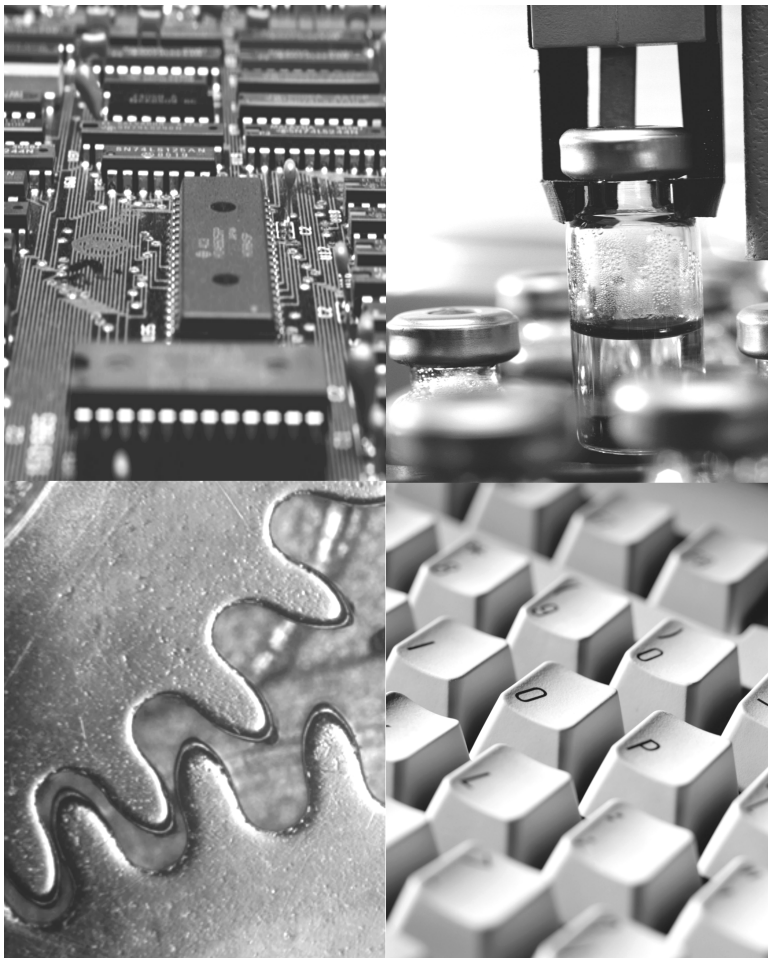
FactoryCast
User's Guide
For Quantum and Premium

890 USE 152 00 Version 2.0



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890 USE 152 00 Version 2.0

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Schneider Electric

Document Set

Quantum Ethernet Embedded Web Server Module User Guide
840 USE 115 00

Premium Ethernet User Guide
TLX DSCOM PL7

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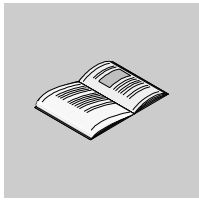
Contents



Introduction to FactoryCast

1

At a Glance

Purpose

This chapter describes FactoryCast for Quantum and Premium, including its functions, components and system requirements.

In This Chapter

This chapter contains the following topics:

What Is FactoryCast?

Overview

FactoryCast is a software package that allows you to customize a Web site on the Embedded Web Server module. The site can be accessed via a browser to view and modify data from a Quantum or Premium programmable logic controller (PLC).

Default Web Site

FactoryCast provides all the Web pages and Java applets you need to view run-time data from your controller. You can use the FactoryCast default Web site simply by configuring the module and accessing it with a browser over the intranet.

Custom Web Site

FactoryCast gives you two ways to customize the default Web site:

- Create a Web-enabled database to view and modify the run-time values of symbols (variables) and direct addresses
- Add your own Web pages to the site

Site Maintenance

FactoryCast also provides all the tools you need to maintain your Web site on the Embedded Server, including ways to download, backup and restore files.

Components of FactoryCast

Overview

The three components of FactoryCast are:

- FactoryCast Server
- FactoryCast Configurator
- FactoryCast Client

Quantum Version

For Quantum, the FactoryCast components are integrated as follows:

This Component...	Is Used To...
140 NOE 211 10 140 NOE 251 10 (Fiber Optic)	Store the Web site on its Embedded Server.
140 NOE 771 10	Enhance web server performance and memory
Concept v. 2.1 and higher Modsoft v. 2.5 and higher	Program the controller.
FactoryCast Configurator	Configure the Web site, download data and maintain the site on the server.
FactoryCast Client	Display and modify PLC data.
Netscape Communicator 4.06 Internet Explorer 4.0 (w/Service Pack 2)	View the Web site.

Premium Version

For Premium, the FactoryCast components are integrated as follows:

This Component...	Is Used To...
TSX ETY 110 WS v. 2.2, minimum	Store the Web site on its Embedded Server.
PL7 v. 3.0 and higher	Program the controller.
FactoryCast Configurator	Configure the Web site, download data and maintain the site on the server.
FactoryCast Client	Display and modify PLC data.
Netscape Communicator 4.06 Internet Explorer 4.0 (w/Service Pack 2, minimum)	View the Web site.

FactoryCast

Overview

FactoryCast consists of HTTP and FTP servers embedded in a Quantum or Premium Ethernet option module.

How It Works

The servers contain a default set of diagnostic Web pages and Java applets. The user can add custom Web pages and applets for specific applications.

Versions

Schneider Automation offers three versions of the Embedded Server

Part Number	Description	Memory Avail. for Customization
140 NOE 211 10	Quantum Embedded Server Module with Ethernet TCP/IP, 10 BaseT Twisted Pair, 1 Channel, and FactoryCast Configurator Software	Configurable
140 NOE 251 10	Quantum Embedded Server Module with Ethernet TCP/IP, 10 BaseFL Fiber Optic, 1 Channel, and FactoryCast Configurator Software	Configurable
140 NOE 771 10	Quantum FactoryCast module with Ethernet TCP/IP, 100 BaseT twisted pair/100 Base Fx fiber optic, 1 channel, and FactoryCast configurator software.	up to 8 Mb
TSX ETY 110 WS v. 2.2, minimum	Premium Embedded Server Module with Ethernet TCP/IP, 10 BaseT Twisted Pair, AUI and FactoryCast Configurator Software	Configurable

FactoryCast Configurator

Overview

You can use the FactoryCast Configurator to configure and maintain your Web site.

You also can use it to create a Web-enabled database of variables (symbols) and direct addresses, which can be viewed and modified during run-time over the Web.

Configuring a Site

The configuration tool helps you to:

- Set security, including passwords and read/write protection
- Add your company logo to Web pages
- Add your own Web pages, images and Java applets to a site
- Download and upload files to the Embedded Server

Creating a Database

The configuration tool allows you to create a Web-enabled database using symbols (variables) and direct addresses from your Concept or PL7 database. You can use this Web-enabled database to view and modify the symbols and direct addresses while the controller is running.

Maintaining a Site

The configuration tool allows you to back up files, restore files and, if necessary, reflash FactoryCast Configurator files to the Embedded Server.

FactoryCast Client

Overview	FactoryCast Run-Time Diagnostics consists of default Web pages, Java applets, a Data Editor, a Graphics Editor, and an Alarm Viewer.
Default Web Components	The default Web pages and Java applets allow you to display the status and configuration of the controller, Embedded Server module, other option modules and I/O modules.
Data Editor	The Data Editor allows you to view and modify variables (symbols) and direct addresses which have been included in a namespace on the Embedded Server.
Graphic Editor	The Graphic Editor allows you to create and view data using Java Beans for visualization. Each graphic object can be linked to a variable or address in the embedded server.
Alarm Viewer (Premium Only)	When the PLC Premium application has diagnostic properties activated, the Alarm Viewer allows you to display potential application faults.

System Requirements

Overview

This section provides minimum system requirements for FactoryCast Configurator software. If FactoryCast Configurator programs are used simultaneously with other software packages, a more powerful configuration may be required.

To Use the Configuration Tool

Minimum system requirements are:

Processor	Pentium 166 Mhz (Pentium 200 Mhz recommended)
Operating System	Windows 95/98 or Windows NT 4.0 (w/Service Pack 3)
Ram	32 Mb (64 MB recommended)
Drives	Hard Disk (free space)40 Mb Floppy Disk 4XCD-ROM
Monitor	SVGA 800x600

To View and Modify Run-Time Diagnostics

Minimum system requirements are:

Processor	Pentium 166 Mhz (Pentium 200 Mhz recommended)
Operating System	Any
Ram	32 Mb (64 MB recommended)
Drives	Hard Disk
Monitor	SVGA 800x600
Browsers	Netscape Communicator 4.06 or higher OR Internet Explorer 4.0 (w/Service Pack 2) or higher (Must support HTML 3.0 and Java Development Kit (JDK) 1.1.5)

Browsers

For browser requirements, see *Browser Requirements, Settings and Security Considerations* on page 229.

Installation

Overview

This section explains the FactoryCast installation procedure. FactoryCast comes on a compact disc and is self-installing. Once the disc has loaded onto your PC, follow the installation dialogs.

Downloaded Files

FactoryCast will download the following files during installation:

Table 1: Quantum Modules

Sys Diag	Data Editor	Graphic Editor	Comm Intf
wwwroot/classes Sys Diag.jar wwwroot/conf Gcnftcop.sys wwwroot/images module.gif miniplc.gif eight_io.gif empty.gif secure/system ctrlstat.htm ethernet.htm plccfg.htm riostat.htm	wwwroot/classes RDE.jar secure/system rde.htm	wwwroot/classes GDE.jar Widgets.jar secure/system gde.htm	wwwroot/classes SAComm.jar

Continued on next page

Installation, continued

Table 2: Premium Modules

Sys Diag	Data Editor	Graphic Editor	Alarm Viewer	Comm Intf
wwwroot/classes JL.jarSysDiag.jar wwwroot/conf business.pbf modules.pbf products.pbf xway.txtranges.pbf wwwroot/images anim1.gif backbtn.gif secure/system plccfg.htm	wwwroot/classes RDE.jar secure/system rde.htm	wwwroot/classes GDE.jar Widgets.jar secure/system gde.htm	wwwroot/classes RAE.jar secure/system rae.htm wwwroot/images ack.gif ackall.gif dfb.gif gr7.gif help.gif nack.gif stop.gif sys.gif trasall.gif trash.gif asi.gif	wwwroot/classes SAComm.jar

Web Site Security

2

At a Glance

Purpose

Before you set up your Web site, you should give some thought to security. While data in a default Web site is read-only, data in a custom site can be write-enabled. You should consider carefully who has access to the site and which data can be modified.

This chapter discusses security concerns and some security mechanisms available to FactoryCast users.

In This Chapter

This chapter contains the following topics:

Internal Security

Overview

The Web site you create with the FactoryCast Configurator may be accessed over an intranet. FactoryCast Configurator provides two mechanisms to ensure that only authorized users view and modify your data.

Security Mechanisms

On intranets, FactoryCast Configurator provides security through:

- Password entry
- Write restrictions

CAUTION

SECURITY SETTINGS MAY BE CHANGED

Keep strict control of access to the FactoryCast Configurator software. Anyone who has access to FactoryCast Configurator and to your Embedded Server can override your security settings and download new settings to the server. This could result in unauthorized users making unauthorized changes to data values, leading to unpredictable and possibly dangerous changes in your application.

Failure to observe this precaution can result in injury or equipment damage.

Password Entry

Although you may add unprotected Web pages to the site, the default Web pages and any other pages you choose to protect can only be viewed by users who supply the correct user name and password.

Continued on next page

Internal Security, Continued

Write Restrictions

In order to write register values or save templates to your Web site with the Data Editor or Graphic Editor, a user must enter an additional password for write access. Users who enter the write password can only modify variables, (symbols) and direct addresses which are set as write-enabled. When you create a Web-enabled database of variables and direct addresses, you can designate each element as read-only or write-enabled.

CAUTION

CHANGES TO DATA MAY RESULT IN CHANGES TO YOUR APPLICATION

Be careful about which variables (symbols) and direct addresses you allow to be modified online, and be cautious about who has permission to modify them. Unauthorized or incorrect changes to data may change the behavior of your application in ways that may be undesirable or even dangerous.

Failure to observe this precaution can result in injury or equipment damage.

Security Overrides

Because the passwords and read/write settings are downloaded to the Embedded Server with the FactoryCast Configurator, anyone who has a copy of the Configuration Tool software and access to your Embedded Server over the network can modify your security settings by downloading new ones.

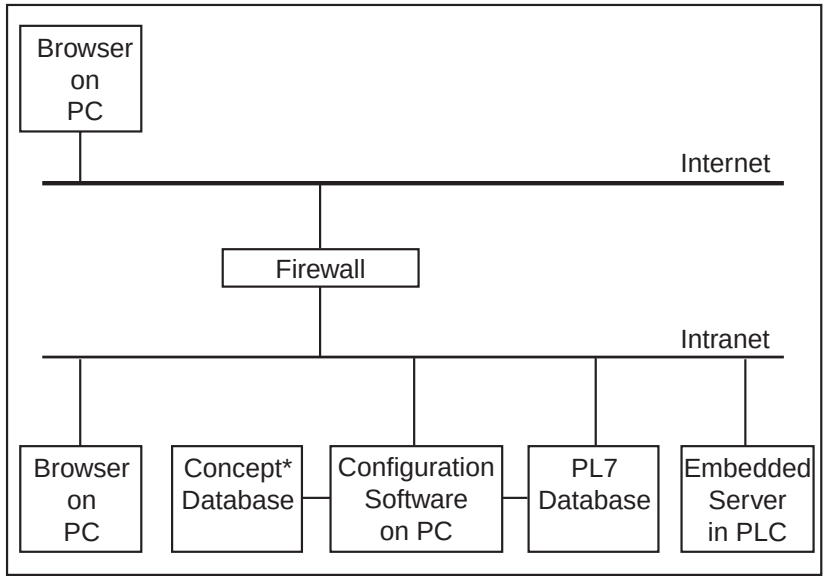
External Security

Overview

If your network is configured to allow users to view your site over the Internet, you have the same security concerns as for an intranet, but you have an extra mechanism to deal with them: a firewall.

Firewall Architecture

A firewall is a gateway from the Internet to your Embedded Server, as depicted below. You can use a firewall to restrict or deny access to your Web site.



Types of Firewalls

There are two types of firewalls:

- Network-level firewalls
- Application-level firewalls

Continued on next page

External Security, Continued

Network-Level Firewalls

Network-level firewalls are frequently installed between the Internet and a single point of entry to an internal, protected network.

Application-Level Firewalls

An application-level firewall acts on behalf of an application; for instance, FTP. It intercepts all traffic destined for that application and decides whether to forward that traffic to the application. Application-level firewalls reside on individual host computers.

Considerations for FactoryCast Configurator

FactoryCast Configurator uses FTP to access Embedded Server files. If you want viewers to be able to access your site from the Internet and your Embedded Server is protected by a firewall, then that firewall must be configured to allow FTP traffic.

The firewall may be configured to allow network connections to a restricted port range or to allow traffic to and from certain IP addresses. Firewalls configured to allow incoming data to FTP's well-known TCP/IP port of 21, and to allow incoming data to ports higher than 1024, will grant access to protected Embedded Servers.

The FactoryCast client follows the "Firewall Friendly FTP" standard, RFC 1579. It issues an FTP PASV command to FactoryCast before all attempts to establish an FTP data connection.

FactoryCast Client uses TCP/IP port 80 for HTTP access to Web pages stored on an Embedded Server. Schneider Automation's MBAP protocol is used to access run-time data on TCP/IP port 502. These ports must also be made available through the firewall.

Note: Quantum users who want to add a single FTP password to the server can create an ASCII file, ftplist.dat. This file should contain the user name string on the first line and a password string on the second line. For example:

MyUser
My password

Save this file to your local PC directory under \FactoryCast\Qbf\Software \wwwroot\ftplist.dat. Next, use the Configurator to "Restore Defaults"

Default Web Site for Quantum

3

At a Glance

Purpose

When you receive the Server, it already contains a default Web site with diagnostic pages and the Data Editor.

You may view these pages and view direct addresses in the Data Editor simply by installing the module and configuring its IP address. To access the site, type the Domain name or IP address of the module in your browser and enter the default user name and password of “USER”. However, Schneider Automation recommends that you complete the setup procedures that begin with*FactoryCast Configurator* on page 79.

This section describes the pages in the default Web site.

In This Chapter

This chapter contains the following sections:

Section 3.1
Introductory Pages

Overview

Purpose

When a user accesses the default Web site for Quantum, he first encounters a FactoryCast Home Page and then a Quantum Welcome Page. This section describes those two pages.

In This Section

This section contains the following topics:

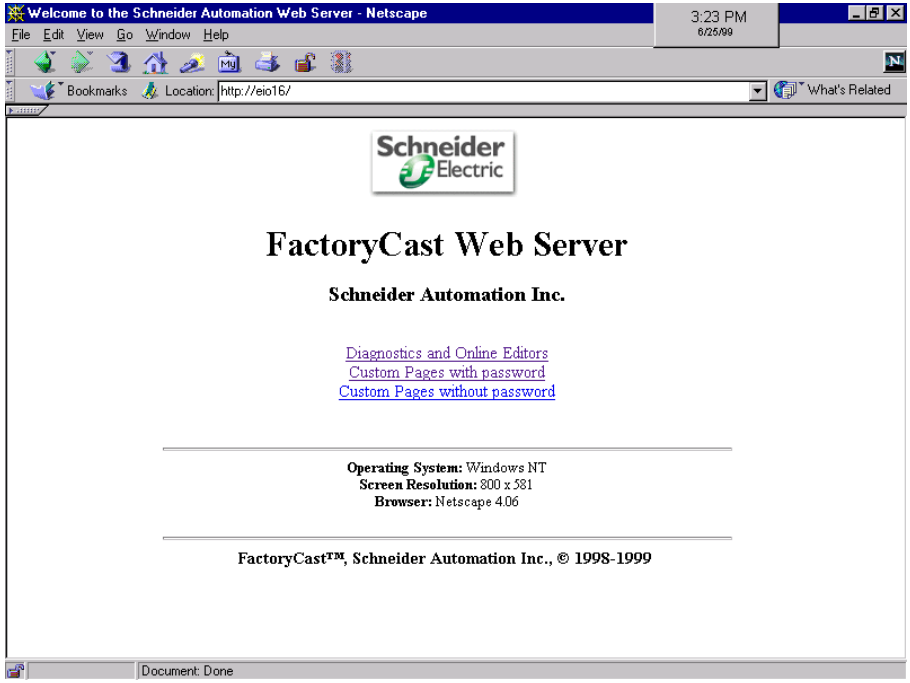
FactoryCast Home Page

Overview

The FactoryCast Home Page is the first page a visitor will encounter. No password is required to access this page.

Home Page

This is how the FactoryCast Home Page looks:



Continued on next page

FactoryCast Home Page, Continued

Links

The home page offers three links:

- Diagnostics and Online Data Editor links to the default diagnostic Web pages and the Run Time Data Editor
- Password Protected Custom Application will link to any Web pages you add to the site with password security
- Custom Application will link to any Web pages you add to the site without password security

Data

The home page reports on your:

- Operating system
- Screen resolution
- Browser type and version

Customize

The home page can be customized to meet your specific needs. Simply edit the HTML and download the page to the embedded server. See *Download* on page 123.

Quantum Welcome Page

Overview

When a visitor clicks on the **Diagnostics** link on the FactoryCast Home Page, they are directed to the Quantum Welcome Page. They must supply a user name and password to view this page because it is in the protected area of the site.

Welcome Page

This is how the Quantum Welcome Page looks:

Links

The Quantum Welcome Page provides links to all of the Quantum diagnostic pages and to the Run-Time Data Editor and Graphic Editor.

Section 3.2
Local Rack Diagnostics

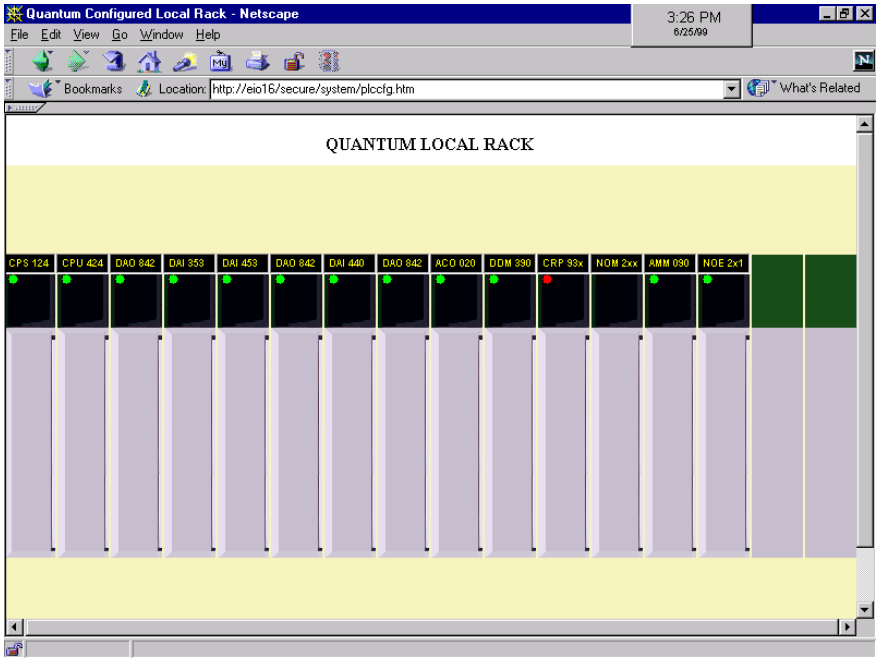
Configured Local Rack Page

Overview

The Quantum Configured Local Rack page displays the current configuration of the local rack, including the controller, Embedded Server module and any I/O modules. The rack can contain up to 16 slots.

Sample Page

Here is an example of a Configured Local Rack page:



Continued on next page

Configured Local Rack Page, Continued

Data

Each module is displayed in its configured slot in the rack and the following information is provided:

- A label at the top of the module tells what type it is. Question marks indicate that the module type is unknown or the slot is empty.
- An LED below the label reports the module status:
  - Green indicates that the module is functioning properly
  - Red indicates that the module is not functioning properly

Links

If you click on any of the modules, you will will get a pull-down menu or go directly to another Web page with detailed information about that module.

Links at the bottom of the page connect to other pages in the server.

Section 3.3
Controller Diagnostics

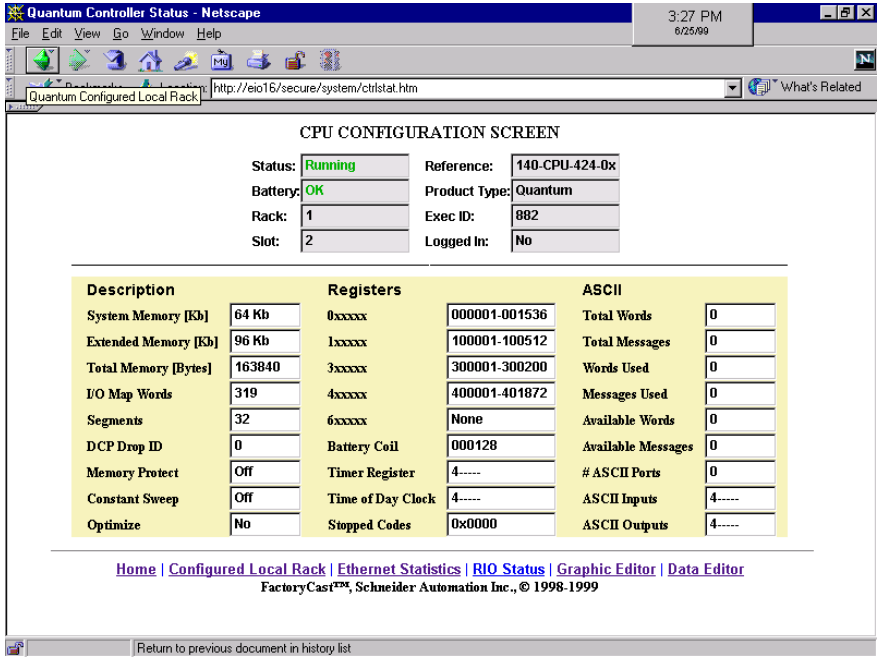
Controller Status Page

Overview

The Controller Status Page provides up-to-date information about the controller and its configuration. Access this page by selecting the CPa module or the hyperlink at the bottom of the page.

Sample Page

Here is an example of a Controller Status page:



Continued on next page

Controller Status Page, Continued

Dynamic Data	Some of the data provided on this page is dynamic. Dynamic data is constantly refreshed at a rate determined by the performance of the Embedded Server, network, and client CPU.
Links	Links at the bottom of the page connect to other major diagnostic pages.

Section 3.4
Ethernet Module Diagnostics

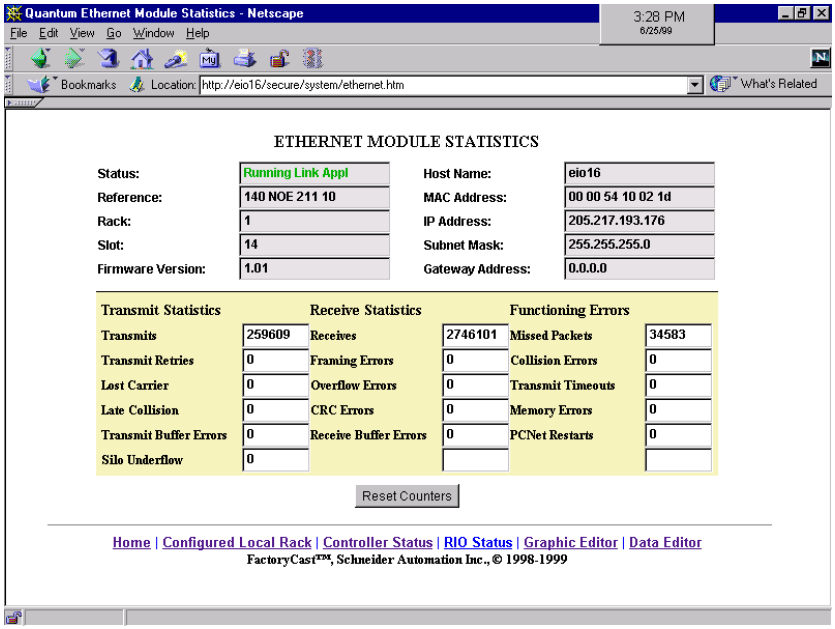
Ethernet Module Statistics Page

Overview

The Ethernet Module Statistics page provides information about the status, transmit and receive statistics and errors for the Embedded Server module. Access this page by selecting the NOE module from the local rack or use the hyperlink at the bottom of the page.

Sample Page

Here is an example of an Ethernet Module Statistics page:



Note: Refer to *Modicon Quantum Ethernet TCP/IP Module User Guide* 840 USE 107 00 and *Modicon Quantum Ethernet TCP/IP Module User Guide* 840 USE 115 00 for definitions of terms.

Continued on next page

Ethernet Module Statistics Page, Continued

Dynamic Data	Some of the data provided on this page is dynamic. Dynamic data is constantly refreshed at a rate determined by the performance of the Embedded Server, network, and client CPU. The Zero Counters button allows you to set all data fields to zero. They will continue to be refreshed after this setting.
Links	Links at the bottom of the page connect to other major diagnostic pages.

Section 3.5
Remote I/O Diagnostics

Remote I/O Diagnostics Overview

Purpose

Several default Web pages provide information about configured remote I/O, including:

- Remote I/O Status page
- Configured Remote I/O page
- Remote I/O Drop pages
- Remote I/O Drop Module pages

In This Section

This section contains the following topics:

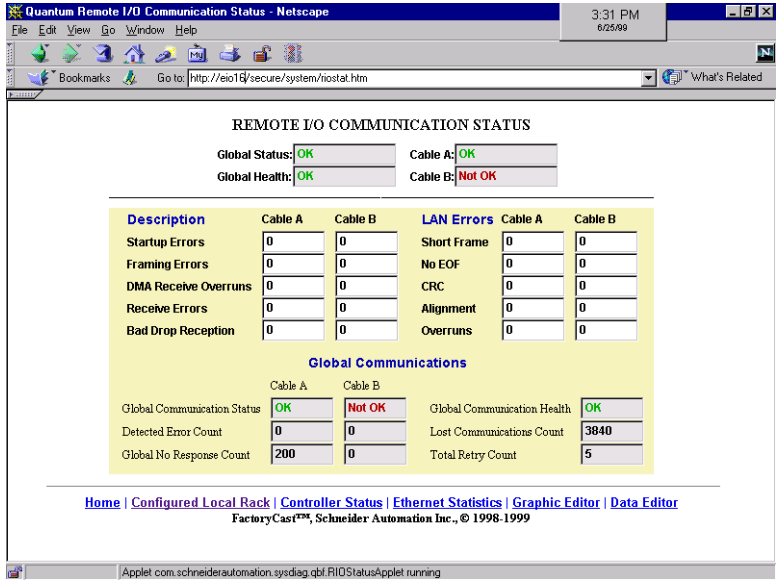
Remote I/O Status Page

Overview

The Remote I/O Status page gives an overview of the status and health of the Remote I/O network communications. Access this page by selecting the CRP Drop down menu item, “Remote I/O Status”.

Sample Page

Here is an example of a Remote I/O Status page:



Dynamic Data

Some of the data provided on this page is dynamic. Dynamic data is constantly refreshed at a rate determined by the performance of the Embedded Server, network, and client CPU.

Links

Links at the bottom of the page connect to other major diagnostic pages.

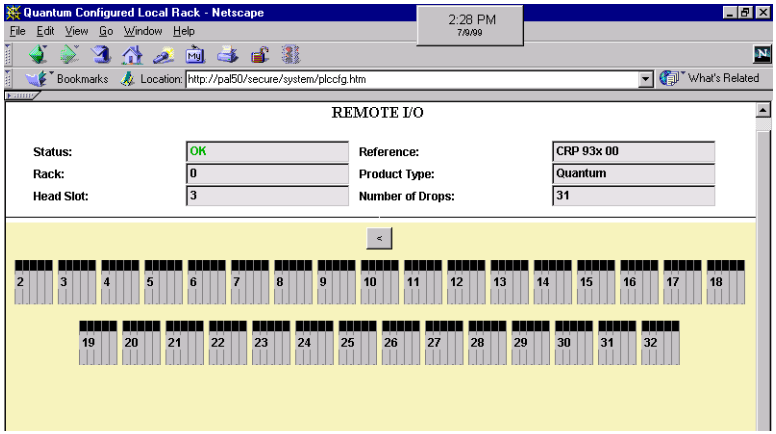
Configured Remote I/O Page

Overview

The Configured Remote I/O page displays information about the Remote I/O Head Processor and the number of remote I/O drops. This page can be accessed by selecting the CRP (RIO Head) module in the Configured Local Rack Page described previously

Sample Page

Here is an example of a Configured Remote I/O page:



Data

The top half of the screen provides the current status (dynamic) and other data about the Remote I/O Head Processor.

The bottom half of the screen displays an icon for each Remote I/O Drop and the drop number. Moving the cursor across the icons will display a text message in the Browser status window indicating whether the drop is 800 series or Quantum I/O.

Links

Click on a drop adapter icon to get detailed information about each drop.

The “<” back button returns you to the previous page.

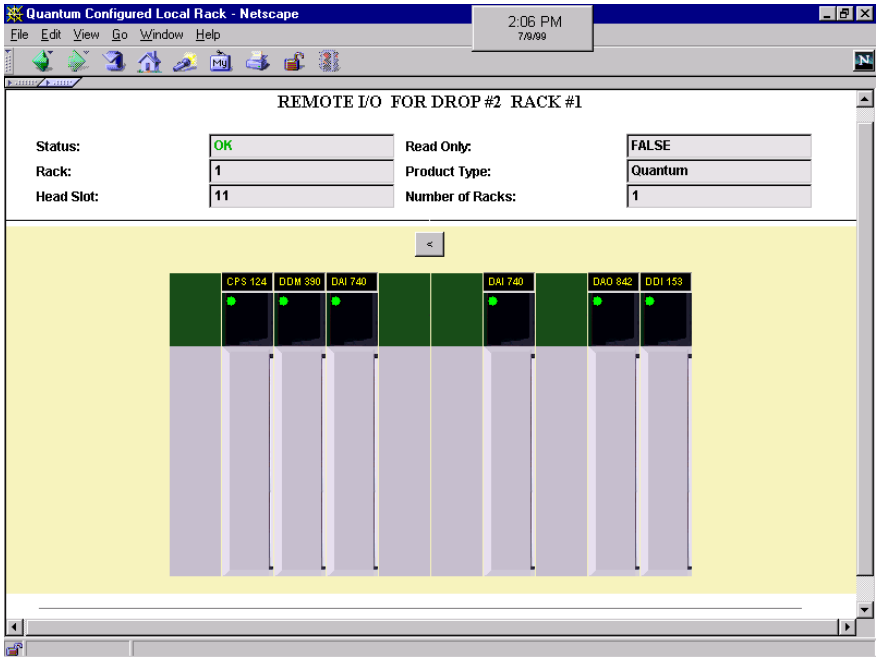
Remote I/O Drop Pages

Overview

When you click on the icon for a Remote I/O Drop Adapter on the Configured Remote I/O page, you reach a Remote I/O Drop page with detailed information about that drop.

Sample Page

Here is an example of a Remote I/O Drop page:



Continued on next page

Remote I/O Drop Pages, Continued

Data

The top part of the page reports the current status of the drop adapter and the number of modules in the drop.

The bottom part of the page provides an icon for each module in the drop. A label at the top of the module identifies the module type. Question marks indicate that the module type is unknown or the slot is empty. A colored LED reports module status:

- Green indicates that the module is functioning properly
- Red indicates that the module is not functioning properly

Links

Click on a module icon to get detailed information about that module.

The “<” back button returns you to the previous page.

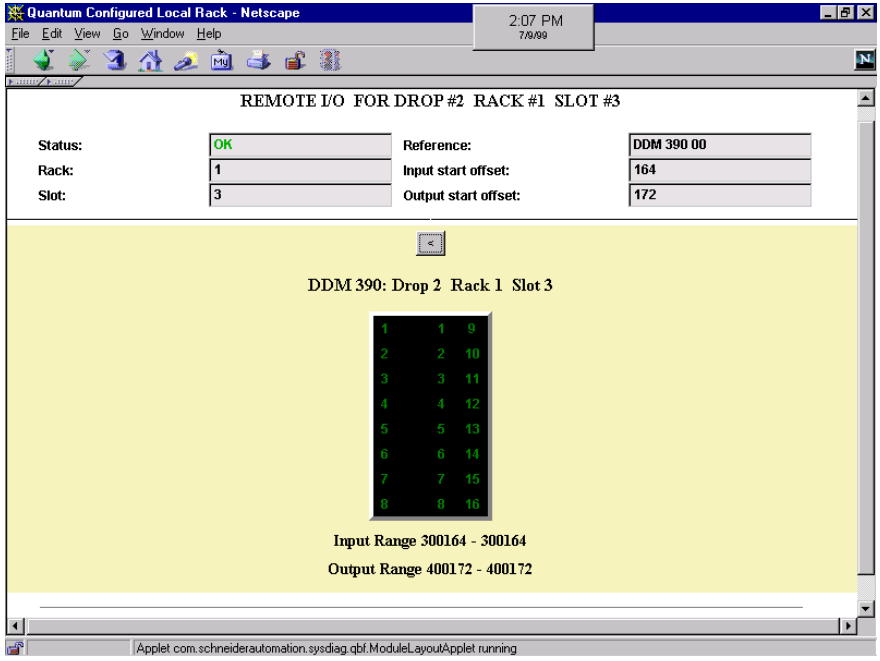
Remote I/O Drop Module Pages

Overview

When you click on a specific module on a Remote I/O Drop page, you reach a Remote I/O Module page with information about that module.

Sample Page

Here is an example of a Remote I/O Discrete Module page:



Continued on next page

Remote I/O Drop Module Pages, Continued

Data

The top part of the screen provides information about the current status of the I/O module, its location, module type and input or output offset.

The LED panel in the lower part of the screen displays the status of the discrete I/O points:

- Green indicates the point is active
- Off indicates the point is not active
- It displays analog register values in integer format.

Links

A “<“ back button at the bottom of the screen allows you to return to the previous page.

Section 3.6
Distributed I/O Diagnostics

Distributed I/O Diagnostic Overview

Purpose

Several Web pages provide information about configured distributed I/O, including:

- Distributed I/O Drops page
- Distributed I/O Specific Drop page
- Distributed I/O Module pages

Distributed I/O pages can be accessed by selecting either the CPU or a NOM from the Configured Local Rack page assuming that Distributed I/O is configured in the controller.

In This Section

This section contains the following topics:

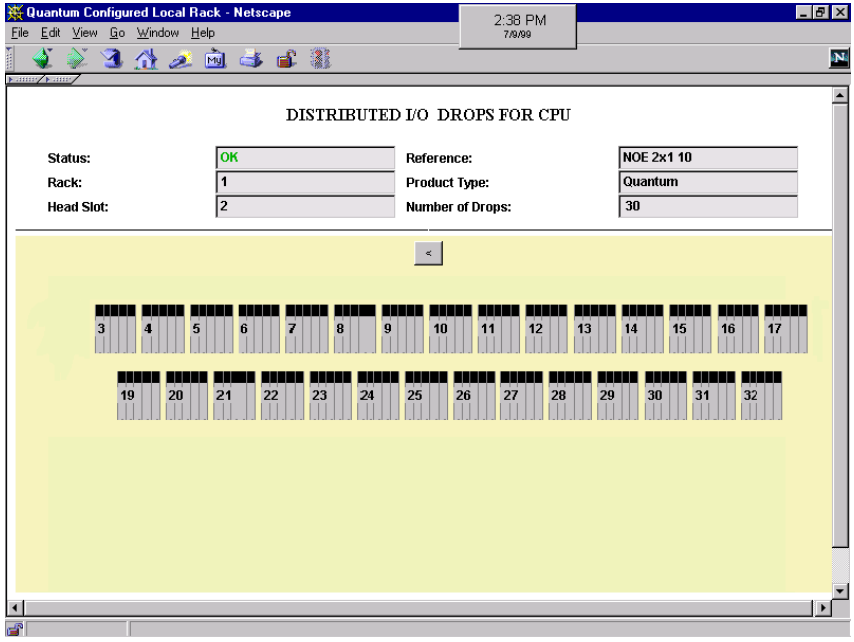
Distributed I/O Drops Page

Overview

When you select a module on the Configured Local Rack page configured for distributed I/O, you reach a page with detailed information about the distributed I/O networked drops controlled by that module.

Sample Page

Here is an example of a Distributed I/O drops page connected to the CPU:



Continued on next page

Distributed I/O Drops Page, Continued

Data

The top half of the screen provides the current status (dynamic) and other data about the controller or NOM module running the distributed I/O network.

The bottom half of the screen displays an icon for each distributed I/O drop.

Links

Click on a drop icon to get detailed information about each drop.

Links at the bottom of the page connect to other diagnostic pages.

The “<” back button returns to the previous page.

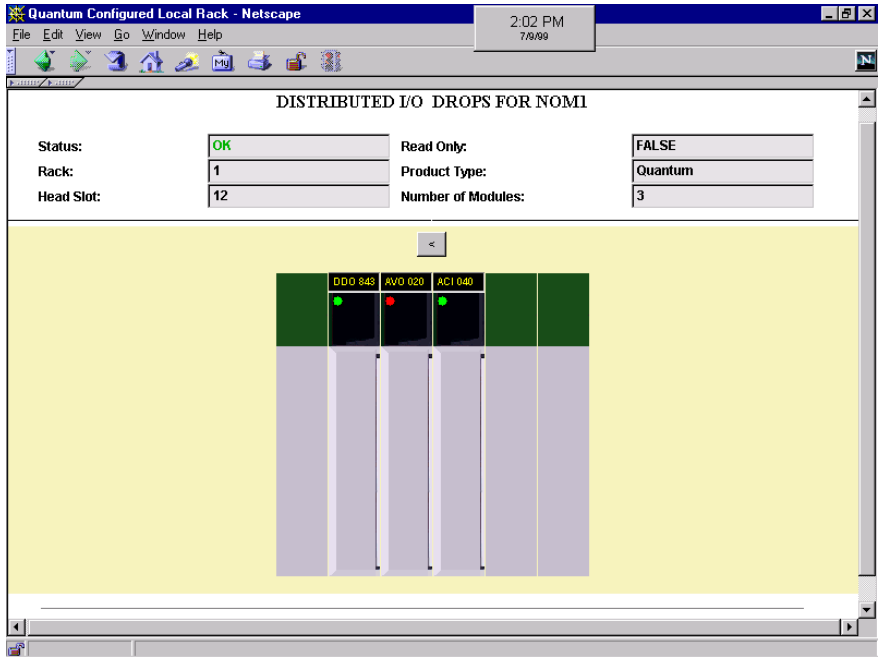
Distributed I/O Specific Drop Page

Overview

When you click on a drop icon on the Distributed I/O Network page, you reach a Distributed I/O Drop page with information about that drop.

Sample Page

Here is an example of a Distributed I/O Drop page:



Continued on next page

Distributed I/O Specific Drop Page, Continued

Data

The top part of the page reports the current status of the drop and the number of modules in the drop.

The bottom part of the page provides an icon for each module in the drop. A label at the top of the module identifies the module type.

- Green indicates that the module is functioning properly
- Red indicates that the module is not functioning properly

Links

Click on a module icon to get detailed information about that module.

Links at the bottom of the page connect to other diagnostic pages.

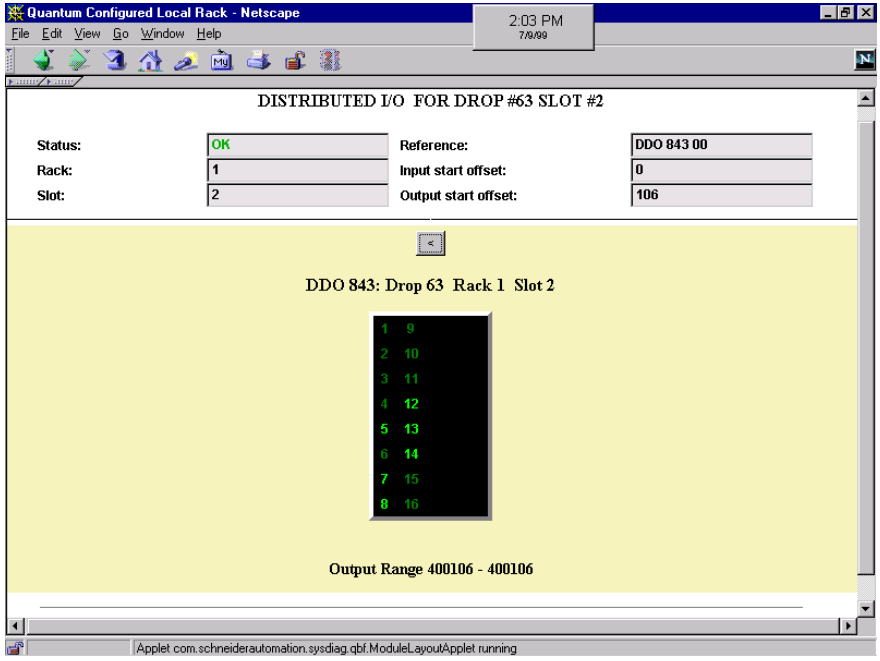
Distributed I/O Module Page

Overview

When you click on a module icon on a Distributed I/O Drop page, you reach a Distributed I/O Module page with information about that module.

Sample Page

Here is an example of a Distributed I/O Module page:



Continued on next page

Distributed I/O Module Page, Continued

Data

The top part of the screen provides information about the current status of the I/O module, its location, module type and input or output offset.

The LED panel in the lower part of the screen displays the status of the discrete I/O points:

- Green indicates the point is active
- Off indicates the point is not active
- It displays analog register values in integer format.

Links

The “<” back button returns you to the previous page.

Default Web Site for Premium

4

At a Glance

Purpose

When you receive the Server, it already contains a default Web site with diagnostic pages and the Data Editor. To use the default Web site, you only have to complete the setup procedures, beginning with *FactoryCast Configurator* on page 79.

This section describes the pages in the default Web site.

In This Chapter

This chapter contains the following sections:

Section 4.1
Introductory Pages

Overview

Purpose

When a user accesses the default Web site for Premium, he encounters first a FactoryCast Home Page and then a Premium Welcome Page. This section describes those two pages.

In This Section

This section contains the following topics:

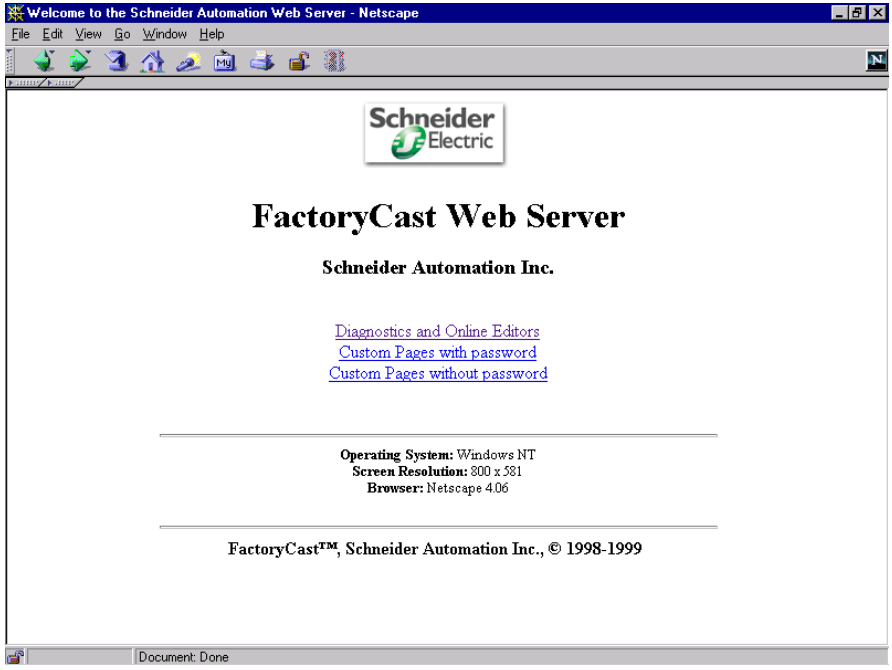
FactoryCast Home Page

Overview

The FactoryCast Home Page is the first page a visitor will encounter. No password is required to access this page.

Home Page

This is how the FactoryCast Home Page looks:



Continued on next page

FactoryCast Home Page, Continued

Links

The home page offers three links:

- Diagnostics and Online Data Editor links to the default diagnostic Web pages and the Data Editor
- Password Protected Custom Application will link to any Web pages you add to the site with password security
- Custom Application will link to any Web pages you add to the site without password security

Data

The home page reports on your:

- Operating system
- Screen resolution
- Browser type and version

Premium Welcome Page

Overview

When a visitor clicks on the **Diagnostics** link on the FactoryCast Home Page, he is directed to the Premium Welcome Page. He must supply a user name and password to view this page.

Welcome Page

This is how the Premium Welcome Page looks:

Links

The Premium Welcome Page provides links to the Rack Viewer, the Data Editor, the Graphic Editor and the Alarm Viewer. The Rack Viewer is a diagnostic page with links to all the other Premium diagnostic pages.

Section 4.2
Local Rack Diagnostics

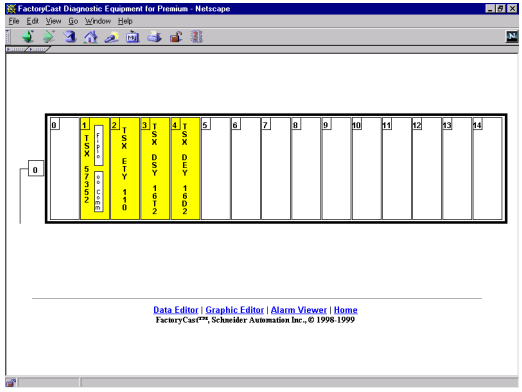
Rack Viewer Page

Overview

The Rack Viewer Page displays the current configuration of the local rack, including the controller, Embedded Server module and any I/O modules.

Sample Page

Here is an example of a Rack Viewer page:



Data

For each module displayed in the rack, the following information is provided:

- A vertical label displays the module type and part number
- The box in the upper lefthand corner of the module displays the slot number and module health:
  - A yellow box indicates that the module is functioning properly
  - A red box indicates that the module is not functioning properly

Continued on next page

Rack Viewer Page, Continued

Links

Click on a module icon to obtain detailed information about that module.

The CPU module icon (slot 1) contains two links. The top link leads to the FIP I/O Module Diagnostics page. The lower link leads to the PLC Personality page.

A line leading down from the Rack#0 icon (to the left of the rack) is a link to the next rack. When you place your mouse over this link, it turns into a red arrow. Each rack in the configuration may be viewed in turn. Upward links will take you back toward Rack#0.

Section 4.3
Controller Diagnostics

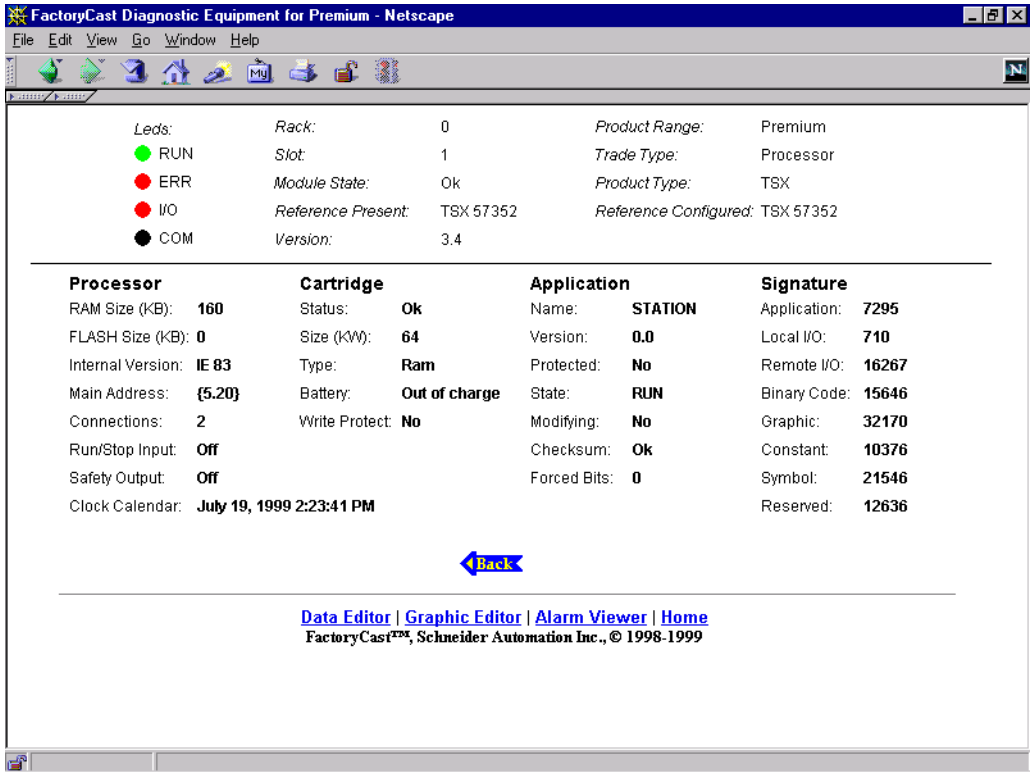
PLC Personality Page

Overview

The PLC Personality page provides up-to-date information about the controller and its configuration.

Sample Page

Here is an example of a PLC Personality page:



Continued on next page

PLC Personality Page, Continued

Dynamic Data

The LEDs in the upper lefthand corner of the screen provide a dynamic report on the controller status:

LED	Color If On	Meaning If On	Meaning If Blinking	Meaning If Off
RUN	Green	Application running	Stopped	PLC error
ERR	Red	PLC error	Not configured	No error
I/O	Red	I/O event	---	No error
COM	Yellow	Communication error	---	No error

Links

The back arrow will take you to the Rack Viewer page for this controller. Links at the bottom of the PLC Personality page connect to the home page and the Data Editor, Alarm Viewer or Graphic Editor.

Section 4.4
Ethernet Module Diagnostics

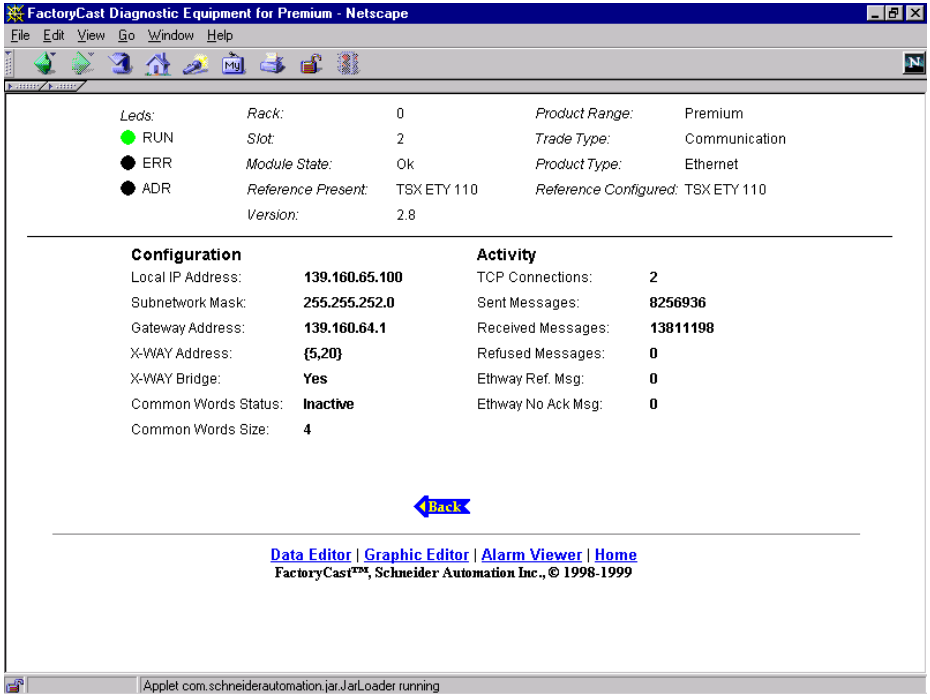
Ethernet Module Statistics Page

Overview

If you click on the Embedded Server module in the Rack Viewer, you will reach the Ethernet Module Statistics page. This page provides up-to-date information about the status, configuration and activity of the Embedded Server module.

Sample Page

Here is an example of an Ethernet Module Statistics page:



Continued on next page

Ethernet Module Statistics Page, Continued

Dynamic Data

The LEDs in the upper lefthand corner of the screen provide a dynamic report on the Embedded Server module status:

LED	Color If On	Meaning If On	Meaning If Blinking	Meaning If Off
RUN	Green	Running normally	---	Power off
ERR	Red	Module fault	Not configured	Running normally
ADR	Red	Network address fault or station out of range	---	No error

Links

The back arrow will take you to the Rack Viewer page for the Embedded Server. Links at the bottom of the page connect to other pages in the server.

Section 4.5
Option Module Diagnostics

Option Module Diagnostics Overview

Purpose

Several default Web pages provide information about configured option modules, including:

- FIP I/O Module Diagnostics page
- Digital I/O Module Diagnostics page
- Analog I/O Module Diagnostics page
- Standard Module Diagnostics page

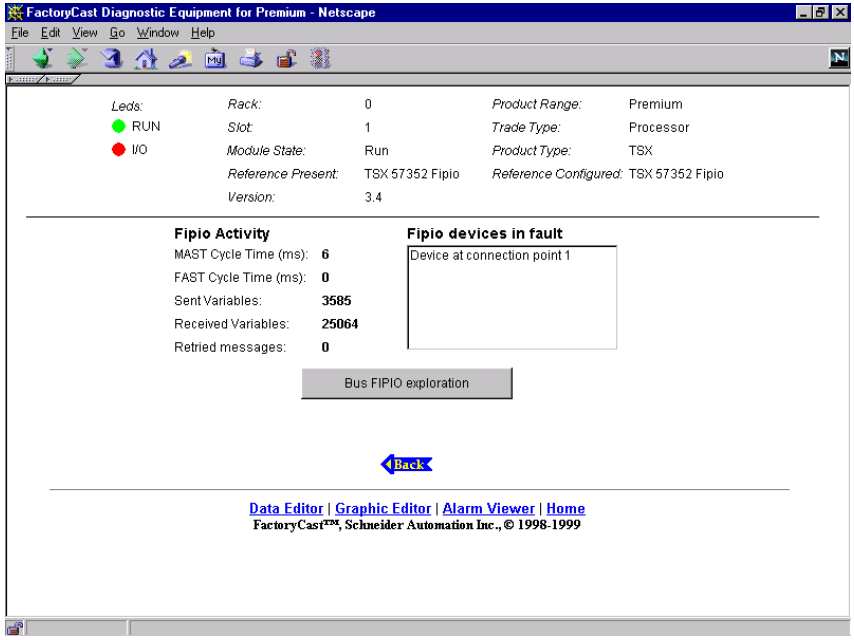
In This Section

This section contains the following topics:

FIP I/O Module Diagnostics Page

Overview

If you click on the FIP I/O link on the controller icon in the Rack Viewer page, you will reach the FIP I/O Module Diagnostics page.



FIP I/O Diagnostics

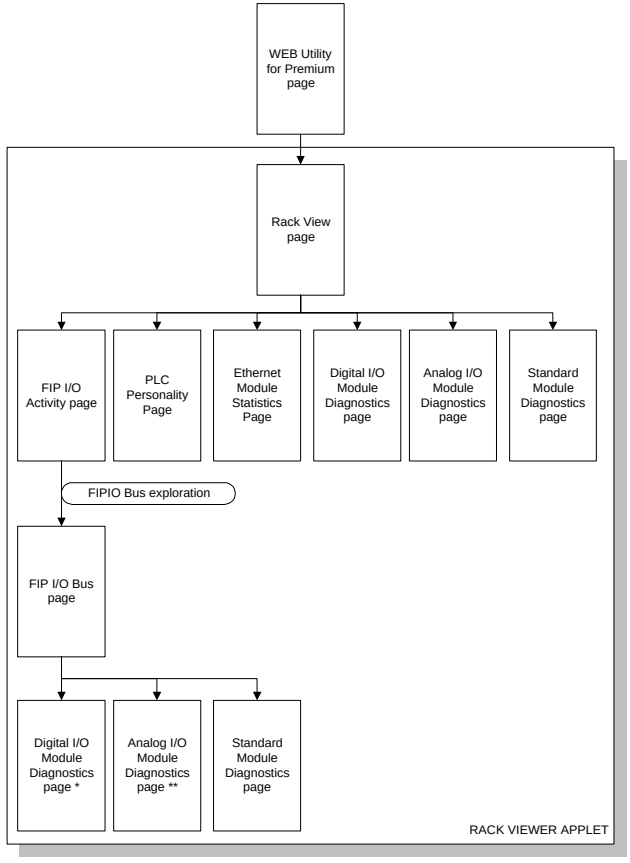
FIP I/O Diagnostic pages in FactoryCast Client for Premium are accessible in Rack Viewer Applet or page form.

Continued on next page

FIP I/O Module Diagnostics Page, Continued

Rack Viewer Navigation

The following illustration represents the navigation page tree of the Rack Viewer Applet.



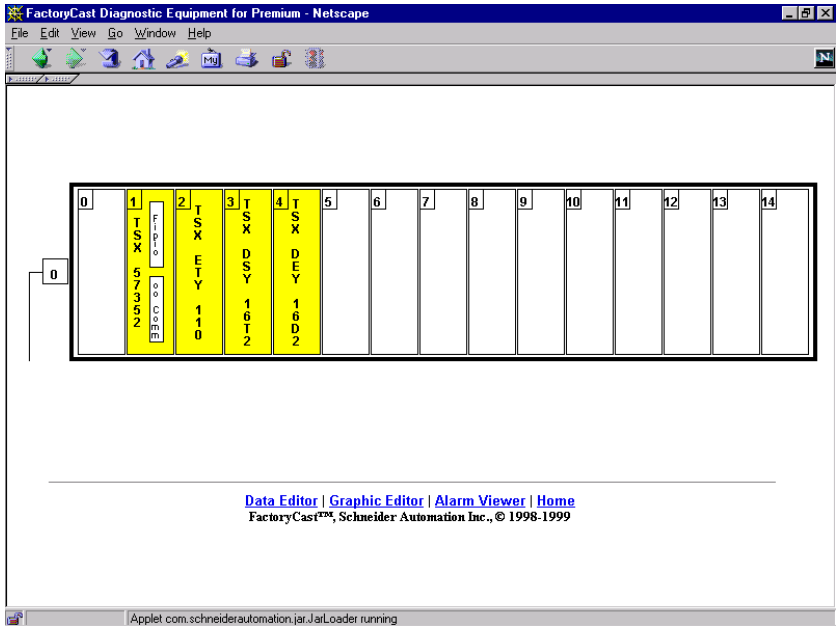
* Only for Digital TBX-7modules
** Only for Analog TBX-7 modules

Continued on next page

FIP I/O Module Diagnostics Page, Continued

Rack Viewer

Click on the Rack Viewer link. The applet starts and displays the current configuration of the local rack, including the controller, Embedded Server module and any I/O modules.



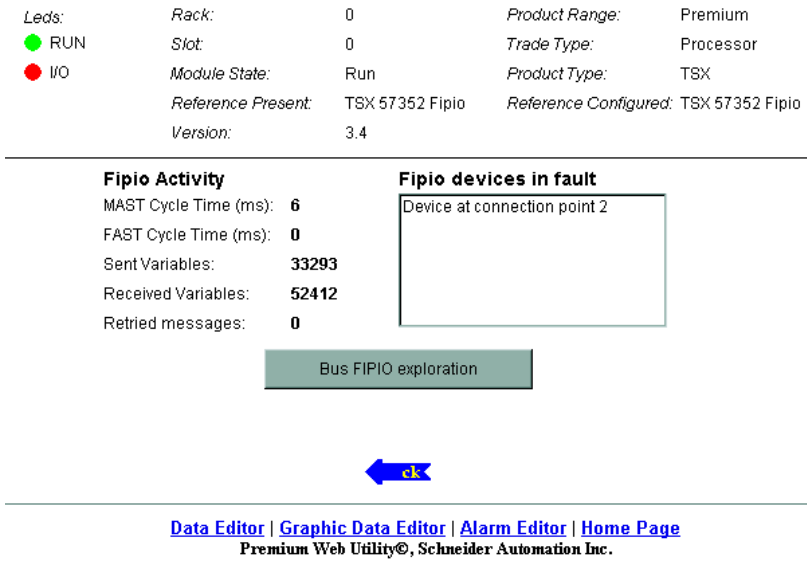
Continued on next page

FIP I/O Module Diagnostics Page, Continued

FIP bus link

If Premium has a CPU with FIP bus link:

Click on the FIP I/O link and the first level diagnostic page of FIP I/O is displayed:



In the center part of this page, meters about FIP I/O activity are displayed. There is also a list of FIP I/O devices that are faulted.

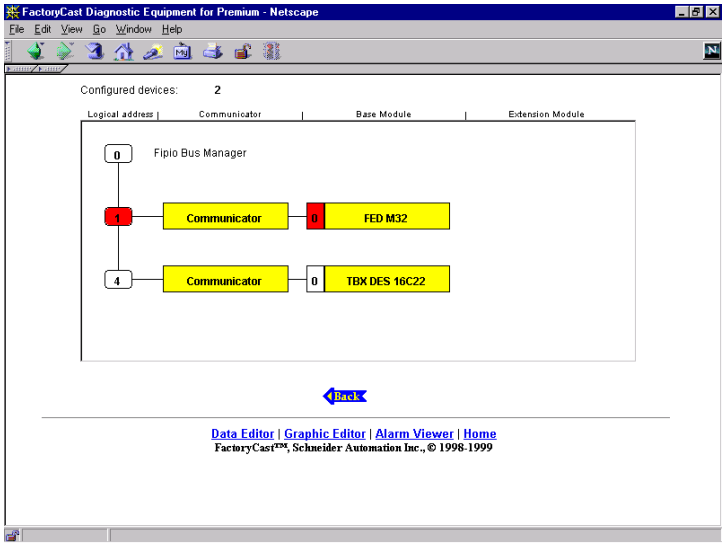
Continued on next page

FIP I/O Module Diagnostics Page, Continued

FIP I/O Bus page

In FactoryCast Client, there is a button at the bottom of the FIP I/O activity page, named **Bus FIP I/O exploration.**
If you click on this button, the **FIP I/O Bus page** is displayed:

Note: The button **FIP I/O Bus exploration** is enabled only if a FIPIO bus is configured in the PLC application. Otherwise, the button is disabled (grayed).



At the top of the page, the number of FIP I/O devices configured on FIP I/O Bus is displayed. A scroll window displays all configured devices on FIP I/O Bus.

A small circle indicates the device connection point. If a FIP I/O Device is in fault, the background color of its logical address indicator is red. A FIP I/O device module in fault is also displayed when the box containing the module number has a red background color.

Note: A FIP I/O device displayed in fault by FIP I/O Bus page is also displayed in fault by FIP I/O devices in the fault list of FIP I/O activity page.

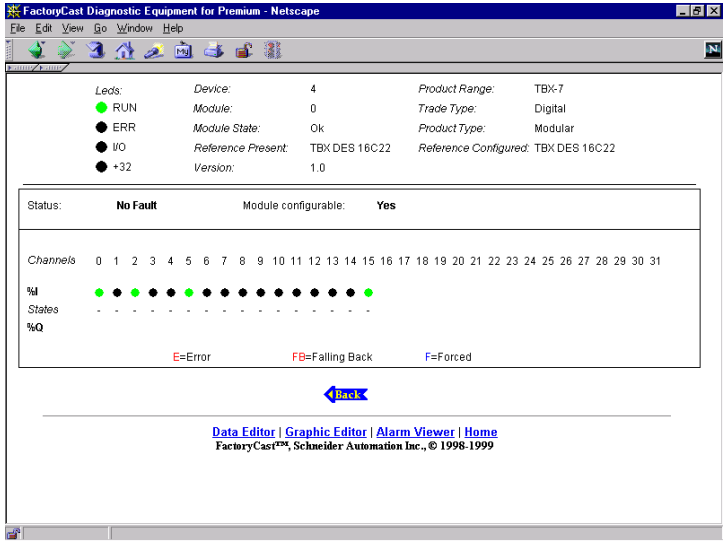
Continued on next page

FIP I/O Module Diagnostics Page, Continued

If the Base Module of FIP I/O device is *modular* type, a **Communicator** is displayed. If Base Module of FIP I/O Device is *compact* type, there is no **Communicator**.

Base Module links and Extension Module links Diagnostic page

Base Module links and Extension Module links, if present, are mouse sensitive: Clicking on the module allows you to access its diagnostic page in the same way as an in-rack module:



Types of Diagnostic Pages

On FIP I/O modules, there are three kinds of diagnostic pages. The display depends on Product Range and of Trade Type.
A **Standard Module Diagnostics page** is displayed except for Digital TBX-7 and for Analog TBX-7 modules.
They are displayed respectively as the **Digital I/O Module Diagnostics page** and the **Analog I/O Module Diagnostics page.**

Continued on next page

FIP I/O Module Diagnostics Page, Continued

Dynamic Data

The LEDs in the upper left hand corner of the screen provide a dynamic report on the FIP I/O module status:

LED	Color If On	Meaning If On	Meaning If Off
RUN	Green	Link active	Link inactive
I/O	Red	Remote device in fault	Remote device operating normally

Links

The back arrow will take you to the Rack Viewer page for the controller. Links at the bottom of the FIP I/O Module Diagnostics page connect to the home page, the Data Editor, Graphic Editor and the Alarm Viewer.

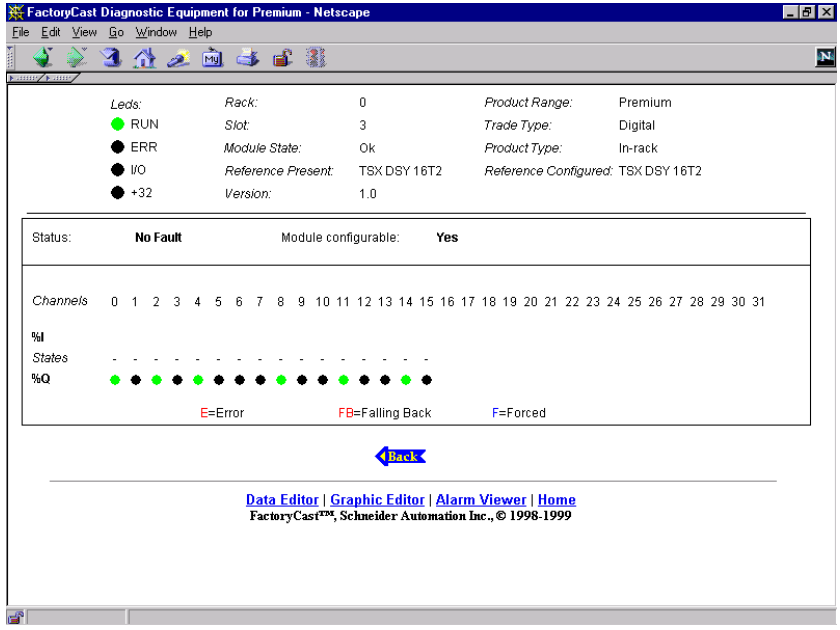
Digital I/O Module Diagnostics Page

Overview

If you click on a digital I/O module in the Rack Viewer, you will reach a Digital I/O Module Diagnostics page with detailed information about that module.

Sample Page

Here is an example of a Digital I/O Module Diagnostics page:



Continued on next page

Digital I/O Module Diagnostics Page, Continued

Dynamic Data

The LEDs in the upper lefthand corner of the screen provide a dynamic report on the module status:

LED	Color If On	Meaning If On	Meaning If Blinking	Meaning If Off
RUN	Green	Running normally	---	Faulty module
ERR	Red	Module failure	Communication fault	No error
I/O	Red	Overloaded short circuit or server/preactuator voltage fault	Terminal block fault	No error
+32	Green	Channels 32 ... 63 displayed	---	Channels 0 ... 31 displayed

The LED panel in the lower part of the screen provides a dynamic status report for each channel.

Links

If this I/O module has more than 32 channels, click on the +32 button to view channels 32 ... 63.

The back arrow will take you to the Rack Viewer page for this module.

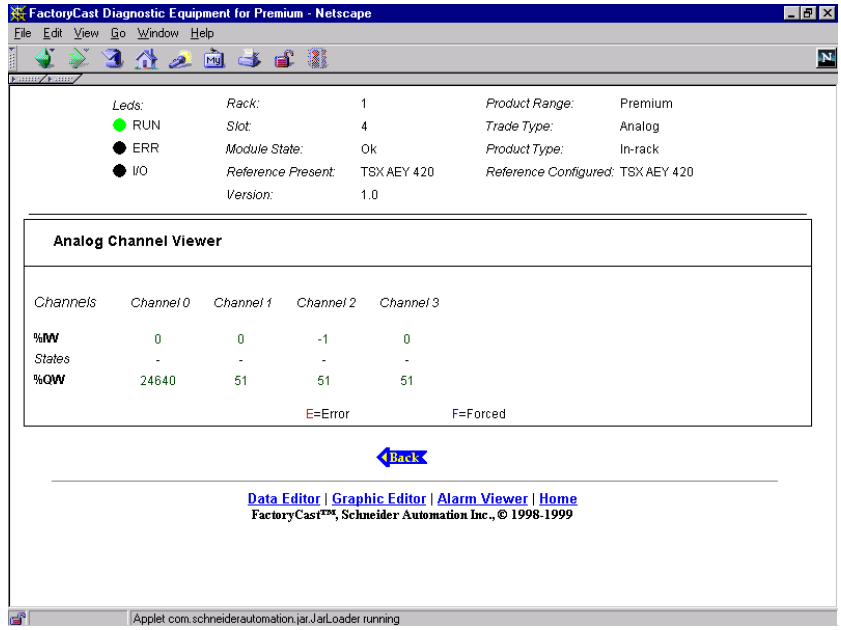
Analog I/O Module Diagnostics Page

Overview

If you click on an analog I/O module icon in the Rack Viewer, you will reach an Analog I/O Module Diagnostics page with detailed information about that module.

Sample Page

Here is an example of an Analog I/O Module Diagnostics page:



Continued on next page

Analog I/O Module Diagnostics Page, Continued

Dynamic Data

The LEDs in the upper lefthand corner of the screen provide a dynamic report on the module status:

LED	Color If On	Meaning If On	Meaning If Blinking	Meaning If Off
RUN	Green	Running normally	---	Faulty module or no power
ERR	Red	Module failure	Communication fault with PLC	No error
I/O	Red	Range overshoot or sensor link fault	Terminal block fault	No error

Links

The back arrow will take you to the Rack Viewer page for this module.

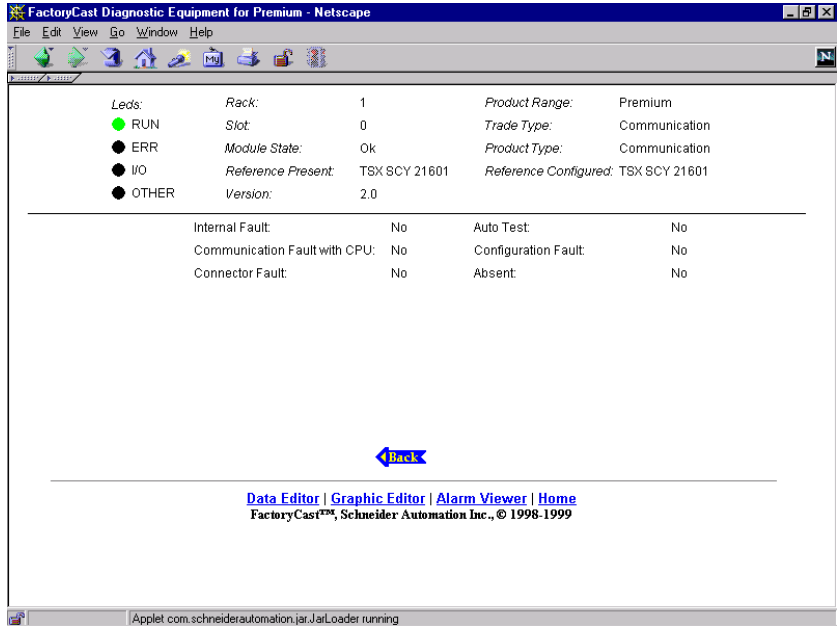
Standard Module Diagnostics Page

Overview

If you click on any other type of module in the Rack Viewer page, you reach a Standard Module Diagnostics page with detailed information about that module.

Sample Page

Here is an example of a Standard Module Diagnostics page:



Continued on next page

Standard Module Diagnostics Page, Continued

Dynamic Data

The LEDs in the upper lefthand corner of the screen provide a dynamic report on the module status:

LED	Color If On	Meaning If On	Meaning If Blinking	Meaning If Off
RUN	Green	Running normally	***	***
ERR	Red	Module fault	Not configured	No error
I/O	Red	I/O event	---	No error
OTHER	Yellow	***	***	***
*** - The meaning depends on the module type. For more information, refer to the user manual for the appropriate module.				

Links

The back arrow will take you to the Rack Viewer page for the module. Links at the bottom of the Standard Module Diagnostics page connect to the home page, the Data Editor, Graphic Editor and the Alarm Viewer.

FactoryCast Configurator

5

At a Glance

Purpose

The FactoryCast Configurator gives you the ability to manage your Web site. This section describes how to:

- Set up a Web site
- Create a Web-enabled database with symbols (variables) and direct addresses
- Download data to the Embedded Server
- Maintain the site

If you only want users to view the default Web pages and to view direct addresses in the Data Editor -- if you are not planning to customize the site in any way or to view symbols (variables) or to modify data online -- you only need to complete the setup procedures.

In This Chapter

This chapter contains the following sections:

Section 5.1
Setting Up a FactoryCast Server

Setup Overview

Purpose

Follow the procedures in this section to set up any FactoryCast server.

In This Section

This section contains the following topics:

Definitions - FactoryCast Configurator

Top Menu

Overview

The Top Menu is a graphical user interface through which you create, edit or view your web page(s).

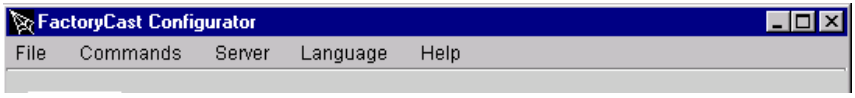
Top Menu functions

Locate your FactoryCast Configurator icon. Double click, *OR:* select the icon and click the right mouse button to activate the context window; select <Open>. The top menu appears.

Note: In Windows 95®, 98®, or Windows NT®, you can also use the right button and the context window to create a desktop shortcut.

See figure below. The Top Menu has submenus (drop down menus) that enable you to build or change your programs.

See the following Figures. The top menu has a title bar, a menu bar, and a work area.

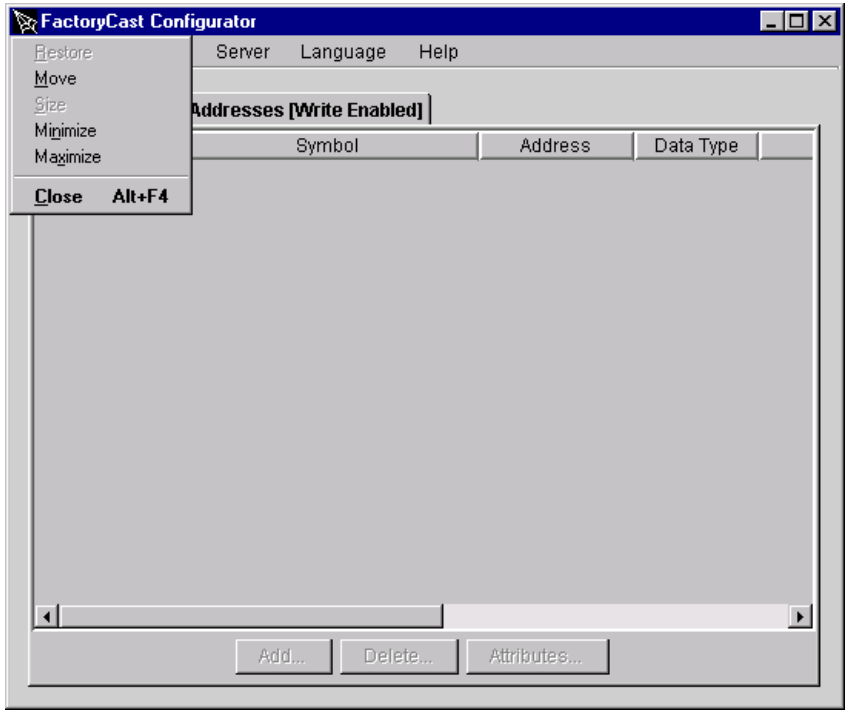


Continued on next page

Top Menu

Control menu box

This is the box in the upper left corner of the Top Menu that displays the FactoryCast Configurator icon. The Control box opens the Control Menu. This menu displays commands that allow you to restore, move, size, minimize, maximize, or close the current application.



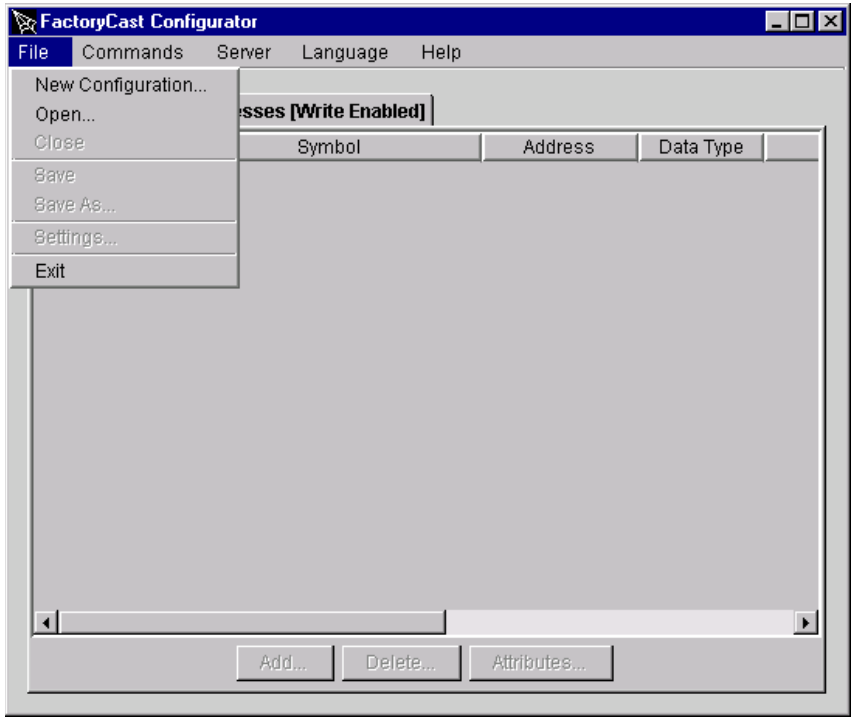
Continued on next page

Top Menu, Continued

The top menu bar contains the following drop-down menu items:

File

File enables you to perform functions that control your application. It contains the following application commands:

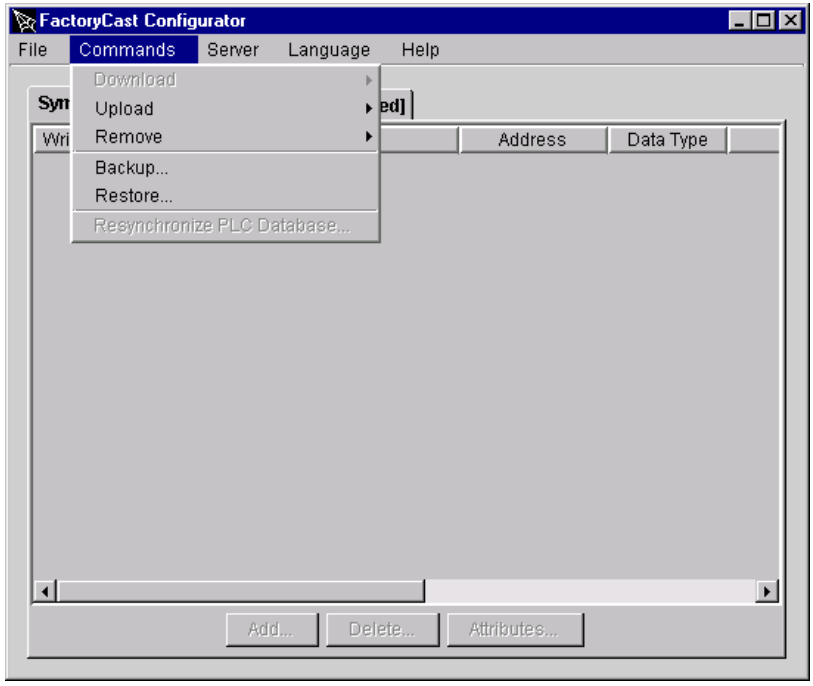


Continued on next page

Top Menu, Continued

Commands

The Commands menu items enable you to perform functions that control your programs. For example, Uploading and Downloading files to and from the server, Back-up and Restore of the website on the server, and the ability to Resynchronize with the PLC programming software. It has the following commands.

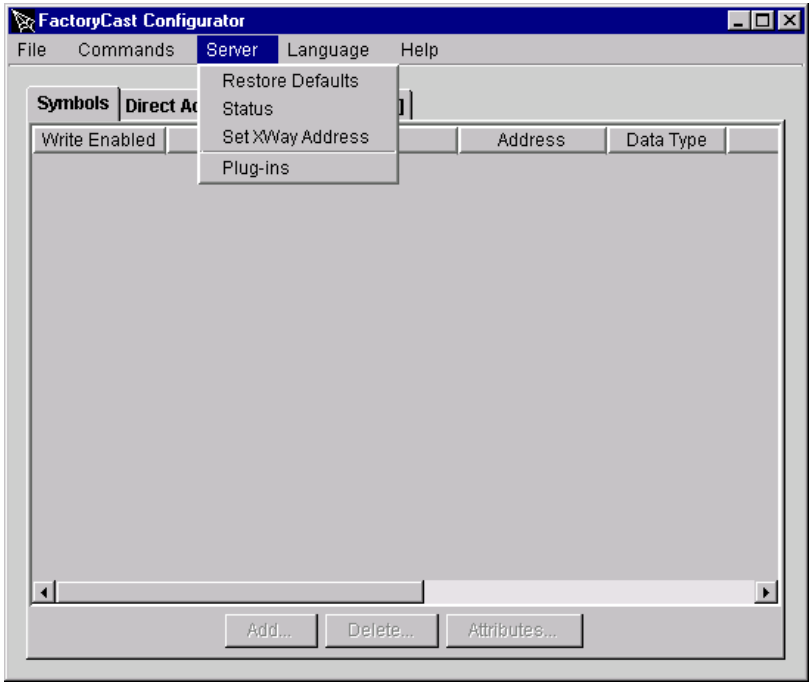


Continued on next page

Top Menu, Continued

Server

“Server” contains: Restore (module) defaults, Check Status, and set XWay address. “Plug-ins” allows you to choose which options will be downloaded to the Embedded Web Server. It has the following commands.

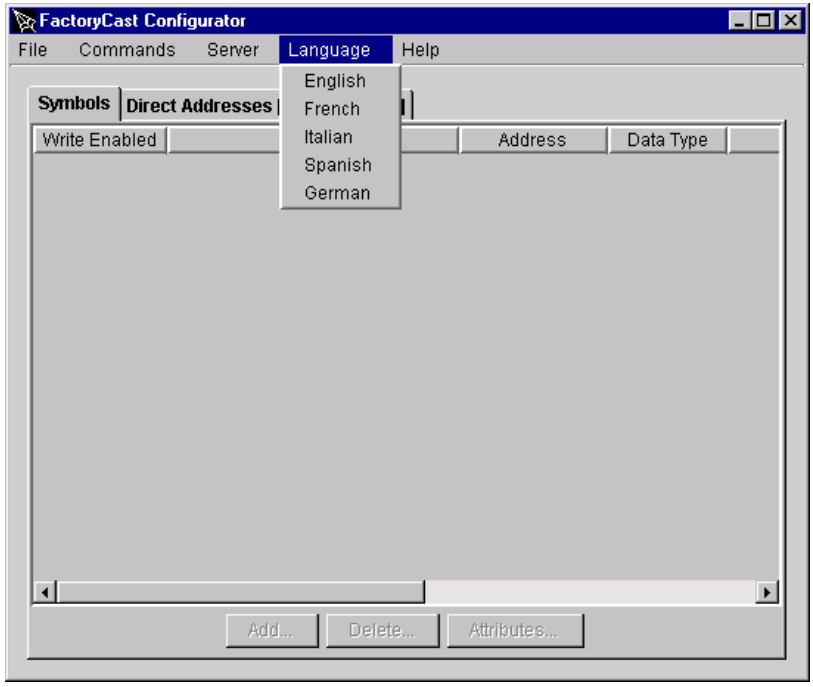


Continued on next page

Top Menu, Continued

Language

Choose the language in which you will be working.



Continued on next page

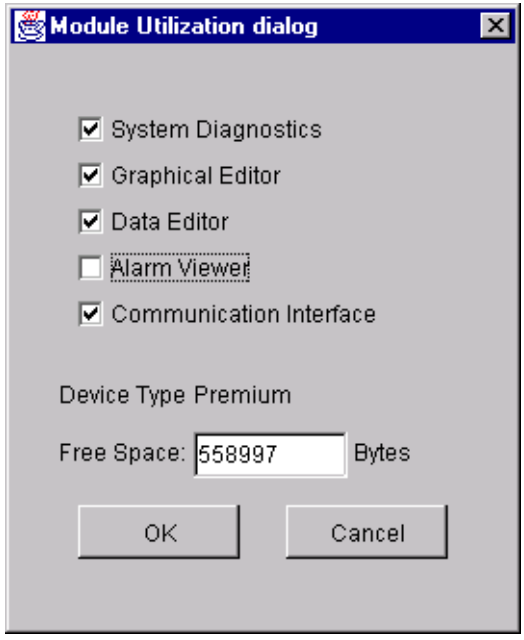
Top Menu, Continued

Server Menu Items

For the following “Server” information:

- Restore Defaults: See *Restoring the Web Server Module* on page 147.
- Status: Module status. See *Checking Embedded Server Status* on page 142.
- Set XWay Address: See *Setting the XWay Address* on page 98
- Plug-Ins: Editors: See *Data Editor* on page 172, *Graphic Editor* on page 184, *Alarm Viewer* on page 221.
- System Diagnostics

Note: Only the Plug-ins which are checked off will be downloaded. Unchecked items will be removed from the FactoryCast server.



Continued on next page

Starting the Tool

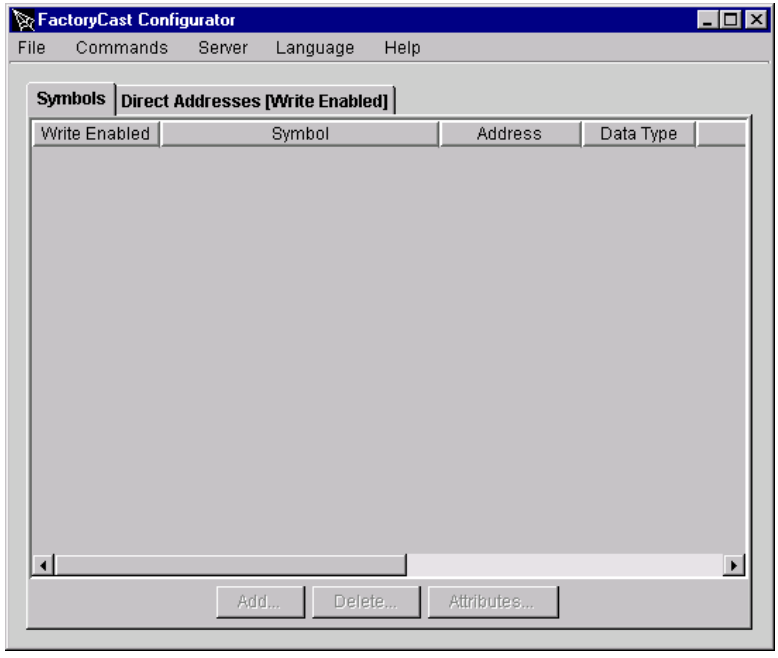
Overview

This section describes how to start the FactoryCast Configurator.

Procedure

Select the FactoryCast Configurator application from Program Files in the Start menu, or use the desktop shortcut.

Result: The FactoryCast Configurator main window appears.



Next Step

Creating a new configuration.

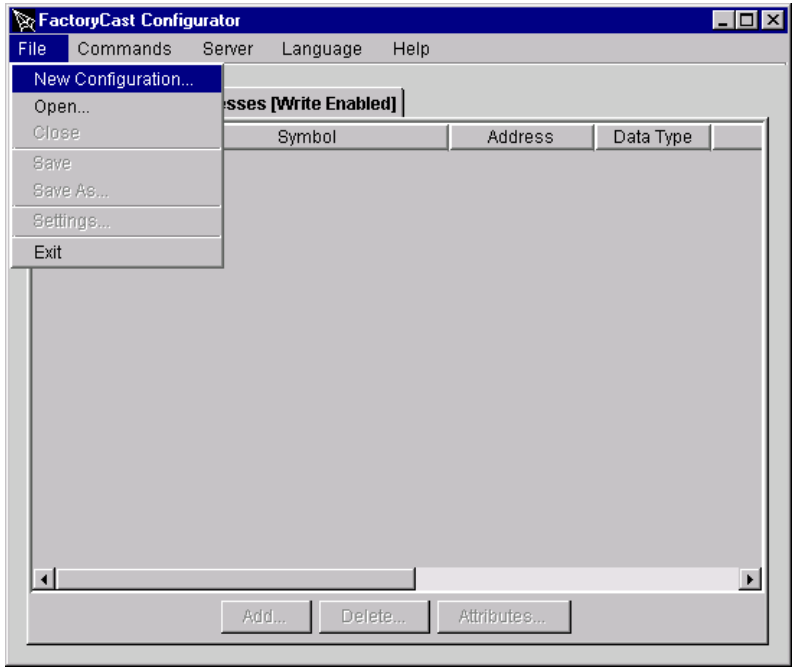
Creating a New Configuration

Overview

In order to set up your Web site, you must create a new configuration. This section describes how to do that.

Procedure

From the FactoryCast Configurator menu bar, select **File | New Configuration**.



Result: The Settings window appears

Next Step

Setting passwords.

Setting Passwords

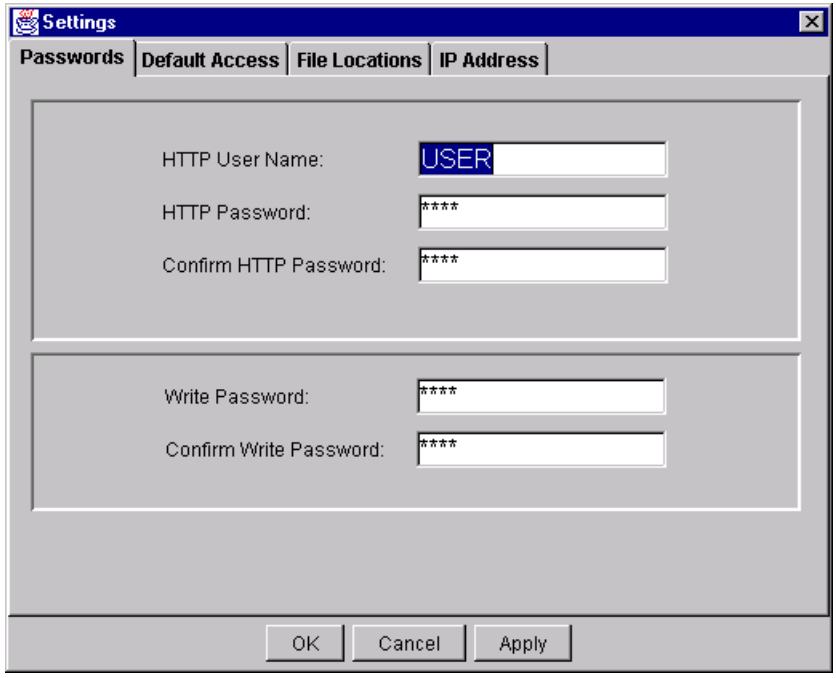
Overview

The first step in setting up your Web site is to specify the passwords for viewing and modifying data.

When you create a new configuration, the Settings window appears automatically with the Passwords dialog. Use this dialog to set the passwords.

Passwords Dialog

The following illustration shows the fields in the Passwords dialog:



Continued on next page

Setting Passwords, Continued

Default Settings

Until you apply your own password settings:

- The default user name is USER
- The default HTTP password is USER
- The default write password is USER

Read Access

Complete the first three fields of the dialog box to set the user name and password for viewing the Web site. Anyone who wants to view the Web site will be prompted for this user name and password.

- **HTTP User Name** is limited to fifteen characters.
- **HTTP Password** is also limited to fifteen characters.
- Confirm the HTTP password by entering it again in the **Confirm HTTP Password** field.

Write Access

Complete the last two fields of the dialog box to set a password for modifying the Web site. Anyone who wants to modify the Web site must supply this password to gain write access.

- **Write Password** is limited to fifteen characters.
- Confirm the write password by entering it again in the **Confirm Write Password** field.

Applying the Passwords

Select **Apply** to save the passwords without exiting the Settings window.

Next Step

If you want to view and modify symbols (variables) in your Web site, your next step is to set default security parameters.

Otherwise, you may go on to set file locations.

Setting Default Access

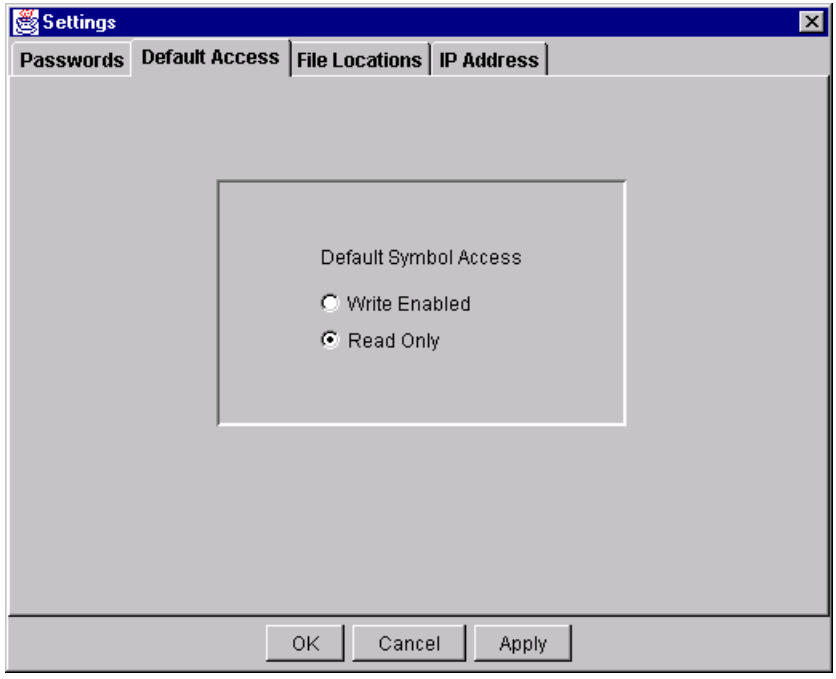
Overview

If you want to view and modify symbols (variables) in your Web site, complete the Default Access dialog. This dialog determines the initial security settings for all the symbols you will add to the Web site.

Accessing the Dialog

Select the **Default Access** tab on the Settings window.

Result: The Default Access dialog appears.



Continued on next page

Setting Default Access, Continued

Options

Select one of the following radio buttons:

- **Write Enabled** sets write access for all symbols (variables) as you add them to the configuration. A user who supplies the write password would be able to modify these symbols.
- **Read Only** sets read-only access for all symbols (variables) as you add them to the configuration. Even if a user supplies the write password, he would not be allowed to modify these symbols.

These settings can be modified later for individual symbols.

Applying Default Access

Select **Apply** to save the Default Access selection without exiting the Settings window.

Next Step

Setting file locations.

Setting File Locations

Overview

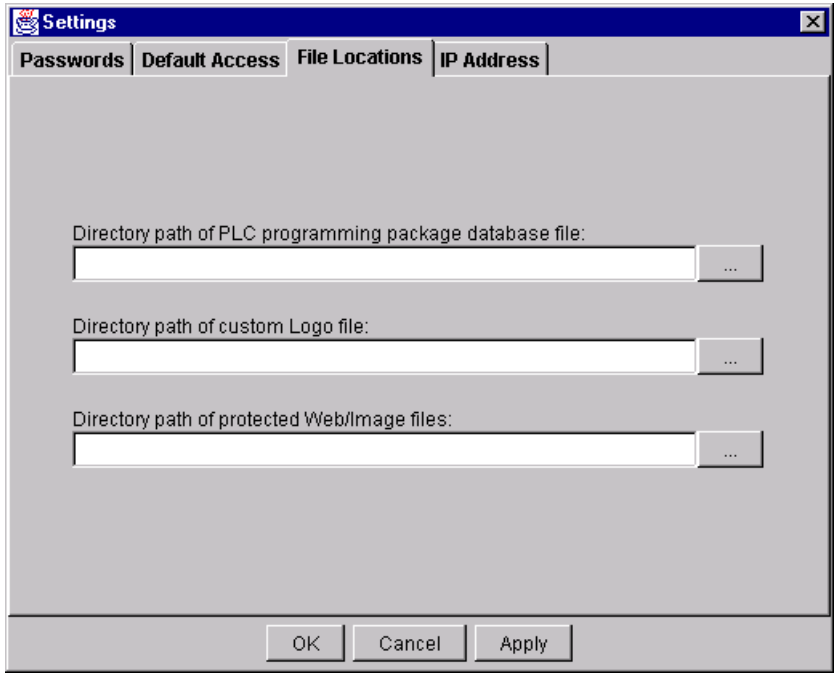
If you want to customize your Web site, use the File Locations dialog to tell FactoryCast Configurator where to find the following files or directories:

Give the Location of...	In Order To Add...
Programming software database file	Symbols (variables) from a Concept or PL7 database
Directory containing your company logo	Your company logo
Directory containing custom Web files	Custom Web pages with password protection

Accessing the File Locations Dialog

Select the **File Locations** tab on the Settings window.

Result: The File Locations dialog appears.



Continued on next page

Setting File Locations, Continued

Specifying File Locations

Use the ellipsis buttons to the right of the text boxes to browse for the desired files and directories.

Note: The logo file must be in .gif format and it must be named logo.gif.

Applying File Locations

Select **Apply** to save the File Locations without exiting the Settings window.

Next Step

Setting the IP address.

Setting the IP Address

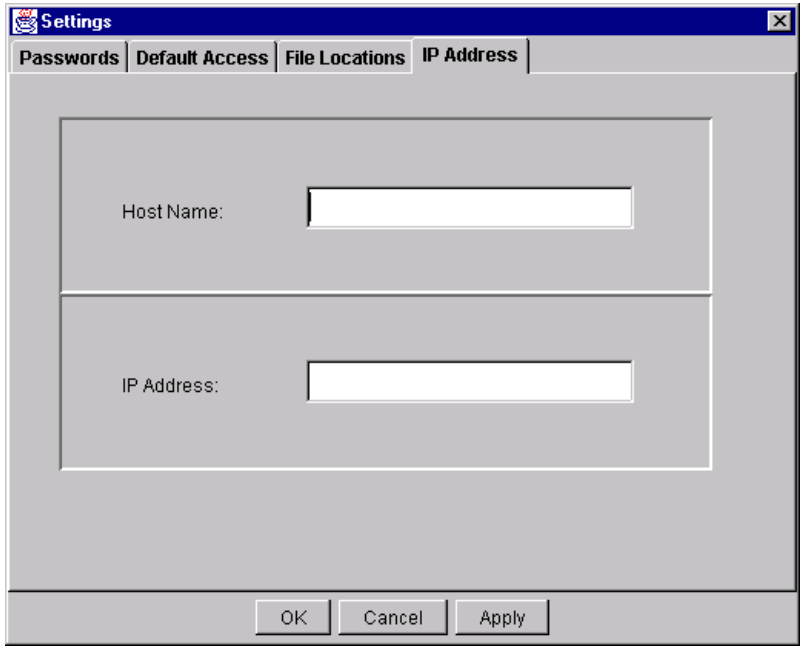
Overview

The final setting in the Settings window is the IP Address.

Accessing the IP Address Dialog

Select the **IP Address** tab on the Settings window.

Result: The IP Address dialog appears.



Setting the IP Address

Enter the **Host Name** or **IP Address** of the Embedded Server. If you enter the **Host Name**, and you have a Domain Name Server [DNS] in your intranet, the correct IP address should appear automatically. If you enter the **IP Address**, that address will appear automatically in the field for the host name.

Note: The IP address of the Quantum or Premium Embedded Server and any host name should be assigned by your system administrator. For performance reasons, if you do not have a DNS, you should add the hostname and IP address to your Hosts file on your Windows PC.

Continued on next page

Setting the IP Address, Continued

Applying the IP Address

Select **Apply** to save the IP Address setting.

If you are satisfied with your settings, select **OK** to save them and to exit the Settings window.

Next Step

Your next step depends on which server you are using and how much you intend to customize the Web site:

- If you are using the Premium ETY Embedded Server, you must set the XWay Address.
- If you are using the Quantum NOE Embedded Server and you are not adding a database of symbols (variables) or write-enabled direct addresses to your Web site, you may proceed to *Downloading Settings to the Server* on page 100.
- If you are using the Quantum NOE Embedded Server and you are adding a database of symbols (variables) and write-enabled direct addresses to your Web site, you may proceed to *Creating a Namespace* on page 102.

Note: At this point, save your configuration file to disc.

Setting the XWay Address

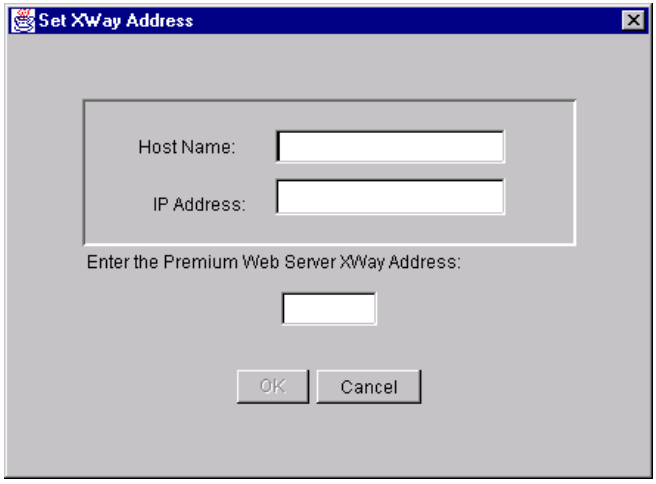
Overview

XWay is a Telemecanique communications protocol. If you are using the Premium ETY Embedded Server, you must set its XWay Address.

Accessing the XWay Address Dialog

Select **Server | Set XWay Address** from the menu bar.

Result: The Set XWay Address Service dialog appears.



Setting the XWay Address

Enter the **Host Name** or **IP Address**, and the **XWay Address** of the Embedded Server.

The XWay address includes the address destination of the Premium ETY Embedded Server module and the address source of the PC. FactoryCast Client will scan a free source in this network from a network.63 nested 10 station address (net.63 to net.54). You must be careful to leave at least one address free in this range.

Note: The IP address of the Embedded Server and any host name should be assigned by your system administrator.

Continued on next page

Setting the XWay Address, Continued

Applying the XWay Address

Select **OK** to download the XWay Address to the Premium ETY Embedded Server.

Next Step

Your next step depends on how much you intend to customize the Web site:

- If you are not creating a database of symbols (variables) and write-enabled direct addresses, you may download the settings to the server.
- If you are creating a database of symbols (variables) and write-enabled direct addresses, you may proceed to *Creating a Namespace* on page 102.

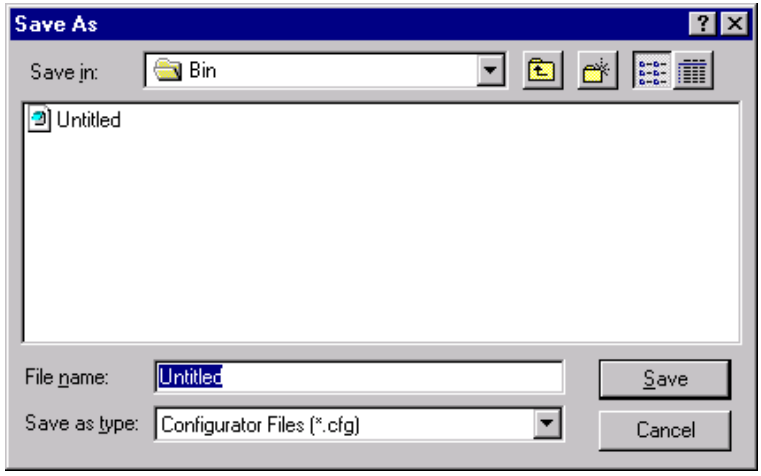
Downloading Settings to the Server

Overview

If you are not creating a database of symbols (variables) and write-enabled direct addresses for your Web site, you may download your settings to the Embedded Server and begin using your site.

Procedure

Follow the steps in the table below to store your settings in a configuration file and download the configuration to the Embedded Server.

Step	Action
1	Select **File | Save As...** from the menu bar. **Result:** The Save As window appears. 
2	Select the directory where you want to store the configuration file.
3	Enter a File name of sixteen characters or less. Configuration files require a .cfg extension.
4	Click **Save** to save your settings in the configuration file and exit the Save As window.

Continued on next page

Downloading Settings to the Server, Continued

Procedure, Continued

Step	Action
5	From the menu bar, select **Commands** | **Download** | **Advanced** | **All of the Above** to download the configuration to the Embedded Server. **Result:** A Download Confirmation dialog appears with the IP address and any host name of the Embedded Server. **Note: "All of the Above" will download the following to the web server:** ● Symbol Table ● Security File ● Modified Home Page ● Logo File **Note:** If the host name or IP address is incorrect, make the appropriate changes in the Settings window. (Refer to *Setting the IP Address* on page 96.)
6	Click **OK** to confirm the IP address and begin the download.

Section 5.2
Creating a Namespace

Overview

Purpose

A namespace is a Web-enabled database containing symbols (variables) and/or write-enabled direct addresses.

This section describes how to use symbols from a software database and direct addresses to create a namespace for your Web site.

In This Section

This section contains the following topics:

Importing Symbols

Overview

If you want to use symbols (variables) in the Data Editor, Graphic Editor or Alarm Viewer, you must include them in the namespace. The applets will not allow you to view symbols which are not found in the namespace.

This section describes how to:

- Add symbols into a namespace
- Delete symbols from a namespace

Accessing Your Software Database

To access a Concept database, you must have the Concept software installed on your computer. Concept database files have a .prj file extension.

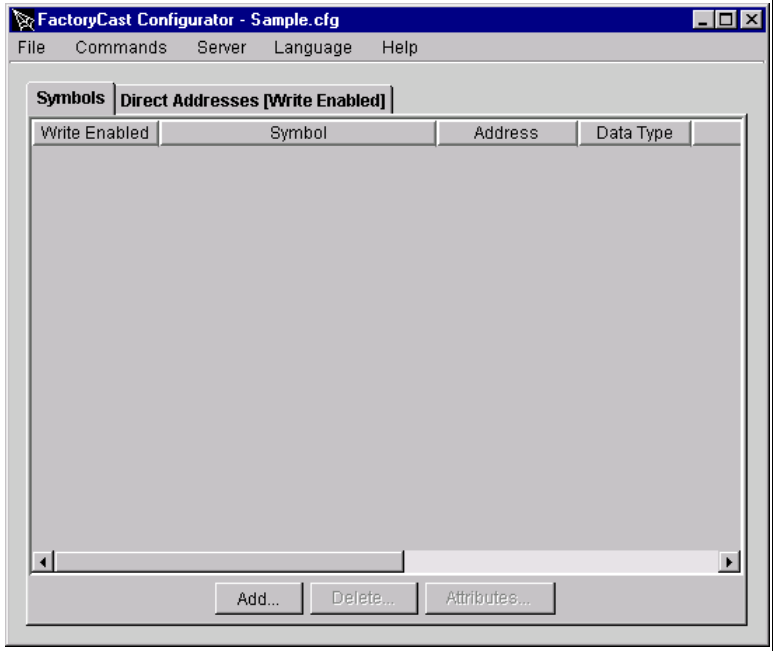
A PL7 database is accessible from any mapped drive. PL7 database files have a .fef file extension.

Continued on next page

Importing Symbols, Continued

Add Symbols

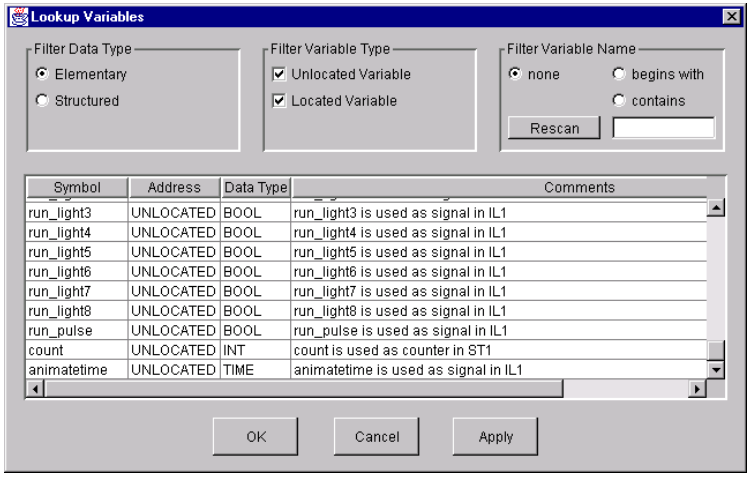
Follow the steps in the table below to import symbols (variables) from a Concept or PL7 database into your namespace.

Step	Action
1	Click the **Add** button at the bottom of the Symbols window. 

Continued on next page

Importing Symbols, Continued

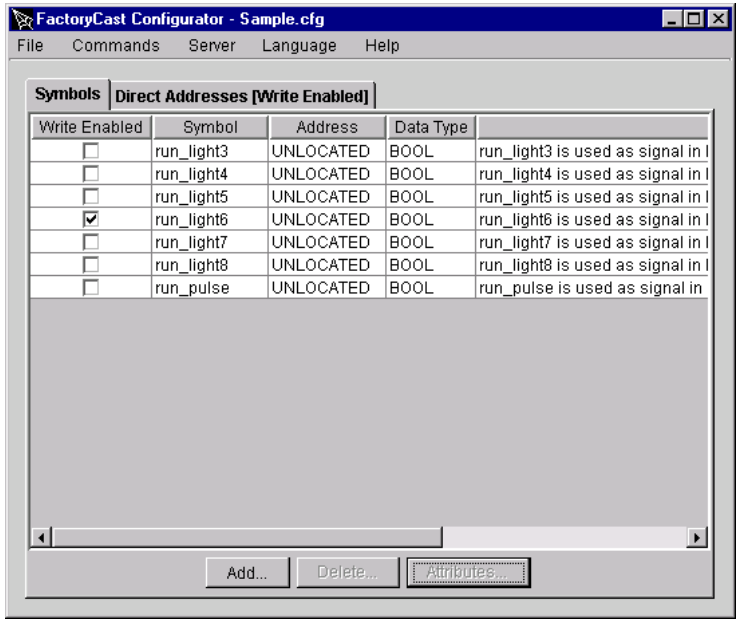
Add Symbols, Continued

Step	Action
2	Select a programming database file. **Note:** If the location of the software database file was entered in the Settings window, FactoryCast Configurator will skip this step. **Result:**The Lookup Variables window appears. It displays symbols associated with the database. 

Continued on next page

Importing Symbols, Continued

Add Symbols, Continued

Step	Action
3	Click on symbols to highlight them individually or in blocks. Press the **Control** key to highlight symbols which are not adjacent to one another. **Note:** The FactoryCast Configurator automatically filters out symbols with address ranges that are not within the configured PLC range. The Lookup Variables window also allows the user to filter variables by: ● Data Type - Elementary or Structured ● Variable Type - Unlocated or Located ● Variable Name Use the **Rescan** button to apply a filter and rescan the database.
4	Select **Apply** to add the selected symbols to the namespace without exiting the Lookup Variables window. Otherwise, select **OK** to exit the Lookup Variables window. **Result:** The symbols you selected appear in the Symbols window. 

Continued on next page

Importing Symbols, Continued

Add Symbols, Continued

Step	Action
5	To add more symbols, click the **Add** button at the bottom of the Symbols window and repeat steps 3 and 4.

Deleting Symbols

To delete a symbol from a namespace, select the symbol and click the **Delete** button at the bottom of the Symbol window.

Next Step

Setting symbol security.

Setting Symbol Access

Overview

FactoryCast Configurator sets default access for each symbol (variable) as you add it to the namespace, based on your selection in the Default Access Settings dialog.

This section discusses security considerations and describes two ways for you to modify the security setting for a symbol.

Two Levels of Access

Each symbol (variable) may be write-enabled or read-only.

- **Write Enabled** means users can modify the symbol value after supplying the write password.
- **Read Only** means users cannot modify symbol values, even after supplying the write password.

CAUTION

CHANGES TO SYMBOLS MAY RESULT IN CHANGES TO YOUR APPLICATION

Be careful about which symbols (variables) you allow to be modified online, and be cautious about who has permission to modify them. Unauthorized or incorrect changes to symbols may change the behavior of your application in ways that may be undesirable or even dangerous.

Failure to observe this precaution can result in injury or equipment damage.

Using the Checkbox to Set Access

Select or deselect the checkbox in the Write Enabled column of the Symbol window.

- A checkmark means the symbol is write-enabled.
- A blank checkbox means the symbol is read-only.

Continued on next page

Setting Symbol Access, Continued

Using the Attributes Button to Set Access

Follow the steps in the table below to use the Attributes button to set symbol access:

Step	Action
1	Highlight a symbol in the Symbol window.
2	Click the **Attributes** button at the bottom of the window.
3	Select the access option.
4	Click **OK**.

Adding Direct Addresses

Overview

If you only want users to view direct addresses, you do not need to include them in the namespace. The The Data Editor and Graphic Editor can read any direct address.

If you want users to be able to modify a direct address, you must include it in the namespace. Any direct address included in the namespace is automatically write-enabled.

This section describes how to import direct addresses into a namespace.

CAUTION

CHANGES TO DIRECT ADDRESSES MAY RESULT IN CHANGES TO YOUR APPLICATION

Be careful about which direct addresses you allow to be modified online, and be cautious about who has permission to modify them. Unauthorized or incorrect changes to direct addresses may change the behavior of your application in ways that may be undesirable or even dangerous.

Failure to observe this precaution can result in injury or equipment damage.

Premium Register Values

The following register ranges are valid for Premium:

Address Range	Type	R(ead)/W(rite) Access
%S0 - %S127	Boolean	R/W
%SW0 - %SW255	Word 16	R/W
%SD0 - %SD254	Word 32	R/W
%M0 - %M12151	Boolean	R/W
%MW0 - %MW31367	Word 16	R/W
%MD0 - %MD31366	Word 32	R/W

Continued on next page

Adding Direct Addresses, Continued

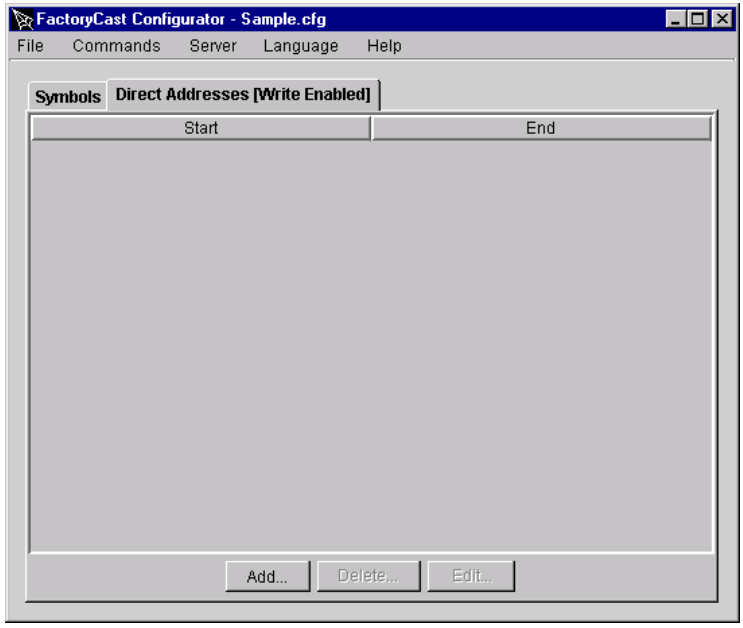
Quantum Register Values

The following register ranges are valid for writing to the Quantum:

Start Value	End Value
000001	065536
400001	465536
600001	699999

Add Direct Addresses

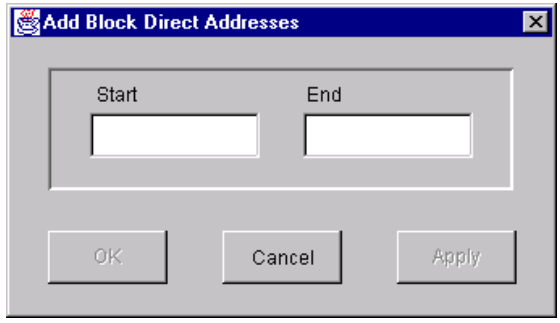
Follow the steps in the table below to add direct addresses into a namespace:

Step	Action
1	Select the **Write Enabled Direct Addresses** tab in the Configurator window. **Result:** The Write Enabled Direct Addresses screen appears. 

Continued on next page

Adding Direct Addresses, Continued

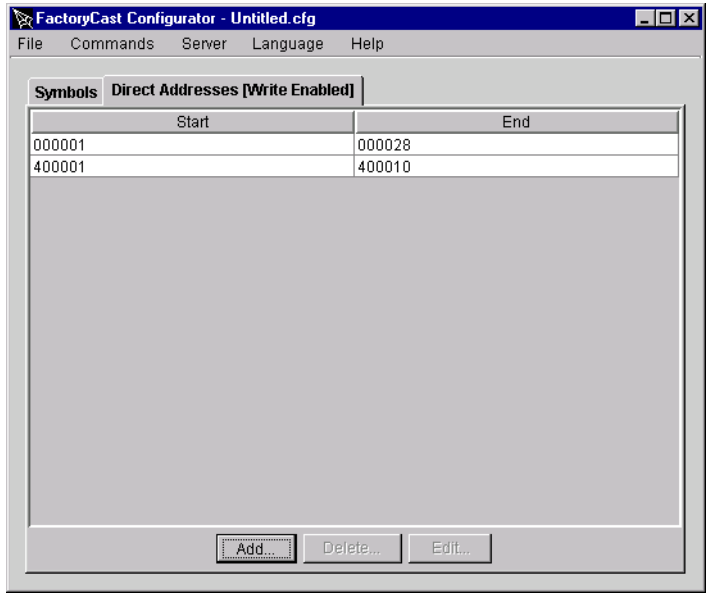
Adding Direct Addresses, Continued

Step	Action
2	Select the **Add** button at the bottom of the window. **Result:** The Add Block Direct Addresses dialog appears. 
3	Enter a valid range of addresses for your Quantum or Premium controller. **Note:** If you are only using direct addresses in your namespace, you may specify any valid range for the controller. If you are including symbols in the namespace, you may only specify direct addresses which are actually configured.

Continued on next page

Adding Direct Addresses, Continued

Adding Direct Addresses, Continued

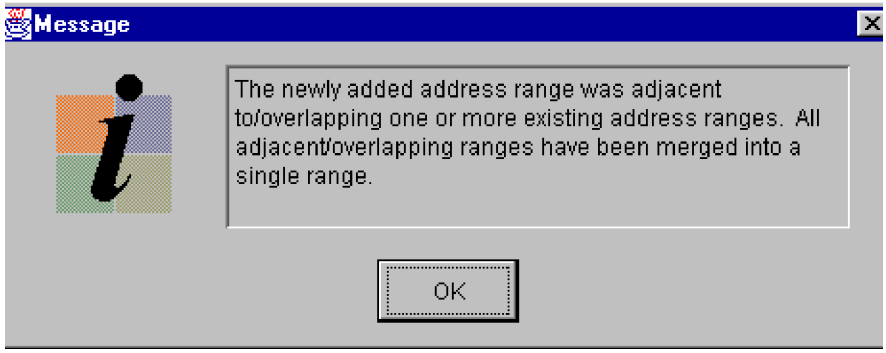
Step	Action
4	Select **Apply** to save the specified registers to the namespace without exiting the dialog. Otherwise, select **OK** to save the registers and return to the Write Enabled Direct Addresses window. **Result:** The direct address register ranges are displayed in the window. 
5	To add more direct addresses, repeat steps 2 through 4.

Continued on next page

Adding Direct Addresses, Continued

Overlapping Register Ranges

If the register range that you have specified overlaps with a range already in the namespace, FactoryCast Configurator merges them into a single range and notifies you with the following message. Select **OK** to acknowledge the message.



Direct Address Blocks and Symbol Security

Overview

When you import a block of direct addresses into a namespace which already contains symbols (variables), you may inadvertently include addresses associated with symbols. This can create a conflict between the security setting for the symbol itself and for its address.

Likewise, when you import symbols (variables) into a namespace which already contains a block of direct addresses, you may include symbols whose address is included in the direct address range. This also can create a security conflict.

This section describes how FactoryCast Configurator notifies you and resolves the conflict.

Conflict#1

If your block of direct addresses includes a symbol (variable) which has already been included in the namespace as read-only, FactoryCast Configurator sends you a message and removes the address from the block. The symbol remains read-only.

When you receive the message, click **OK**.

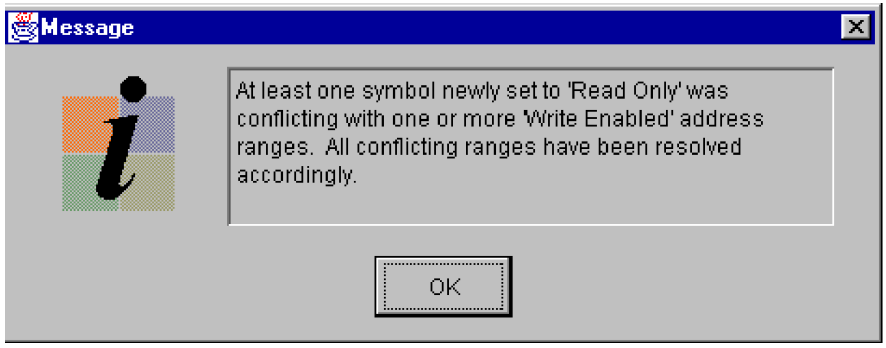
Continued on next page

Direct Address Blocks and Symbol Security, Continued

Conflict#2

If a symbol (variable) is imported into the namespace as read-only OR if you change its security setting from write-enabled to read-only, and that symbol is included in a block of direct addresses, FactoryCast Configurator sends you a message and removes the address from the block.

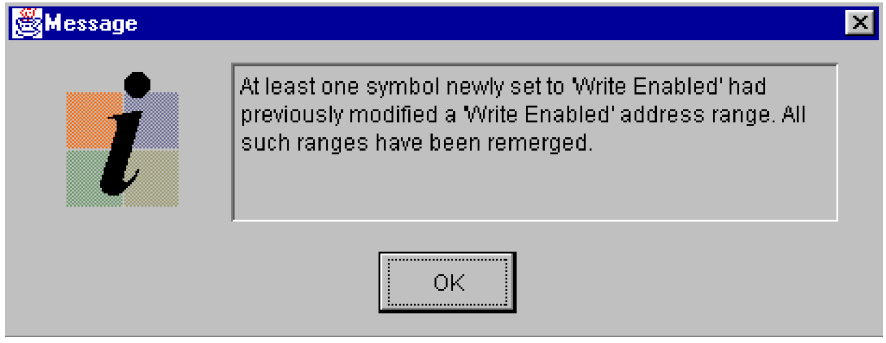
When you receive the message, click **OK**.



Reversing a Conflict

If you change the security setting on a symbol (variable) from read-only to write-enabled and that symbol had been removed from a block of direct addresses, FactoryCast Configurator send you a message and will restore it to the block.

When you receive the message, click **OK**.



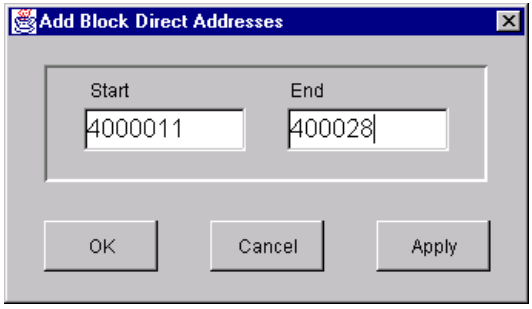
Editing and Deleting Direct Addresses

Overview

This section describes how to edit or delete direct addresses in the namespace.

Editing Direct Addresses

Follow the steps in the table below to edit a block of direct addresses:

Step	Action
1	Highlight a block of addresses in the Write Enabled Direct Addresses window.
2	Click the **Edit** button at the bottom of the window. **Result:** The Edit Block Direct Addresses dialog appears. 
3	Modify the register range by typing a new value in the **Start** or **End** field.
4	Click **OK**.

Deleting Direct Addresses

To delete a direct address from the namespace, highlight it in the Write Enabled Direct Address window and click the **Delete** button at the bottom of the window.

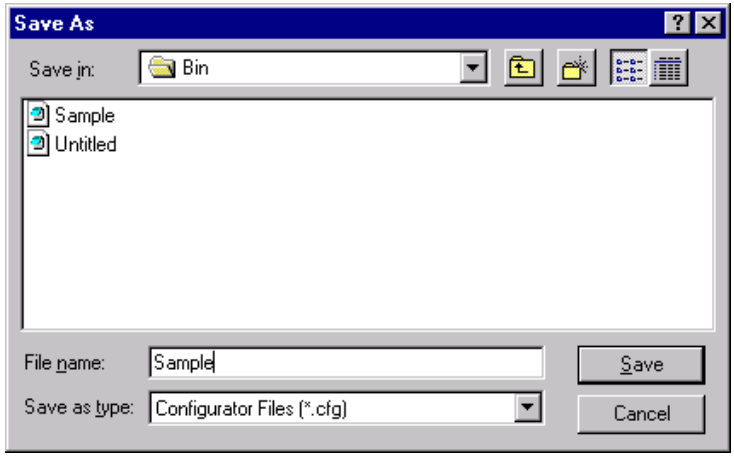
Saving the Namespace

Overview

This section describes how to save a namespace as part of the configuration file.

Procedure

Follow the steps in the table below to save the namespace in your configuration file.

Step	Action
1	Select **File | Save As...** from the menu bar. **Result:** The Save As window appears. 
2	Select the directory where you want to save the configuration file.
3	Enter a File name of sixteen characters or less. Configuration files require a .cfg extension.
4	Select **Save**.

Resynchronizing Your Namespace with Its Database

Overview

Over time, you may make changes to the Concept or PL7 database from which you created your namespace. The Configuration Tool will only notify you of differences between the database and your namespace when you try to make changes in the namespace.

This section describes how the Configuration Tool notifies you and prompts you to resynchronize your namespace with the database.

When FactoryCast Configurator Asks You to Resynchronize

FactoryCast Configurator will prompt you to resynchronize if you have changed the Concept or PL7 database file and then try to:

- Add symbols or write-enabled direct addresses
- Delete symbols or write-enabled direct addresses
- Set the attributes of symbols
- Edit write-enabled direct addresses

Verifying Discrepancies

Select **Commands | ReSynchronize PLC Database** to verify whether differences exist between the current configuration and the corresponding database.

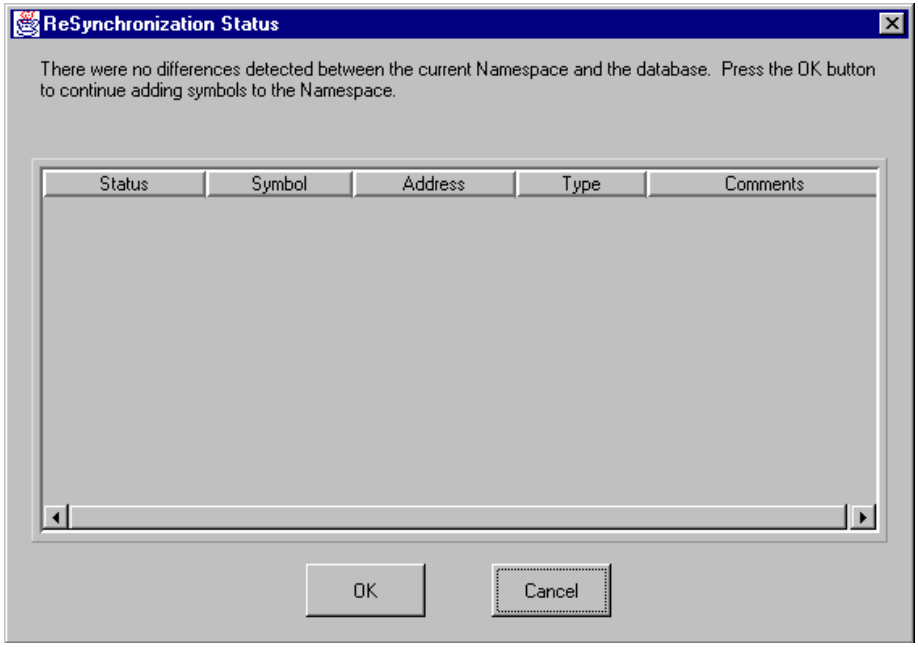
The ReSynchronization Status window appears to notify the user if differences are detected between the configuration and the database.

Continued on next page

Resynchronizing Your Namespace with Its Database, Continued

No Differences Detected

If no discrepancy is detected, the following window appears.



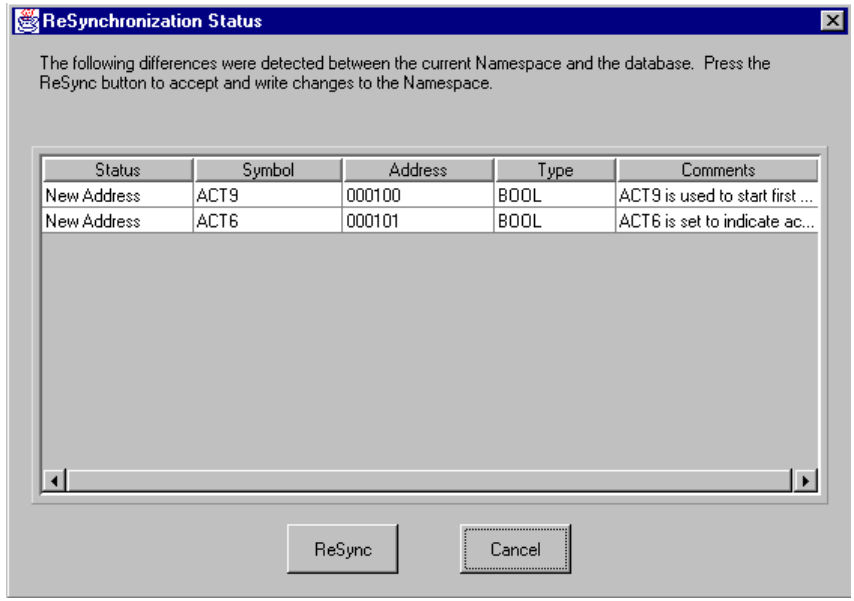
Continued on next page

Resynchronizing Your Namespace with Its Database, Continued

Differences Detected

If a discrepancy between the namespace and the database is detected, a notification appears in the ReSynchronization Status dialog. Discrepancies include:

- A symbol in the namespace has been deleted from the database.
- A symbol in the namespace has had its address or data type changed in the database.
- A symbol in the namespace has had its name changed in the database



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Resynchronizing Your Namespace with Its Database, Continued

To Resynchronize

Resynchronizing will alter the item(s) that differ from the database. The Configuration Tool allows only one resynchronization per configuration session.

Follow the steps in the table below:

Step	Action
1	Select **Commands | Resyncronize PLC Database**.
2	Select **File | Save**. **Result:** The **Resyncronize Function** changes the configuration to correct any discrepancies.

If You Don't Resynchronize

Until the files are resynchronized, you will not be able to add, delete, change the attributes of, or edit symbols and write-enabled direct addresses in the namespace.

Section 5.3
Download

Download Overview

Purpose

The **Commands | Download** menu provides several options for downloading part or all of the information you have provided to customize your Web site. This section describes those options and provides a download procedure.

In This Section

This section contains the following topics:

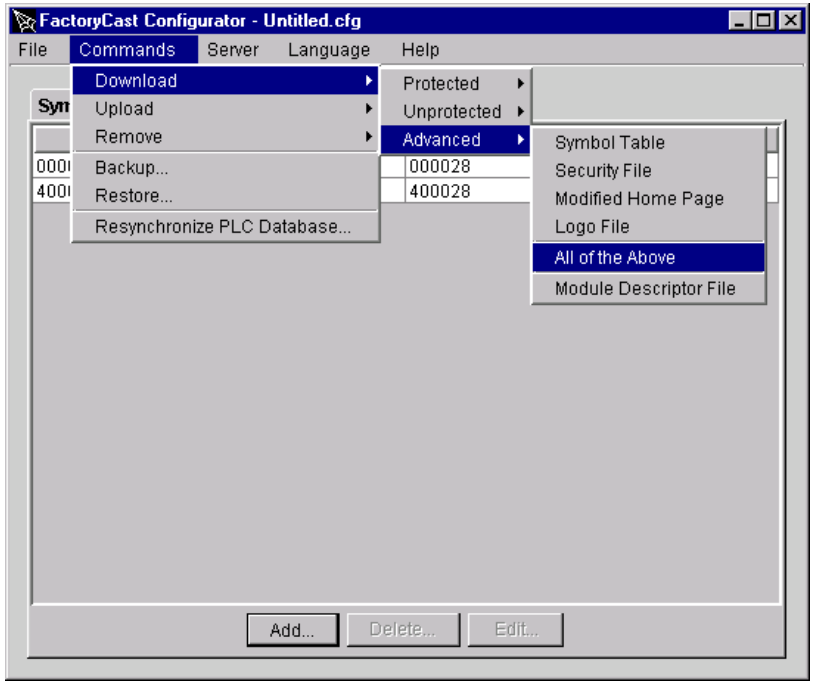
Download Options

Overview

This section describes the options of the **Commands | Download** menu.

Download Menu

The following illustration shows the **Commands | Download>** menu.



Protected

This option allows you to download **All Files** from a specific directory or to download a **Single File** selected from any directory to the password protected area of an Embedded Server.

Continued on next page

Download Options, Continued

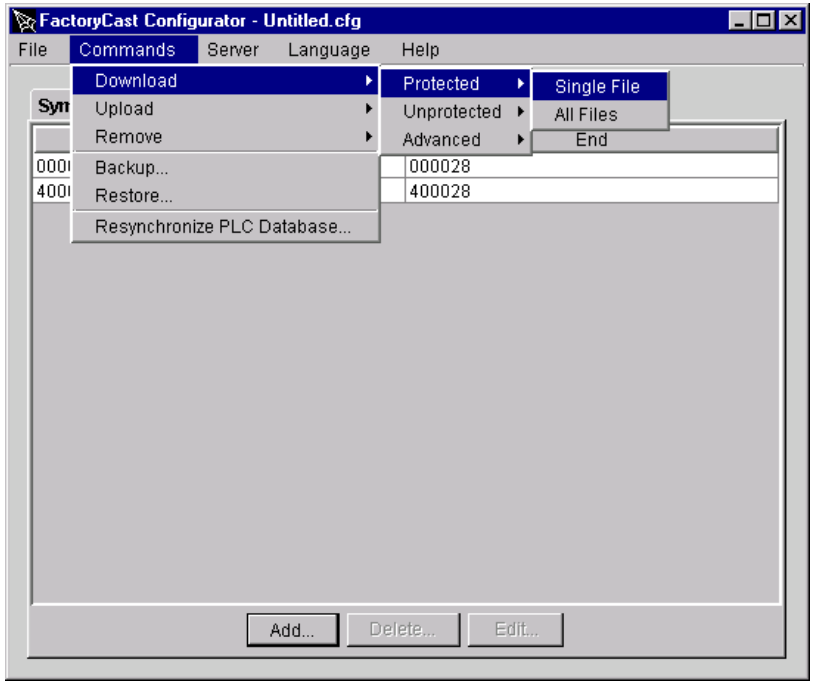
Unprotected	This option allows the user to download **All Files** from a specific directory or to download a **Single File** selected from any directory to the unprotected area of an Embedded Server.

Download Options, Continued

Download File

- Goto **Commands | Download | Protected | Any File**. *OR:*
- Goto **Commands | Download | Unprotected | Any File**.

Pressing the “OK“ button causes verification of the *file* selection, including: valid path, valid file name, etc. and then download the *file* to wwwroot/secure/user *OR:* wwwroot/unsecure/user. See *Download* on page 123.



A dialog with the following appears:

- A Host Name text field, which is filled by default
- An I/P Address numeric text field, which is also filled by default
- A File drop down list box, which is filled by “browse”

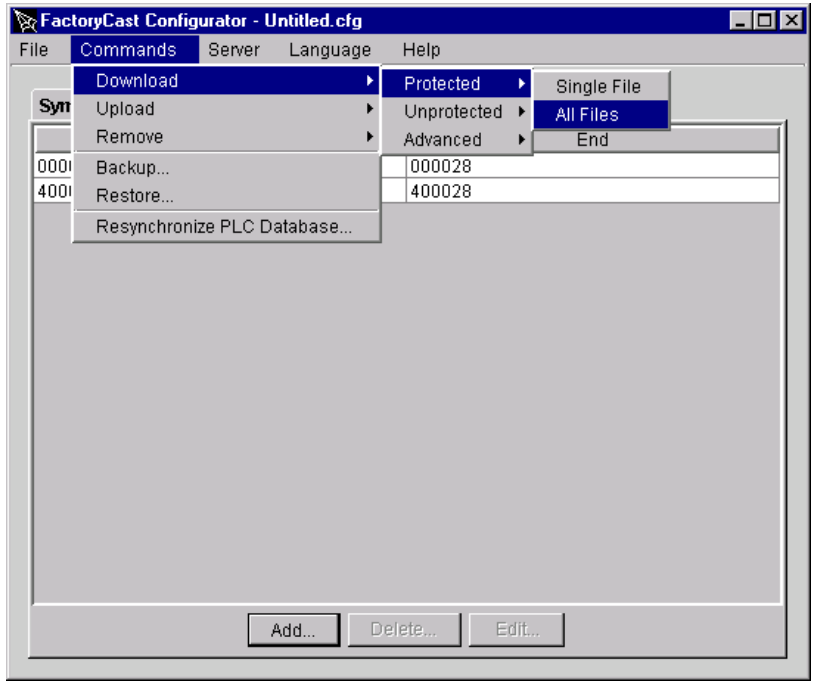
Continued on next page

Download Options, Continued

Download Directory

- Goto **Commands | Download | Protected | All Files**. *OR:*
- Goto **Commands | Download | Unprotected | All Files**.

Pressing the “OK“ button causes verification of *directory* selection, including: valid path, valid directory name, validity of all files in the directory, etc. and then download the *directory content* to wwwroot/secure/user *OR:* wwwroot/unsecure/user. See *Download* on page 123.



A dialog with the following appears:

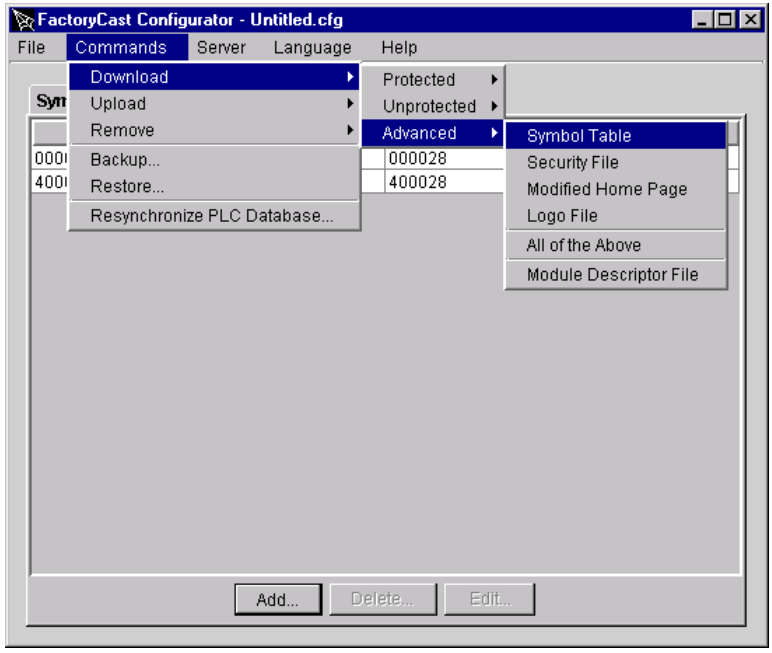
- A Host Name text field, which is filled by default
- An I/P Address numeric text field, which is also filled by default
- A Directory drop down list box, which is filled by “browse”

Download Options, Continued

Advanced Menu

This menu item allows you to selectively download files to modify the Embedded Server configuration or to configure multiple Embedded Servers performing the same function. Selecting only the files changed, you can save time on downloading.

The following illustration shows the **Commands | Download | Advanced** menu.



Symbol Table

This option allows you to download only the namespace file, without having to download additional Settings or other configuration information.

Security File

This option allows you to download only the Security file, when a new password has been entered for the server, without having to download additional Settings or other configuration information.

Continued on next page

Download Options, Continued

Modified Home Page	This option allows you to download only the Home Page [index.htm] once you have made modifications to it. The file is **Qbf\software\wwwroot\index.htm** for Quantum or **Pbf\software\wwwroot\index.htm** for Premium. The name of this file should remain index.htm.
Logo File	This option downloads your company logo file [logo.gif] to the default Web pages. Before you can download, you must specify the file location in the File Locations dialog in the **Settings** pull-down menu. The name of this file should remain **logo.gif**.
All of the Above	This option allows you to download all of **Settings** information including Symbol Table, Security File, Modified Home Page and your company Logo File.
Module Descriptor File	This option allows you to download a new module descriptor file supplied by Schneider Automation Inc. This file contains all of the text descriptions for the hardware presented by FactoryCast. Refer to *Setting File Locations* on page 94 for additional information.

How to Download

Overview

This section provides a procedure for using any of the options on the **Commands | Download** menu.

Memory Check

FactoryCast Configurator checks how much space is available on the Embedded Server before downloading. If there is insufficient memory, an error message appears.

Procedure

Follow the steps in the table below to download information to the Embedded Server.

Steps	Action
1	Select an option from the **Commands	Download** menu. **Result:** The Download Confirmation dialog appears with the IP address and any host name of the Embedded Server. **Note:** If the IP address or host name is incorrect, make the appropriate changes in the IP Address dialog. (Refer to *Setting the IP Address* on page 96.)
2	Click **OK** to confirm the IP address and begin the download.

Section 5.4
Upload

Upload Overview

Purpose

The **Commands | Upload** menu provides options for uploading one file or all files within a directory on the FactoryCast server. This section describes those options and provides the upload procedure. This function is useful for getting a file from the FactoryCast server which you would like to modify.

In This Section

This section contains the following topics:

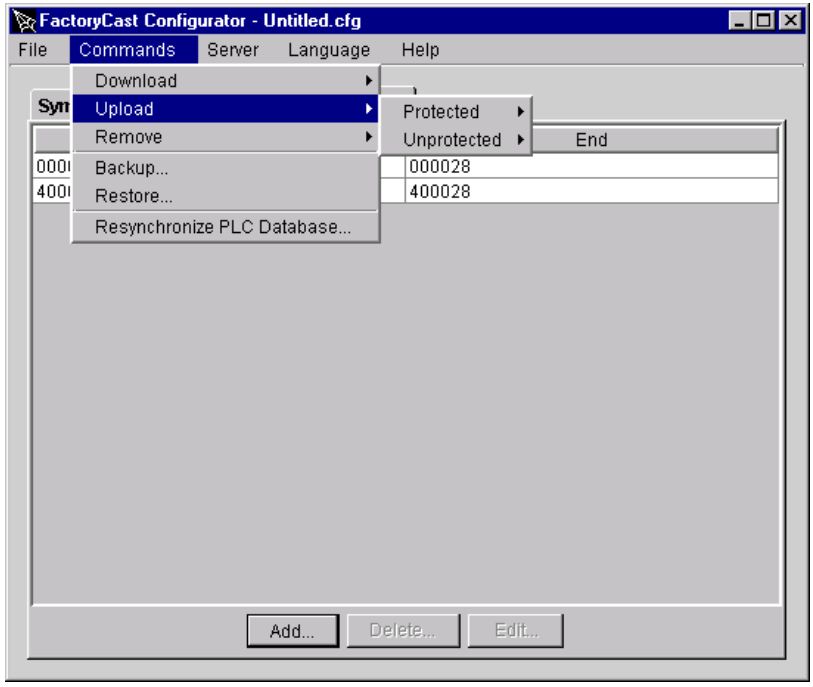
Upload Options

Overview

This section describes the options of the **Commands | Upload** menu.

Upload Menu

The following illustration shows the **Commands | Upload** menu.



Protected

This option allows you to upload **All Files** from a specific directory or to upload a **Single File** selected from any directory in the password protected area of the FactoryCast server to a directory specified by you.

Unprotected

This option allows you to upload **All Files** from a specific directory or to upload a **Single File** selected from any directory in the unprotected area of the FactoryCast server to a directory specified by you.

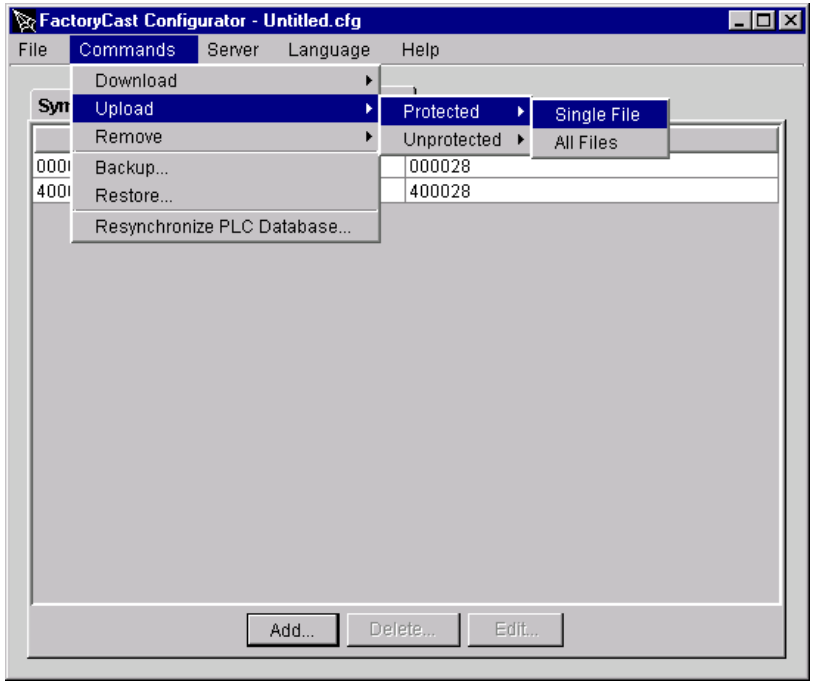
Continued on next page

Upload Options, Continued

Upload File

- Goto **Commands | Upload | Protected | Any File**. *OR:*
- Goto **Commands | Upload | Unprotected | Any File**.

Upload allows you to retrieve a file or files from the web server so you can edit them on your PC. Pressing the “OK“ button causes the selected *file* to be uploaded from wwwroot/secure/user *OR:* wwwroot/unsecure/user to the *Directory Selected*.. See *Upload* on page 131.



A dialog with the following appears:

- A Host Name text field, which is filled by default
- An I/P Address numeric text field, which is also filled by default
- A File drop down list box, which is filled by “browse”

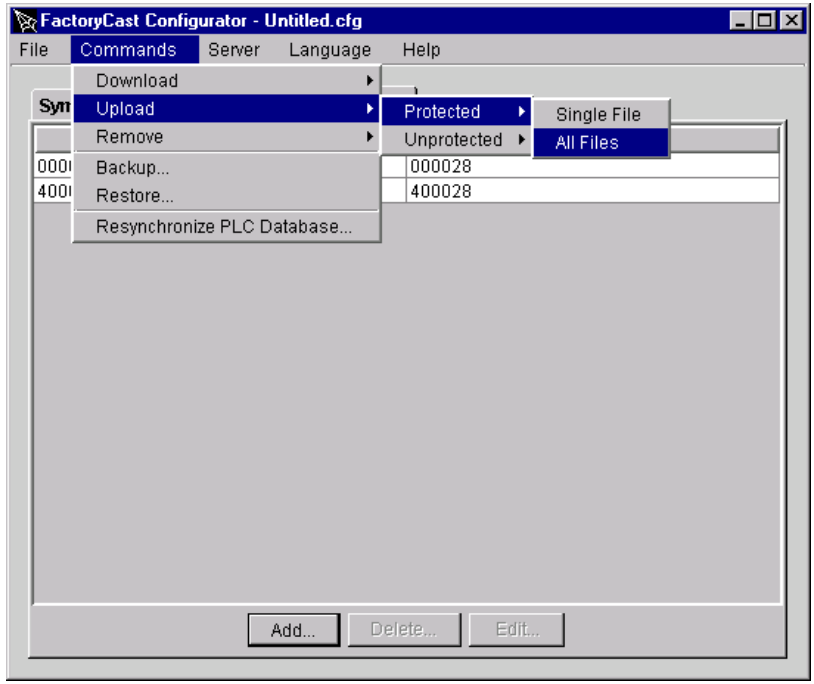
Continued on next page

Upload Options, Continued

Upload Directory

- Goto **Commands | Upload | Protected | All Files**. *OR:*
- Goto **Commands | Upload | Unprotected | All Files**.

Upload All Files allows you to retrieve an entire directory from the web server so you can edit them on your PC. Pressing the “OK“ button causes the selected *directory* content to be uploaded from wwwroot/secure/user *OR:* wwwroot/unsecure/user to the *Directory Selected*. See *Upload* on page 131.



A dialog with the following appears:

- A Host Name text field, which is filled by default
- An I/P Address numeric text field, which is also filled by default
- A Directory drop down list box, which is filled by “browse”

How to Upload

Overview

This section provides a procedure for using any of the options on the **Commands | Upload** menu.

Procedure

Follow the steps in the table below to upload information from the Server.

Steps	Action
1	Select an option from the **Commands | Upload** menu. **Result:** The Upload Conformation dialog appears with the IP address and host name of the FactoryCast. Additionally, there are two fields, one for the source directory and file and the second for the destination directory for the upload.

Note: If the IP address or host name is incorrect, make the appropriate changes in the IP Address dialog. Refer to *Setting the IP Address* on page 96.

2	Enter the appropriate path and file or use the ellipses button to find the file to select.
3	Click **OK** to confirm the IP address and begin the upload.

Section 5.5
Remove

Overview

This section describes the options of the **Commands | Remove** menu.

Purpose

The **Commands | Remove** menu provides options for removing part or all of the files you have downloaded to customize your Web site. This section describes those options and provides a remove procedure.

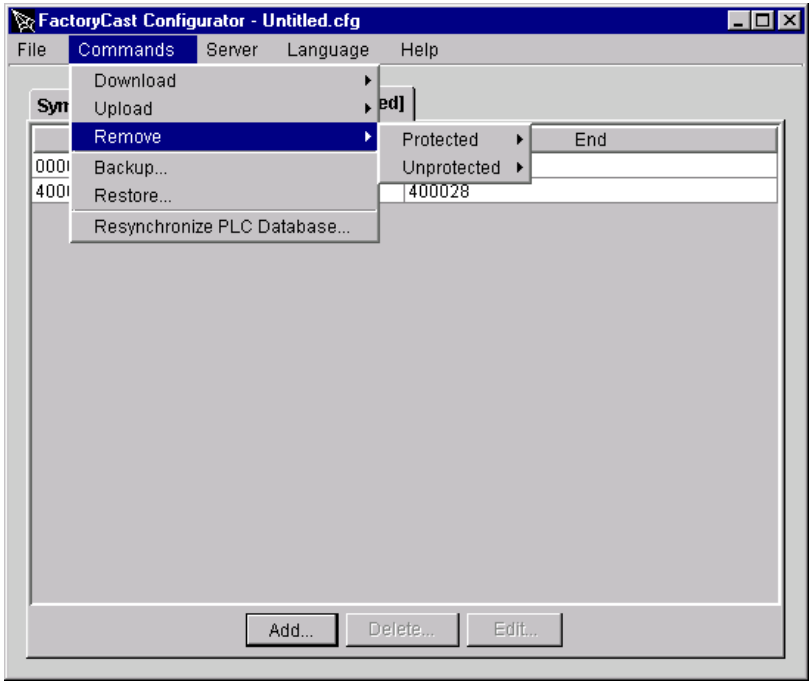
In This Section

This section contains the following topics:

Remove Options

Remove Menu

The following illustration shows the **Commands | Remove** menu.



Protected

This option allows you to remove **All Files** from a specific directory or to remove a **Single File** selected from any directory in the password protected area of the embedded server.

Unprotected

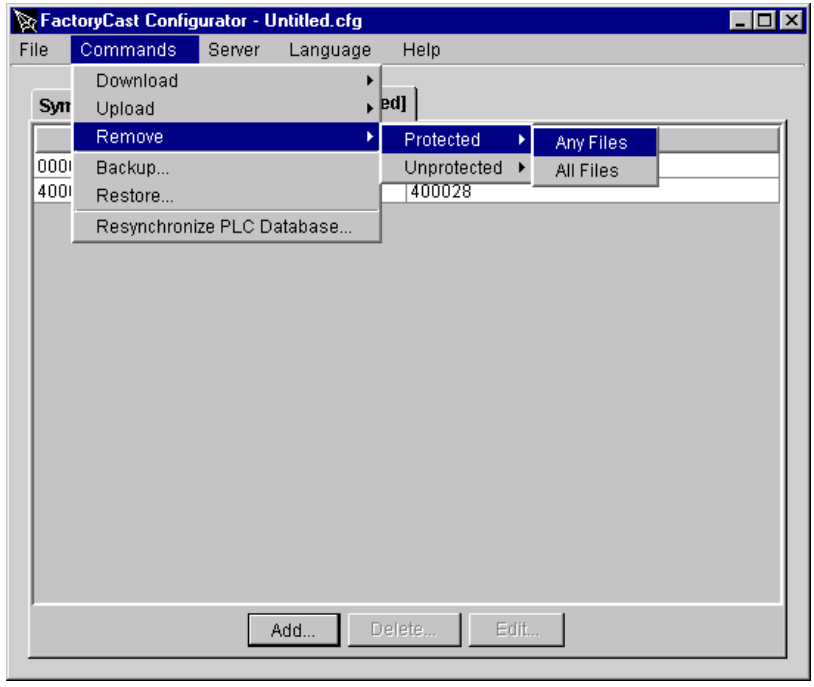
This option allows you to download **All Files** from a specific directory or to download a **Single File** selected from any directory in the unprotected area of the embedded server.

Remove Options, Continued

Remove File

- Goto **Commands | Remove | Protected | Any File**. *OR:*
- Goto **Commands | Remove | Unprotected | Any File**.

Remove File allows you to remove a file or files from the web server. Pressing the “OK“ button causes the selected *file* to be removed from wwwroot/secure/user *OR:* wwwroot/unsecure/user. See *Remove* on page 136.



A dialog with the following appears:

- A Host Name text field, which is filled by default
- An I/P Address numeric text field, which is also filled by default
- A File drop down list box, which is filled by “browse”

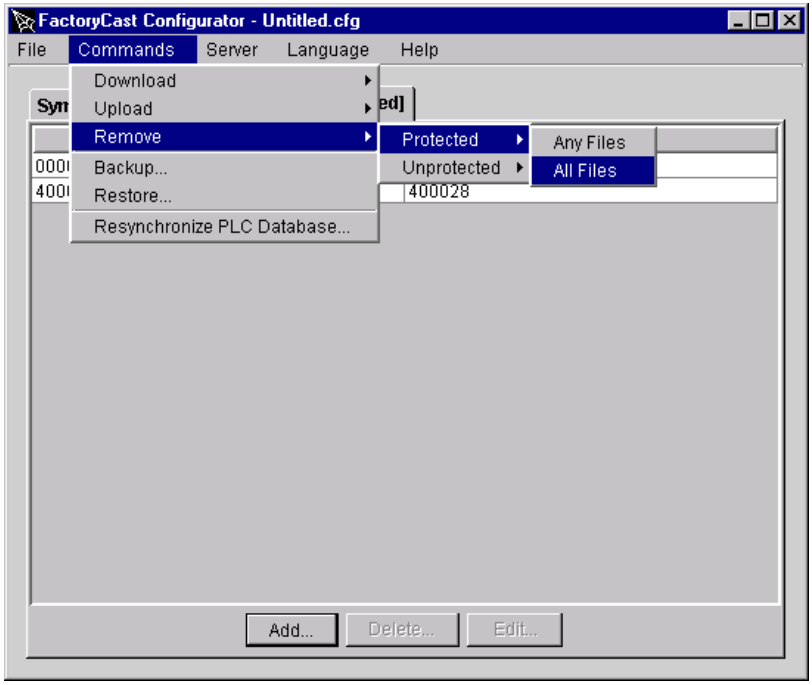
Continued on next page

Remove Options, Continued

Remove Directory

- Goto **Commands | Remove | Protected | All Files**. *OR:*
- Goto **Commands | Remove | Unprotected | All Files**.

Remove File allows you to remove a directory from the FactoryCast server. Pressing the “OK“ button causes the selected *directory content* to be removed from wwwroot/secure/user *OR:* wwwroot/unsecure/user. See *Remove* on page 136.



A dialog with the following appears:

- A Host Name text field, which is filled by default
- An I/P Address numeric text field, which is also filled by default
- A Directory drop down list box, which is filled by “browse”

How to Remove

Overview

This section provides a procedure for using any of the options on the **Commands | Remove** menu.

Procedure

Follow the steps in the table below to remove information from the Server.

Step	Action
1	Select an option from the **Commands** | **Remove** menu. **Result:** The Remove Confirmation dialog appears with the IP address and host name of the Embedded Server as well as a file path entry field.

Note: If the IP address or host name is incorrect, make the appropriate changes in the IP Address dialog. Refer to *Setting the IP Address* on page 96.

2	Enter the appropriate path and file or use the ellipses button to find the file to select.
3	Click **OK** to confirm the IP address and begin the removal process.

Section 5.6
Web Site Maintenance

Maintenance Overview

Purpose

This section describes how to maintain your Web site, including:

- Checking server status
- Backing up files
- Restoring files
- Reflashing the module
- Updating I/O module descriptions

In This Section

This section contains the following topics:

Checking Embedded Server Status

Overview

The Configurator gives you a way to check:

- Bytes of free memory in the Embedded Server
- The file name of the last configuration downloaded to the Embedded Server

Memory Capacity

Consult the table below to find out how much memory your Embedded Server provides for customizing your Web site:

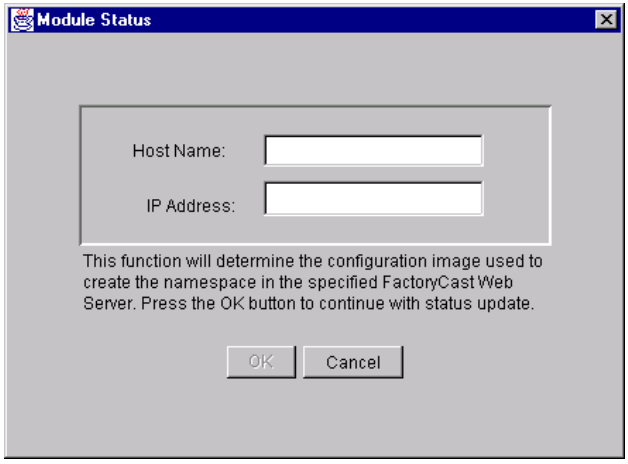
Embedded Server Model	Memory Available for Customizing the Site
Quantum 140 NOE 2x1 10	Customizable based on plug-ins configured
Premium TSX ETY 110 WS	Customizable based on plug-ins configured

Continued on next page

Checking Embedded Server Status, Continued

Procedure

Follow the steps in the procedure below to check the server status:

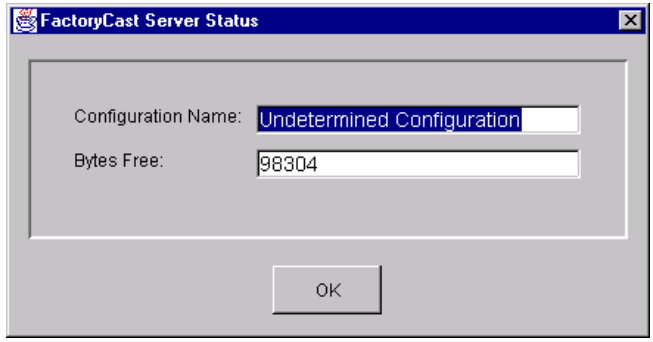
Step	Action
1	Select **Server | Status>** from the menu bar. **Result:** The Module Status dialog appears. 
2	Enter the **Host Name** or **IP Address** of the Embedded Server.

Note: Since you do not need a Configuration file open to perform this function the Host name is not filled in by default.

Continued on next page

Checking Embedded Server Status, Continued

Procedure, Continued

Step	Action
3	Select **OK**. **Result:** The Ethernet Module Status dialog appears. It displays the current configuration file for the Embedded Server and the number of bytes free in memory.. 
4	Click **OK** to exit the Module Status dialog.

Backing Up Files

Overview

The **Commands | Backup** option is used to archive the entire file contents of the Embedded Server. A zip file is created in the directory specified as result of the Backup operation.

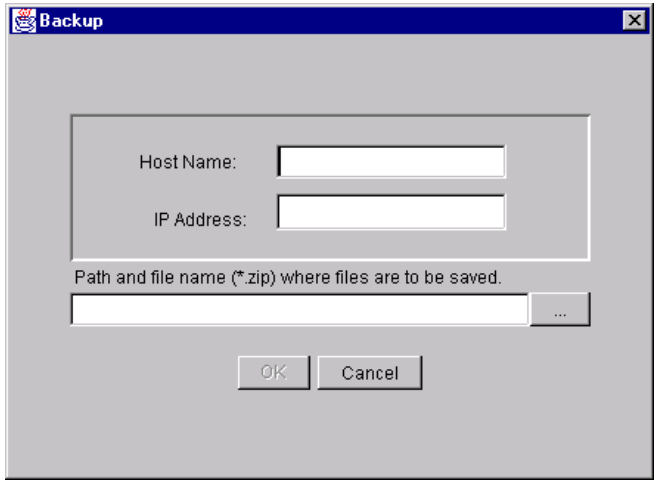
The contents of the backup can be used to restore the Embedded Server to the configuration at the time of the backup.

Do Not Modify Backup Files

The user should not make any modifications to the directory structures or files in the zip file.

Procedure

Follow the steps in the table below to create a backup of your configuration file:

Step	Action
1	Select **Commands | Backup**. **Result:** The Backup dialog appears. 
2	Enter the **Host Name** or **IP Address** of the Embedded Server.

Continued on next page

Backing Up Files, Continued

Procedure, Continued

Step	Action
3	Enter the **Path** and **File Name** where you would like to store the backup file. Use the ellipses button to the right of the text box to browse for a location.
4	Click **OK** to begin the backup.

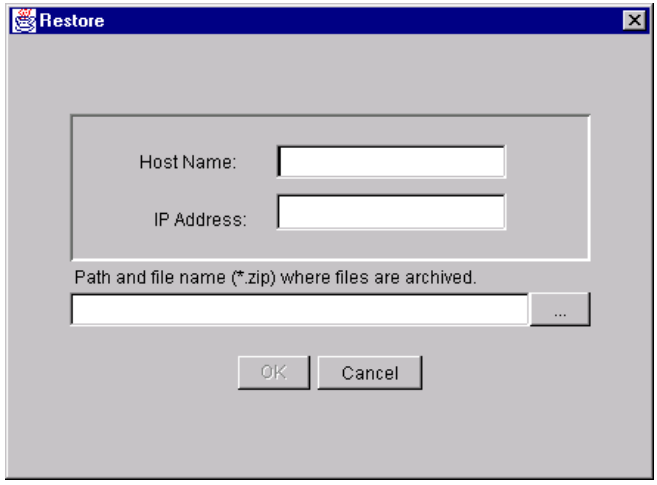
Restoring the Web Server Module

Overview

The **Commands | Restore** option is used to restore the contents of a backup file to the FactoryCast.

Procedure

Follow the steps in the table below:

Step	Action
1	Select **Commands | Restore**. **Result:** The Restore dialog appears. 
2	Enter the **Host Name** or **IP Address** of the Embedded Server.
3	Enter the **Path** and **File Name** of the backup file. Use the ellipses button to the right of the text box to browse for the file.
4	Click **OK**.

Restoring the Web Server Module, Continued

Overview

If the server fails or its files become corrupted through user error, you can use the **Server | Restore Defaults** option to restore the FactoryCast Configurator files. This menu item restores the selected module to the state in which it was shipped from the factory. This may take some time, so be prepared.

Conditions for Restoring

In order to restore the Embedded Server to the factory supplied configuration, you must have unaltered FactoryCast Configurator files on your hard drive. If you have altered the FactoryCast Configurator directory files on your hard drive in any way -- for instance, by replacing the default home page with your own home page -- you must reinstall FactoryCast Configurator on your hard drive before you reflash the module. Otherwise, the module will be restored with the files on your hard drive which may have caused the initial problem.

If you have altered the FactoryCast Configurator files on your hard drive in any way -- for instance, by replacing the default home page with your own home page -- you must reinstall FactoryCast Configurator on your hard drive before you reflash the module.

Consequences of Restoring

Module initialization deletes all files on the FactoryCast Server except data template for the Data Editor and Graphic Editor.

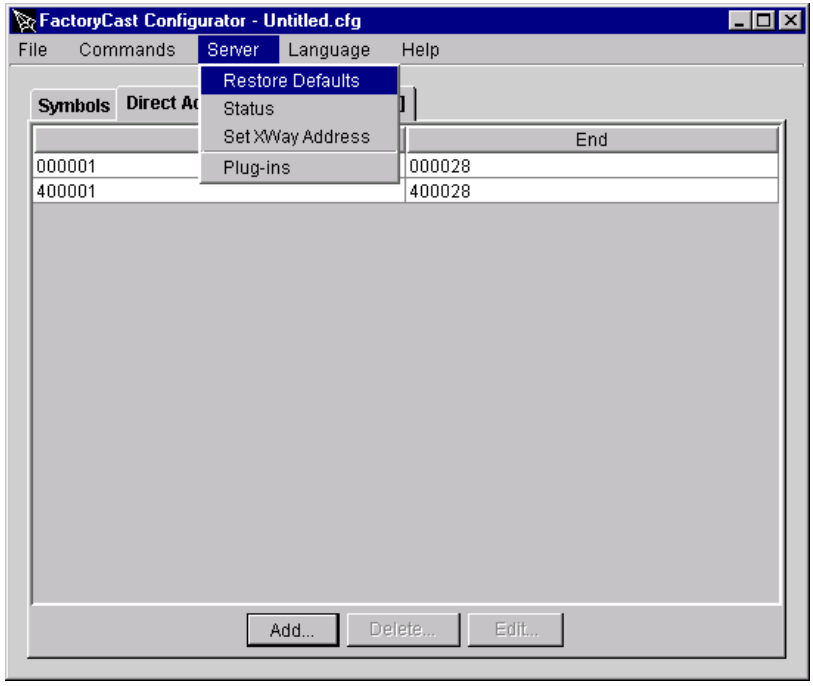
Continued on next page

Restoring the Web Server Module, Continued

Restore Defaults Command

When “Restore Defaults” is selected, the module will be cleared (except rdt and gdt directories) and the default plug-ins will be downloaded again.

Note: If “OK” is selected the module files will be restored to the selected packages. If “CANCEL” is selected, all selections will be cleared and the dialog dismissed.

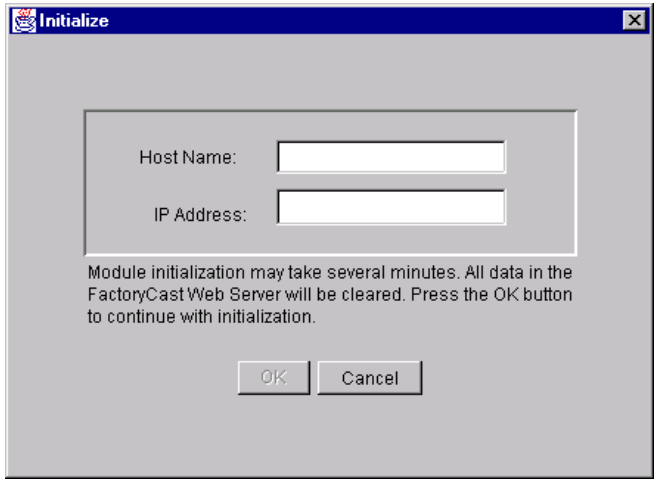


Continued on next page

Restoring the Module, Continued

Procedure

Follow the steps in the table below:

Step	Action
1	Select **Server | Restore Defaults.** **Result:** The Initialize dialog appears. 
2	Enter the **Host Name** or **IP Address** of the Embedded Server.
3	Select **OK**.

Updating I/O Module Descriptions

Overview

Over time, the I/O module descriptions for the modules displayed in the default Web pages may become outdated. Schneider Automation will make available, from time to time, new I/O module descriptions to be downloaded to the Embedded Server module.

When you receive a new I/O module description file from Schneider Automation, follow the procedure below to download the file to the server.

Procedure

Follow the steps in the table below to download updated I/O module descriptions.

Steps	Action
1	Select **Commands | Download | Advanced | Module Descriptor File** from the menu bar. **Result:** The Download Module Descriptor dialog appears and prompts you for the IP address and host name of the Embedded Server. **Note**: If the Host Name or IP Address is incorrect, make the appropriate changes in the IP Address dialog. (Refer to *Setting the IP Address* on page 96.)
2	Click “OK”.

Adding Custom Pages to the Site

6

At a Glance

Purpose

You may choose to add your own Web pages to the site on the Embedded Server. The FactoryCast Configuration Tool allows you to protect them with the same passwords as the default pages or to put them in an unprotected area, where anyone can view them without a password.

FactoryCast Configurator provides some simple Java applets you can include to create dynamic data from the controller right in your custom Web pages..

This section discusses how to add custom pages to the site and how to use the Java applets on those pages.

Note: When planning custom Web pages, be sure to keep them within the limits of the memory available for customization. (Refer to *Checking Embedded Server Status* on page 142.)

At a Glance

This chapter contains the following sections:

Section 6.1
Working with Custom Pages

Overview

Purpose

You may develop any pages you want to customize the FactoryCast Configurator site. FactoryCast Configurator gives you three different methods for adding these pages to the site:

- You may replace the default home page with one of your own by following a particular procedure
- You may add supporting pages and place them under password protection
- You may add supporting pages and make them available to any user

In This Section

This section contains the following topics:

Downloading a Custom Home Page

Overview

If you want to replace the default home page with one of your own, you must take the following steps:

- Back up the original FactoryCast configuration, so that you can restore it later if necessary
- Move the supplied default home page to a secure place
- Create a new home page or edit the existing page
- Replace it with your home page
- Download your home page to the Embedded Server

Backing Up the Original Configuration

Before you change the default home page, you should back up the configuration, following the procedure in *Backing Up Files* on page 145. That way, if any problems develop with the Embedded Server, you will be able to restore the server to its original configuration. Remember, you can always re-install from CD-ROM.

Creating Your Home Page

You must give your home page the same name as the default home page: index.htm. Be sure to retain the hyperlinks needed to get to the Schneider supplied pages.

Moving the Default Home Page

Here is the location of the default home page:

Drive\FactoryCast Configurator\ (QBF or PBF)\software\wwwroot\Index.htm

Copy the default home page from the wwwroot directory and move it to a secure place.

Placing Your Home Page

Copy your home page into the wwwroot directory where you found the default home page. Be sure you name it **index.htm**

Continued on next page

Downloading a Custom Home Page, Continued

What About Image Files?

Any image files for your new home page should be placed in the same directory as your company logo. This directory is specified in the File Settings dialog.

Image file names must conform to DOS 8.3 format (no more than eight letter file name and three letter extension) and should be lower case (ie. machine1.htm).

Downloading

Follow the steps in the table below to download your new home page to the Embedded Server.

Steps	Action
1	Select **Commands | Download | Advanced | Modified Home Page** from the menu bar. **Result:** The Download Home Page File dialog appears with the IP address and any host name of the Embedded Server. **Note**: If the Host Name or IP Address is incorrect, make the appropriate changes in the IP Address dialog. Refer to *Setting the IP Address* on page 96.
2	Click **OK**.

Downloading Other Protected Pages

Overview

If you are adding supporting Web pages to the default Web site, you may choose to protect them with the same user name and password as the default pages.

In order to add password-protected pages to the site, you must specify the directory where they are located and then download them to the server.

Specifying File Locations

Place the files for your Web pages and any images for the pages in a single directory.

Be sure all file names conform to DOS 8.3 format (no more than eight letter file name and three letter extension). The file names should be lower case (ie. machine1.htm).

Use the File Locations dialog to specify the location of the files. (Refer to *Setting File Locations* on page 94.)

Download Options

If you are only downloading the password-protected Web pages and related images, you can use the **Commands | Download | Protected | All Files** option.

Note: Remember to create new hyperlinks to the other web pages so you can access them in the browser.

Procedure

Follow the steps in the table below to download to the server.

Steps	Action
1	Select an option from the **Commands | Download | Protected | All Files** menu. **Result:** The Download Confirmation dialog appears with the IP address and any host name of the Embedded Server. **Note:** If the IP address or host name is incorrect, make the appropriate changes in the IP Address dialog. (Refer to *Setting the IP Address* on page 96.)
2	Click **OK** to confirm the IP address and begin the download.

Downloading an Unprotected Web Site

Overview

You may choose to have an unprotected Web pages. These are pages that:

- Have read-only information
- Can be accessed without a password

Use the **Commands | Download | Unprotected | All Files** option to download unprotected Web pages to the Embedded Server.

File Names and Location

Before you can download unprotected Web pages to the Embedded Server, you must place the page and its image files in one folder.

Each subdirectory should have a page named Index.htm. Web pages and image files must have names conforming to DOS 8.3 format (no more than eight letter file name and three letter extension) and should be lower case (ie. machine1.htm).

Download Procedure

Follow the steps in the table below to download an unprotected Web site to the Embedded Server.

Steps	Action
1	Select **Commands | Download | Unprotected | All Files** from the menu bar. **Result:** The Download Unprotected Web Files dialog appears and prompts you with the IP address and any host name of the Embedded Server. **Note**: If the Host Name or IP Address is incorrect, make the appropriate changes in the IP Address dialog. Refer to *Setting the IP Address* on page 96.
2	Enter the source directory containing the Web files. Use the ellipsis button to the right of the text box to search for the directory.
3	Click **OK**.

Removing Unprotected Web Files

Overview

If you want to remove unprotected Web files from the Embedded Server, See *Remove* on page 136.

Section 6.2
Using FactoryCast's Java Applets

Overview

Purpose

This section describes how to use the Java Applets `LiveLabelMgrApplet`, `LiveLabelApplet`, `LiveBeanMgrApplet`, and `LiveBeanApplet` to include dynamic data from the controller on your Web pages.

In This Section

This section contains the following topics:

Using the Applets on a Web Page

Overview

The supplied applets can be included on a Web page to query and display dynamic data from a Quantum or Premium controller without having to know or write Java code.

LiveBeanMgr Applet

The `LiveBeanMgrApplet` allows the Web page to display dynamic data from the controller. This applet **must** be included **once** on the page if any instances of `LiveBeanApplet` are included in the page.

`LiveBeanMgrApplet` can be included on a Web page in two possible forms. One form is as an invisible applet, if the Web page is only for monitoring PLC values. The other form is as an icon of a key, if the Web page is to send new values to the PLC as well as monitor values. If the form that allows values to be sent to the PLC is used, when a Web browser user clicks on the applet (icon of a key), a dialog is presented that allows the user to enter the password that enables writes to the PLC.

Here is the HTML code that you use to include the applet on a Web page that is to be used only for monitoring:

```
<APPLET codebase="/classes"
archive="SAComm.jar,GDE.jar,Widgets.jar"
code="com.schneiderautomation.gde.LiveBeanMgrApplet"
width=0 height=0>
</APPLET>
```

Here is the HTML code that you use to include the applet on a Web page that is to be used for sending values to a PLC as well as monitoring:

```
<APPLET codebase="/classes"
archive="SAComm.jar,GDE.jar,Widgets.jar"
code="com.schneiderautomation.gde.LiveBeanMgrApplet"
width=32 height=32>
<PARAM name=MODE value="READWRITE">
</APPLET>
```

Continued on next page

Using the Applets on a Web Page, Continued

LiveLabelMgr Applet

The `LiveLabelMgrApplet` allows the Web page to display dynamic data from the controller. This applet MUST be included once on the page if any instances of `LiveLabelApplet` are included on the page.

Here is the HTML code that you use to include the applet on a page:

```
<APPLET codebase=”/classes” archive=”SAComm.jar”
code=”com.schneiderautomation.factorycast.LiveLabelMgrApplet
”
width=0 height=0>
</APPLET>
```

LiveLabelApplet

The `LiveLabelApplet` is included one time for each variable (symbol) or direct address monitored on the Web page. For instance, if you are monitoring three variables, you would include the applet three times.

This applet displays the following three fields:

Field	Description
Label	Your label for the variable (symbol) or direct address
Value	Run-time value of the variable (symbol) or direct address
Units	The units you specify for the value

Using the Applets on a Web Page, Continued

LiveBeanApplet

The `LiveBeanApplet` is included one time for each variable (symbol) or direct address monitored/controlled on the Web page. For instance, if you are monitoring three variables, you would include the applet three times. `LiveBeanApplet` allows any graphic object (Java Bean) that was created with the Graphic Editor to be included on a Web page as a separate applet. (See *Graphic Editor* on page 184, for information on the Graphic Editor.) Any graphic object that has been saved as part of a Graphic Editor graphic display can be retrieved from the graphic file and presented by the applet.

Note: If a Web page contains both `LiveLabelApplet` and `LiveBeanApplet`, then it must contain a single instance of `LiveBeanMgrApplet`, not `LiveLabelMgrApplet`. (`LiveBeanMgrApplet` supports both `LiveLabelApplet` and `LiveBeanApplet`, while `LiveLabelMgrApplet` supports only `LiveLabelApplet`.)

Continued on next page

LiveBeanApplet

LiveBeanApplet Parameters

The `LiveBeanApplet` uses parameters to allow you to specify the graphic object to be presented by the applet and to set the applet's background color.

Parameter…	Defines…
LIBRARY	The name of the graphic display which contains the graphic object that is to be presented by the applet. (This will be the same name that was used when the graphic display was saved with the Graphic Editor .) **This parameter is required.**
BEAN	The name of the graphic object that is to be retrieved from the graphic display specified by the LIBRARY parameter. (This will be the name that appears as the 'Name' property of the graphic object.) **This parameter is required.**
BACKGRND	The background color for the applet. Acceptable values are WHITE, LT_GRAY, GRAY, DK_GRAY, BLACK, RED, PINK, ORANGE, YELLOW, GREEN, MAGENTA, CYAN, and BLUE. Also, a RGB color value can be entered using the format "0xRRGGBB" where RR, GG and BB are the hexadecimal values for the red, green and blue components, respectively. This parameter is optional, but is normally set to match the color of the HTML page.

In addition to the above parameters, the <APPLET> tag for a `LiveBeanApplet` must include 'width' and 'height' attributes. Normally, the size of a `LiveBeanApplet` is set to match the size of the graphic object that it is presenting. To get the size of a graphic object, select it while the Graphic Editor is in editing mode. The selected object's name and size are shown in the "Information Area" at the top of the Graphic Editor applet.

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LiveBeanApplet Parameters, Continued

LiveBeanApplet Example

All instances of `LiveBeanApplet` that are included in a Web page follow the same pattern, with only the applet parameters and size varying for each instance.

Here is the HTML code for including a `LiveBeanApplet` that will present the graphic object named “MyMeter” which was saved by the Graphic Editor as part of the graphic display, “Library 1”.

```
<APPLET codebase="/classes"
archive="SAComm.jar,GDE.jar,Widgets.jar"
code="com.schneiderautomation.gde.LiveBeanApplet"
width=180 height=160>
<PARAM name=LIBRARY      value="Library1">
<PARAM name=BEAN         value="MyMeter">
<PARAM name=BACKGRND     value="0xDDEEFF">
</APPLET>
```

Note: For information about adding graphic applets into web pages, see *Applet Parameters* on page 203.

More Information

For more information about creating Java applets and graphic objects to obtain run-time data from a PLC, refer to the Software Developer’s Kit included on the FactoryCast installation CD ROM.

LiveLabelApplet Parameters

Overview

The `LiveLabelApplet` uses several parameters which allow you to customize the applet.

Data Parameters

The applet's data parameters, their meaning, and default values are shown below.

Parameter...	Defines...	With Default Value...
LABEL	A text label to identify the data item	No label
UNITS	A text label to identify the value's engineering units	No units displayed
ADDRESS	The address of the Concept/PL7 variable (symbol) name or Quantum/Premium direct address	None
DATATYPE	The data type of the variable (symbol) or direct address. Acceptable values are: SHORT 8-bit signed integer USHORT 8-bit unsigned integer INT 16-bit signed integer UINT 16-bit unsigned integer DINT 32-bit signed integer UDINT 32-bit unsigned integer REAL 32-bit IEEE floating point TIME 32-bit unsigned integer (in ms) BOOL 1-bit discrete (boolean)	UNDEFINED
	NOTES: If the ADDRESS parameter is a direct address, a DATATYPE parameter must be provided. If ADDRESS is a direct address for a discrete PLC reference (Quantum 0x/1x reference), DATATYPE must be set to BOOL. DATATYPE may be set to BOOL only for discrete PLC references. If the ADDRESS parameter is the name of a Concept or PL7 variable, the DATATYPE parameter is optional. If the DATATYPE is specified for a variable, it must exactly match its actual data type.	

Continued on next page

LiveLabelApplet Parameters, Continued

Data Parameters, Continued

Parameter...	Defines...	With Default Value...
FORMAT	The display format for the value. Acceptable values for this parameter are: DEC decimal HEX hexadecimal BIN binary ASCII bytes displayed as ASCII characters TIME 'day_hr_min_sec_ms' BOOL ON_WORD or OFF_WORD (see below)	DEC for most data types TIME for data type TIME BOOL for data type BOOL
	NOTES: If DATA TYPE is REAL, a FORMAT other than DEC will give unpredictable results if the value cannot be converted to an integer. Time is not a valid FORMAT for Premium (ETY).	
GAIN	The gain (multiplier) for scaling the retrieved value to engineering units.	1.0
	NOTE: Scaling is be performed only if GAIN or BIAS is set and FORMAT is DEC. Linear scaling is performed by the formula: SCALED_VALUE=GAINxRAW_VALUE+BIAS	
BIAS	The bias (offset) for scaling the retrieved value to engineering units. See NOTE for GAIN.	0.0
ON_WORD	A text value to be shown when value is non-zero (Use only if the FORMAT is BOOL).	ON
OFF_WORD	A text value to be shown when value is zero (Use only if the FORMAT is BOOL).	OFF

Continued on next page

LiveLabelApplet Parameters, Continued

Format Parameters

The format parameters for the applet, their meaning and default values are shown below:

Parameter...	Defines...	With Default Value...
FOREGRND	Foreground color of the applet. Acceptable values are: WHITE, LT_GRAY, GRAY, DK_GREY, BLACK, RED, PINK, ORANGE, YELLOW, GREEN, MAGENTA, CYAN, and BLUE.	BLACK
BACKGRND	Background color for the applet. For acceptable values, see FOREGRND.	LT_GRAY
ERROR_ COLOR	Foreground color of the VALUE field when unable to retrieve the value from the PLC. For acceptable values, see FOREGRND.	MAGENTA
FONT_NAME	Name of the font used by the applet. Acceptable values are: SERIF, SANSSERIF, and MONOSPACE.	SANSSERIF
FONT_BOLD	If set, displays all text in the applet as bold. Acceptable values are: TRUE and FALSE.	FALSE
FONT_ITALIC	If set, displays all text in the applet in italics. Acceptable values are: TRUE and FALSE.	FALSE
FONT_SIZE	Sets the point size of the font used by the applet.	12

Size Parameters

The size of a `LiveLabelApplet` is specified in the width and height attributes of its <APPLET> tag. The LABEL and UNITS fields of the applet will always take the width required to display the text values of their associated applet parameters. The remaining width of the applet is given to its VALUE field.

LiveLabelApplet Example #1

Overview

The applet example in this section contains almost every applet parameter.

Example Code

Here is the HTML code for this example:

```
<APPLET codebase=”/classes” archive=”SAComm.jar”
code=”com.schneiderautomation.factorycast.LiveLabelApplet”
width=300 height=30>
<PARAM name=LABEL        value=”Reactor 1 Temperature”>
<PARAM name=UNITS        value=”F”>
<PARAM name=ADDRESS      value=”40101” or “%MW100” (Premium)>
<PARAM name=DATATYPE     value=”UINT”>
<PARAM name=FORMAT       value=”DEC”>
<PARAM name=GAIN         value=”2.0”>
<PARAM name=BIAS         value=”100.0”>
<PARAM name=FOREGRND     value=”WHITE”>
<PARAM name=BACKGRND     value=”BLACK”>
<PARAM name=ERROR_COLOR  value=”RED”>
<PARAM name=FONT_NAME    value=”SERIF”>
<PARAM name=FONT_BOLD    value=”TRUE”>
<PARAM name=FONT_ITALIC  value=”FALSE”>
<PARAM name=FONT_SIZE    value=”10”>
</APPLET>
```

LiveLabelApplet Example #2

Overview

This is an example of a minimal applet, using default values for most parameters.

Example Code

Here is the HTML code for this example:

```
<APPLET codebase=”/classes” archive=”SAComm.jar”
code=”com.schneiderautomation.factorycast.LiveLabelApplet”
width=300 height=30>
<PARAM name=LABEL       value=”Reactor 1 Pressure”>
<PARAM name=UNITS       value=”PSI”>
<PARAM name=ADDRESS     value=”PT_101”
</APPLET>
```

Editors

7

At a Glance

In This Chapter

This chapter contains the following topics:

Section 7.1
Data Editor

Purpose

Every default Web page contains a link to the Data Editor. The Data Editor is a Java applet that enables you to create dynamic data tables that are updated with run-time data from the PLC.

This section describes how to use the Data Editor to view and modify the values of variables (symbols) and direct addresses.

In This Section

This section contains the following topics:

The Data Editor Spreadsheet

Overview

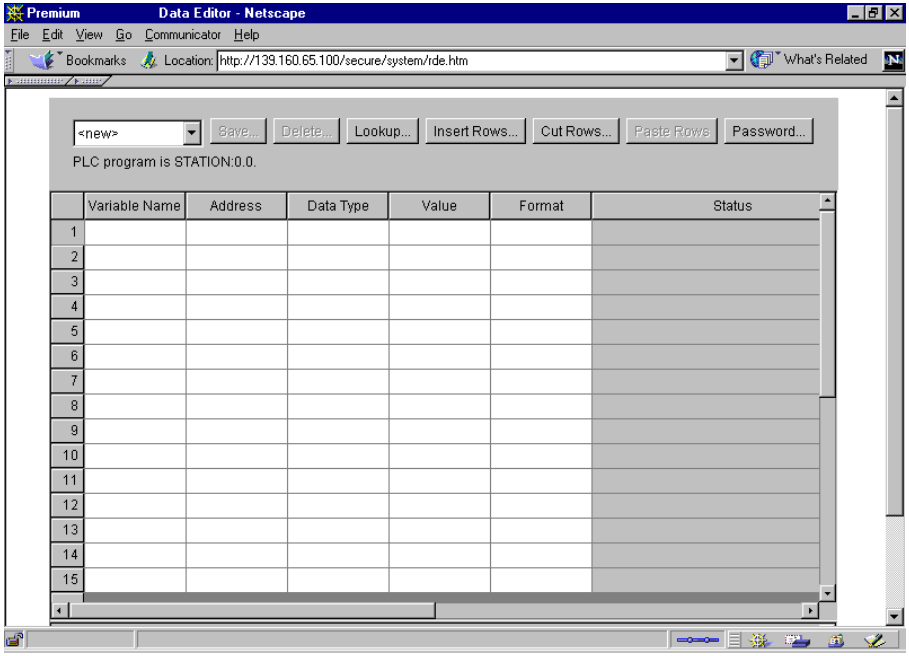
The Data Editor displays data in a spreadsheet with the following fields:

- Variable Name
- Address
- Data Type
- Value
- Format
- Status

This section provides a snapshot of the spreadsheet and an explanation of each field.

Spreadsheet

Here is a Data Editor spreadsheet:



Continued on next page

The Data Editor Spreadsheet, Continued

Variable Name Field

The Variable Name column contains the names of Concept or PL7 variables (symbols).

The only variables which may be used in the Data Editor are the ones in the namespace on the Embedded Server. If you try to enter a variable which is not in the namespace, a ‘variable not found’ message appears.

Note: The Data Editor can only read values from a namespace which was created from the same program as the one running in the controller. The program used in the controller is displayed at the top of the Data Editor. If the namespace was created using a different program, its name is displayed at the bottom of the Data Editor.

Continued on next page

The Data Editor Spreadsheet, Continued

Address Field

The Address column contains direct addresses and the addresses of Concept or PL7 variables. Any direct address may be viewed by entering its reference in this field. It does not have to be included in the namespace.

Valid Direct Addresses for Quantum

- Coils (0x)
- Discrete inputs (1x)
- Input registers (3x)
- Output/holding registers (4x)
- Extended memory registers (6x)
- “Page zero” memory registers (8x)

Valid Direct Addresses for Premium

Address	Type	(R)ead or (W)rite Access
%KWi	WORD 16	R
%KDi	WORD 32	R
%MDi	WORD 32	R/W
%SDi	WORD 32	R/W
%Irs.c	BOOLEAN	R
%Qrs.c	BOOLEAN	R/W
%Mi	BOOLEAN	R/W
%Si	BOOLEAN	R/W
%IWrs.c.i	WORD 16	R
%MWi	WORD 16	R/W
%SWi	WORD 16	R/W
%QWrs.c.i	WORD 16	R/W
%MWrs.c.i	WORD 16	R/W
%MWrs.MOD.i	WORD 16	R/W
%KWrs.c.i	WORD 16	R/W
r=rack number, s=slot number, c=channel number, andi=range number		

Continued on next page

The Data Editor Spreadsheet, Continued

FIP I/O Addresses

Address	Type	(R)ead or (W)rite Access
%I\rs.2.d\m.c	BOOLEAN	R
%Q\rs.2.d\m.c	BOOLEAN	R/W
%Iw\rs.2.d\m.c.i	WORD 16	R
%Qw\rs.2.d\m.c.i	WORD 16	R/W
%Mw\rs.2.d\m.c.i	WORD 16	R/W
%Kw\rs.2.d\m.c.i	WORD 16	R.
r=rack number, s=slot number, c=channel number, i=range number d=device number, and m=module number		

Data Type Field

The Data Type field contains the data type of the variable (symbol) or direct address. Variable data types appear automatically when the variable is located. Direct address data types must be set by the user from a dropdown list. The following data types are valid:

Abbreviation	Data Type
INT	16-bit signed integer
UINT	16-bit unsigned integer
DINT	32-bit signed integer
UDINT	16-bit unsigned integer
REAL	32-bit IEEE floating point
TIME	32-bit unsigned integer (in ms)
BOOL	1-bit discrete (boolean)

Value Field

The Value column will be filled with the value of the variable (symbol) or direct address. This field is updated continuously.

Continued on next page

The Data Editor Spreadsheet, Continued

Format Field

The Format field contains the format type for displaying the value of the variable (symbol) or direct address. The following formats are available:

Abbreviation	Format Type
bool	Boolean
dec	Decimal
hex	Hexadecimal
binary	Binary
ASCII	bytes displayed as ASCII characters
time	day_hr_min_sec_ms

Status Field

The Status column contains messages about the status of communications with the variable (symbol) or direct address. If communications are normal, the status message will be “OK”.

If there is a problem communicating with the variable or direct address, the Status column will contain an error message describing the problem.

Creating a Data Template

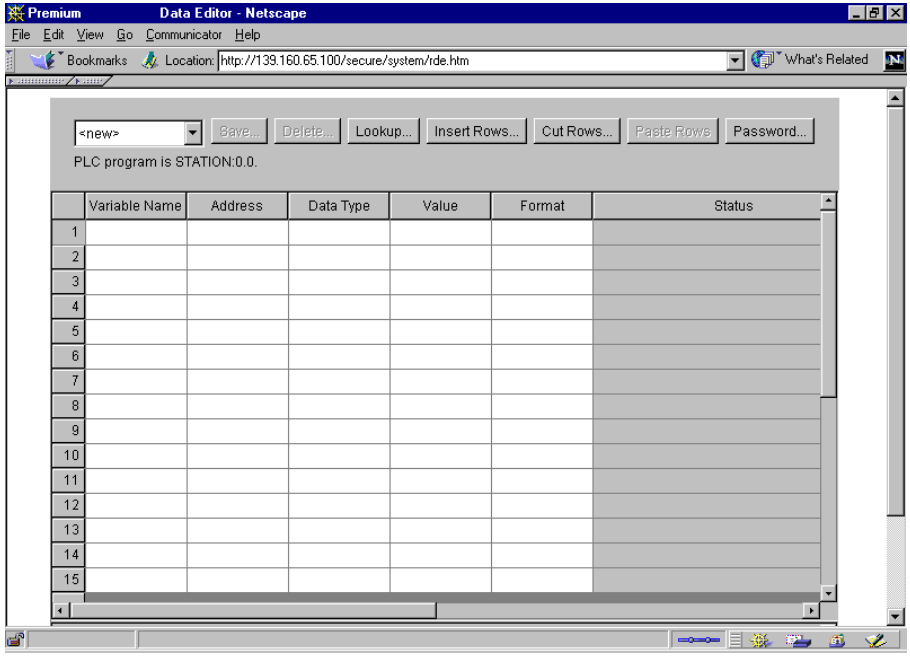
Overview

When you want to see the values of variables (symbols) or direct addresses, you enter the variable name or direct address on a Data Editor spreadsheet. The spreadsheet containing your data is called a data template.

To Get a Fresh Spreadsheet

A blank spreadsheet appears when you open the Data Editor.

If you have been working with a spreadsheet in the Data Editor and would like a fresh one, select <new> from the dropdown menu in the upper lefthand corner of the applet.



CAUTION

This will delete the current spreadsheet unless you save it first.

Inserting Variables in a Data Template

Overview

If you want to view or modify the value of a variable (symbol) in the namespace, you must insert that variable in a data template.

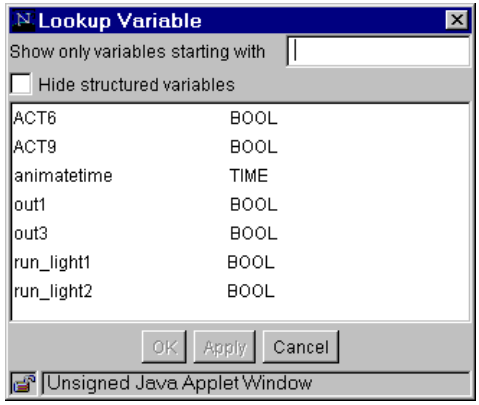
Two Ways to Insert Variables

To insert a variable (symbol) in a data template, you can:

- Type its name into a Variable Name cell in an empty row on the spreadsheet and press the **Enter** key
- Use the Lookup Variable dialog

Using the Lookup Variable Dialog

Follow the steps in the table below to use the Lookup Variable dialog.

Step	Action
1	Click the **Lookup** button above the spreadsheet. **Result:** The Lookup Variable dialog appears. 
2	Highlight the variables you want to insert in the data template.
3	Click **OK**. **Result:** The variables you selected are displayed in the template.

Inserting Direct Addresses in a Template

Overview

If you want to view or modify the value of a direct address, you must insert that direct address in a data template.

Two Ways to Insert Direct Addresses

To insert a direct address(es) in a data template, you can:

- Type the address in an Address cell in an empty row of the spreadsheet and press the **Enter** key
- Use the Insert Rows dialog

Using the Insert Rows Dialog

Follow the steps in the table below to use the Insert Rows dialog.

Step	Action
1	Click the **Insert Rows** button above the spreadsheet. **Result:** The Insert Rows dialog appears. 
2	Type in the **Starting address** and **Number of rows to insert**. This will insert a block of rows beginning with the starting address. **Result:** The **Data type** and a default **Format** will appear automatically.
3	You may adjust the **Data type** and **Format** by selecting from the dropdown menus.
4	Click **OK**. **Result:** The direct addresses you specified are displayed in the template.

Modifying Data Values

Overview

You can use the Data Editor to modify the values of some variables (symbols) and direct addresses and send the new values to the controller.

Restrictions on Modifying Data

You can only modify the values of variables (symbols) or direct addresses which are write-enabled in the namespace.

Procedure

Follow the steps in the table below to modify the value of a variable (symbol) or direct address:

Step	Action
1	Display the variable or direct address in a data template.
2	Click the **Password** button from the Data Editor menu. **Result:** A Password dialog appears. 
3	Enter the write password.
4	Click **OK**.
5	Change the value of the variable or direct address in the Value field of the template.
6	Press **Enter**. **Result:** The new value is sent to the controller.

Saving a Data Template

Overview

If you save a data template, you can use it again to view or modify the same variables (symbols) or direct addresses.

Procedure

Follow the steps in the table below to save a data template:

Step	Action
1	Click the **Password** button from the Data Editor menu. **Result:** A Password dialog appears. 
2	Enter the write password.
3	Click **OK**. Result: The **Save** button is enabled on the Data Editor menu.
4	Click the **Save** button. **Result:** A Save dialog appears.
5	Type a name for the data template in the text box. A template name must be eight characters or less. Names are case sensitive. They may contain upper or lower-case characters, digits, underscores, dashes, and dollar signs.
6	Click **OK**.

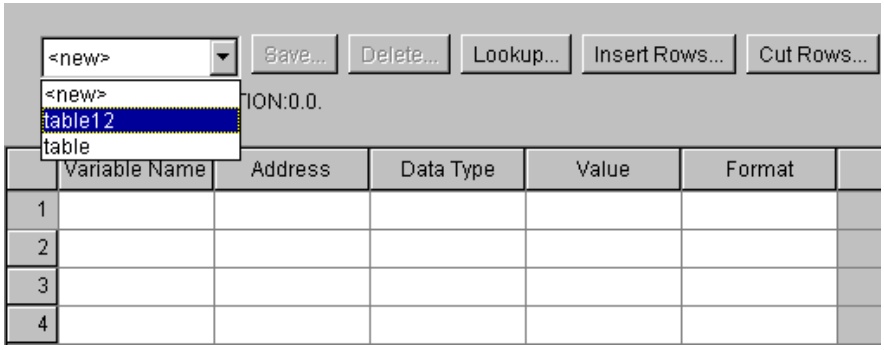
Using an Existing Data Template

Overview

Once you have saved a data template, you can use it to view or modify the values of the same variables (symbols) and direct addresses.

Finding a Data Template

A drop-down menu on the Data Editor lists all the data templates which have been saved.



Retrieving a Data Template

Select the data template you want from the dropdown menu. It will appear on a spreadsheet.

Modifying a Data Template

If you enter the write password, you can modify and save a new version of a data template.

Section 7.2
Graphic Editor

Introduction

This section describes the functions and features for the Graphic Editor. The Graphic Editor is a Java applet which enables you to create dynamic graphic displays, via a Web browser, using a set of pre-defined graphic objects. The Graphic Editor serves as both the editor for creating and modifying the displays and the run-time environment for viewing the displays as they are dynamically animated with run-time data from the PLC.

In This Section

This section contains the following topics:

Overview

Top Window

The Graphic Editor applet is divided into three windows. The Top Window provides the area for presenting all the user controls and dialogs for creating, saving, reading and editing a graphic display.

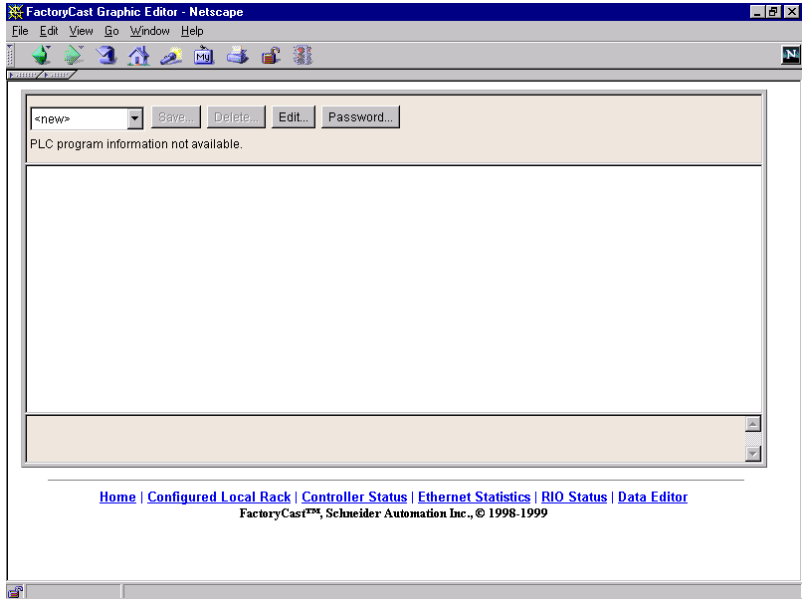
The figure below shows the Graphic Editor applet with its initial top window and empty display and message windows.

Display Window

The Display Window provides the area for presenting the current graphic display. When you create a new graphic display, this window becomes an “empty canvas”, ready for you to add the graphic objects that will make up the desired graphic display.

Message Window

The Message Window provides a scrollable message window for presenting any messages that are generated by the Graphic Editor.



Continued on next page

Overview, Continued

Note: On most Embeded Servers you cannot download both the Data Editor and Graphic Editor because of memory restrictions. If you want both, you must remove an equivalent amount of plug-ins.

Graphic Objects

All the graphic objects that are provided with the Graphic Editor are capable of communicating with the PLC from which the Graphic Editor applet was downloaded. There is no additional “wiring” of the graphic objects with “communication objects”. All the graphic objects are designed as stand-alone, meaning that there are no connections required between the objects, and each is capable of operating independently.

Viewing a Graphic Display

After the Graphic Editor applet has been uploaded to a Web browser, you will typically be interested in either viewing a graphic display (for monitoring/controlling the PLC application) or creating/modifying a graphic display.
For a user who just wants to view and interact with existing graphic displays (e.g., an operator), they can select the desired graphic displays from the list that is available as soon as the applet is presented. They will need to enter a password only if they want to write data to the PLC.

Create and Modify Graphic Displays

If you want to create and modify graphic displays, click the “Edit...” button and you are presented with the customary editing capabilities for a graphic editor. That is, select objects from a palette, drop them onto a canvas, move and size them with a mouse, and set their properties. You can immediately test the modified graphic display with run-time data from the PLC by exiting editor mode (click the 'Done' button). When satisfied with your creation, the graphic display can be saved to the PLC for re-use by clicking the “Save...” button, *if you have entered the correct password*.

Continued on next page

Overview, Continued

User Functions

Most of the Graphic Editor's user functions are available from the top window, which is discussed in *Top Window User Functions* on page 188. From the display window, you can directly manipulate a graphic object's size and location. All properties of a graphic object (e.g., scaling values, labels, colors, PLC addresses of the run-time data) are set by means of the Property Sheet, which is described in *Property Sheet* on page 200.

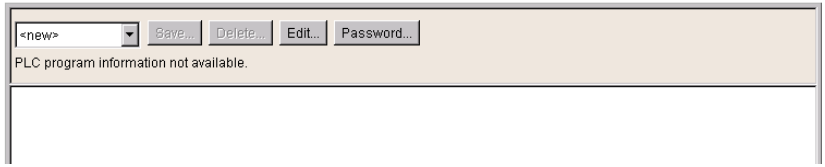
Top Window User Functions

Overview

The Graphic Editor applet's top window consists of several “dialog panels”, only one of which is shown at time. Switching from one dialog to another is done by clicking buttons on the current dialog. This section describes the dialog panels that comprise the top window.

Top Dialog

The “Top Dialog” is the dialog panel that is initially shown in the top window when the Graphic Editor applet is started. Access to all other dialog panels of the top window is from this dialog.



Top Window User Functions, Continued

The controls of the “Top Dialog” provide the following functions:

- **Drop-down List.** The drop-down list box shows all the graphic display files that have been saved to the web server module, and are available for retrieving. When you select a graphic display from this list, the graphic display currently visible in the window is replaced with the one selected. If the current graphic display has been modified since it was last saved, you will be asked for confirmation that the changes are to be discarded. If the special entry <new> is chosen from the list, then the display window is cleared, and a new graphic display can be created.
- **Save**. The 'Save' button causes the “Save Dialog” to become visible. This button is disabled until you have entered a correct write-enable password.
- **Delete**. The 'Delete...' button causes the “Delete Dialog” to become visible. This button is disabled until you have entered a correct password, or if the current graphic display has not yet been saved.
- **Edit**. The 'Edit...' button causes the "Edit Dialog" to become visible.
- **Password**. The 'Password...' button causes the "Password Dialog" to become visible.
- **Information display area**. The information display area shows the name and version of the Concept or PL7 program that is running in the connected PLC.

Save Dialog

The “Save Dialog” allows you to save the current graphic display.

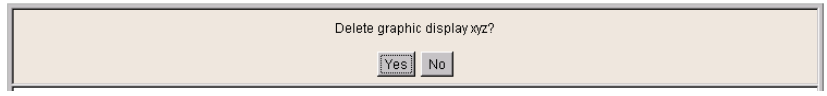
Continued on next page

Top Window User Functions, Continued

When the “Save Dialog” is presented, the name of the current graphic display is shown in the dialog’s text field. If the current graphic display has never been saved (i.e., a <new> graphic display), then the text field is blank. Once you have either accepted the current name (a “save” operation) or provided a new name (a “save as” operation), then you can click the OK button to save the contents of the current graphic display to the web server module. The “Cancel” button will cause the “Top Dialog” to be shown again, with no action being taken.

Delete Dialog

The “Delete Dialog” allows you to delete the current graphic display.



If you click the “Yes” button, the existing graphic display window is cleared and the graphics file on the web server module is deleted. Clicking the “No” button will cause the “Top Dialog” to be shown again, with no action being taken.

Top Window User Functions, Continued

Password Dialog

The “Password”Dialog” allows you to enter the password that enables those user functions that modify graphic display files or PLC run-time data values.

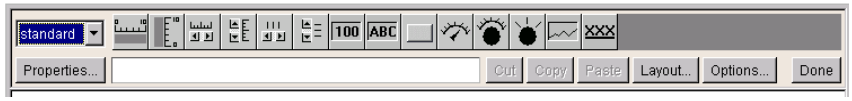
If you enter the correct password and click the “OK” button, then you will be allowed to save and delete the current graphic display. Correct password entry also permits you to write new values to the PLC (via those graphic objects that support writing values to a PLC, if any). If you click the “OK”button when the text field is empty, then the current password permissions, if any, are cleared. The “Cancel” button will cause the “Top Dialog” to be shown again, with no changes made to current password permissions.

Continued on next page

Top Window User Functions, Continued

Edit Dialog

The “Edit Dialog” allows you to select a graphic object for placement in the display window, and provides access to all of the graphic editing functions. The graphic objects that are available to you are presented in a set of palettes, with one palette visible at a time.



Top Window User Functions, Continued

The controls of the “Edit Dialog” provide the following functions:

- The **Drop-down List Box** shows the set of palettes that are available. When you select the name of a palette from the list, the graphic objects that are in that palette are presented in the palette display area of the dialog.
- The **Palette** shows the graphic objects that are in the current palette with an icon that depicts each graphic object's type (meter, button, etc.). When you click any of the icons in the palette, a graphic object of the corresponding type becomes selected for insertion. While the Graphic Editor is in “insert mode,” if you click in an open area of the display window, an instance of the selected graphic object is inserted into the graphic display.
- The **Information Area** shows the name and size of the graphic object that is currently selected.
- The **Cut** button causes the currently selected graphic object(s) to be removed from the graphic display and saved to a buffer (i.e., an internal clipboard), replacing any existing contents of the buffer.
- The **Copy** button causes the currently selected graphic object(s) to be copied to the buffer, replacing any existing contents.
- The **Paste** button causes the content of the clipboard to be inserted into the upper left corner of the graphic display. The pasted graphic objects can then be moved to the desired location in the display.
- The **Properties** button causes the Properties Sheet for the currently selected graphic object to be shown. See *Property Sheet* on page 200.
- The **Layout** button causes the “Layout Dialog” to become visible.
- The **Options** button causes the “Options Dialog” to become visible.
- The **Done** button causes the “Top Dialog” to be shown again.

Continued on next page

Top Window User Functions, Continued

Layout Dialog

The “Layout Dialog” allows you to change the position and size of a group of graphic objects.

The controls of the "Layout Dialog" provide the following functions:

- For aligning graphic objects’ edges, the “Right”, “Bottom”, “Left”, and “Top” buttons cause the currently selected graphic objects to be moved so that their specified sides are at the same position. At least two graphic objects must be selected for these buttons to be enabled.
- For aligning graphic objects’ centerlines, the “Horizontally”, and “Vertically” buttons cause the currently selected graphic objects to be moved so that their vertical or horizontal centerlines, respectively, are at the same position. At least two graphic objects must be selected for these buttons to be enabled.
- For positioning graphic objects so that they are evenly spaced, the “Horizontally” and “Vertically” buttons cause the currently selected graphic objects to be moved so that either the horizontal or vertical spacing between the objects is the same. At least three graphic objects must be selected for these buttons to be enabled.

Continued on next page

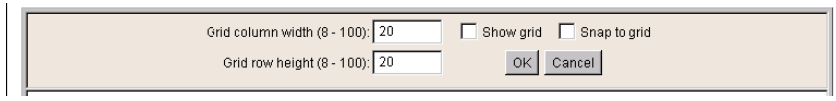
Top Window User Functions, Continued

- To automatically size graphic objects, use the “Width” and “Height” buttons to re-size the currently selected graphic objects so that either the widths or heights, respectively, of the objects match. At least two graphic objects must be selected for these buttons to be enabled.
- The “Done” button causes the “Edit Dialog” to be shown again.

Note: For all layout operations (except “space evenly”) one of the selected objects is considered the “reference object” to which all other selected objects refer in order to know their new position or dimension. For example, when the “Width” button is pressed, all of the selected objects will have their width changed to match the width of the reference object. The reference object is differentiated from the other selected objects by making its selection box a different color than the others.

Options Dialog

The “Options Dialog”allows you to change the settings related to a grid that can be drawn in the display window. The grid is solely for assistance in editing a graphic display and is shown only when the Graphic Editor is in “edit mode”. Edit mode starts when you switch to the “Edit Dialog” and ends when you return to the “Top Dialog”.



Continued on next page

Top Window User Functions, Continued

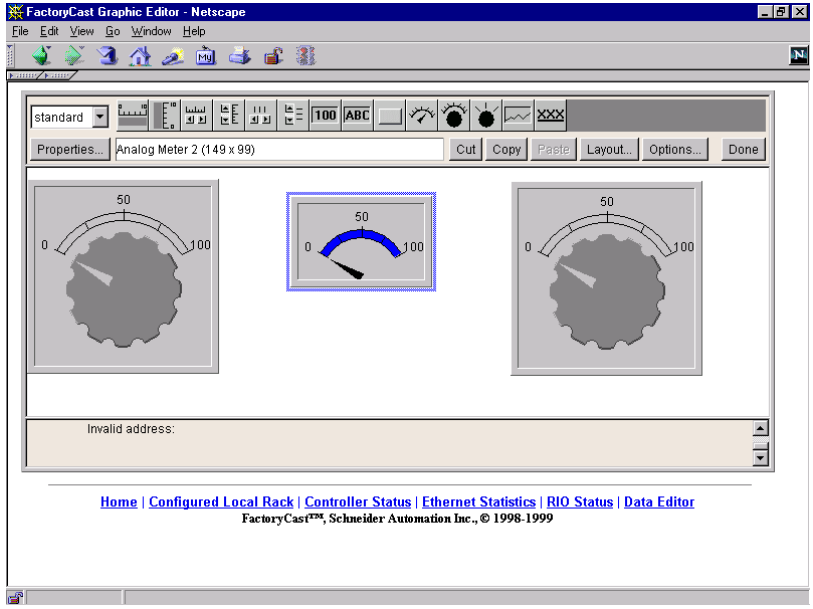
The controls of the “Options Dialog” provide the following functions:

- The cell size of the grid can be changed by the entering the grid's column width and row height into the dialog's text fields.
- If the “Show grid” check-box is checked, the grid will be drawn; otherwise, no grid will be shown.
- If the “Snap to grid” check-box is checked, then, when you change the size or position of a graphic object, the changed coordinate(s) or dimension(s) is automatically adjusted so that it coincides with a grid point.
- The “OK” button causes the current option settings to become active, and the “Edit Dialog” to be shown again.
- The “Cancel” button causes the “Edit Dialog” to be shown again, with no option settings being changed.

Display Window User Functions

Overview

The user functions available from the Graphic Editor display window include object selection, moving and sizing. All moving and sizing operations require that the graphic object(s) that is to be modified must first be selected. A selected object is indicated by surrounding it with a box; a deselected object has no surrounding box. The figure below shows the Graphic Editor display window containing three graphic objects, with only the one in the middle being selected.



Selecting Graphic Objects

A graphic object's selection state (selected/deselected) can be set by the following user actions:

- A single graphic object can be selected by simply clicking on it with a mouse. If any other objects are currently selected, they will be deselected.

Continued on next page

Display Window User Functions, Continued

- Multiple graphic objects can be selected by constructing a bounding box in the display window. If you press a mouse button in an open area of the display window (i.e., not on a graphic object) and drag the mouse without releasing the mouse button, then a bounding box or “rubberband box” will be shown, where one corner of the box is fixed at the location where the mouse button was initially pressed, and the opposite corner tracks the current mouse position. When the mouse button is released, all of the objects that intersect the bounding box will be selected. Any objects that are outside the bounding box will be deselected.
- A graphic object's selection state can be toggled between selected and deselected, without affecting the selection state of any other objects, by pressing the “Ctrl” key when clicking on the object. With this action, graphic objects can be individually added or removed from the current group of selected objects.
- A graphic object can be selected, without affecting the selection state of any other objects, by pressing the “Shift” key when clicking on the object. When an object is selected by this action, it becomes the “reference object” (see *Layout Dialog* on page 194) for the group of selected objects. The primary purpose of this action is to change the reference object in a group of selected objects prior to invoking one of the “Layout” operations.
- All graphic objects can be deselected by clicking the mouse in an open area of the display window, that is, not on a graphic object.

Sizing Graphic Objects

A graphic object's size can be changed by first selecting it, and then using the mouse to change the size of the object's selection box. As you move the mouse over an object's selection box, the mouse pointer changes to reflect the type of sizing operation that will be performed. If you press a mouse button while the mouse is over an object's selection box and drags the mouse without releasing the mouse button, then a bounding box or “rubber-band box” is shown. When the mouse button is released, the object's size is changed to match the size of the bounding box. There are eight possible sizing actions depending on which part of an object's selection box is dragged. Each corner of the box will allow only its adjacent sides to move, each side of the box will allow only that side to move.

Continued on next page

Display Window User Functions, Continued

Moving Graphic Objects

A graphic object's location in the display window can be changed by using the mouse. If you press a mouse button while the mouse is over an object and drag the mouse without releasing the mouse button, then a bounding box will be shown. When the mouse button is released, the object's position is changed to the location of the bounding box.

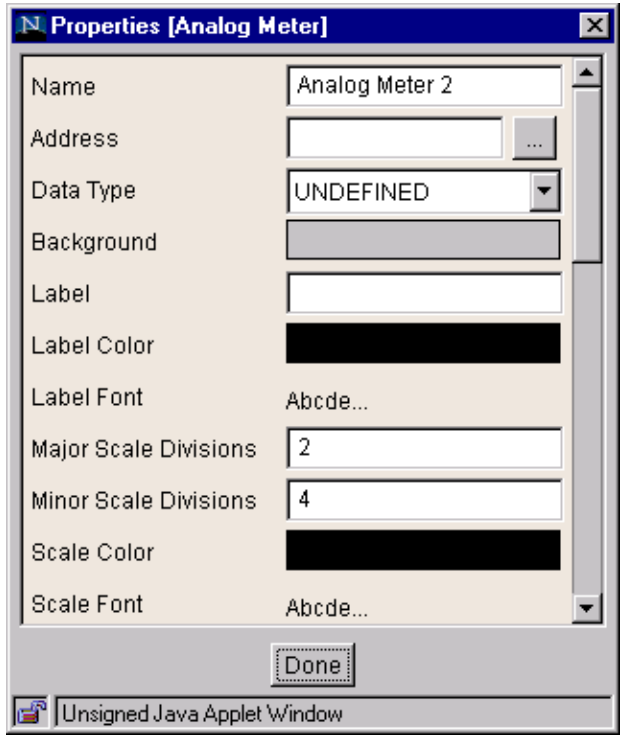
Multiple graphic objects can be moved by first selecting the objects to be moved, and then dragging the entire group of objects in the same way a single object is moved. When a group of objects is being moved, a bounding box is shown for each object in the group.

Setting Graphic Object Properties

You can set a graphic object's properties via the Property Sheet (see *Property Sheet* on page 200). If the Property Sheet is visible, then the properties of the currently selected graphic object are presented for editing. The Property Sheet can be made visible by pressing the "Properties..." button or by double clicking the mouse anywhere on the selected object in the display window.

Property Sheet

The Property Sheet is a “floating” (non-modal) dialog that presents all the settable properties of the currently selected graphic object.



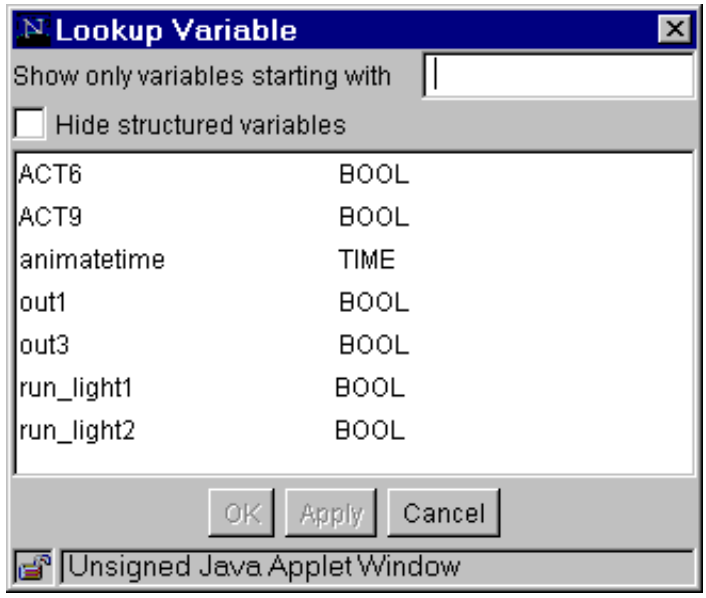
The properties of a graphic object are specific to an object’s type. The properties are presented in a scrollable list, with the name and value of each property listed. See *Graphic Objects* on page 205 for a description of the graphic objects provided with the Graphic Editor.

Continued on next page

Property Sheet, Continued

Lookup Dialog

For each of the graphic objects provided with the Graphic Editor, a property editor is provided for its “address” property. This property editor not only allows you to directly enter the address of a Quantum/Premium register (or Concept/PL7 variable name), but also provides access to the “Lookup Dialog.” The Lookup Dialog allows you to pick a Concept/PL7 variable name from a list of variables that have been “web enabled” by the FactoryCast Configurator.



Security

You are protected from unauthorized access to your PLC data in three ways:

- The HTML page containing the Graphic Editor applet has been placed in a “secure” directory on the web module, then the Web browser user is asked for a password before being allowed to download the HTML page.
- You must enter the correct password via the “Password Dialog” to have permission to save/delete files or send data values to the connected PLC. With respect to sending data values to the PLC, the Graphic Editor will enforce its “read-only” mode by disabling the user-input controls of all graphic objects.
- The FactoryCast Configurator allows you to specify that an item is read-only. The Graphic Editor will enforce the read-only attribute of a variable/address by rejecting any request to set a new value for the data item, and informing the user in the Graphic Editor message window.

Applet Parameters

Overview

The Graphic Editor supports two applet parameters to customize its behavior. Applet parameters are specified with <PARAM>tags within the <APPLET> tag in the Graphic Editor's HTML page. The parameters recognized by the Graphic Editor applet are:

- **LOAD -** This parameter tells the Graphic Editor to auto-load a specific graphics file when it starts. If the specified file does not exist, an error message is presented to you. If this parameter is not provided in the <APPLET> tag, then no graphics file is auto-loaded at startup, and you must select the initial graphics file from the list provided by the Graphic Editor.
- **MODE -** This parameter tells the Graphic Editor whether to startup in its normal "Edit Mode" or in a special "View Mode". When started in view mode, the Graphic Editor will show only its display window. When this parameter is used with the LOAD parameter, a web site can be designed using HTML pages that are dedicated to specific graphic displays. No explicit selection of graphic files would be required by a user, providing more typical HMI screen behavior. The possible values for this parameter are:
  - **EDIT -** the Graphic Editor will startup in its normal Edit Mode (default value).
  - **VIEW_RO --** the Graphic Editor will startup in read-only view mode. The Web browser user will not be allowed to send data values to the PLC.
  - **VIEW_RW --** the Graphic Editor will startup in read/write view mode. The Web browser user will be allowed to send data values to the PLC after entering the *write-access* password.

Continued on next page

Applet Parameters, Continued

Example

The following is an example of an applet tag for the Graphic Editor that will cause it to startup in view mode and automatically load the graphics file named “UNIT_1”. The Web browser user would be allowed to send values to the PLC via any graphic objects that support sending values, if they have entered the *write-access* password.

```
<APPLET codebase=”/classes”
        archive=”SAComm.jar,GDE.jar,Widgets.jar”
        code=”com.schneiderautomation.gde.GdeApplet”
        width=”700”
        height=”514”>
<PARAM name=”LOAD”     value=”UNIT_1”>
<PARAM name=”MODE”     VALUE=”VIEW_RW”>
</APPLET>
```

Graphic Objects

Overview

The set of graphic objects provided in the Graphic Editor is intended to support building graphic displays that mimic conventional instrument panels. All of the data monitoring and control objects have built-in communication capabilities, and are designed as stand-alone graphic objects.

Additionally, to support customers that want to put several simple applets on a single HTML page, each object in the Graphic Editor set is provided in an applet version. When used in conjunction with the `LiveBeanApplet`, the Graphic Editor graphic objects can be used in the same way as the `LiveLabelApplet`.

The following is a description of the standard graphic objects and their properties:

Horizontal Indicator

A Horizontal Indicator provides an analog representation of the value of a variable or direct address in a PLC by drawing a horizontal bar whose length is proportional to the value as a percentage of its range in engineering units. Optionally, a digital indication of the value can be shown in the center of the bar area.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to monitor	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Major Scale Divisions	The number of major (labeled) scale divisions	0 to 100
Minor Scale Divisions	The number of minor (unlabeled) scale divisions	0 to 100
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Scale Precision	The number of fractional digits to be shown for scale labels (Set to -1 to use a general exponential format.)	-1 to 6
Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	

Continued on next page

Graphic Objects, Continued

Horizontal Indicator, Continued

Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Value Visible	Indicates whether a digital display of the scaled value is to be shown	
Value Font	The font for the digital display of the value, if shown	
Bar Background	The background color for the bar indicator area	
Bar Color	The color for the indicator bar (when scaled value within High/Low limits)	
High High Limit Value	The value in engineering units for the ‘High High’ limit	
High High Limit Color	The color for the indicator bar when scaled value is greater than the ‘High High’ limit	
High Limit Value	The value in engineering units for the ‘High’ limit	
High Limit Color	The color for the indicator bar when scaled value is greater than the ‘High’ limit	
Low Limit Value	The value in engineering units for the ‘Low’ limit	
Low Limit Color	The color for the indicator bar when scaled value is less than the ‘Low’ limit	
Low Low Limit Value	The value in engineering units for the ‘Low Low’ limit	
Low Low Limit Color	The color for the indicator bar when scaled value is less than the ‘Low Low’ limit	
Limit Deadband	The deadband (as percentage of EU range) to apply to High/Low limit checking	0 to 10
Border Width	The width (in pixels) for the graphic object’s border	0 to 32
Border Color	The color for the graphic object’s border	
PLC Value	A simulated, raw (unscaled) input value for testing the graphic object	See Note 3

Continued on next page

Graphic Objects, Continued

Vertical Indicator

A Vertical Indicator provides an analog representation of the value of a variable or direct address in a PLC by drawing a vertical bar whose length is proportional to the value as a percentage of its range in engineering units.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to monitor	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Major Scale Divisions	The number of major (labeled) scale divisions	0 to 100
Minor Scale Divisions	The number of minor (unlabeled) scale divisions	0 to 100
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Scale Precision	The number of fractional digits to be shown for scale labels (Set to -1 to use a general exponential format.)	-1 to 6
Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	
Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Bar Background	The background color for the bar indicator area	
Bar Color	The color for the indicator bar (when scaled value within High/Low limits)	
High High Limit Value	The value in engineering units for the ‘High High’ limit	
High High Limit Color	The color for the indicator bar when scaled value is greater than the ‘High High’ limit	

Continued on next page

Graphic Objects, Continued

Vertical Indicator, Continued

High Limit Value	The value in engineering units for the 'High' limit	
High Limit Color	The color for the indicator bar when scaled value is greater than the 'High' limit	
Low Limit Value	The value in engineering units for the 'Low' limit	
Low Limit Color	The color for the indicator bar when scaled value is less than the 'Low' limit	
Low Low Limit Value	The value in engineering units for the 'Low Low' limit	
Low Low Limit Color	The color for the indicator bar when scaled value is less than the 'Low Low' limit	
Limit Deadband	The deadband (as percentage of EU range) to apply to High/Low limit checking	0 to 10
Border Width	The width (in pixels) for the graphic object's border	0 to 32
Border Color	The color for the graphic object's border	
PLC Value	A simulated, raw (unscaled) input value for testing the graphic object	See Note 3

Horizontal or Vertical Slider

A Horizontal or Vertical Slider provides an analog representation of the value of a variable or direct address in a PLC by drawing a scrollbar whose "thumb" position is proportional to the value as a percentage of its range in engineering units. With a mouse, a user can change the value of the scrollbar and cause a new value to be sent to the PLC.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to get/set	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Major Scale Divisions	The number of major (labeled) scale divisions	0 to 100

Continued on next page

Graphic Objects, Continued

Horizontal or Vertical Slider, Continued

Minor Scale Divisions	The number of minor (unlabeled) scale divisions	0 to 100
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Scale Precision	The number of fractional digits to be shown for scale labels (Set to -1 to use a general exponential format.)	-1 to 6
Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	
Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Unit Increment	The amount that the scaled value should change when the scrollbar's arrow buttons are clicked	
Block Increment	The amount that the scaled value should change when the scrollbar's scroll area is clicked	
Border Width	The width (in pixels) for the graphic object's border	0 to 32
Border Color	The color for the graphic object's border	

Horizontal or Vertical Selector

A Horizontal or Vertical Selector allows a user to make a selection from a set of choices. When a selection is made, the value corresponding to the choice is sent to the PLC. The choices are shown as labels of a "scale," with the current selection indicated by the position of the "thumb" of a scrollbar.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to get/set	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Choices	The choices for the selector. Each choice is given as a 'label=value' entry (when a user selects 'label,' 'value' is sent to PLC)	Minimum of two choices required
Label	The label to be displayed as part of the graphic object	

Continued on next page

Graphic Objects, Continued

Horizontal or Vertical Selector, Continued

Label Color	The color for the label	
Label Font	The font for the label	
Scale Visible	Indicates whether a “scale,” labeled with the choices, is to be shown	
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Border Width	The width (in pixels) for the graphic object’s border	0 to 32
Border Color	The color for the graphic object’s border	

Digital Indicator

A Digital Indicator provides a numeric representation of the value of a variable or direct address in a PLC. The value can be shown in various formats, and can be made to change color when a preset high or low limit is exceeded.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to monitor	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Value Format	The format (decimal, hex, etc.) to use in displaying the scaled value	
Value Precision	The number of fractional digits to be shown for the scaled value (Set to -1 to use a general exponential format.)	-1 to 6
Value Background	The background color for the value display area	
Value Color	The text color for the digital display of the value	
Value Font	The font for the digital display of the value	
Units	The label for the engineering units of the value (appended to the numeric display of the value)	

Continued on next page

Graphic Objects, Continued

Digital Indicator, Continued

Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	
Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
High High Limit Value	The value in engineering units for the ‘High High’ limit	
High High Limit Color	The color for the digital indication of the value when it is greater than the ‘High High’ limit	
High Limit Value	The value in engineering units for the ‘High’ limit	
High Limit Color	The color for the digital indication of the value when it is greater than the ‘High’ limit	
Low Limit Value	The value in engineering units for the ‘Low’ limit	
Low Limit Color	The color for the digital indication of the value when it is less than the ‘Low’ limit	
Low Low Limit Value	The value in engineering units for the ‘Low Low’ limit	
Low Low Limit Color	The color for the digital indication of the value when it is less than the ‘Low Low’ limit	
Limit Deadband	The deadband (as percentage of EU range) to apply to High/Low limit checking	0 to 10
Border Width	The width (in pixels) for the graphic object’s border	0 to 32
Border Color	The color for the graphic object’s border	
PLC Value	A simulated, raw (unscaled) input value for testing the graphic object	See Note 3

Continued on next page

Graphic Objects, Continued

Message Display

A Message Display shows a text message based on the value of a variable or direct address in a PLC. For each specified message, a value is also specified that will trigger its display.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to monitor	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Messages	The set of messages to display. Each message is given as a 'value=text' entry (when the PLC value equals 'value', 'text' is displayed as the message)	Minimum of one message required
Message Background	The background color for the message display area	
Message Color	The color for the message text	
Message Font	The font for the message text	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Border Width	The width (in pixels) for the graphic object's border	0 to 32
Border Color	The color for the graphic object's border	
PLC Value	A simulated input value for testing the graphic object	

Push Button

A Push Button allows a user to send preset value(s) to a PLC when clicked with the mouse.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to set	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Values	The value(s) to send to the PLC	See Note 4
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	

Continued on next page

Graphic Objects, Continued

Push Button, Continued

Button Label	The text label for the button	
Button Background	The color for the button	
Button Label Color	The color for the button label	
Button Label Font	The font for the button label	
Border Width	The width (in pixels) for the graphic object's border	0 to 32
Border Color	The color for the graphic object's border	

Analog Meter

An Analog Meter provides an analog representation of the value of a variable or direct address in a PLC by drawing a pointer on a circular dial whose position is proportional to the value as a percentage of its range in engineering units. The size of the meter's circular dial (degrees sweep of a circle), the colors for the dial, and the style of the pointer can all be set.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to monitor	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Major Scale Divisions	The number of major (labeled) scale divisions	0 to 100
Minor Scale Divisions	The number of minor (unlabeled) scale divisions	0 to 100
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Scale Precision	The number of fractional digits to be shown for scale labels (Set to -1 to use a general exponential format.)	-1 to 6

Continued on next page

Graphic Objects, Continued

Analog Meter, Continued

Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	
Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Dial Degrees Sweep	The amount of a circular arc to use for drawing the dial	60 to 300
Pointer Type	The type (needle, arrow head, etc.) of pointer to use	
Pointer Color	The color for the pointer	
Dial Color	The color for the dial (that part that is within the High/Low limits)	
High High Limit Value	The value in engineering units for the ‘High High’ limit	
High High Limit Color	The color for the part of the dial that is greater than the ‘High High’ limit	
High Limit Value	The value in engineering units for the ‘High’ limit	
High Limit Color	The color for the part of the dial that is greater than the ‘High’ limit	
Low Limit Value	The value in engineering units for the ‘Low’ limit	
Low Limit Color	The color for the part of the dial that is less than the ‘Low’ limit	
Low Low Limit Value	The value in engineering units for the ‘Low Low’ limit	
Low Low Limit Color	The color for the part of the dial that is less than the ‘Low Low’ limit	
Border Width	The width (in pixels) for the graphic object’s border	0 to 32
Border Color	The color for the graphic object’s border	
PLC Value	A simulated, raw (unscaled) input value for testing the graphic object	See Note 3

Continued on next page

Graphic Objects, Continued

Rotary Slider

A Rotary Slider provides an analog representation of the value of a variable or direct address in a PLC by drawing a knob on a circular dial whose position is proportional to the value as a percentage of its range in engineering units. The size of the circular dial (degrees sweep of a circle) and knob color can be set. With a mouse, a user can change the position of the knob and cause a new value to be sent to the PLC.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to get/set	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Major Scale Divisions	The number of major (labeled) scale divisions	0 to 100
Minor Scale Divisions	The number of minor (unlabeled) scale divisions	0 to 100
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Scale Precision	The number of fractional digits to be shown for scale labels (Set to -1 to use a general exponential format.)	-1 to 6
Dial Degrees Sweep	The amount of a circular arc to use for drawing the dial	60 to 300
Dial Color	The color for the dial	
Knob Color	The color for the knob	
Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	
Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Border Width	The width (in pixels) for the graphic object's border	0 to 32
Border Color	The color for the graphic object's border	

Continued on next page

Graphic Objects, Continued

Rotary Selector

A Rotary Selector allows a user to make a selection from a set of choices. When a selection is made, the value corresponding to the choice is sent to the PLC. The choices are shown as labels of a “scale,” with the current selection indicated by the position of the knob. The size of the circular dial (degrees sweep of a circle) and knob color can be set.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to get/set	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Choices	The choices for the selector. Each choice is given as a ‘label=value’ entry (when a user selects ‘label,’ ‘value’ is sent to PLC)	Minimum of two choices required
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Scale Visible	Indicates whether a “scale,” labeled with the choices, is to be shown	
Scale Color	The color for the scale and its labels	
Scale Font	The font for scale labels	
Dial Degrees Sweep	The amount of a circular arc to use for drawing the dial	60 to 300
Knob Color	The color for the knob	
Border Width	The width (in pixels) for the graphic object’s border	0 to 32
Border Color	The color for the graphic object’s border	

Continued on next page

Graphic Objects, Continued

Trend Recorder

A Trend Recorder provides a continuous, time-based charting of the value of a variable or direct address in a PLC. A Trend Recorder emulates a strip-chart recorder, with the pen on the right, and the “paper” moving from right to left. A vertical scale can be shown on the left side of the chart for showing the range of the value being recorded, and a horizontal scale can be shown below the chart for showing the time span of the chart. The rate at which the chart is updated, and the appearance of the chart can be set.

Property	Description	Limits
Name	The name for the graphic object	
Address	The direct address (or the name of a variable) to monitor	See Note 1
Data Type	The data type of the direct address or variable	See Note 2
Background	The background color for the graphic object	
Label	The label to be displayed as part of the graphic object	
Label Color	The color for the label	
Label Font	The font for the label	
Major Scale Divisions	The number of major (labeled) vertical scale divisions	0 to 100
Minor Scale Divisions	The number of minor (unlabeled) vertical scale divisions	0 to 100
Scale Color	The color for the scales and their labels	
Scale Font	The font for scale labels	
Scale Precision	The number of fractional digits to be shown for the vertical scale labels (Set to -1 to use a general exponential format.)	-1 to 6
Maximum EU Value	The maximum value, in engineering units, of the direct address or variable	
Minimum EU Value	The minimum value, in engineering units, of the direct address or variable	
Maximum PLC Value	The maximum raw (unscaled) value of the direct address or variable in the PLC	See Note 3

Continued on next page

Graphic Objects, Continued

Trend Recorder, Continued

Minimum PLC Value	The minimum raw (unscaled) value of the direct address or variable in the PLC	See Note 3
Update Period	The update interval (in seconds) for the chart	0.5 to 120
Time Scale Divisions	The number of horizontal scale divisions	0 to 6
Chart Background	The color for the chart area	
Pen Color	The color of the “pen“ used to record the scaled value	
Grid Color	The color of the grid drawn in the chart area	
Vertical Grid Divisions	The number of vertical divisions for the grid	0 to 100
Border Width	The width (in pixels) for the graphic object’s border	0 to 32
Border Color	The color for the graphic object’s border	

Display Link

A Display Link is a special graphic object that allows the user to switch to another graphic display by clicking on it with a mouse. To indicate to the user that the object is a link to another display, the text label for the link is underlined and the mouse cursor changes to a hand icon when the mouse is moved over it. This object is especially useful when the Graphic Editor is used in its “view mode,” where no drop-down list of graphic displays is available for selecting a display.

Property	Description	Limits
Label	The text label for the link	
Link Display Name	The name of the graphic display to be loaded when the link is clicked	
Label Color	The color for the link text	
Label Font	The font for the link text	

Continued on next page

Graphic Objects, Continued

NOTES

1. If the Address property of a graphic object is a direct address, the Data Type property must be specified and cannot be set to UNDEFINED. If the Address property is a variable name, the Data Type property does not have to be specified and can be set to UNDEFINED. If, however, the Data Type property is specified for a variable, it must exactly match the variable's actual data type.
2. If the Address property is a direct address for a discrete PLC reference (Quantum 0x/1x reference), the Data Type property must be set to BOOL. The Data Type property may be set to BOOL only for a discrete PLC reference.
3. The meaning of the possible values of the Data Type property are:

UNDEFINED	no data type specified
BOOL	1-bit discrete (Boolean)
SHORT	8-bit signed integer
USHORT	8-bit unsigned integer
INT	16-bit signed integer
UINT	16-bit unsigned integer
DINT	32-bit signed integer
UDINT	32-bit unsigned integer
REAL	32-bit IEEE floating point
TIME	32-bit unsigned integer (in milliseconds)

4. The limits for the Maximum PLC Value and Minimum PLC Value properties are the natural limits of the Data Type property that is set. A Data Type setting of UNDEFINED is treated as a REAL with respect to its limit values.
5. For a Push Button, a minimum of one value must be provided. If the Address property is a variable name, then only one value will ever be sent to the PLC, and any additional values are ignored. If the Address property is a direct address, then all of the values provided will be sent to the PLC as an array of values starting at the specified direct address.

Alarm Viewer

8

At a Glance

In This Section This section contains the following topics:

Purpose The Alarm Viewer is a Java applet designed to monitor Premium PLCs. It is not currently supported by Quantum. It is a Client Runtime Function and will run in the JVM of internet client browser (Internet Explorer, Netscape Navigator, etc.).

References Refer to the following manuals for a full explanation of the software.

Language	Manual	Part Number	Order Number
Spanish	Manual de instalación de las funciones de diagnióstico	TLX DS DIAG PL7 33S	W915905840701A02
German	Handbuch zur Inbetriebnahme der Diagnosefunktionen	TLX DS DIAG PL7 33G	W915905840201A02
French	Manuel de mise en œuvre des fonctions de diagnostic	TLX DS DIAG PL7 33F	W915905840101A02
English	Diagnostic Functions Setup Manual	TLX DS DIAG PL7 33E	W915905840301A02

Abbreviations **DFB** : Derived Function Block

Continued on next page

Display

Select **Server** | **Alarm Viewer**.

Note: “Alarm Viewer” is a “Plug-in” You must download it before you can use it.

The display is composed of:

1. Button bar (in the work area),
2. List of alarms,
3. Status frame.

Button bar

The button bar contains five buttons:

This button is used to acknowledge a selected alarm in the list. A request is sent to the PLC (Diagnostic Buffer).

This button is used to acknowledge all alarms in the list that can be acknowledged. A request for each alarm is sent to the PLC

This button is used to delete a selected alarm in the list. There is no request sent to the PLC. This command affects only the alarm list in Alarm Viewer.

This button is used to delete all alarms in the list that can be deleted. There is no request sent to the PLC. This command affects only the alarm list in Alarm Viewer.

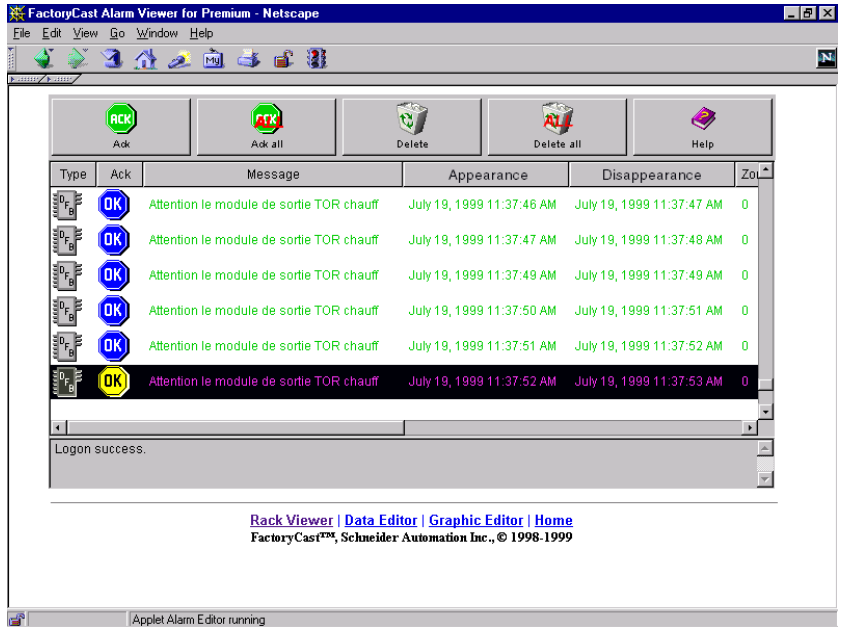
This button displays a frame that contains help.

Continued on next page

Display, Continued

List of alarms

Alarms in the list are displayed in historical order. The last alarm in runtime is added to the end of the list.



Continued on next page

Display, Continued

Each line displayed in the list corresponds to an alarm and contains the following information:

Type: An icon that represents the alarm type. For each type there is a different icon:

DFB alarm


Grafcet alarm


System alarm


A-SI alarm

Ack: An icon that represents the acknowledgement status.

This alarm must be acknowledged by the user.

Alarm has been acknowledged.

Alarm doesn't need to be acknowledged.

Message: Alarm text.

Appearance: Date and time when alarm occurs.

Disappearance: Date and time when alarm disappears.

Continued on next page

Display, Continued

Zone or area number: Area or geographical zone from which the error comes (common area : 0).

Note:

- You can change the column width by using the mouse.
- The number of alarms that can be displayed in the list is limited to 1000. When this limit is reached, a warning message is displayed in the status frame.
- Alarm Viewer displays alarms from all zones. The zone contains values from 0 ... 15.

Note: An alarm that appears is displayed in red text and there is no *Disappearance*. An alarm that disappears is displayed in green text with *Disappearance*.

Status Frame

This frame is used to display the error, an informative message, or throughput messages. For example: "Diagnostic Application is not configured in this application".

Continued on next page

Operation and Management of Alarms

Browsing

Use the “Up”, “Down”, “PageUp”, or “PageDown” keys or the mouse to select (highlight) the alarms in the list. Use the scroll bar if the list contains more alarms than can be displayed in the dialog.

Acknowledgment

To acknowledge an alarm that requires acknowledgment, select the alarm and use the appropriate toolbar button.

Several alarms can be acknowledged at one time by using the “Ack All” button.

Note: An alarm can be acknowledged by another Alarm Viewer. In this case, Alarm Viewer is notified and the alarm is displayed as acknowledged.

Deleting an Alarm from the List

- An alarm that requires acknowledgment, or an alarm that has not disappeared cannot be deleted
- DELETE and DELETE ALL buttons can be used to delete only those alarms which have disappeared and have been acknowledged (if required)

Limitations

For each alarm, there is additional information stocked in the diagnostic buffer. For example, many DFBs have outputs named STATUS (word) where the error cause is coded. Alarm Viewer doesn't use this information. It displays only basic information about alarms.

The Alarm Viewer will only work with the TSX ETY 110 WS hardware. It needs at least Premium PLC TSX57/PCX57/PMX57 V3.3 and PL-7 PRO or PL-7 Junior Version V3.3.

Browser Requirements, Settings and Security Considerations

A

At a Glance

Purpose

In order to view the Java applets on FactoryCast Web sites, you must have the correct browser version. This appendix discusses that requirement and other browser considerations.

In This Appendix

This appendix contains the following topics:

Browser Version

Overview

In order to view the Java applets in the FactoryCast Web pages, you must have a browser which supports the Java Development Kit (JDK) 1.1.5.

Which Browsers Qualify?

The browsers that meet that requirement are:

- Netscape Navigator 4.06 and Netscape Communicator 4.5 and higher
- Internet Explorer 4.0 w/Service Pack 2 and higher

Which Browser Do I Have?

Your browser name and version are displayed in the browser **Help** | **About** drop down menu.

How Do I Upgrade?

You can download the required version of a browser from the following sites:

Download Browser...	At Web Site...
Netscape Navigator 4.06 Netscape Communicator 4.5	http://www.netscape.com
Internet Explorer 4.0 w/Service Pack 2	http://www.microsoft.com

Browser Settings

Overview

If you are using Microsoft Internet Explorer and you have trouble viewing Java applets, you can modify your browser security settings to improve your ability to view the applets.

Procedure

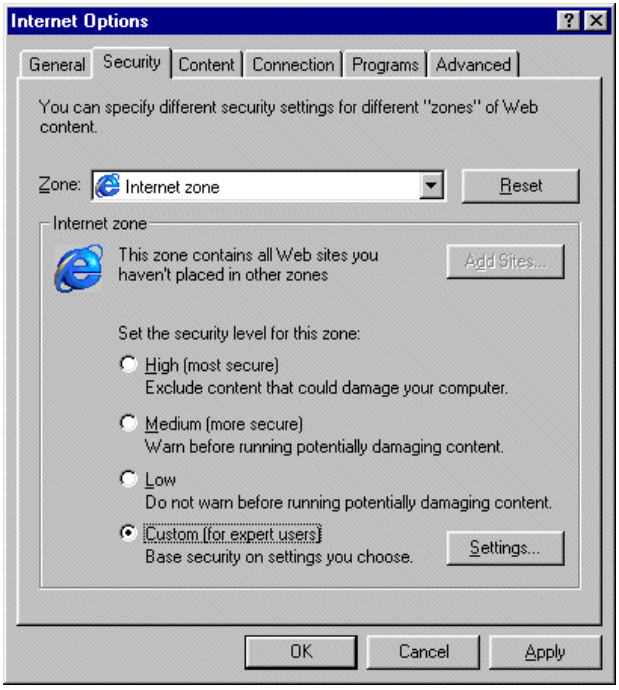
Follow the steps in the table below to modify the security settings of the browser:

Step	Action
1	Open Internet Explorer.
2	Select **View | Internet Options** from the menu bar. **Result:** The Internet Options window appears.

Continued on next page

Browser Settings, Continued

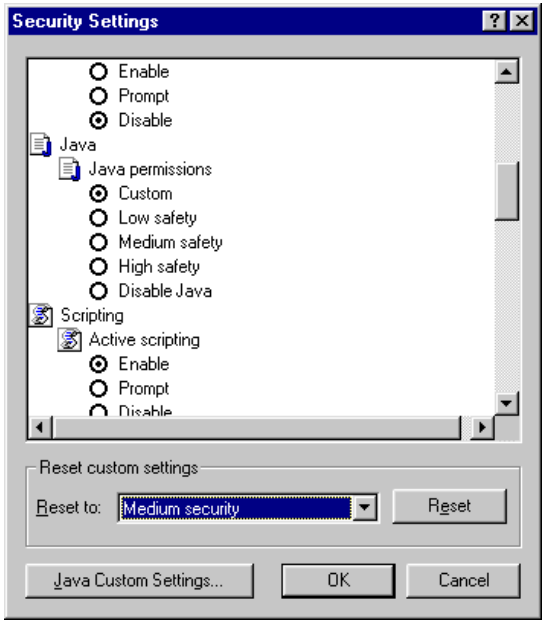
Procedure, Continued

Step	Action
3	Select the **Security** tab. **Result:** The Security dialog appears. 
4	Select the **Custom** button in the security level settings section.

Continued on next page

Browser Settings, Continued

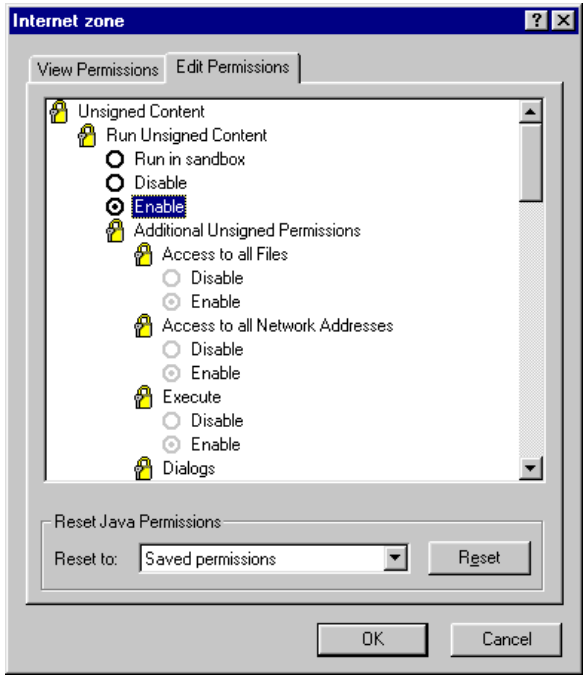
Procedure, Continued

Step	Action
5	Select the **Settings** button. **Result:** The Security Settings dialog appears. 

Continued on next page

Browser Settings, Continued

Procedure, Continued

Step	Action
6	Select the **Java Custom Settings** button. **Result:** The Internet Zone dialog appears. 
7	Select the **Edit Permissions** tab.
8	Under the **Run Unsigned Content**, select **Enable**.
9	Click **OK**.

Browser Security Considerations

Security Issue	Both Netscape Navigator and Internet Explorer remember a user name and password once entered for a Web site.
We Recommend	Close the browser after each session to prevent unauthorized people from using your passwords to gain read or write access to your site. If you are using Internet Explorer, you may also have to change your security settings using the custom settings option. Under the options for User Authentication, select “Prompt for user name and password.”

Performance Benchmarks

B

At a Glance

Purpose

This appendix contains performance benchmarks for:

- The Premium Embedded Server
- The Quantum Embedded Server
- The FactoryCast Configurator

In This Appendix

This appendix contains the following topics:

Premium Performance Benchmarks

Overview

This section contains performance information for the TSX ETY 110 WS V2.2 Web Embedded Server compared with the TSX ETY 110 V2.2 Ethernet Module.

All the response time are in ms. The client and the server have the same cycle time.

Average time of 1 EF READ-VAR of 50 words

ETHWAY

	Cyclic	**5**	**10**	**20**	**50**
TSXETY 110 V2.2	73	73	76	82	103
TSXETY 110 WS installed	73	72	76	83	138
TSXETY 110 WS running with data editor	73	73	75	83	127
TSXETY 110 WS running with sysdiag on ETY client	86	88	91	98	149
TSXETY 110 WS running with sysdiag on ETY client and server	93	98	99	99	148

TCP/IP

	Cyclic	**5**	**10**	**20**	**50**
TSXETY 110 V2.2	74	75	77	84	102
TSXETY 110 WS installed	74	73	77	84	106
TSXETY 110 WS running with data editor	74	73	77	85	108
TSXETY 110 WS running with sysdiag on ETY client	80	85	90	98	109
TSXETY 110 WS running with sysdiag on ETY client and server	92	94	100	108	128

Continued on next page

Premium Performance Benchmarks, Continued

Average time of 8 EF READ-VAR of 50 words

ETHWAY

	Cyclic	10	50
TSXETY 110 V2.2	221	229	247
TSXETY 110 WS installed	223	229	247
TSXETY 110 WS running with data editor	224	231	249
TSXETY 110 WS running with sysdiag on ETY client	236	240	254
TSXETY 110 WS running with sysdiag on ETY client and server	246	252	275

TCP/IP

	Cyclic	10	50
TSXETY 110 V2.2	244	254	287
TSXETY 110 WS installed	244	261	291
TSXETY 110 WS running with data editor	245	259	293
TSXETY 110 WS running with sysdiag on ETY client	262	270	309
TSXETY 110 WS running with sysdiag on ETY client and server	304	307	337

Continued on next page

Premium Performance Benchmarks, Continued

Throughput time of Bridge

ETHWAY

	Cyclic	**10**	**20**	**50**
TSXETY 110 V2.2	55	56	55	26
TSXETY 110 WS running	51	51	47	18
TSXETY 110 WS running with Comm ETY Bridge	61	58	58	56
TSXETY 110 WS running with Comm ETY client and server Bridge	62	63	62	23

TCP/IP

	Cyclic	**10**	**20**	**50**
TSXETY 110 V2.2	57	57	60	31
TSXETY 110 WS running	58	56	55	33
TSXETY 110 WS running with Comm ETY Bridge	65	63	64	67
TSXETY 110 WS running with Comm ETY client and server Bridge	66	69	67	54

Quantum Performance Benchmarks

Overview

These Quantum Web Embedded Server performance tests were run on Win95 on a Dell OptiPlex Gxi at 200 MHZ. The PLC was a Quantum 424.

Performance Data

The following table contains the performance data for the Quantum Web Embedded Server.

Web Scanner w/MSTR Block	50 scans	100 scans	200 scans	500 scans
Web scanner loaded, 1 MSTR	48.2ms	33.4ms 134.3ms	34.3ms	34.3ms
Web scanner loaded, 2 MSTR	43.7ms 66.4ms	45.6ms	43.8ms	46.7ms
Web scanner loaded, 4 MSTR	72.35ms 86.19ms	73ms	74ms	74ms 90ms
Web scanner loaded, 4 MSTR, 1 browser	107.3ms	72.5ms	73ms	72ms
Web scanner loaded, 4 MSTR, 3 browsers	78.9ms 94.2ms	80.5ms	81.1ms	120ms
Web scanner loaded, 4 MSTR, 5 browsers	105ms	80.5ms	80ms	90ms
Web scanner loaded, 4 MSTR, 5 instances of Internet Explorer (no cache)	104.1ms 92.5ms	85.2ms	88.9ms	90ms
Web scanner loaded, 4 MSTR, 5 instances of Internet Explorer (cache on)	108ms 83.7ms	85.2ms	90ms	120ms 92.5ms

Configuration Tool Performance Benchmarks

Overview

This section provides test results for downloading a namespace and for downloading a Web site.

Application Download

In this performance test, the Download Namespace Only option was chosen.

Trial	ETY Embedded Server (min:sec)	NOE Embedded Server (min:sec)
1	:20	:05
2	:20	:18
3	:20	:11

Web Site Download

In this test, 10 HTML files of 2 K each were downloaded to the server.

Trial	ETY Embedded Server (min:sec)	NOE Embedded Server (min:sec)
1	1:32	1:25
2	2:00	2:45
3	2:00	2:45

Index

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