assigns IP addresses dynamically using a technique called DHCP. Although ICL controllers can support DHCP, it is not recommended for ErgoView systems. In this case, the “Specify IP Address” box should be checked (and DHCP will not be checked).



The network address that the controller is set to MUST be unique and compatible with the rest of the network. If you are not sure of what address and mask settings to use, you should ask the person that administers your network, or your Internet provider.

In some cases, the controller will be connected to a local PC using a simple point to point connection via a “crossover cable” or through a hub or switch. If the Ethernet connection is not shared with other computers, there is no chance of address conflicts and a “standard” internal address may be used. If this is the case, use the address and Network Mask settings shown above. Remember, these settings must only be used if you are not on a network with other users.

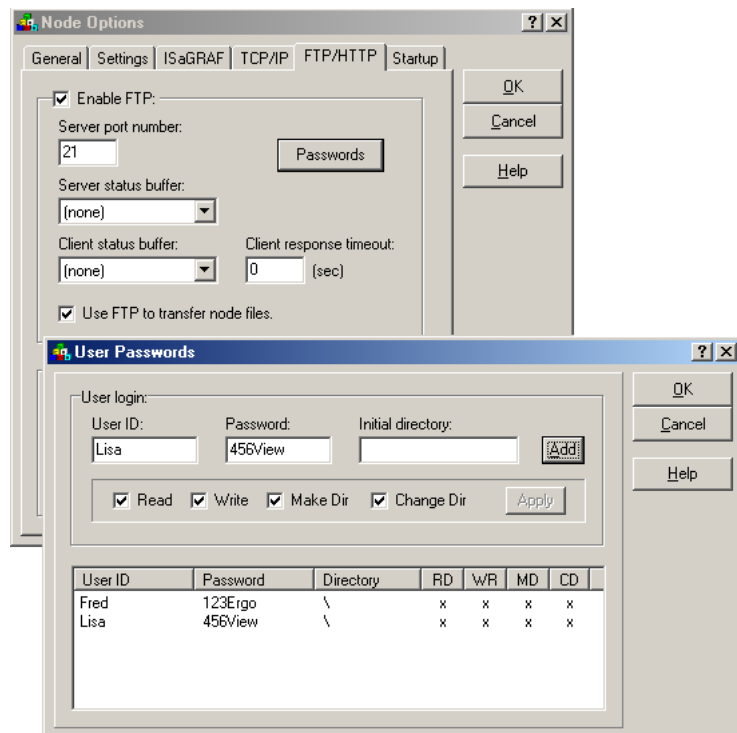
FTP Configuration

Besides enabling the use of the FTP protocol, the FTP protocol configuration section is primarily used to configure User IDs and Passwords to limit access to the controller. It is possible to configure the controller to bypass User ID and password validation, but unless you are in a very secure environment, it is recommended that you assign User IDs and Passwords. The FTP protocol can enable a malicious user to freely add and delete files in the Controller.

Since ErgoView uses the FTP protocol, the “Enable FTP” box must be checked.

Unless you have a specific reason to do so, you should NOT change to default server port number (21). This number is a standard on the Internet.

To configure the FTP User IDs and Passwords, click on the “Passwords” button. This causes a User ID/Password editing window to be displayed.



ErgoView must be able to create a directory and write files to the controllers flash disk. In general, it is recommended that the password(s) set up for ErgoView developers should be allowed at least Read, Write and Make Directory permissions.

To set up an FTP user for ErgoView development, the User ID and Password should be entered in the appropriate boxes. The initial directory may be left blank. The Permissions boxes should be checked. Once the user information has been filled in, click on the “Add” button to finish entry of the user data. Users can be deleted by right-clicking on their line and selecting “delete”.

Note that ScadaBuilder can also use FTP to download files for configuring and programming the Controller. If ScadaBuilder development is being done over Ethernet, the “Use FTP to transfer Node Files” box should be checked.

HTTP Configuration

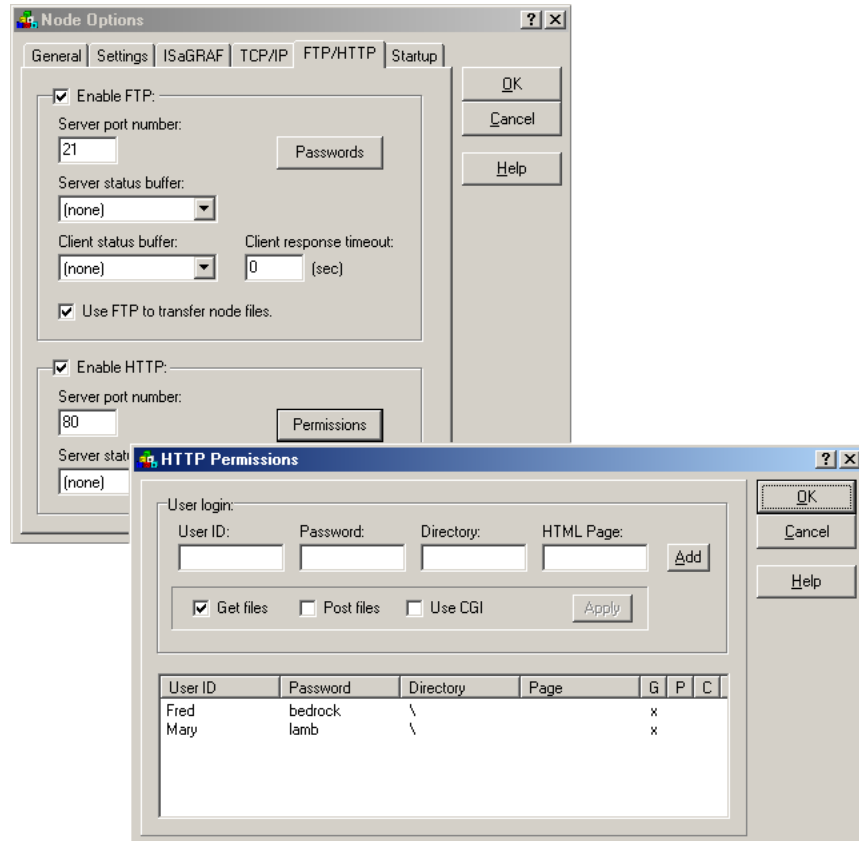
Besides enabling the use of the HTTP protocol, the HTTP protocol configuration section is primarily used to configure User ID and Passwords to limit access to the controller and its ErgoView screens. Since ErgoView can be used to change registers in the Controller, you may decide to not bypass this level of security, depending on what users are allowed to do in the ErgoView screens.

Since the ErgoView screens (Java applets) are uploaded to the user PCs with the HTTP protocol, the “Enable HTTP” box must be checked.

Unless you have a specific reason to do so, you should NOT change to default server port number (80). This number is a standard on the Internet.

To configure the HTTP User IDs and Passwords, click on the “Permissions” button.

This causes a User ID/Password editing window to be displayed.



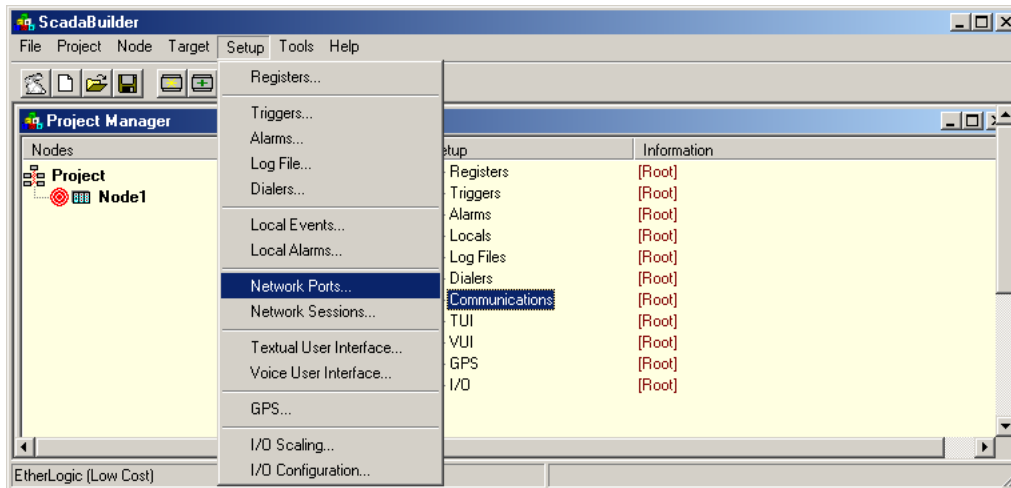
To set up an HTTP user to access ErgoView screens, the User ID and Password should be entered in the appropriate boxes. The initial directory and HTML Page may be left blank. Only the “Get Files” Permissions boxes should be checked. Once the user information has been filled in, click on the “Add” button to finish entry of the user data. Users can be deleted by right-clicking on their line and selecting “delete”.

Modbus TCP/IP Configuration

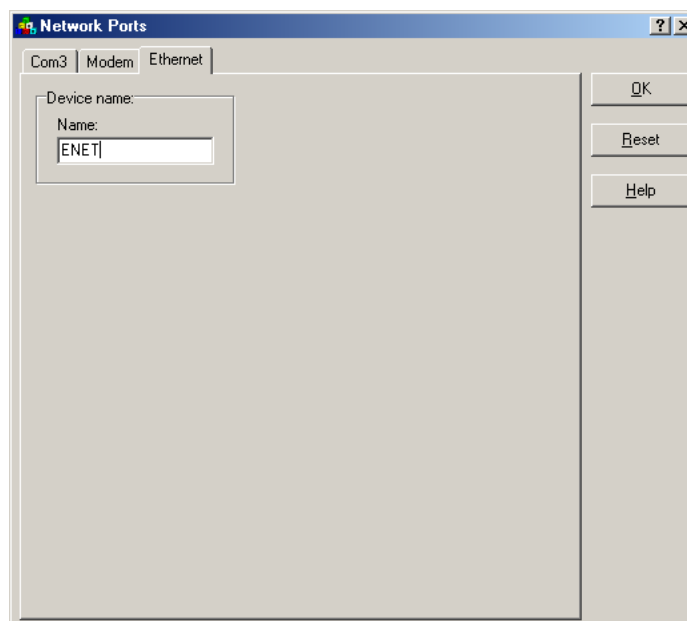
ErgoView applets expect to “talk” to a Modbus TCP/IP Slave to retrieve controller data, therefore, the Controllers Ethernet port must be configured with a Modbus TCP/IP Slave Net Session. Setting up an Ethernet Network Session is a two part process. First, a Network Port must be set up for Ethernet. Then a Network Session using that port name and configured for Modbus TCP/IP Slave protocol must be created.

Setting up an Ethernet Network Port

To begin setup of the Network Port, click on the “Setup” tab and select “Network Ports”.

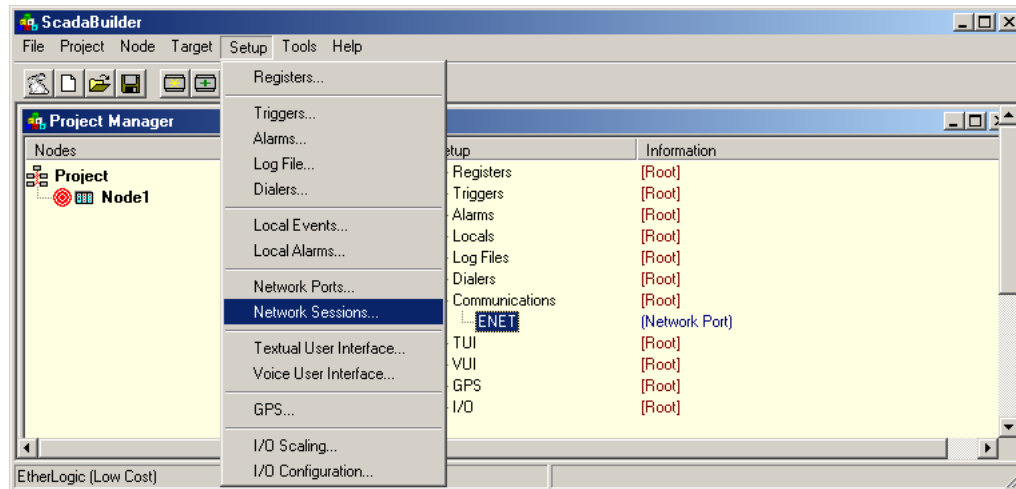


Under Network Ports, select the Ethernet tab and assign a name to the Ethernet Port. The actual name is not critical as long as it is unique (not used by any other port).

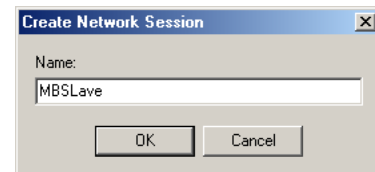


Setting up an Ethernet Network Session

To begin setup of the Network Session, click on the “Setup” tab and select “Network Sessions”.

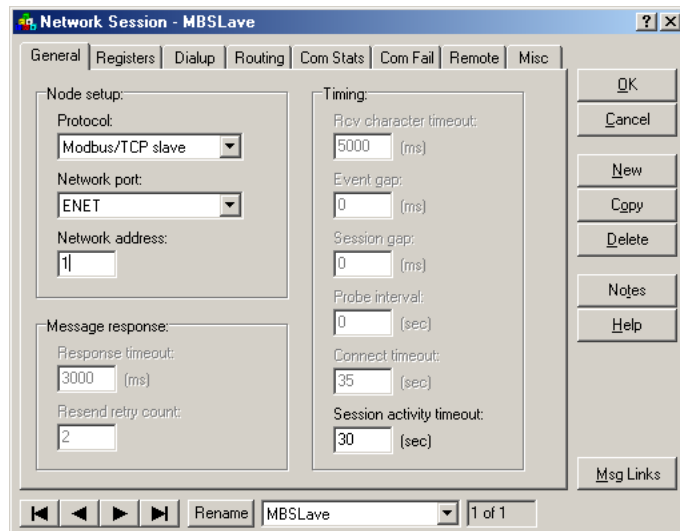


A window will pop up prompting for entry of a name for the new Network Session. The actual name is not critical as long as it is unique (not used by any other network session).



Once a name is entered, a Network Session configuration window is displayed. In this window, select the protocol (Modbus TCP/IP Slave), the Network Port (select the name that you assigned to the port), and the Network Address (typically 1).

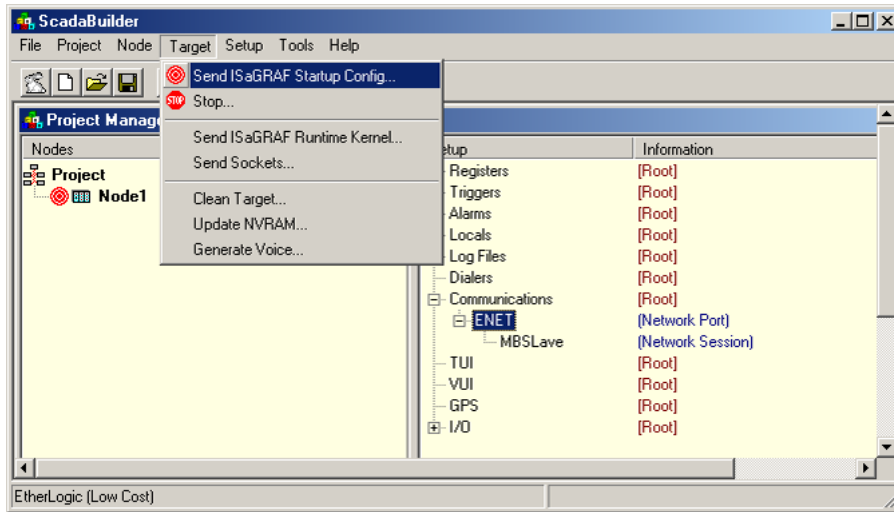
Unless you have a specific reason to do so, do not change the Session Activity Timeout parameter which defaults to 30 seconds.



ISaGRAF Startup Configuration

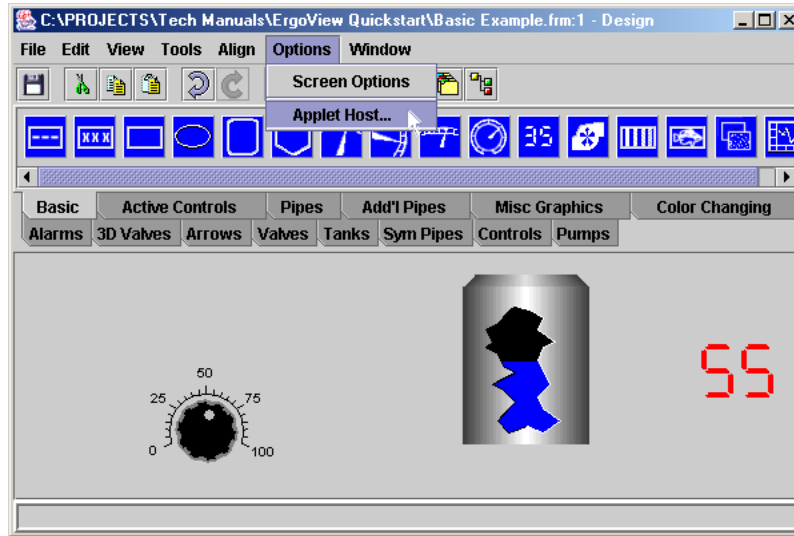
Whenever changes are made to the controllers Ethernet ports and drivers, a new startup configuration file must be downloaded to the controller. In addition, if the controller has never before been configured for any Ethernet operation, the Ethernet “sockets” module must be downloaded to the Controller. Both of these functions are accessed under the “Target” menu tab.

Without a previously established Ethernet link, ScadaBuilder will have to load the files via a serial port. Connect your PC computer to the COM1 serial port of the controller using a “null modem” cable. With the cable installed, click on the appropriate function under this tab and follow the prompt messages from ScadaBuilder.

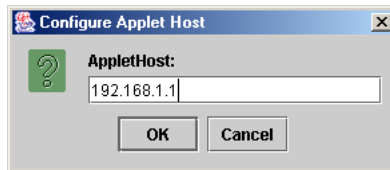


Configuring the ErgoView Applet Host Address

To successfully communicate with the controller, ErgoView must be configured with the same IP address that was used in the TCP/IP address configuration of the controller. This address is known as the Applet Host address (since the controller will Host the applets to users that log in). The Applet Host address is entered under the “Options” menu tab of the Design Window.



When the Applet Host address is selected from the menu tab, ErgoView presents a new pop-up window for entry of the Host I/P address.



Linking Controller Registers to ErgoView

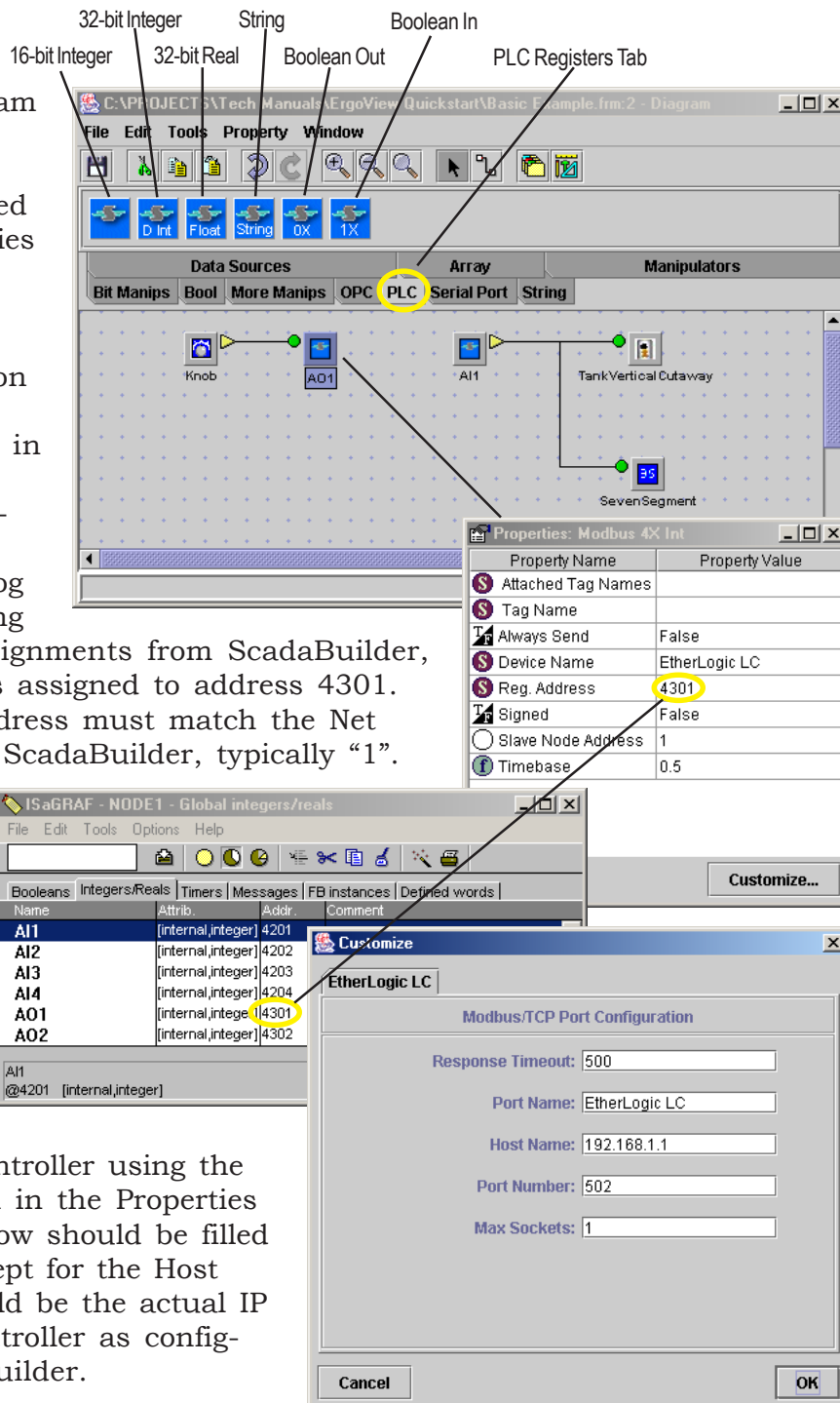
Working with the original design elements used in the first section of this guide, we will now connect the devices to registers in the controller instead of each other. The Control Knob will be linked to an Analog Output, and an Analog Input will be linked to the Tank Level and LED display. The links to the controller

registers have their own set of icons in the Diagram Window under the “PLC” tab. These icons are configured using the Properties Window.

The register addresses of each icon must match the register addresses in the controller. In this case, the Control Knob will be used to drive analog output AO1. Looking at the register assignments from ScadaBuilder, the AO1 register is assigned to address 4301. The slave node address must match the Net Session setting in ScadaBuilder, typically “1”.

The “Timebase” sets the update rate from the controller in seconds.

The device name and TCP/IP parameters are typically defined only once for a controller using the “customize” button in the Properties Window. The window should be filled out as shown, except for the Host Name, which should be the actual IP address of the controller as configured with ScadaBuilder.



Downloading to the Controller

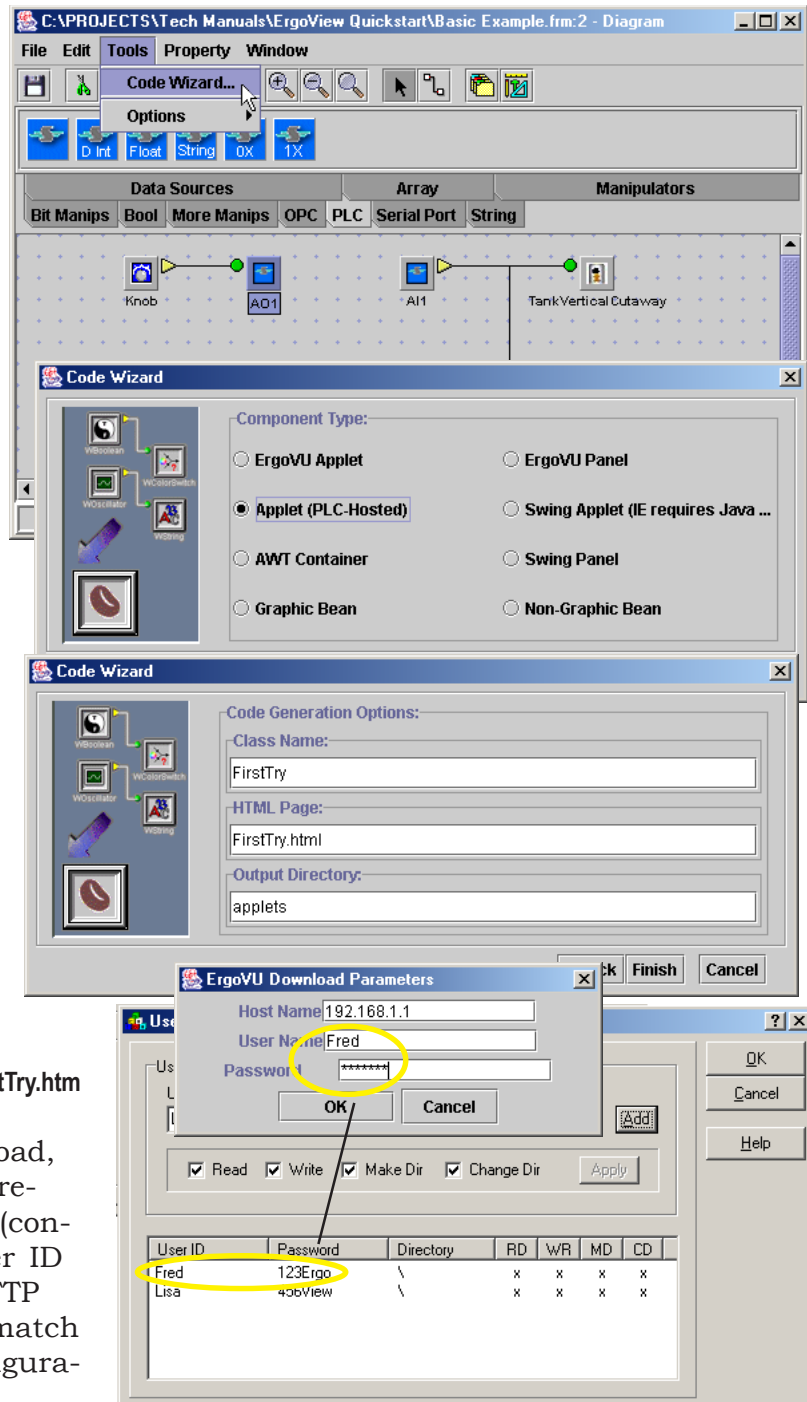
Once the operation of the screens has been verified using the “running man mode” on the Design Window, ErgoView can generate the Java applets and download them to the controller so that users can access the screens with their web browsers. This function is performed by the “Code Wizard” which may be launched from the “Tools” menu of either the Design Window or the Diagram Window.

When the Code Wizard is launched, a “Component Type” window is displayed. “Applet (PLC Hosted)” must be used for ICL controllers.

A second window is then displayed with “Code Generation Options”. Enter a “Class Name” of eight characters or less. This name will become the name of the HTML file stored on the flash “disk” of the controller.

The “Output Directory” should be left as “Applets”, the directory into which the ErgoView applets will be placed. In this example, the web page would be accessed at **HTTP://<IP Address>/applets/FirstTry.htm**

To complete the download, the Code Wizard then requests the Host name (controller IP address), User ID and Password for the FTP transfer. These must match the ScadaBuilder configuration in the Controller.





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