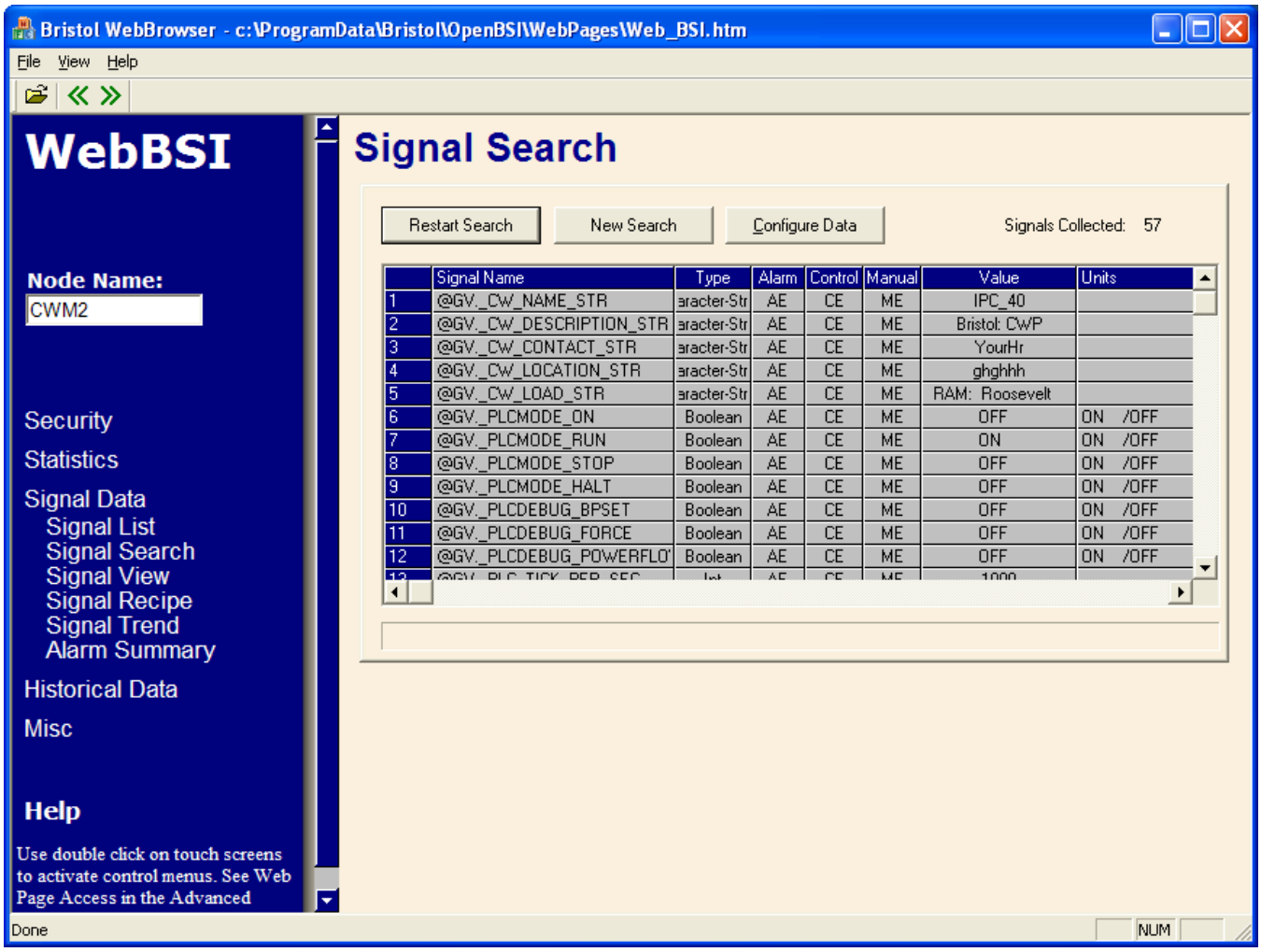
Web_BSI Manual



Application Safety Considerations

- **Protecting Operating Processes**
  A failure of this application – for whatever reason -- may leave an operating process without appropriate protection and could result in possible damage to property or injury to persons. To protect against this, you should review the need for additional backup equipment or provide alternate means of protection (such as alarm devices, output limiting, fail-safe valves, relief valves, emergency shutoffs, emergency switches, etc.)

⚠CAUTION

When implementing control using this product, observe best industry practices as suggested by applicable and appropriate environmental, health, and safety organizations. While this product can be used as a safety component in a system, it is NOT intended or designed to be the ONLY safety mechanism in that system.

Table of Contents

What is Web_BSI? 1
- Setting up the Web_BSI Software 2
- Installing the Web_BSI software on your PC 2
- Specifying the Location of Your Web Browser 2
- Specifying the Startup Web Page For A Controller 2
- Other Notes About Using Web Pages 3

Web_BSI Pages 5
- Alarm Summary Web Page 7
- Archive Collection Web Page 19
- Array Collection Web Page 23
- Array Item View Web Page 27
- Audit Collection Web Page 33
- Buffer Usage Web Page (Network 3000) 36
- Crash Blocks Web Page 38
- Custom PROM INFO Web Page (Network 3000) 39
- File Transfer web page 41
- Historical Log Storage Web page 43
- IP Statistics Web page 45
- Node Locator Web Page 51
- Node Routing Table Web Page 53
- Port Summary Statistics Web Page 54
- Security Sign-On Web Page 64
- Signal List Web Page 66
- Signal Recipe Web Page 69
- Signal Search Web Page 73
- Signal View Web Page 87
- Tele-Product Web Pages - Notes About 104
- Trend Web Page (Historical Trend, Signal Trend) 106
- Version Information Web Page 123

Appendix A - ActiveX Controls A-1
- Notes About Creating Your Own Web Pages A-3
- Standard Properties (Common to Multiple ActiveX Controls) A-3
- Use of Parameters A-5
- Notes about Specifying Colors: A-6
- Specifying RGB colors as Decimal Numbers A-6
- Forcing a Refresh of a Web Control A-6
- Troubleshooting Tip – Web Page Controls Not Functioning Properly A-6
- Resetting the Internet Security Settings A-6
- Verifying that Javascript is enabled A-7

Alarm Summary A-9

Archive Collection Control A-12
Array Collection Control A-13
Audit Collection Control A-15
Buffer Usage Control A-17
CPROM Control (Custom PROM) A-17
Crash Block Control A-18
File Transfer Control A-18
Historical Array Item View Control A-20
Historical Log Storage Control A-24
IP Statistics Control A-32
Node Routing Control A-32
OpenBSI Version Control A-32
Port Summary Control A-33
Recipe Control A-33
RTU Locator Control A-35
Security Control (Sign On) A-36
Signal List Control A-37
Signal Search A-38
Signal View Control A-41
Trend A-53
Version Information Control A-58
Write Signal Control A-59

Examples - Configuring ActiveX Controls in HTML A-62

Appendix B – File Tabs for Calibration Web Pages B-1

Addendum

Web_BSI consists of a set of standard web pages and ActiveX controls which may be used to configure a newly installed ControlWave series process automation controller, or to modify certain configuration parameters in an existing ControlWave unit. Some web page functions are also supported for Network 3000-series controllers.

The key components of the Web_BSI, from a user's point of view are:

- **Standard Set of Web Pages -** A series of data collection web pages, compatible with Microsoft® Internet Explorer (Version 5.0 or newer), are provided to view data from arrays, archives, audit files, and lists. Some of the standard web pages may be used with *both* Network 3000 and ControlWave series controllers, others will function with only one product series.

  NOTE: Separate sets of web pages are also available for configuration/calibration operations for particular ControlWave or TeleFlow products. For information on these, please consult the help files in those web pages.

  The easiest way to access the web pages is through LocalView or NetView, after you have added the controller to the OpenBSI network.

  The Web_BSI standard set of web pages (HTML) are stored on the OpenBSI workstation.

- **ActiveX Controls for use in User-Created Web Pages -** In addition to this standard set of web pages, users can create their own web pages. To support the user-created web pages, a series of ActiveX controls specific to ControlWave and Network 3000 controllers are provided for web page developers. User-created web pages are stored on the OpenBSI Workstation.

- **LocalView** - Allows local communication with a controller. Also allows configuration parameters to be set. See Chapter 5 of the the *OpenBSI Utilities Manual* (document# D5081) for details.

Installing the Web_BSI software on your PC

Web_BSI is automatically included when you install either the OpenBSI Network Edition, or the OpenBSI Local Edition. See Chapter 2 of the *OpenBSI Utilities Manual* (document# D5081) for details.

> IMPORTANT
>
> The Web_BSI software should only be run on Windows® 2008 Server, Windows® 7 Professional, or Windows® 10. ***Users are warned NOT to attempt to run this software under Windows® 95, because of unpredictable results. There is no longer support for Windows® 98, Windows® NT, Windows® 2000, or Windows® XP Professional.***

Specifying the Location of Your Web Browser

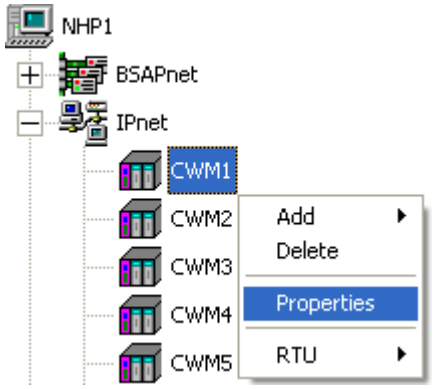
If the path of your web browser is other than the default (\Program Files\Internet Explorer\) you will need to use a text editor to edit the WEB_BROWSER_PATH parameter in your NDF file to reflect the web browser's location.

WEB_BROWSER_PATH=C:\Program Files\Internet Explorer

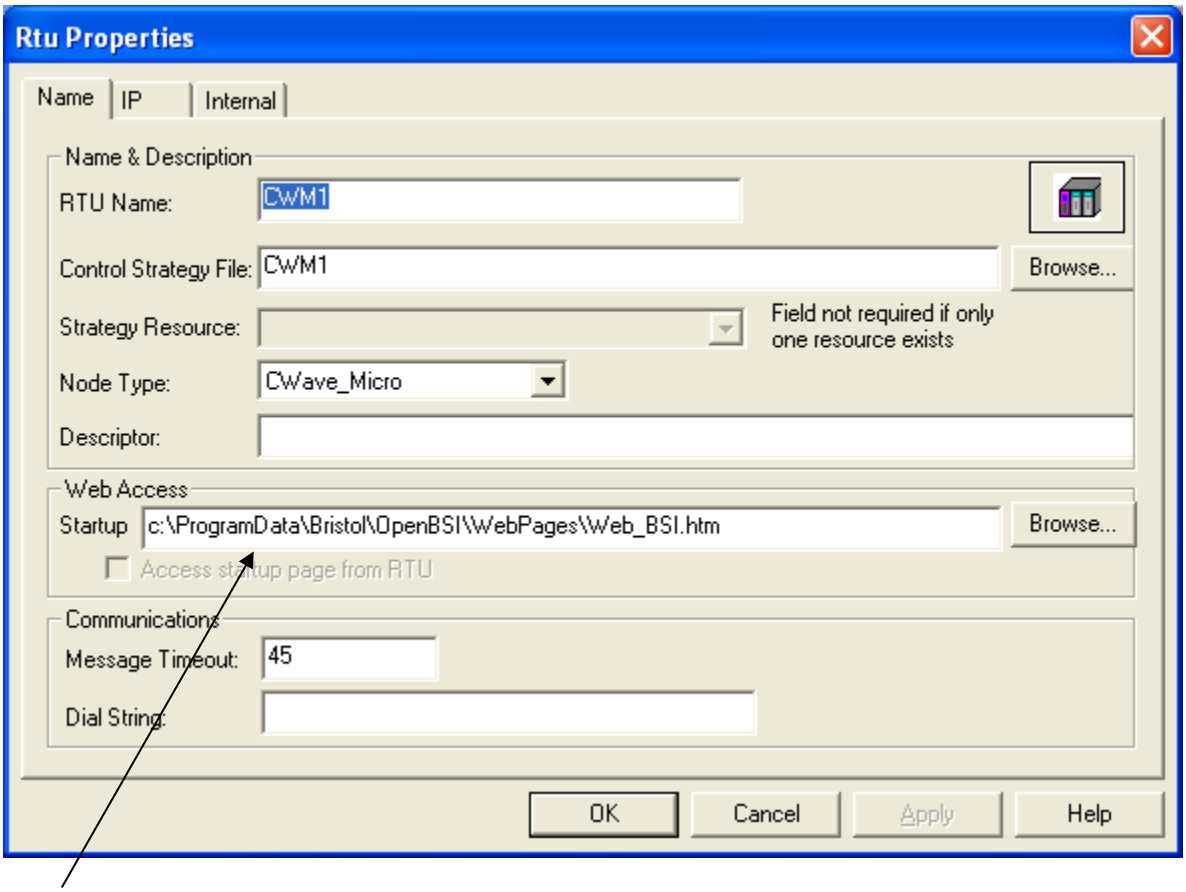
Specifying the Startup Web Page For A Controller

During OpenBSI system configuration, you must specify a startup HTML web page for each controller. This can be done in the RTU Wizard of NetView when the controller is initially added to the network, or from the RTU Properties dialog box, after it is already in the network.

To access the RTU Properties dialog box, *right* click on the icon for the controller, and choose **"Properties"** from the pop-up menu.



- The startup web page resides on the PC workstation, so a full path and filename must be entered in the **"Startup"** field of the RTU Properties dialog box.
- If you would like access to the standard web page set, specify web_bsi.htm as the startup page. This web page is referred to as the **Main Menu**, and contains links to all of the standard web pages.



Specify the complete path and filename on the PC, of the startup web page here. (Use the "Browse" push button to locate the web page, if desired.)

Other Notes About Using Web Pages

- For optimum results, screen resolution should be set to 1024 x 768 when using our web pages.

- You can use the tab key to move between fields on web pages. (OpenBSI 5.8 and newer.)

- If you need to enter a value in a field on a web page, you must press the **[Enter]** key to save the value. You can use the **[Esc]** key to leave the field unchanged.

- If you need make a selection from a drop-down menu (combo box), you must press the **[Enter]** key to save the value, unless you have OpenBSI 5.8 Service Pack 1 or newer in which case your selection is sent to the RTU automatically.

- You can have multiple web pages open simultaneously, for example, to look at different types of data from the same RTU. To do this, just open a new instance of Internet Explorer (or open a new window in IE using the **File→New** command). Note, however, that if you terminate one instance (or window) communicating with a particular RTU, you will

terminate *all instances or windows* communicating with that same RTU.

- If your ControlWave-series controller is part of a BSAP network, it will be treated as a BSAP controller; and only those configuration facilities and features available for a BSAP controller will be available. This will prevent web page configuration of Audit/Archive and certain security features.
- NetView software must be registered in order to be used beyond the 60 day evaluation period. See Chapter 2 of the OpenBSI Utilities Manual (document# D5081) for more information on the registration process.

- The standard set of web pages for Web_BSI are stored in the directory:

  *openbsi_installation_path***WebPages**

  where *openbsi_installation_path* is whatever directory you chose for the installation of OpenBSI data files. The default is \ProgramData\Bristol\OpenBSI\.

  Other folders of web pages are also available for various other ControlWave or TeleFlow products.

There are two different methods for calling up the Web_BSI web pages:

IMPORTANT

If this is the first time you are calling up the Web_BSI web pages, you will need to use the Node Locator page, described later in this manual, to identify the nodes with which you want to communicate. After that, you should not need to use it again, unless you are communicating with different nodes, or if your network configuration has changed.

IMPORTANT

You must log in with Administrative privileges in order to use certain configuration web pages, in particular the Node Locator.

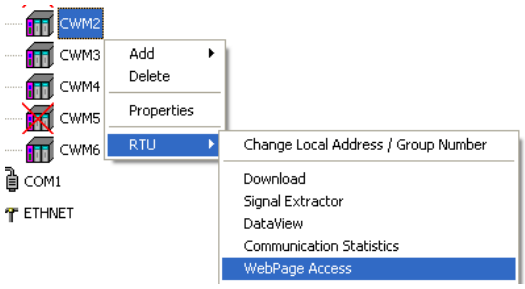
Method 1

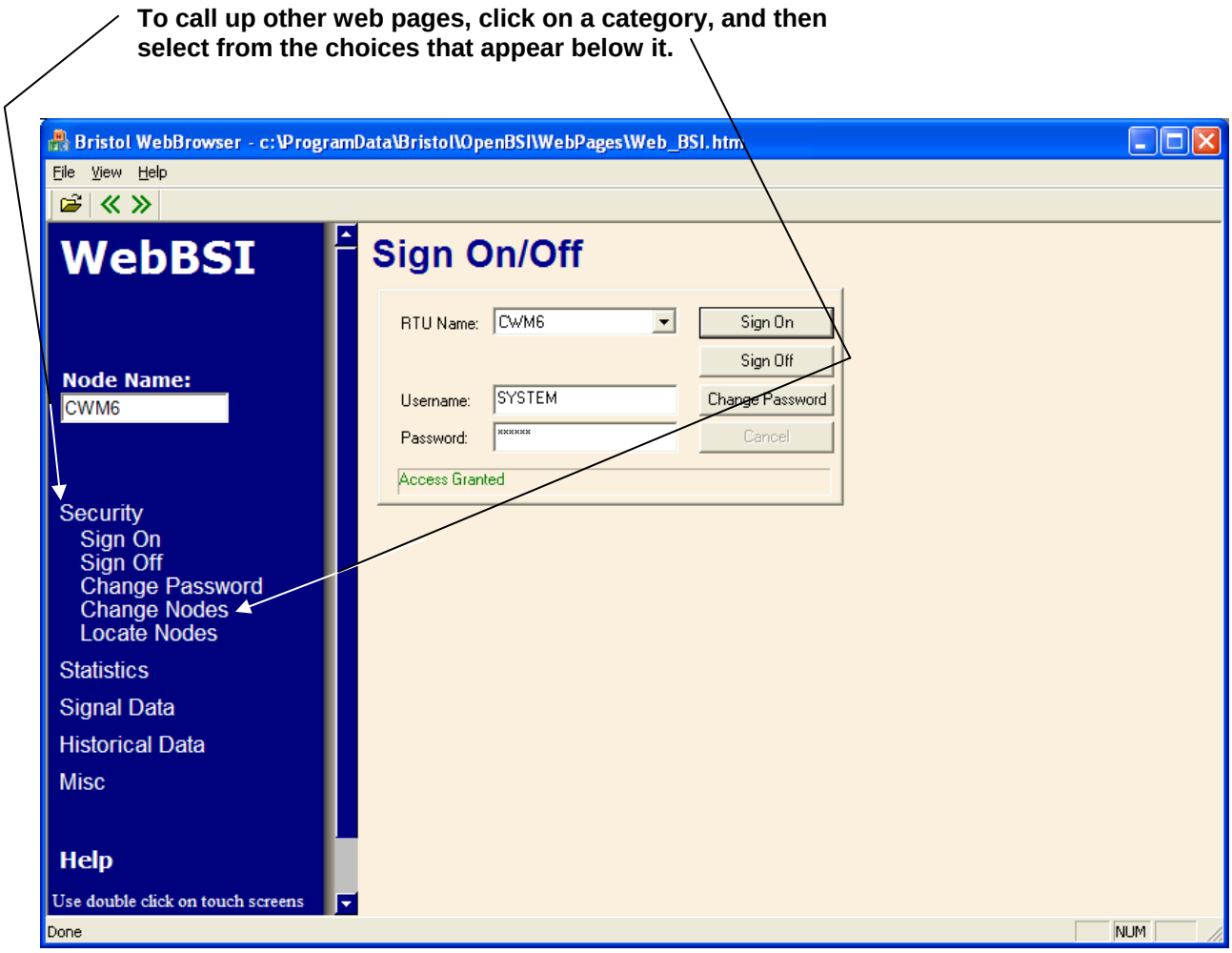
With NetView or LocalView running, click as follows:

Start→Programs→OpenBSI Tools→Web Page Access→Standard Pages

Method 2

In order to call up the web page(s) associated with a particular controller, right click on the icon for the controller in the OpenBSI NetView tree, and choose **RTU→WebPage Access** from the pop-up menu. Internet Explorer will be started, and whichever startup web page associated with the controller will be displayed.





The Main Menu page in the standard set is shown, above, however, the startup page for your controller may be different. Typically, the Security Sign-On always appears on the Main Menu page.

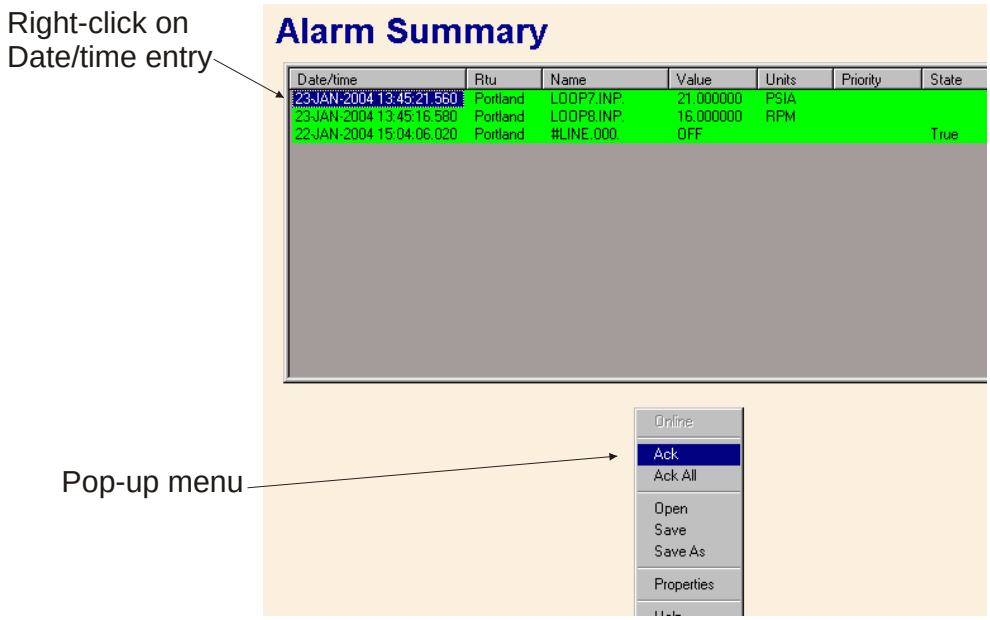
The various web pages include category buttons along the left hand side, for calling up additional pages; when you click your cursor on a category button, a list of pages belonging in that category will appear below it. The category buttons are named Security, Statistics, Signal Data, and Historical Data.

A **"Node Name"** field displays the name of the current controller from which data is being viewed on the web page.

.

The Alarm Summary Web Page allows you to view all current alarm messages received from a controller (or multiple controllers) in the network.[1]

To access the Alarm Summary web page, click on the **"Signal Data"** category button, then choose the **"Alarm Summary"** drop-down menu selection.



- The most recent alarms appear at the top of the window; older alarms are automatically moved towards the bottom. If there are more alarms than can fit in the window, a scroll bar will appear, which you can use to view the additional alarms. By clicking on the 'Date/Time' column heading, you can sort alarms already displayed from newest to oldest, or oldest to newest, however, any new alarms coming in will always appear at the top.

- Alarms appear in different colors based on the Alarm Priority. The colors are set in the 'Colors' page of the Alarm Properties dialog box.

- The choice of which columns are included for the alarm entries can be specified from the 'Alarm Summary' page of the Alarm Properties dialog box.

- Alarms can be filtered so that only alarms meeting certain criteria are displayed. This can be specified from the 'Filtering' page of the Alarm Properties dialog box.

- Alarms can be sorted alphabetically based on a particular column, by clicking on the column heading. (NOTE: This does not apply to certain columns, such as the value or limit.)

[1] *The initial release of the Alarm Summary Control in Version 5.3 only supported alarms from RTUs communicating via BSAP. Beginning with OpenBSI 5.4, alarms from RTUs communicating via IP are also supported, provided the RTU firmware is 4.40 or newer.*

- Optionally, alarms can also be saved in a log file, for viewing at a later time. This can be configured from the 'Logging' page of the Alarm Properties dialog box.

- If you want to view alarms from more than one controller in the Alarm Summary, you must be logged onto each of these controllers, prior to opening the Alarm Summary web page. (This could be accomplished via the Sign On control, or via a login script in your web page which uses the Sign On Control). To view a list of which controllers you are currently logged onto, *right* click outside of the Alarm Summary window, but within the boundaries of the control, and click on **"Rtu List"** in the pop-up menu

Acknowleging Alarms

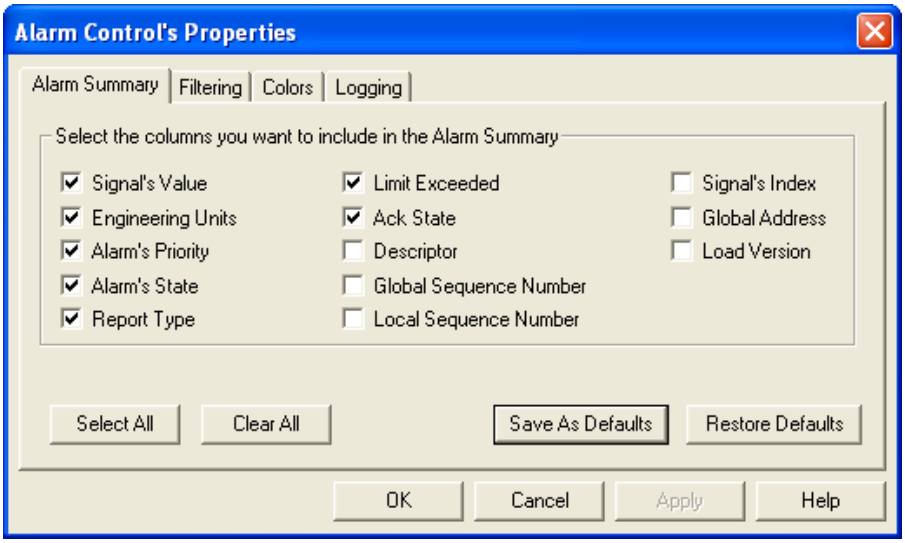
To acknowlege an alarm visible in the Alarm Summary, click on the timestamp for the alarm, then *right*-click outside of the Alarm Summary window, but within the boundaries of the control, and click on **"Ack"** in the pop-up menu. If you want to select multiple alarms for acknowlegement, hold down the **[Ctrl]** key as you select the alarms, then click on **"Ack"**. If you want to acknowlege all alarms in the control, click on **"Ack All"**. *NOTE: Once an alarm has returned to normal, and has been acknowleged by the operator, it will be removed from the alarm summary. Change of state alarms are removed once they are acknowledged.*

Alarm Control Properties Dialog Box

The Alarm Control Properties dialog box allows you to configure which types of alarm message data should be displayed in the Alarm Summary. The dialog box is divided into multiple pages, accessible by clicking on tabs.

To call up the Alarm Properties dialog box, *right*-click outside of the Alarm Summary window, but within the boundaries of the control, and click on **"Properties"** in the pop-up menu.

Alarm Summary Page



The 'Alarm Summary' page allows you to specify what parts of the alarm message you want to display in the columns of the Alarm Summary. NOTE The RTU's node name, the signal name, and the timestamp when the alarm occurred are always displayed, and so are not included as options.

Columns Which May be Included in the Alarm Summary:

To include a particular type of alarm message data in the Alarm Summary, check the appropriate box. The boxes are:

Signal's Value — The value of the signal at the moment the alarm was generated.

Engineering Units — The engineering units for the signal, such as gallons, inches, degrees celsius, etc.

Alarm's Priority — The priority indicates the importance of the alarm. The priorities, in order of most importance to least importance are: Critical, Non-Critical, Operator Guide (Op. Guide), and Event.

Alarm's State — For analog alarms the possible states are 'High-High', 'High', 'Low' and 'Low-Low'. These states indicate which alarm limit has been most recently exceeded. For logical alarms, the state indicates the type of boolean value change which occurred to generate the alarm. 'True' indicates the signal changed from 'False' to 'True'. 'False' indicates the signal changed from 'True' to 'False', and 'Change of State' indicates the signal simply changed from 'True' to 'False' or 'False' to 'True'.

Report Type	The report type indicates the number of times the signal has gone into an alarm condition as part of this particular alarm message. 'Single' indicates it went 'in alarm' once. 'Momentary' indicates that it momentarily went 'in alarm', but then returned to normal. 'Multiple' indicates that the signal has gone into and out of alarm more than once.
Limit Exceeded	This is the alarm limit which was exceeded.
Ack State	This shows whether the alarm has been acknowleged by the operator, or not.
Descriptor	This is the textual descriptor of the alarm signal.
Global Sequence Number	The Global Sequence Number of the alarm, used internally, for identifying alarm, audit, and archive files, within this RTU.
Local Sequence Number	The Local Sequence Number, used internally, for identifying alarms within this RTU.
Signal's Index	For Network 3000: The Master Signal Directory (MSD) Address. For ControlWave: The PDD Index. These are internal numbers used by the firmware.
Global Address	The global address of this RTU.
Load Version	The version of the ACCOL load or ControlWave project executing in this RTU.

Push Buttons and Other Controls

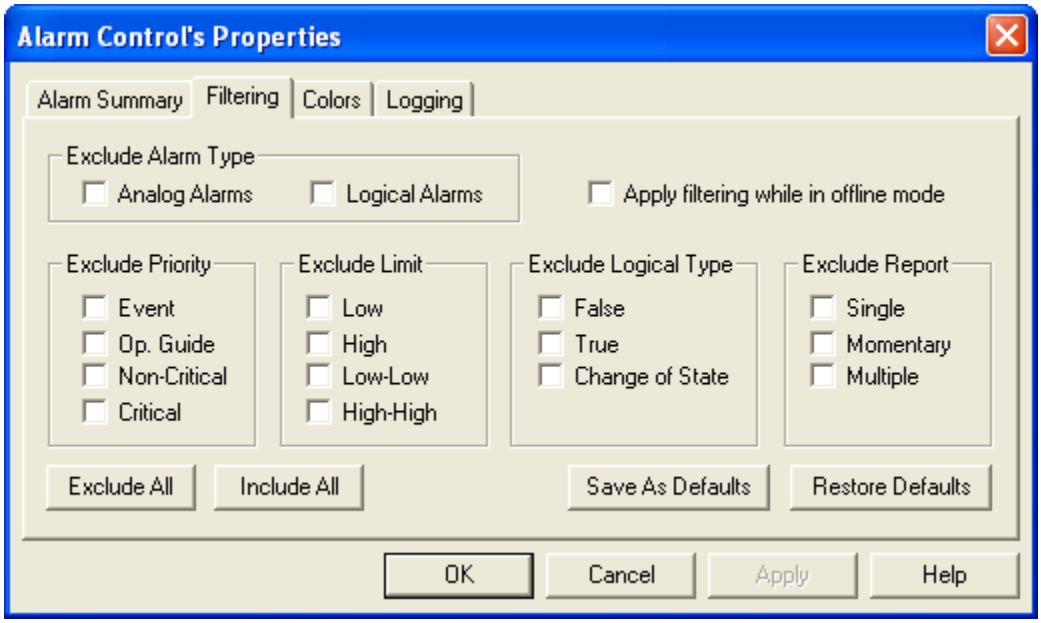
[Select All]	Selects all items for inclusion as columns in the Alarm Summary. Users can then de-select any they do not want.
[Clear All]	Clears all selections on this page.
[Save As Defaults]	Saves the selections in the Alarm Control's Properties dialog box to a defaults file.
[Restore Defaults]	Restores the saved selections from the defaults file.
[OK]	Exits the Alarm Control's Properties dialog box, saving all changes.
[Cancel]	Exits the Alarm Control's Properties dialog box, without saving

changes, except for changes saved to the defaults file.

[Help] Calls up a help file.

Filtering Page

Sometimes, the user may wish to limit the alarm summary to only signals which satisfy certain criteria, for example, they may want to exclude 'Event' and 'Op. Guide' alarms so that the summary only shows 'Critical' and 'Non-Critical' alarms, or they may want to exclude 'Logical Alarms' so that the summary will only show 'Analog Alarms'. The Filtering page allows users to specify this filtering criteria.



Exclude Alarm Type This allows you to limit the alarm summary to only analog alarms, or only logical alarms.

Selecting **"Analog Alarms"** prevents display of analog alarms in the Alarm Summary.

Selecting **"Logical Alarms"** prevents display of logical (BOOL) alarms in the Alarm Summary.

Apply Filtering while in offline mode The contents of the Alarm Summary can be saved in an alarm snapshot (*.ALM) file, for off-line viewing, even when communications are not active with the RTU network. If, when viewing the off-line alarm summary, you want to continue to filter alarms, based on the criteria defined on this page, select the **"Apply Filtering while in offline mode"** box.

Exclude Priority

This allows you to limit the priorities of alarms which are displayed in the Alarm Summary.

Selecting **"Event"** prevents display of event priority alarms in the Alarm Summary.

Selecting **"Op. Guide"** prevents display of operator guide alarms in the Alarm Summary.

Selecting **"Non-Critical"** prevents display of non-critical alarms in the Alarm Summary.

Selecting **"Critical"** prevents display of critical alarms in the Alarm Summary.

Exclude Limit

This allows you to restrict analog alarms which are displayed in the Alarm Summary based on which alarm limits have been exceeded, for example, you could exclude low and high alarms, and only show low-low and high-high alarms in the Alarm Summary.

Selecting **"Low"** prevents display of analog alarms in the Alarm Summary which have exceeded their low alarm limit.

Selecting **"High"** prevents display of analog alarms in the Alarm Summary which have exceeded their high alarm limit.

Selecting **"Low-Low"** prevents display of analog alarms in the Alarm Summary which have exceeded their low-low alarm limit.

Selecting **"High-High"** prevents display of analog alarms in the Alarm Summary which have exceeded their high-high alarm limit.

Exclude Logical Type

This allows you to restrict logical alarms which are displayed in the Alarm Summary based on which logical state triggered the alarm.

Selecting **"False"** prevents alarms generated by a signal becoming FALSE, from being displayed in the Alarm Summary.

Selecting **"True"** prevents alarms generated by a signal becoming TRUE, from being displayed in the Alarm Summary.

Selecting **"Change of State"** prevents alarms generated by a signal changing state from FALSE-to-TRUE or TRUE-to-FALSE, from being displayed in the Alarm Summary.

Exclude Report This allows you to restrict alarms which are displayed in the Alarm Summary based on how the alarms are reported.

Select **"Single"** to prevent alarms generated based on a signal entering an alarm condition once from appearing in the Alarm Summary.

Select **"Momentary"** to prevent alarms generated based on a signal momentarily entering an alarm condition and then returning to normal, from appearing in the Alarm Summary.

Select **"Multiple"** to prevent alarms generated based on a signal entering an alarm condition more than once for a given alarm message from appearing in the Alarm Summary.

Push Buttons and Other Controls

[Exclude All] Causes all boxes on the Filtering page to be selected, thus excluding all alarms from the Alarm Summary.

[Include All] Clears all boxes on the Filtering page, thereby turning off filtering, and allowing all alarms to be displayed in the Alarm Summary.

[Save As Defaults] Saves the selections in the Alarm Control's Properties dialog box to a defaults file.

[Restore Defaults] Restores the saved selections from the defaults file.

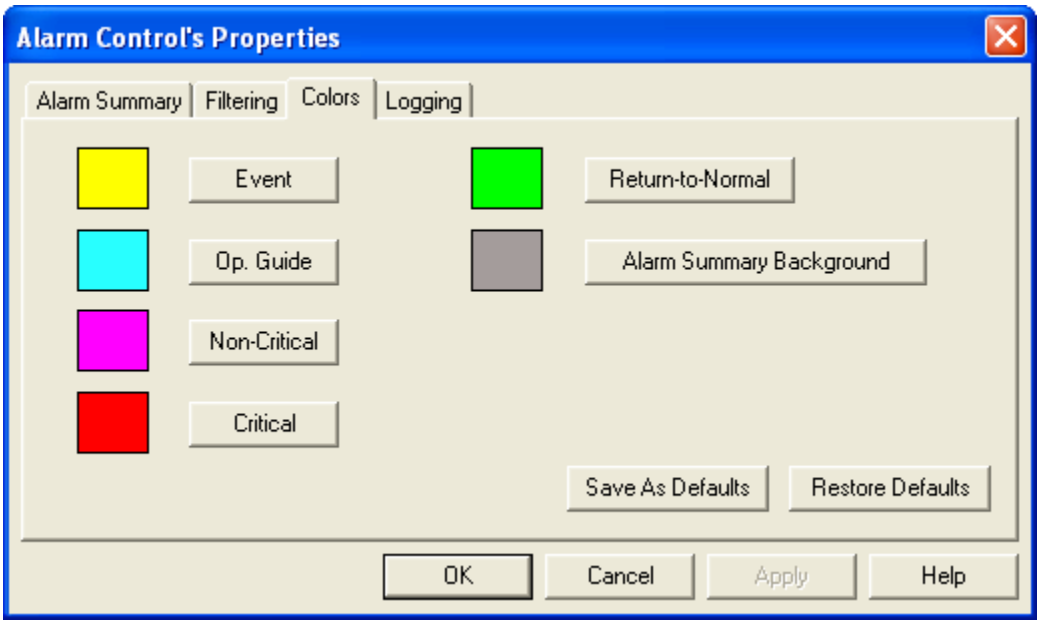
[OK] Exits the Alarm Control's Properties dialog box, saving all changes.

[Cancel] Exits the Alarm Control's Properties dialog box, without saving changes, except for changes saved to the defaults file.

[Help] Calls up a help file.

Colors Page

The Colors page allows you to choose which colors you want displayed for alarm messages of a particular priority, for example, critical alarms appear in RED, etc. The page also lets you define the background color for the Alarm Summary window.



How to set colors:

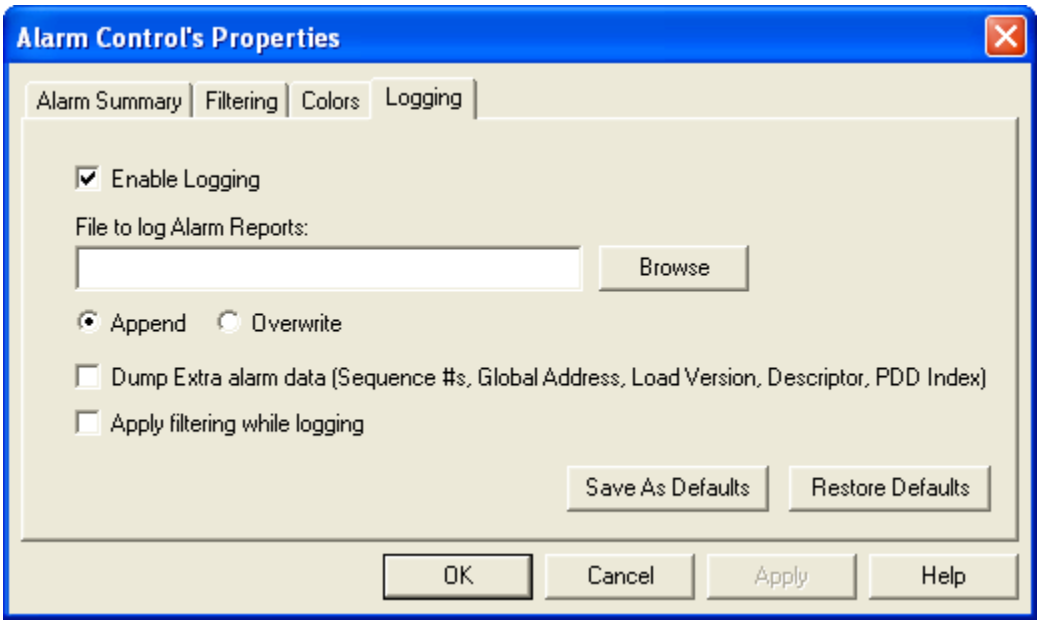
The current colors for each alarm priority are displayed next to a button for that priority. To specify the colors which will be displayed for alarm messages of a particular priority, click on the button for that priority, and the color pallette will appear.

Choose the desired color, and then click on **[OK]**.

[Event]	Click here to call up the color pallette and specify the color in which Event alarm messages will be displayed in the Alarm Summary.
[Op. Guide]	Click here to call up the color pallette and specify the color in which Operator Guide alarm messages will be displayed in the Alarm Summary.
[Non-Critical]	Click here to call up the color pallette and specify the color in which Non-Critical alarm messages will be displayed in the Alarm Summary.
[Critical]	Click here to call up the color pallette and specify the color in which Critical alarm messages will be displayed in the Alarm Summary.
[Return-to-Normal]	Click here to call up the color pallette and specify the color in which Return-to-Normal alarm messages will be displayed in the Alarm Summary.
[Alarm Summary Background]	Click here to call up the color pallette and specify the background color of the Alarm Summary window.
[Save As Defaults]	Saves the selections in the Alarm Control's Properties dialog box to a defaults file.
[Restore Defaults]	Restores the saved selections from the defaults file.
[OK]	Exits the Alarm Control's Properties dialog box, saving all changes.
[Cancel]	Exits the Alarm Control's Properties dialog box, without saving changes, except for changes saved to the defaults file.
[Help]	Calls up a help file.

Logging Page

The Logging page allows the user to specify the name of a log file into which alarm summary data will be stored. This allows users to keep a historical record of alarms, even after they have been removed from the Alarm Summary.



Enable Logging — When checked, causes entries in the Alarm Summary to also be stored in a ASCII-text log file on your computer's hard disk.

File to log Alarm Reports — This specifies the path and name of the log file where the alarm data will be stored. If a file already exists, use the **[Browse]** button to locate it. Log files have the extension of *.LOG.

Append — When selected, any new alarm summary entries are appended to the end of the existing log file, preserving earlier data in the log file.

Overwrite — When this is selected, the Alarm Summary log file will be emptied whenever the control starts, thereby deleting any previous entries.

Dump Extra alarm data — By default, the local and global sequence numbers, the global address, the load version, the descriptor, and the PDD index are omitted from the log file. When this box is selected, however, they are all included in the Alarm Summary log file. *All other types of Alarm Summary Data (signal value, engineering units, etc.) are always included in the Alarm Summary Log file.*

Apply filtering while logging — When selected, filtering criteria specified in the 'Filtering' page of the Alarm Properties dialog box, will be used to limit the types of alarms stored in the Alarm Summary Log file. When this is not selected, filtering criteria will only apply to the alarms appearing on the screen in the Alarm Summary.

[Save As Defaults] — Saves the selections in the Alarm Control's Properties dialog box to a defaults file.

[Restore Defaults] — Restores the saved selections from the defaults file.

[OK] — Exits the Alarm Control's Properties dialog box, saving all changes.

[Cancel] — Exits the Alarm Control's Properties dialog box, without saving changes, except for changes saved to the defaults file.

[Help] — Calls up a help file.

Example of an Alarm Summary Log File:

An example of an Alarm Summary Log File is shown below. These files may be viewed in Notepad or any other ASCII text editor.

```
23-JAN-2004 13:43:00.560  Portland  LOOP7.INP.  0.000000 PSIA
Critical  Single

23-JAN-2004 13:43:00.560  Portland  LOOP8.INP.  0.000000 RPM
Critical  Single

23-JAN-2004 13:43:06.580  Portland  LOOP8.INP.  6.000000 RPM
Non-Critical

23-JAN-2004 13:43:11.560  Portland  LOOP7.INP.  11.000000 PSIA
Critical

23-JAN-2004 13:43:16.560  Portland  LOOP8.INP.  16.000000 RPM
(Normal)
```

Saving a 'snapshot' of the current alarms into an Alarm Snapshot File

An Alarm Snapshot File is *different* from the Alarm Summary Log File discussed, earlier. Alarm Snapshot Files have a file extension of (*.ALM) and are used to store a 'snapshot' of all current alarms visible in the Alarm Summary. They are binary files, and so cannot be viewed in a text editor.

To save the current alarms appearing on the screen in an existing Alarm Snapshot file, *right*-click outside of the Alarm Summary window, but within the boundaries of the control, and click on **"Save"** in the pop-up menu. If there is no existing Alarm Snapshot file, you will be prompted for a path and filename, for the Alarm snapshot file.

If you store the Alarm data in an all new snapshot file, choose **"Save As"** instead of save, and provide the path and filename for the file.

Viewing an Alarm Snapshot File

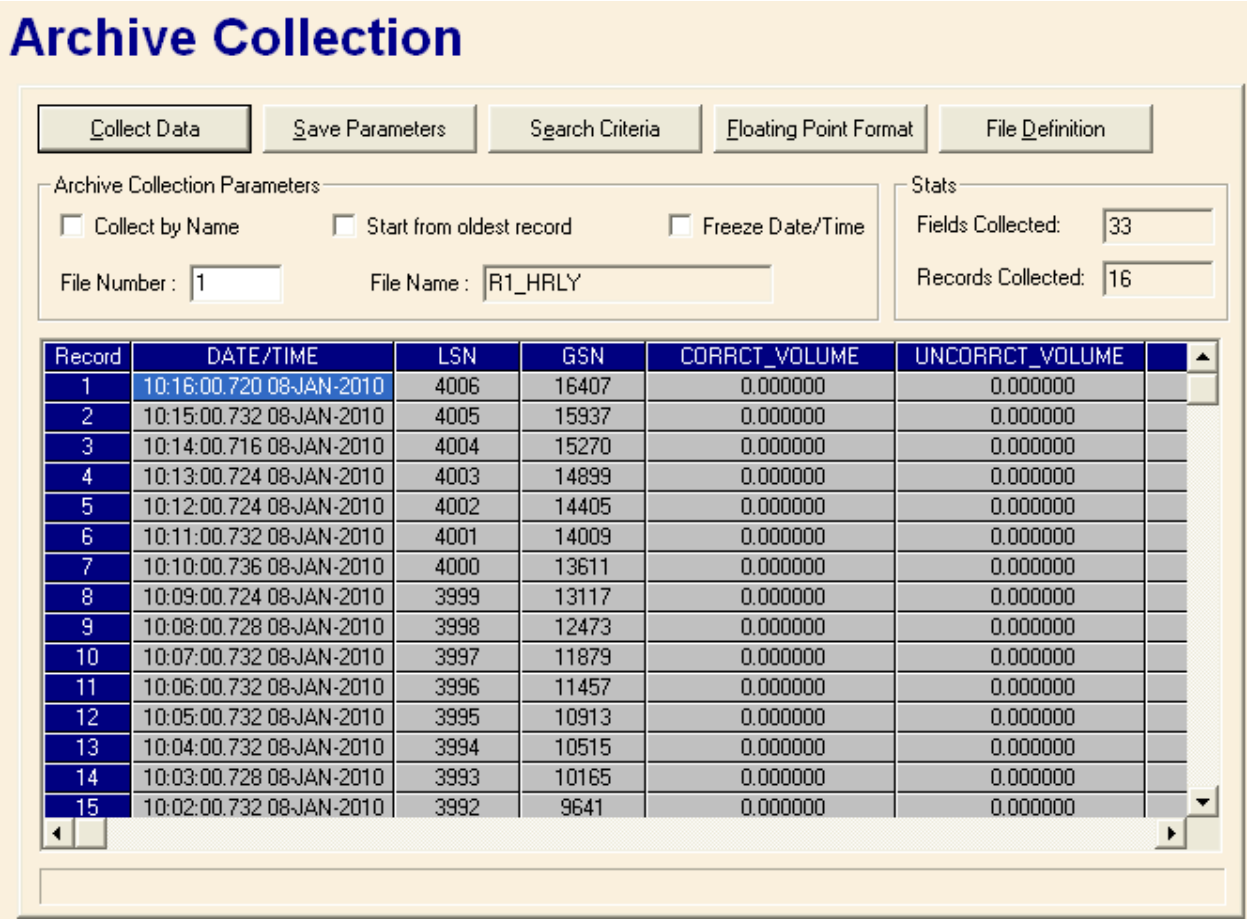
An Alarm Snapshot file can only be viewed when the Alarm Summary Window is in off-line mode.

To view the snapshot file, *right*-click outside of the Alarm Summary window, but within the boundaries of the control, and click on **"Open"**, then navigate to the alarm snapshot (*.ALM) file, and open the file. The Alarm Summary Window will automatically go off-line, and no new alarms will be displayed or logged while it is off-line. (You can tell the Alarm Summary is off-line because while in off-line mode, the word OFFLINE appears on a status line at the bottom of the window, along with the path and name of the Alarm Snapshot file currently being viewed.)

When you have finished viewing the Alarm Snapshot file, you can close it and return to on-line mode by *right*-clicking outside of the Alarm Summary window, but within the boundaries of the control, and then clicking on **"Online"**. The Alarm Summary control will now resume displaying active alarms.

The Archive Collection page allows you to view the contents of archive files stored in the controller.

To access the Archive Collection page, click on the **"Historical Data"** category button, then choose the **"Archive Collection"** drop-down menu selection.



Archive Collection Parameters

Collect by Name — If the type of controller you are communicating with supports access to Archive files using the Archive file's name, you can check this box, and then enter the desired archive file's name in the **"File Name"** field. Otherwise, you must access the file through its file number.

Start from oldest record — If you would like the oldest archive file entries to appear first, select this option.

Freeze Date/Time — As you scroll through the archive file window, the first column

(which may contain date/time stamps) may disappear from the window as higher numbered columns are brought into the window. To prevent this, select this option.

File Number This is the unique ID number for the Archive File you want to view. To enter the file number, the **"Collect by Name"** check box must NOT be selected.

File Name This is the archive file name of the Archive File you want to view. To enter the archive file name, you must have checked the **"Collect by Name"** box.

Stats

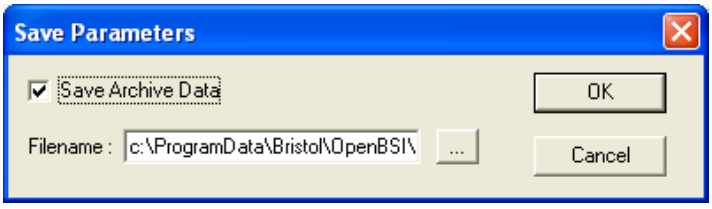
Fields Collected Displays the number of fields (columns) in the archive file which have been collected.

Records Collected Displays the number of records (rows) in the archive file which have been collected.

Push Buttons and Other Controls

Collect Data Click on this button to collect archive data based on your entries in the **"Archive Collection Parameters"** section.

Save Parameters This button calls up the Save Parameters dialog box. You can save the archive data you have viewed into a file on your PC hard disk.

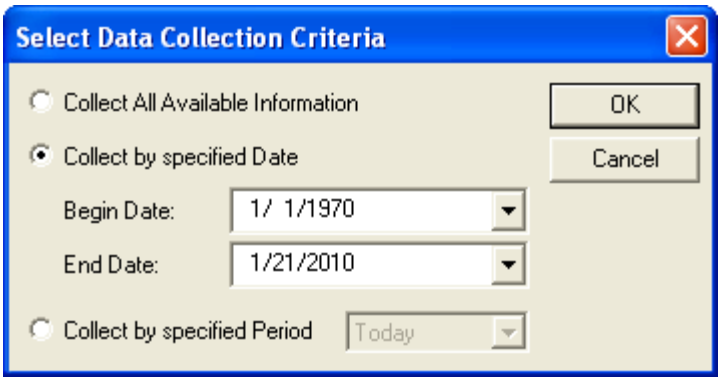


To save the archive data, check the **"Save Archive Data"** check box, then enter a filename in the **"Filename"** field, or choose the **[…]** button to locate a path and filename of a file. NOTE: This only saves a snapshot of the data you have actually viewed on the screen; it does NOT save the entire archive file. As you scroll to bring new data on the screen, it will be added to the specified file. If you want to save an entire Archive File, you should use a tool such as the OpenBSI Harvester or the Historical Log Storage control.

Click on **[OK]** when finished.

Search Criteria

This button calls up the Select Data Collection Criteria dialog box.



This dialog box allows you to filter the archive data which will be displayed.

"Collect All Available Information" specifies that all archive data from this archive file should be collected.

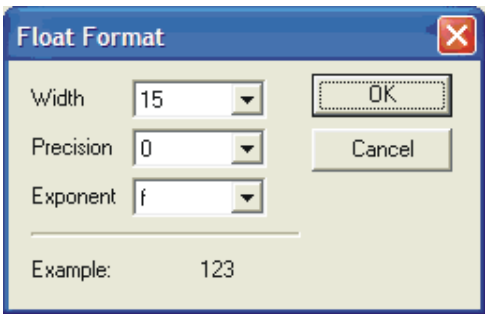
"Collect by specified Date" specifies that only archive data with timestamps between the **"Begin Date"** and **"End Date"** entries you specify should be collected.

"Collect by specified Period" specifies that only archive data collected during the period you specify should be collected. Choices are 'Today', 'This Week', or 'This Month'.

Click on **[OK]** when you have finished selecting the search criteria.

Floating Point Format

Calls up the Float Format dialog box. In this dialog box, you can specify the precision with which analog (floating point) values are displayed.



Use the **"Width"** list box to specify the total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.

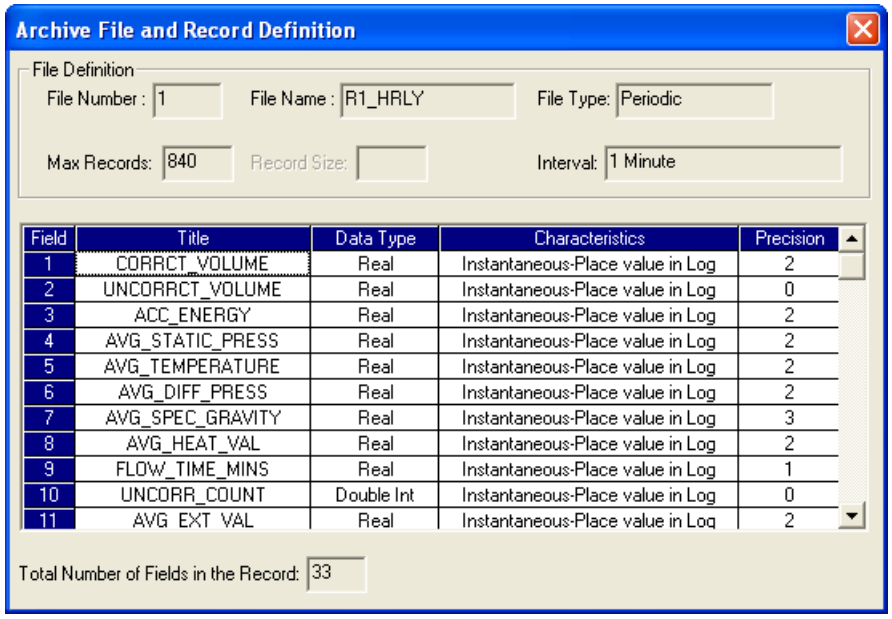
Use the **"Precision"** list box to choose the number of places to the right of the decimal point which should be displayed. This can range from 0 to 15. The default is 6.

Use the **"Exponent"** list box to choose the floating point format 'f', exponential notation 'e', or choose 'g' to have the Archive Collection control choose the best fit format.

Click on **[OK]** when finished.

File Definition

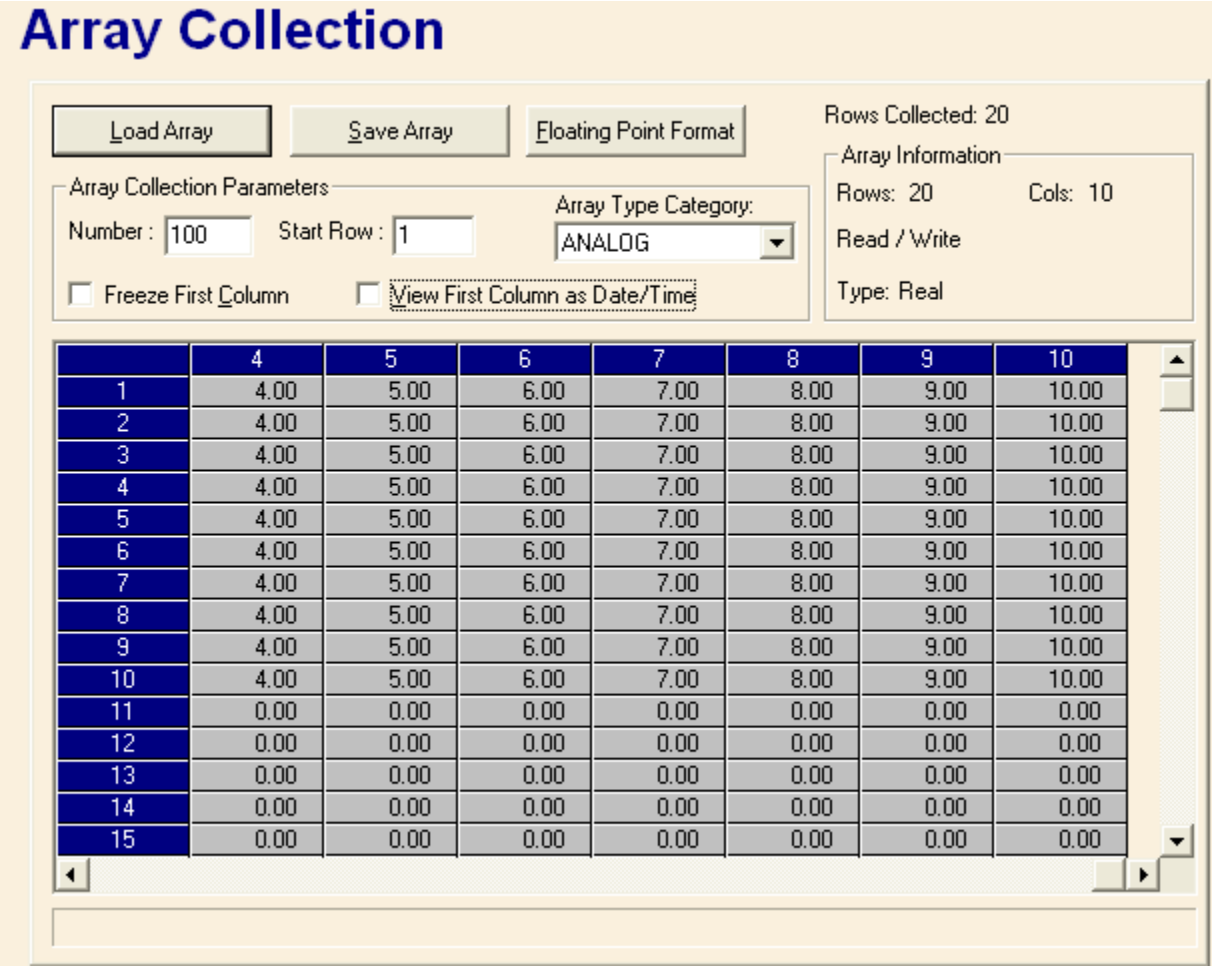
This button displays certain configuration parameters for this archive file, e.g. number of records. NOTE: These parameters CANNOT be changed here, they are only displayed.



Field	Title	Data Type	Characteristics	Precision
1	CORRCT_VOLUME	Real	Instantaneous-Place value in Log	2
2	UNCORRCT_VOLUME	Real	Instantaneous-Place value in Log	0
3	ACC_ENERGY	Real	Instantaneous-Place value in Log	2
4	AVG_STATIC_PRESS	Real	Instantaneous-Place value in Log	2
5	AVG_TEMPERATURE	Real	Instantaneous-Place value in Log	2
6	AVG_DIFF_PRESS	Real	Instantaneous-Place value in Log	2
7	AVG_SPEC_GRAVITY	Real	Instantaneous-Place value in Log	3
8	AVG_HEAT_VAL	Real	Instantaneous-Place value in Log	2
9	FLOW_TIME_MINS	Real	Instantaneous-Place value in Log	1
10	UNCORR_COUNT	Double Int	Instantaneous-Place value in Log	0
11	AVG_EXT_VAL	Real	Instantaneous-Place value in Log	2

The Array Collection Page allows you to view the contents of data arrays stored in the controller.

To access the Array Collection page, click on the **"Historical Data"** category button, then choose the **"Array Collection"** drop-down menu selection.



	4	5	6	7	8	9	10
1	4.00	5.00	6.00	7.00	8.00	9.00	10.00
2	4.00	5.00	6.00	7.00	8.00	9.00	10.00
3	4.00	5.00	6.00	7.00	8.00	9.00	10.00
4	4.00	5.00	6.00	7.00	8.00	9.00	10.00
5	4.00	5.00	6.00	7.00	8.00	9.00	10.00
6	4.00	5.00	6.00	7.00	8.00	9.00	10.00
7	4.00	5.00	6.00	7.00	8.00	9.00	10.00
8	4.00	5.00	6.00	7.00	8.00	9.00	10.00
9	4.00	5.00	6.00	7.00	8.00	9.00	10.00
10	4.00	5.00	6.00	7.00	8.00	9.00	10.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Array Collection Parameters

Number — Enter the number of the array you want to view.

Start Row — Enter the number of the first row of data in the array you want to view. This is useful in the case of very large arrays, in which you want to skip earlier rows, and start with a particular row.

Type — This list box is used to choose the type of array to be viewed (real, etc.)

Array Info

Rows This displays the total number of rows in this array.

Columns This displays the total number of columns in this array.

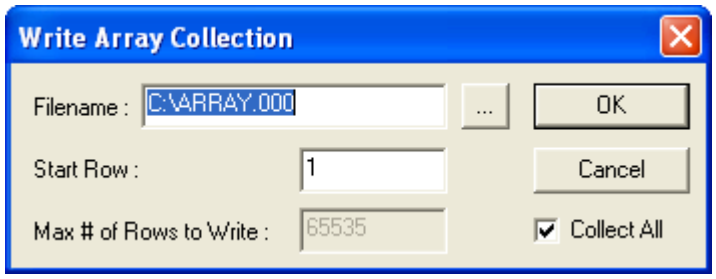
Rows Collected This displays the number of rows which have been collected for display in the current window.

Read, Read/Write This indicates the array access type. Read means this is a read-only array; read/write means it is a read/write array.

Push Buttons and Other Controls

Load Array Click on this button to view the array specified based on your entries in the **"Array Collection Parameters"** section.

Save Parameters This button calls up the Write Array Collection dialog box. You can save the array data you have viewed into a file on your PC hard disk.



To save the array data, enter a filename in the **"Filename"** field, or choose the **[…]** button to locate a path and filename of a file.

NOTE: This only saves a snapshot of the data you have actually viewed on the screen; it does NOT save the entire array. As you scroll to bring new data on the screen, it will be added to the specified file.

If you want to save the entire array, enter a **"Start Row"** of 1, and check the **"Collect All"** box.

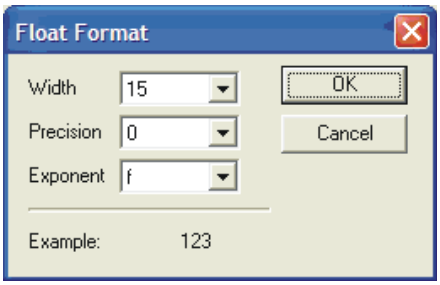
If you want to only save certain rows of the array, make sure **"Collect All"** is not selected, and choose a starting row in **"Start Row"**, and enter the total number of rows (beginning with the

starting row) that you want to store in the **"Max # of Rows to Write"** field.

Click on **[OK]** when finished.

Floating Point Format

Calls up the Float Format dialog box. In this dialog box, you can specify the precision with which analog (floating point) values are displayed.



Use the **"Width"** list box to specify the total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.

Use the **"Precision"** list box to choose the number of places to the right of the decimal point which should be displayed. This can range from 0 to 15. The default is 6.

Use the **"Exponent"** list box to choose the floating point format 'f', exponential notation 'e', or choose 'g' to have the Array Collection control choose the best fit format.

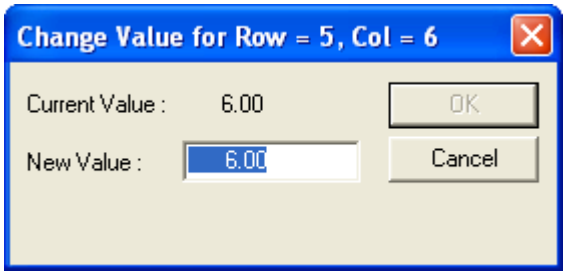
Click on **[OK]** when finished.

Freeze First Column — As you scroll through the array window, the first column (which may contain date/time stamps) may disappear from the window as higher numbered columns are brought into the window. To prevent this, select this option.

View First Column as Date / Time — Depending upon how your data array is configured, it may include a numerical total used by the system to store the date / time, instead of the Julian date / time stamp. Use this button to toggle between the two formats.

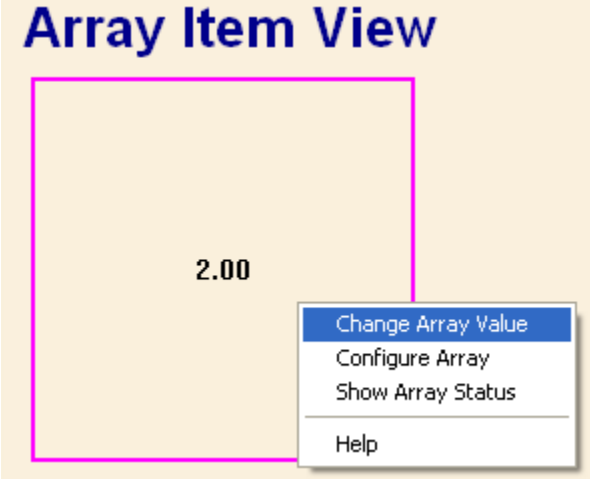
Changing Array Values

If desired, you can change the value of individual elements in the data array. To do so, click on the element you want to change, enter the new value in the Change Value dialog box, and click on **[OK].**



The Array Item View page allows the value of a specific array cell to be displayed on the screen. In order to successfully use this page, you must have already signed on to the controller which contains the array you want to display.

To access the Array Item page, click on the **"Historical Data"** category button, then choose the **"Array Item View"** drop-down menu selection.



Configuring the Array Item View Control

If a signal has not been configured, already, the Array Item View Control will present a series of question marks on the screen '?????'.

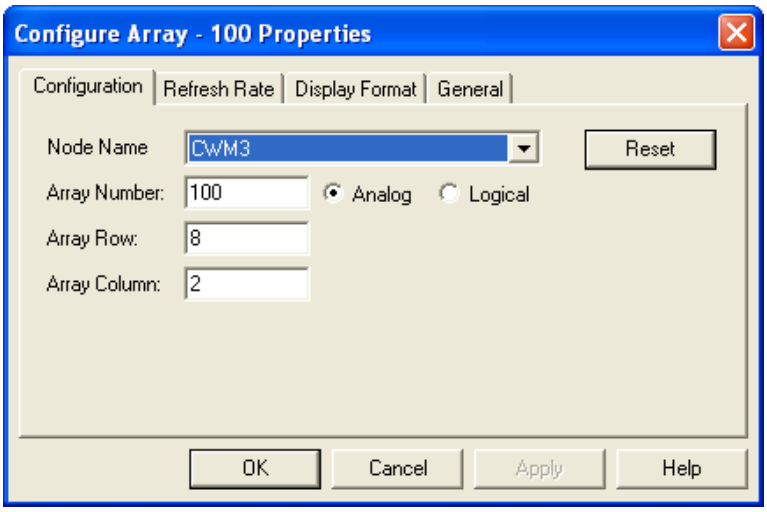
Right-click on the question marks, and choose **"Configure Array"** from the pop-up menu. The Configuration page of the Configure Array dialog box will appear:

NOTE: The Configure Array dialog box contains multiple pages. The dialog box displays the number of the array you configure in the title bar. To move between the various pages, click on the tab for that page. Clicking on **[OK]** in any of the pages will exit the dialog box, therefore, you should only click on **[OK]** when you have finished with all of the necessary pages. Clicking on **[Reset]** erases your entries, and replaces them with defaults.

Configuration Page

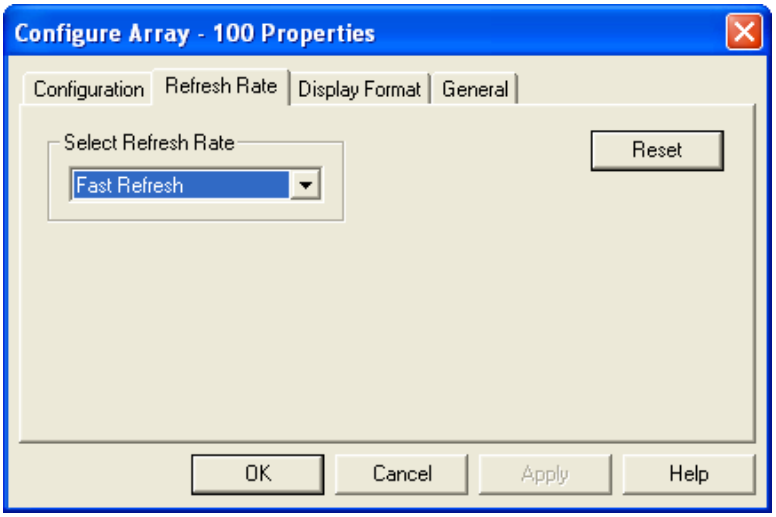
Select the controller from the **"Node Name"** list box. Then specify whether this is an **"Analog"** or **"Logical"** array.

Specify the number of the array in the **"Array Number"** field. Then, identify which cell of the array you want to display by filling in the **"Array Row"** and **"Array Column"** fields.



Refresh Rate Page

The Refresh Rate page specifies how often data will be updated on the screen for an item of array data.



No Refresh 'No Refresh' means the value will only be presented once, and will not be updated.

Slow Refresh 'Slow Refresh' means the value will be updated at the slow rate; this varies depending upon the type of controller, for Network 3000 series nodes this would be 5 seconds.

Fast Refresh 'Fast Refresh' means the value will be updated at the fast rate; this varies depending upon the type of controller. The update will be as fast as possible.

NOTE: The default refresh rates are specified in the DATASERV.INI initialization file for OpenBSI.

Display Format Page

The Display Format page allows you to specify how the array data will be presented. The appearance of the 'Properties' section will vary, somewhat, based on the display format you choose. You have a choice of three different items which can be displayed. Only ONE of the three can be selected:

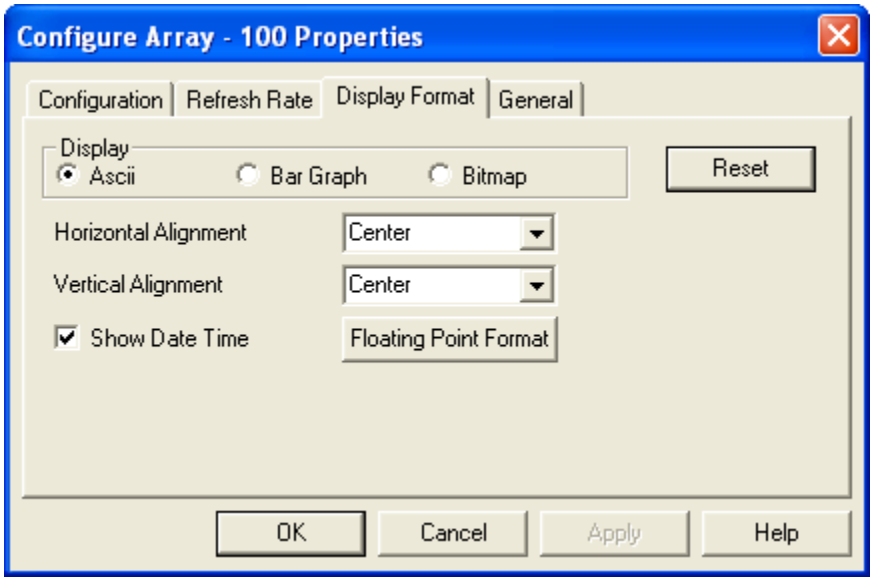
- If you want to display the array data as a numerical value, choose **"ASCII"** as the display type.
- If, you want to depict the array data as a bar graph, choose **"Bar Graph"**as the display type.
- If you want to depict the array data using a pair of bitmaps, choose **"Bitmap"**.

A description of the 'Properties' fields for each possible choice is included, below:

ASCII:

If your chosen display format is **"ASCII"** you can specify the horizontal and vertical alignment of the value on the screen. The default is 'Center' for both the horizontal and vertical alignment.

If this array value is a timestamp, you should check the **"Show Date Time"** box; otherwise the timestamp will be displayed as a numerical value.

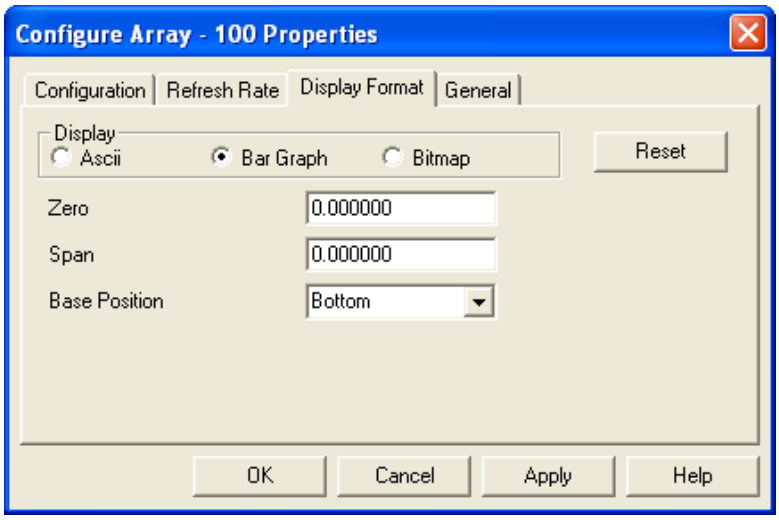


The **[Floating Point Format]** button calls up a dialog box which lets you specify the number of decimal places used to present the signal value. This dialog box is shared by many different controls. See page 91 for details.

Bar Graph

If your chosen display type is **"Bar Graph"** you must enter the **"Zero"** and **"Span"** values which define the range of the array item value.

The **"Base Position"** determines the direction in which the bar graph moves. The default is 'BOTTOM', which means the **"Zero"** is at the bottom of the graph, and the full **"Span"** is at the top of the graph. 'TOP' means the **"Zero"** is at the top of the graph, and the full **"Span"** is at the bottom of the graph. 'LEFT' means the left edge of the bar is the **"Zero"** value for the graph and the full **"Span"** is at the right edge of the bar.

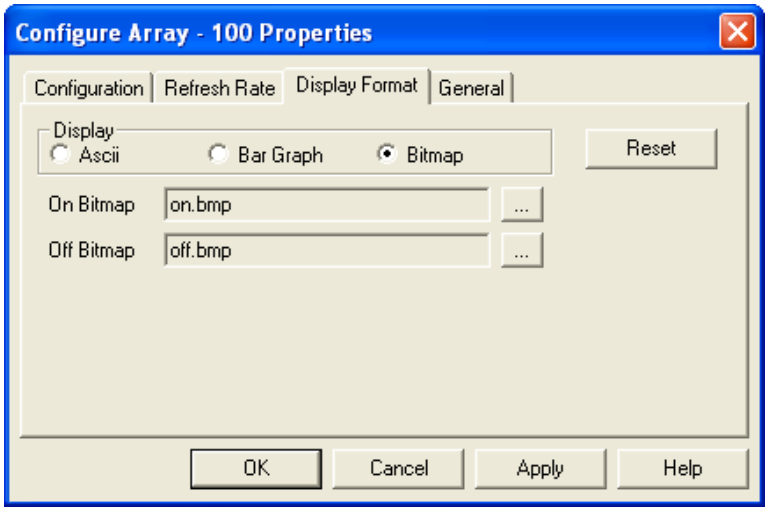


'LEFT' means the left edge of the bar is the **"Zero"** value for the graph and the full **"Span"** is at the right edge of the bar. 'RIGHT' means the right edge of the bar is the **"Zero"** value for the graph and the full **"Span"** is at the left edge.

Bitmap

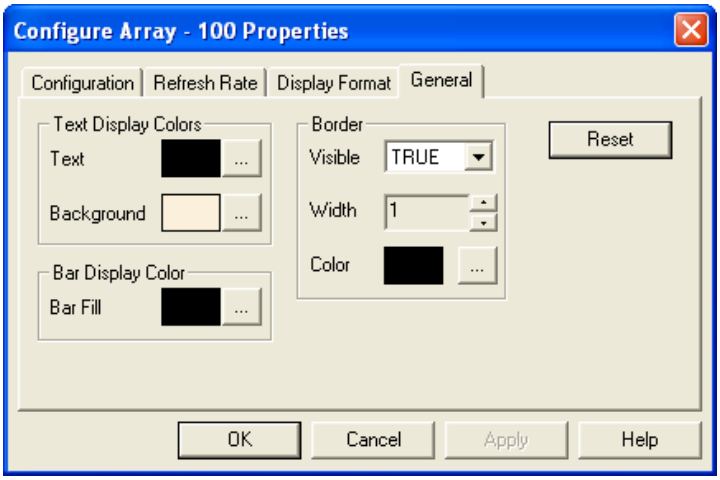
If your chosen display type is **"Bitmap"** use the **"ON Bitmap" […]** push button to specify the picture (bitmap) to be displayed when the array value is in its ON state (logical data) or its non-zero state (analog data).

Use the **"OFF Bitmap" […]** push button to specify the picture (bitmap) to be displayed when the array value is in its OFF state (logical data) or is zero (analog data).



General Page

The General page sets various colors and properties.



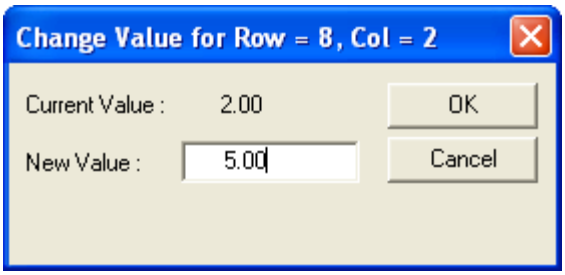
The **"Text Display Colors"** section allows you to specify the colors in which the array value will be presented. The **"Text"** color is only used when **"ASCII"** is chosen as the Display type on the Display Format page. The **"Background"** color specifies the background color of the text, or if **"Bar Graph"** is chosen as the Display type on the Display Format page, the background color behind the bar of the bar graph.

The **"Bar Fill"** specifies the color of the bar graph when the array value is in the normal range.

The Border**"Visible"** selection allows you to specify whether or not a box should appear surrounding the area where the array data will be presented. You can also specify the **"Width"** and **"Color"** of the border.

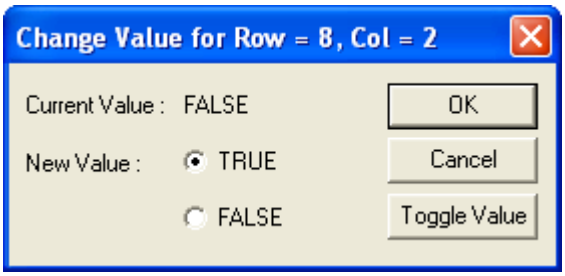
Changing the Value of an Array Item (through a dialog box)

Right-click on the value, and choose **"Change Array Value"** from the pop-up menu. The Change Value dialog box will appear.



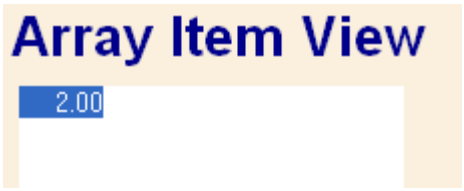
For analog values, enter the new value, in the **"New Value"** field and click on **[OK]**.

For logical signals, *either* choose the new state of the array value, *or* use the **[Toggle Value]** button to choose the new state, then click on **[OK]**.



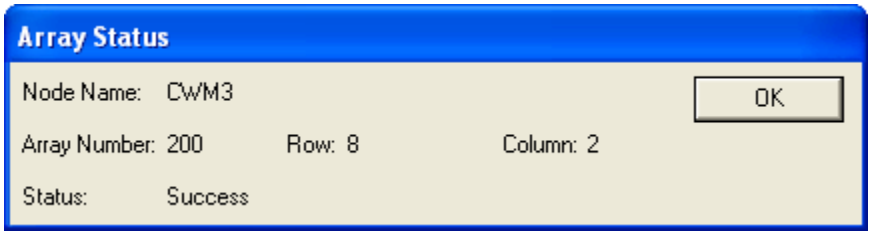
Changing the Value of an Array Item (in-line edit) (OpenBSI 5.8 and newer)

An alternative to changing the value in a dialog box is to click on the array value. This opens an in-line change box around the value. You can then type in the new value and press the **[Enter]** key on the keyboard to send the new value to the array in the RTU. To exit the in-line change box, press the escape key [**Esc]**.



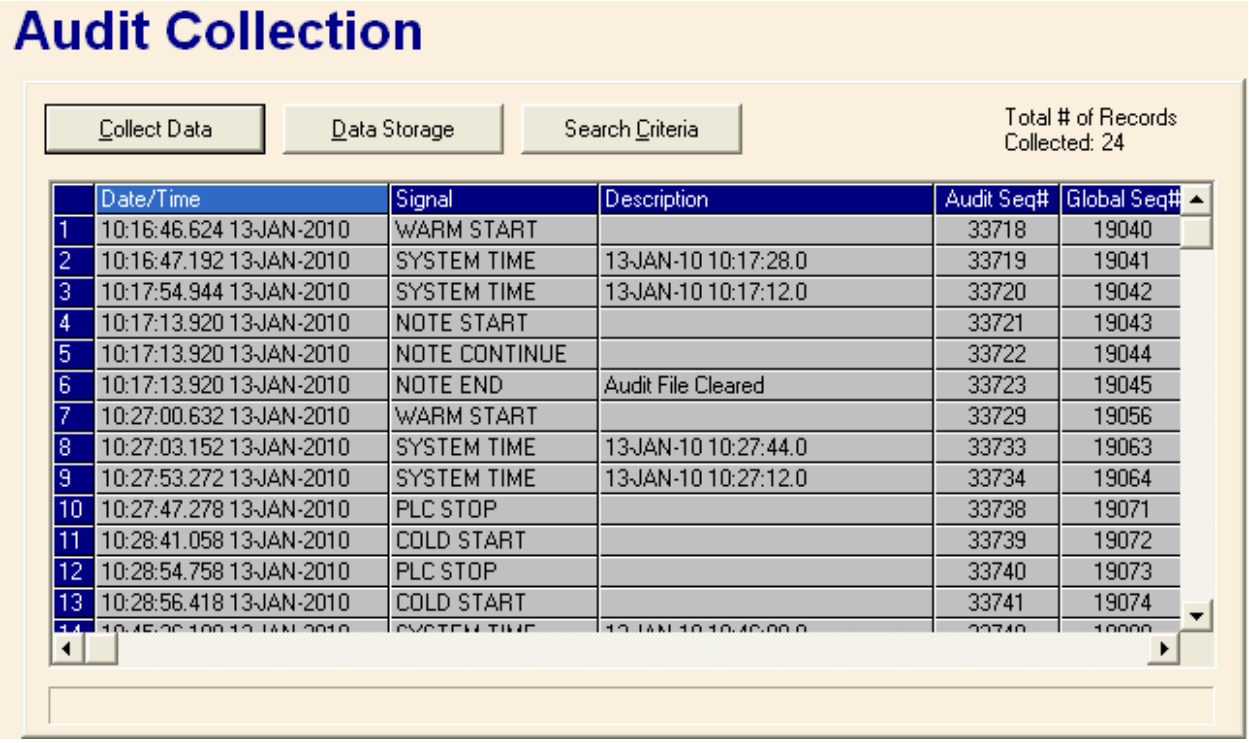
Verifying That Communications Are Possible to the Array

Right-click on the array value, and choose **"Show Array Status"** from the pop-up menu. The Array Status dialog box will appear. 'Success' will be displayed if the signal can be accessed; otherwise an error message will appear. Click on **[OK]** to exit the dialog box.



The Audit Collection Page allows you to view the contents of the alarm and event buffers in the controller.

To access the Audit Collection page, click on the **"Historical Data"** category button, then choose the **"Audit Collection"** drop-down menu selection.



	Date/Time	Signal	Description	Audit Seq#	Global Seq#
1	10:16:46.624 13-JAN-2010	WARM START		33718	19040
2	10:16:47.192 13-JAN-2010	SYSTEM TIME	13-JAN-10 10:17:28.0	33719	19041
3	10:17:54.944 13-JAN-2010	SYSTEM TIME	13-JAN-10 10:17:12.0	33720	19042
4	10:17:13.920 13-JAN-2010	NOTE START		33721	19043
5	10:17:13.920 13-JAN-2010	NOTE CONTINUE		33722	19044
6	10:17:13.920 13-JAN-2010	NOTE END	Audit File Cleared	33723	19045
7	10:27:00.632 13-JAN-2010	WARM START		33729	19056
8	10:27:03.152 13-JAN-2010	SYSTEM TIME	13-JAN-10 10:27:44.0	33733	19063
9	10:27:53.272 13-JAN-2010	SYSTEM TIME	13-JAN-10 10:27:12.0	33734	19064
10	10:27:47.278 13-JAN-2010	PLC STOP		33738	19071
11	10:28:41.058 13-JAN-2010	COLD START		33739	19072
12	10:28:54.758 13-JAN-2010	PLC STOP		33740	19073
13	10:28:56.418 13-JAN-2010	COLD START		33741	19074

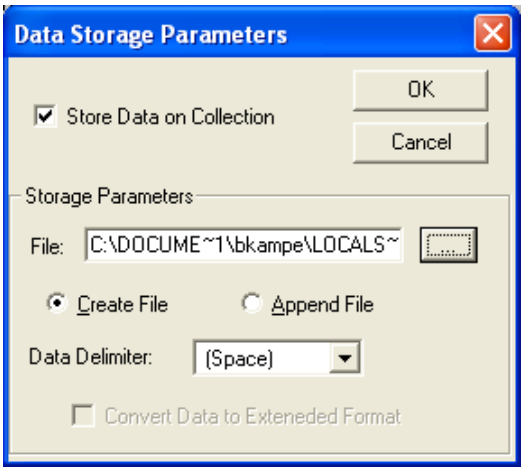
NOTE: Any audit entries which have *already* been collected from a controller via the Historical Log Storage control, or the OpenBSI Harvester, will NOT be accessible through the Audit Collection web page.

Push Buttons and Other Controls

Collect Data — Click on this button to collect audit data based on your entries in the Data Storage Parameters and Search Criteria dialog boxes.

Data Storage — Click on this button to call up the Data Storage Parameters dialog boxes.

You can save the audit data you have viewed into a file on your PC hard disk.



To save a snapshot of the audit data, first, select the **"Store Data on Collection"** option.

Storage Parameters:
Next, enter a filename in the **"File"** field, or choose the **[…]** button to specify a path and filename of the snapshot file. If you are creating an all-new file, choose **"Create File"**; if you are appending to an existing file, choose **"Append File"**.

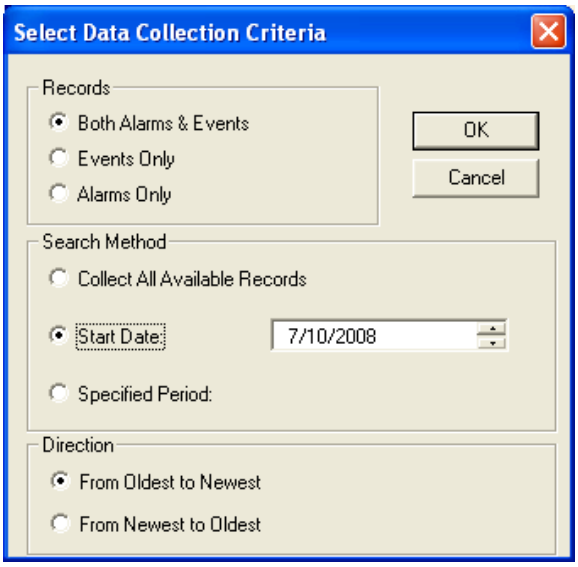
Choose a format for the way the audit data entries will be separated in the snapshot file using the **"Data Delimiter"** field. Choices include a space, comma, or semi-colon.

Selecting the **"Convert Data to Extended Format"** option stores a longer version of the audit data.

NOTE: This only saves a snapshot of the data you have actually viewed on the screen; it does NOT save the entire contents of the audit buffers. As you scroll to bring new data on the screen, it will be added to the specified file. If you want to save ALL Audit data, you should use a tool such as the OpenBSI Harvester or the Historical Log Storage control.

Click on **[OK]** when finished.

Search Criteria



This dialog box allows you to filter the audit data which will be displayed.

Records:
"Both Alarms & Events" specifies that both alarm and event data will be displayed

"Events Only" specifies that only event data will be displayed.

"Alarms Only" specifies that only alarms will be displayed.

Search Method:
"Collect All Available Records" specifies that all audit data from this alarm and event buffer should be collected.

"Start Date" specifies that only audit data with timestamps newer than the date you specify should be collected.

"Specified Period:" specifies that only audit data collected during the period you specify should be collected. Choices are 'Today', 'This Week', or 'This Month'.

Click on **[OK]** when you have finished selecting the search criteria.

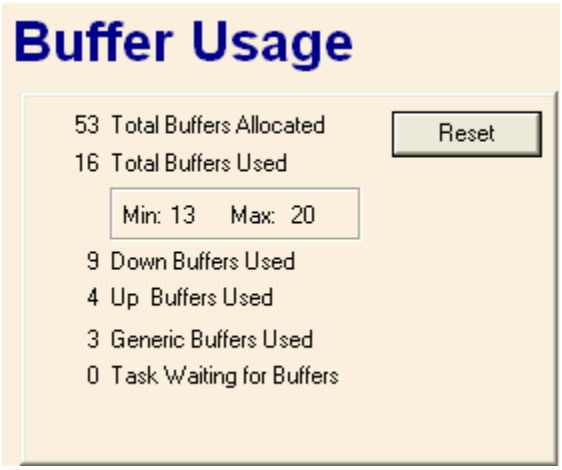
Total # of Records Collected

This displays the total number of audit records collected by the Audit Collection control for the current window.

BUFFER USAGE Web Page (Network 3000)

Communication buffers are pre-allocated portions of memory, in the Network 3000-series controller, that are used to hold communication input / output (I/O) messages. The system automatically allocates a certain number of buffers. The total number of additional buffers is defined, by the user, in the *COMMUNICATIONS section of the ACCOL source file. Information on how many communication buffers are in use, at a given time, is presented on the Buffer Usage Statistics Page.

To access the Buffer Usage Statistics page, click on the **"Statistics"** category button, then choose the **"Buffer Usage"** drop-down menu selection.



The fields on the page represent a snapshot of the current buffer usage in the controller:

Total Buffers Allocated represents the total number of communication I/O buffers in the controller. This value can only be altered by editing the *COMMUNICATIONS section of the ACCOL source file, and re-downloading the unit.

Total Buffers Used represents the total number of buffers currently in use.

Up Buffers Used, Down Buffers Used, Generic Buffers Used Each of the buffers currently being used is either an **"Up Buffer"**, a **"Down Buffer"**, or a **"Generic Buffer"**.

Min, Max The **"Min"** and **"Max"** values represent the minimum and maximum number of buffers which have been used since the last time the controller was downloaded, or the counts were reset using the **[Reset]** push button.

Tasks Waiting for Buffer represents the number of tasks which are waiting for buffers to be freed-up for their use.

Indications of Buffer Shortages

If the **"Total Buffers Used"** is *consistently* close to the **"Total Buffers Allocated"** value, there are probably not enough buffers allocated.

Similarly, if the **"Task Waiting for Buffers"** is *frequently* a non-zero value, more buffers may need to be allocated.

Edit the number of Communication I/O Buffers defined in the *****COMMUNICATIONS section of the ACCOL Load, and re-download the Network 3000 unit.

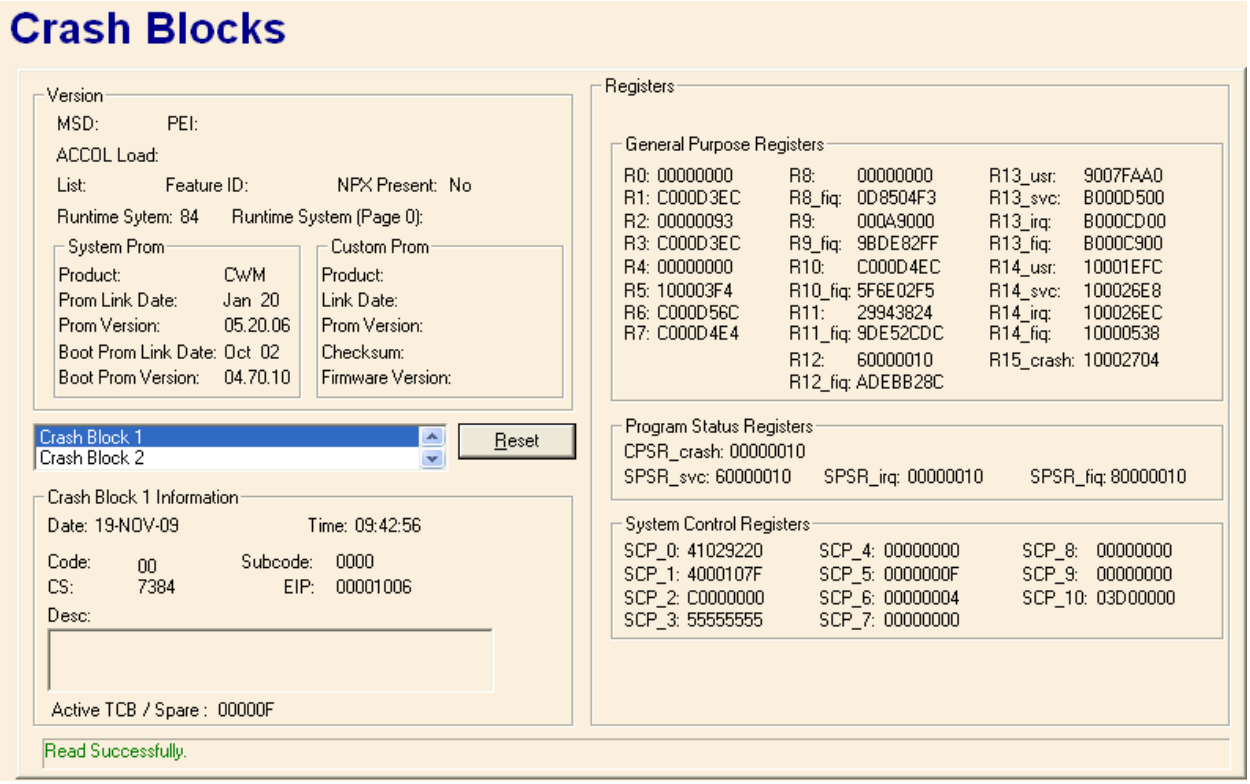
Resetting the Min, Max Counts

The count of the "Min" and "Max" buffers used can be reset to 0 by clicking on the **[Reset]** push button. You must be signed on with sufficient security privileges in order to perform the reset.

CRASH BLOCKS Web Page

A crash block is an area of memory in the controller which retains a 'snapshot' of the state of the unit immediately prior to a system failure. This information can be used by Emerson Application Support and/or Development personnel to help diagnose the cause of the failure. NOTE: Not all failures result in useable crash block information.

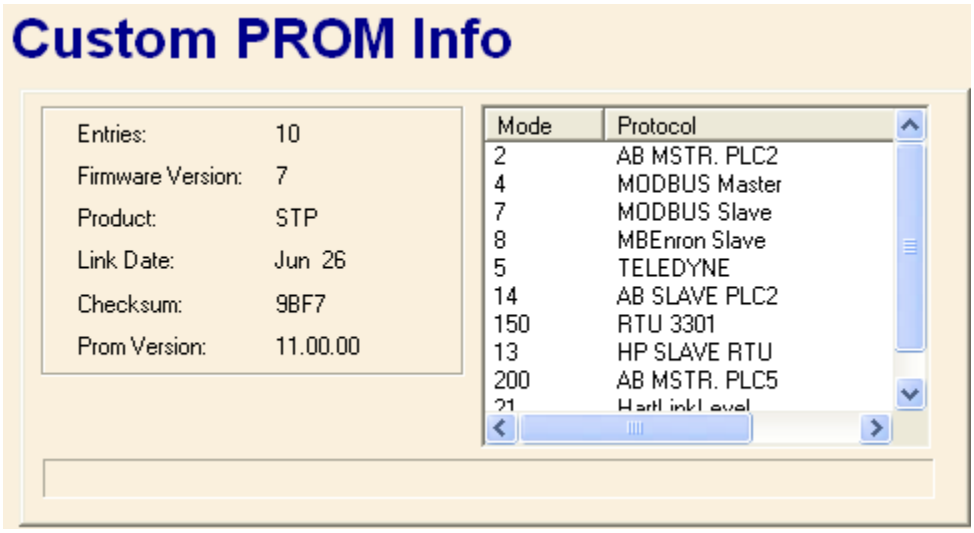
To access the Crash Block Statistics page, click on the **"Statistics"** category button, then choose the **"Crash Blocks"** drop-down menu selection.



The contents of the crash block should be recorded and provided to Emerson personnel for analysis. (You can copy the screen to the Windows™ Clipboard by the Windows™ **[Alt][Printscreen]** command, and then paste it into another document, which can then be printed.) Once this has been done, *all five* of the crash blocks can be cleared (by clicking on the **[Reset]** push button) to allow any new crash information to be captured.

The Custom PROM Statistics Page displays the contents of the Custom PROM area.

To access the Custom PROM Statistics page, click on the **"Statistics"** category button, then choose the **"Custom Prom"** drop-down menu selection.



The window displays, in abbreviated form, the name of each custom communication **"Protocol"** which is installed in the custom area of the controller. The number of protocols installed appears in the **"Entries"** field. Use the scroll bar to view entries which do not fit in the window. The **"Mode"** value is the number which must be entered in the ACCOL Custom Module to designate which protocol is to be used. Users can find the mode values for the most popular protocols, and configuration information for those protocols, in the *ACCOL II Custom Protocols Manual* (document# D4066).

"Product" is an identification string for the custom firmware, as specified in the Custom PROM area. 'PCP' is the proper identification string for custom firmware.

"Firmware Version" provides information about the type of custom firmware, and is typically one of the following values:

3	firmware is 186-based pre-version AE.00
5	firmware is 186-based, version AE.00 through AJ.10
7	firmware is 186-based AK or newer or 386EX Real Mode
8	firmware is 386EX Protected Mode

"Link Date" and **"Checksum"** are the firmware link date and data checksum value. This information can be used by Emerson personnel to verify PROM revision information.

"Prom Version" version is encoded as:

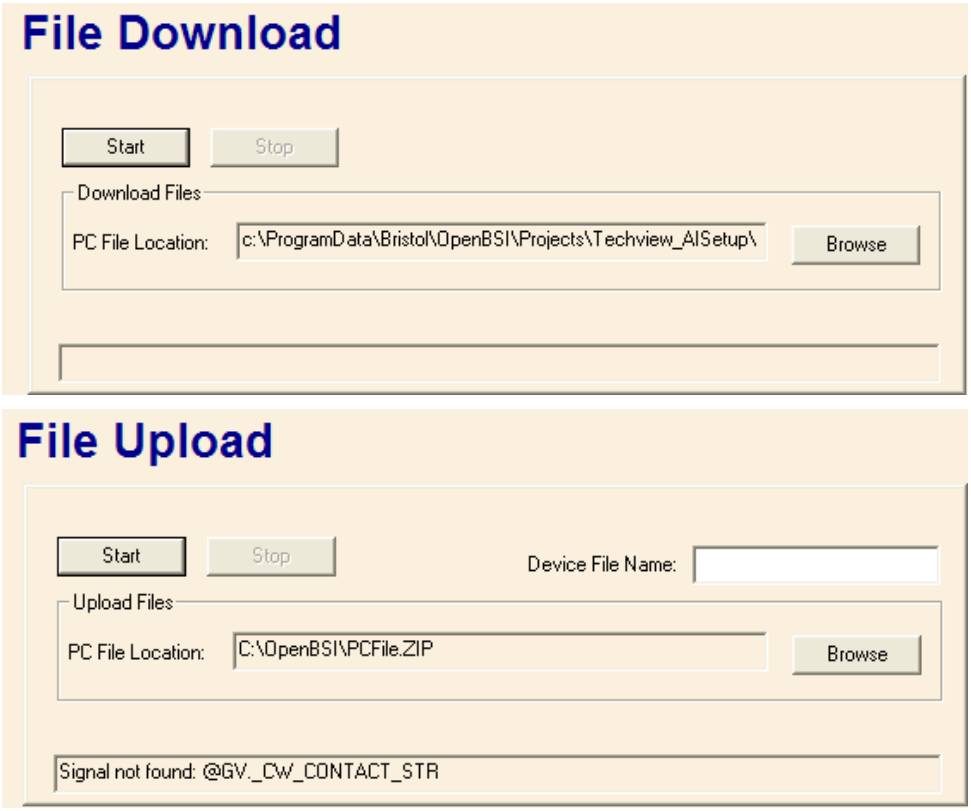
aa.bb.cc

where: 'aa' is the firmware version
'bb' is the update revision
'cc' indicates the beta revision

for example PCP00 with no updates or beta revisions would appear as 00.00.00.

The File Transfer web page allows user files (web pages, initialization files, etc.) to be transferred to and from the ControlWave's FLASH memory area. NOTE: This utility is NOT intended for downloading the ControlWave project itself, since that goes to a different area of memory.

This control is available in OpenBSI 5.6 Service Pack 1 (and newer).



To access the File Transfer web page, choose the **"Misc"** category button, and then select either **"File Upload"** or **"File Download"**.

File Download mode transfers files from the PC to the ControlWave. File Upload mode transfers files from the ControlWave to a specified location on the PC.

The fields are as follows:

PC File Location — In Download mode, this is the path, and filename of the file on the PC to be downloaded to the ControlWave. In Upload mode, this is the destination path on the PC where the file uploaded from the ControlWave will be sent. If not set, the default OpenBSI installation directory will be used as the location. The **[Browse]** button may be used to specify the location.

Device Filename *(Upload Mode ONLY)* — This is the name of the file to be transferred from the ControlWave to the PC. Only one file can be transferred at a time.

[Start] — This starts the file transfer.

[Stop] — This aborts the file transfer. If sending to the ControlWave, any partial file transferred will be automatically deleted from its destination. If sending to the PC, any partial file will remain.

IMPORTANT

Once you have initiated a file transfer you must stay on the File Transfer page *until the transfer completes successfully.* If, instead, you go to a different page before successful completion, the transfer will be automatically aborted, *and* you will be prevented from transferring that file *again* because it will be locked for 10 minutes.

Downloading a File from the PC to the ControlWave's FLASH Memory

Choose **"File Download"** from the **"Misc"** item in the menu.

Use the **[Browse]** button to specify the path and name of the file you want to download, or type it in directly in the **"PC File Location"** field.

Click on **[Start]** and the file will be sent to the ControlWave. The status bar will indicate when the transfer has completed.

Uploading a File from the ControlWave's FLASH Memory to the PC

Choose **"File Upload"** from the **"Misc"** item in the menu.

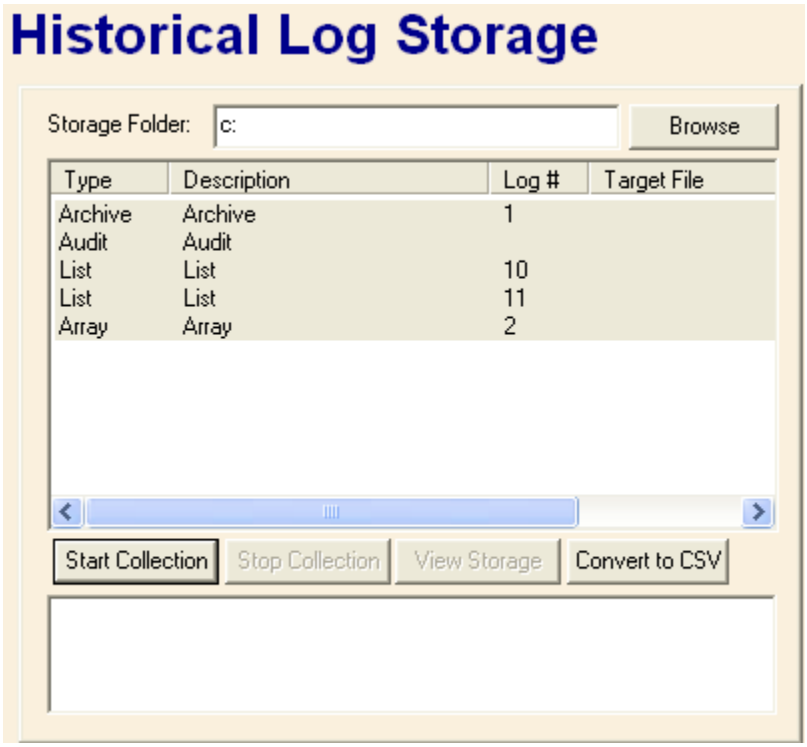
Specify the name of the file you want to transfer in the **"Device Filename"** field.

Specify the path on the PC where you want the file to be sent in the **"PC File Location"** field. Use the **[Browse]** button to do this, if desired. If nothing is specified, the default OpenBSI installation directory will be used. NOTE: If you want the destination file to have a different name, specify the new filename at the end of the path statement, e.g:

C:\MYFILES\NEWNAME.TXT

Click on **[Start]** and the file will be sent from the ControlWave to the specified directory on the PC. The status bar will indicate when the transfer has completed.

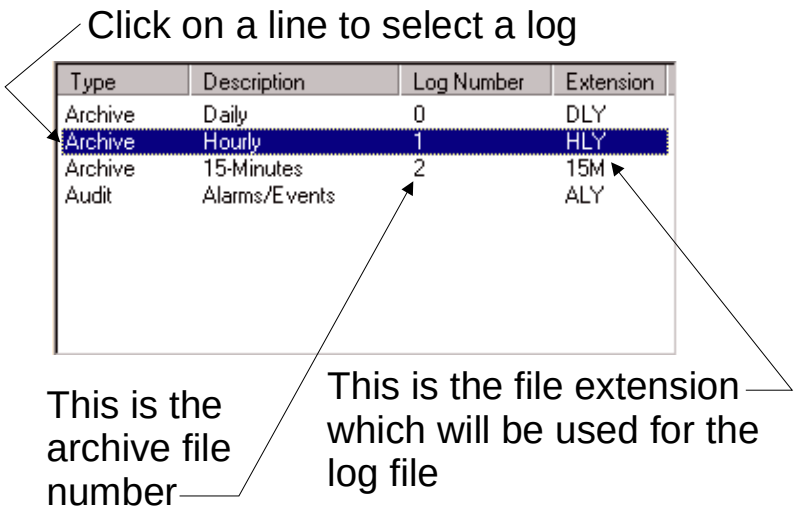
Some of our products maintain logs which may be accessed by the user. They can be stored in files on the PC using the Historical Log Storage page. Data for these logs is extracted from the Archive, Audit, and List files.



Storage Folder This is the directory on the PC where the log files will be stored. This directory must exist.

Log selection window The window in the center of the page displays details of the available data in the RTU which can be used to create log files. Included are the **"Type"** of data (audit, archive, list), a **"Description"** of the data, a **"Log Number"** which identifies the archive file number or list number (not applicable to audit), and an **"Extension"** which shows the file extension which will be used for the log file.

This window is also used to specify which logs you want to collect, view, or convert to CSV. To select a log, click on it. You can select multiple logs for collection by holding down the **[Ctrl]** key as you select. Once you have selected the logs, you can start the collection by clicking on **[Start Collection]**. The view and convert options can only be used on one log at a time.



[Start Collection] When clicked will start collections of all selected logs. This button is disabled if collections are already in progress.

[Stop Collection] When clicked, will terminate all underway collections. Note: This can result in incomplete data being stored in log files.

[View Storage] When clicked, will display the contents of the currently selected log file in a separate window on the screen.

[Convert to CSV] When clicked, will generate a comma separated variable (CSV) file, from the contents of the currently selected log file(s). To select more than one log file, hold down the **[Ctrl]** key (OpenBSI 5.8 and newer). This file will be created in the folder specified in the **"Storage Folder"** field. The filename will be the original file basename, followed by an underscore, followed by the original file extension, then (.CSV) for the extension. For example, the CSV file generated from the log file DAILY.DLY would be named DAILY_DLY.CSV.

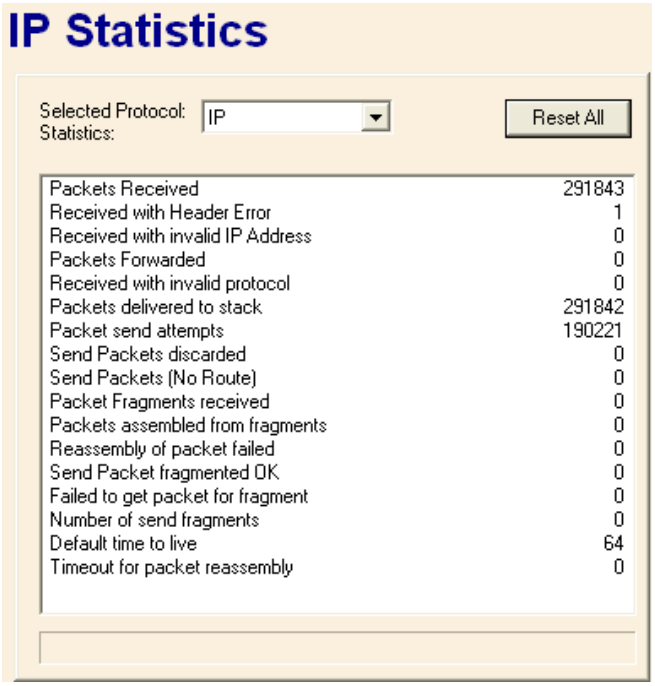
Status box This displays error and status information about collections. The most recent error/status message appears, however, you can scroll down to view previous messages.

The Internet Protocol (IP) Statistics Window displays information on IP communication activity.

NOTE

> Much of this information is not of interest to typical users. Advanced users, however, who are attempting to implement non-standard IP network configurations, may find this information useful.

To access the IP Statistics page, click on the **"Statistics"** category button, then choose the **"IP Statistics"** drop-down menu selection.



IP statistics are divided up into categories because IP communications involves several different inter-related communication protocols. All of these protocols must function together properly in order for data to be transferred through the network intact.

The **"Selected Protocol"** list box allows you to choose which portion of the IP statistics you would like to access.

Users can reset all Internet Protocol statistics by clicking on the **[Reset All]** push button.

The various categories of statistics are described, below:

IP Statistics Decription

IP stands for Internet Protocol; it is a specification which defines the most basic packets of information transported in a TCP/IP network. IP provides addressing and packet routing mechanisms. The statistics maintained are as follows:

Packets Received	Number of data packets received from the Data Link. Invalid packets and packets destined for 'pass-thru' are included in this count. Not counted are packets discarded by the data link due to checksums or length checks performed at that layer.
Received with Header Error	Discards due to header errors: these include invalid IP data length, invalid IP version, and IP header checksum errors.
Received with invalid IP Address	Number of times which a packet was received which is not for the current RTU and the current RTU does not know how to route the packet to the contained address.
Packets Forwarded	Number of receive packets not for the current RTU, which have been forwarded to another machine for processing.
Received with invalid protocol	Discards due to an unrecognized protocol code in the header.
Packets delivered to stack	Number of packets properly received, and sent on to be processed by a protocol handler.
Packet send attempts	Number of packets which the IP layer has been asked to send. This includes discards. Note: This count does not include send attempts which are discarded by UDP or other higher-level layers.
Send Packets discarded	Packets discarded due to badly formed packets (length errors, bad destination, etc.)
Send Packets (No Route)	Packets discarded because there is no known route to the destination address. Also, increments the `discarded' statistic.
Packet Fragments received	A data link does not support sending of an entire large packet in one section; therefore, the source machine has broken it into fragments. This is the total number of these fragments received.
Packets assembled from fragments	The number of packets which have been put together from fragments.
Reassembly of packet	The number of times a packet has been discarded due to not

failed	receiving all of its fragments within the allotted time.
Send Packet fragmented OK	A data link on the current RTU cannot support sending of full-size packets. This is the number of packets which have been split into fragments for sending.
Failed to get packet for fragment	The number of times which a packet has been discarded due to the IP layer not being able to allocate a send packet for the fragment.
Number of send fragments	The number of packet fragments which have been sent out a data-link.
Default time to live	The number of "hops" (sends over data links) a packet can have before it is discarded. This is not a statistic; but, a display of the default value used by this RTU.
Timeout for packet reassembly	The time between the arrival of the first fragment of a packet to when all fragments must arrive. If the fragments all do not arrive, the fragments are discarded. This is not a statistic; but, a display of the default value used by this RTU.

ICMP Statistics Description

ICMP is a low-level IP protocol which performs notification of communication events. The statistics defined are:

Packets received	Protocol packets received. This includes discards.
Receive packets discarded	Packets discarded due to length error, ICMP checksum, or invalid request type.
Destination unreachable packet received	Notifications of the following: A packet was sent from this RTU to a destination (either IP address or Protocol Port) which could not be reached.
Time to Live Exceeded packet received	Notifications of the following: A packet was sent from this RTU which was transmitted over too many data links on the way to its destination (and was discarded).
Redirect packets received	Requests received to modify internal routing information based on a routing machine determining a better path for a previously sent message.
Echo Request packets	PING requests received. PING is a program which sends a simple

received	ECHO packet to another IP machine to determine if communications is possible.
Echo Reply packets received	Number of replies received to `PING' requests made by this RTU.
Time stamp request packet received	Requests for timestamp received. Note: This is not the RTU time-synch request.
Packets Sent	Total ICMP packets sent. Does not include discards.
Out packets discarded	Message discarded due to not being able to allocate send packet.
Destination unreachable packets sent	A packet could not be delivered or forwarded. A notification was sent back to the originator of the packet.
Time to live exceeded packets sent	When forwarding a packet, its time-to-live count was exhausted; a notification was sent back to the originator of the packet.
Redirect packets sent	When forwarding a packet out the same line it was received over, a notification is sent back to the originating node that a better path is available.
Echo request packets sent	PING requests sent by this RTU.
Echo reply packets sent	PING responses sent by this RTU.

UDP Statistics Description

UDP stands for User Datagram Protocol - A method of transmitting user data from one Protocol Port on a computer to another (either on the same or another computer). UDP provides a checksum on the data sent; but, does not guarantee delivery. UDP is connectionless, there is no need to establish a connection before sending data.

Statistics available are as follows:

Packets received	Packets received and processed. Does not include discards.
Port not present	A packet was discarded because it was destined for an undefined Port. An ICMP error packet is returned.
Receive packet discarded	Packets discarded due to header or checksum errors.

Packets sent	Packets sent to IP layer for processing.

IBP Statistics Description

IBP stands for Internet Bristol Protocol. It is the protocol used inside UDP packets to perform reliable data communication between OpenBSI workstations and ControlWave/Network 3000 IP RTUs. This communication method allows both detection and retry of missed packets, and proper ordering of requests. In addition, multiple request (sub-packets) can be combined into a single network packet.

The statistics defined are:

No connection available	Number of packets dropped due to not being able to find an inactive connection.
Total discards based on mult ACK tmo	The number of packets discarded due to exceeding the ACK timeout limit.
ACK timeouts	The number of times that an ACK for a packet was not received within the timeout
Discarded by purge operations	Packets discarded due to connection inactivity.
Discarded due to quota	Packets discarded at the RTU due to a shortage of available network packets.
Discarded due to sequence #	Packets discarded due to sequence #s which were not in the proper range. Note: This can include packets which were re-sent due to timeout, but already received.
Invalid form or packet	Packets received with an invalid header length.
Invalid identifier for sub-packet	Number of sub-packets detected with invalid type code.
Packets received out-of-order	The number of packets which were received out of sequence (and thus loaded onto the out-of-order list). Items are removed from the list when the preceding packets are received.
Packets accepted	The number of IBP packets accepted for processing.

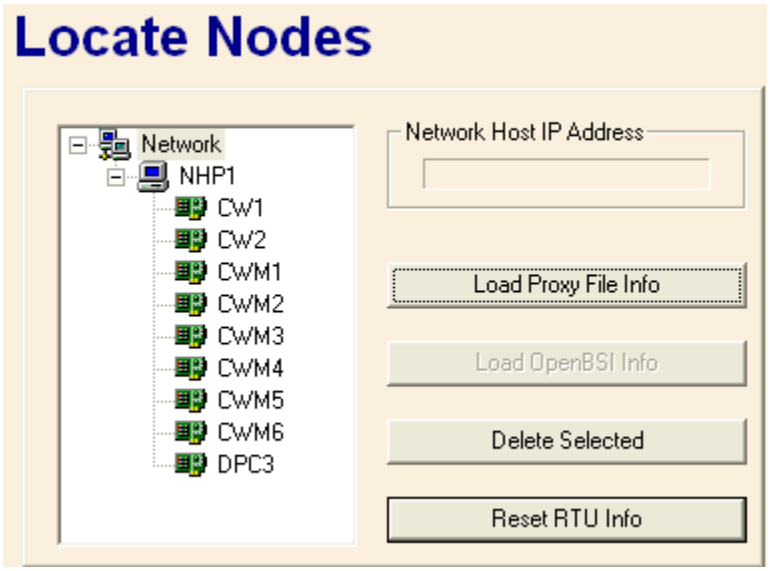
Packets sent	The number of IBP packets given to the IP stack for send.
Restart connection	Number of times an IBP packet was received which indicated that the local sequence number should be reset.
Errors attempting to send packet	The number of times the IP stack issued an error while trying to send a packet
Sub-packets received	Number of IBP sub-packets received from IP stack.
Sub-packets sent	Number of IBP sub-packets given to IP stack for sending.

The Locator page is used to identify which controller(s) you would like to communicate with, from this PC. The controllers can be identified either by loading proxy files, or by loading OpenBSI information. In either case, they will be displayed as icons in a tree on the left side of the page.

IMPORTANT:

You will need to run the Node Locator page the first time you use the web pages to identify nodes. After that, you should not need to use it again, unless you are communicating with different nodes, or if your network configuration has changed.

The Node Locator Page is accessible by clicking on the **"Security"** category button and choosing the **"Locate Nodes"** drop-down menu selection.



Network Host Address Displays the primary IP address of the Network Host PC (NHP). Click on the icon for the Network Host PC in the tree at left, if the address is not visible.

[Load Proxy File Info] Loads all proxy files (.PXY) from the specified directory. These files identify those controllers (RTUs) to which this PC should have access. NOTE: Proxy files are created through the **"Proxy Export"** feature in NetView. See *'Creating and Exporting A Proxy File'* in Chapter 6 of the *OpenBSI Utilities Manual* (document# D5081).

[Load OpenBSI Info] Loads information about accessible controllers from the OpenBSI NETDEF database. NOTE: This button is inaccessible if a proxy file

has already been loaded.

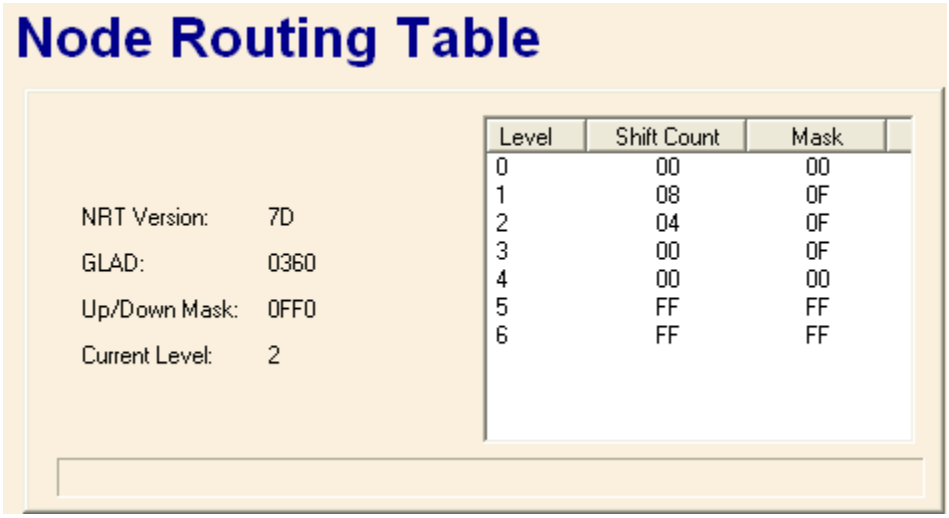
[Delete Selected] Deletes the currently selected RTU from the tree, thereby eliminating access to that RTU from this PC.

[Reset RTU Info] Deletes the entire tree. This allows you to re-define the accessible RTUs, either by loading a proxy file, or loading OpenBSI information.

NODE ROUTING TABLE Web Page

The Node Routing Table is generated by the NetView software, and specifies the addresses of each node in the network. This information is essential for network communications to function. Each node in the network holds a *unique* copy of the Node Routing Table, which has been specifically modified for that node. The Node Routing Table Window presents details on the Node Routing Table residing in this controller including the current node's global address, version number, as well as up/down routing information for global messages.

To access the Node Routing Table Statistics Page, click on the **"Statistics"** category button, then choose the **"NRT Table"** drop-down menu selection.

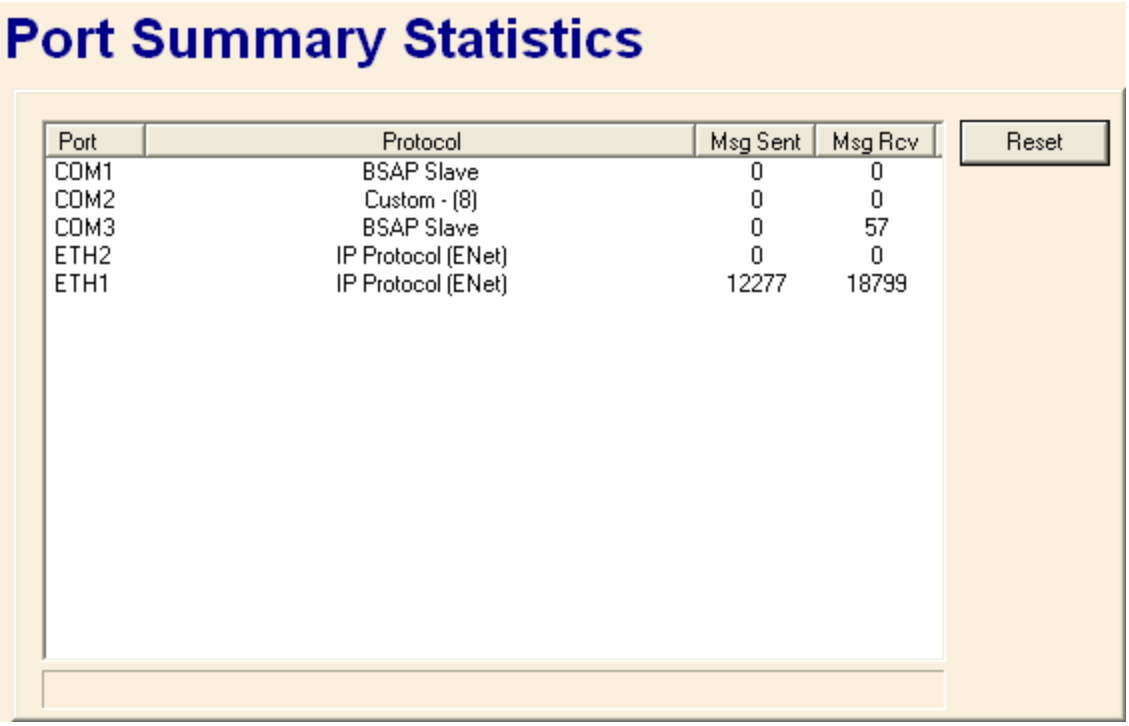


The global address of this controller (node) appears in the **"GLAD"** field. The level of the node appears in the **"Current Level"** field.

The remaining information in the window may be useful to Emerson support personnel when trouble-shooting network communication problems at a particular customer site.

Information on the communication ports of a controller can be viewed on the Port Summary Statistics page.

To access the Port Summary Statistics page click on the **"Statistics"** category button, then choose the **"Port Summary"** drop-down menu selection.



The fields are described, below:

Port is the name of the port. If a particular port has not been configured, it will not appear on the Port Summary Statistics page. NOTE: For ControlWave-series users, unused ports will be displayed as 'BSAP Slave', since unused ports default to that type.

Protocol is the type of port configuration. For ports configured with a Custom Protocol, the name 'Custom' appears, followed by the mode value for the particular type of custom protocol.[2]

MsgSent is the total number of messages sent out through this port. Note: Not all port types maintain this statistic. If they do not, the value will remain 0.

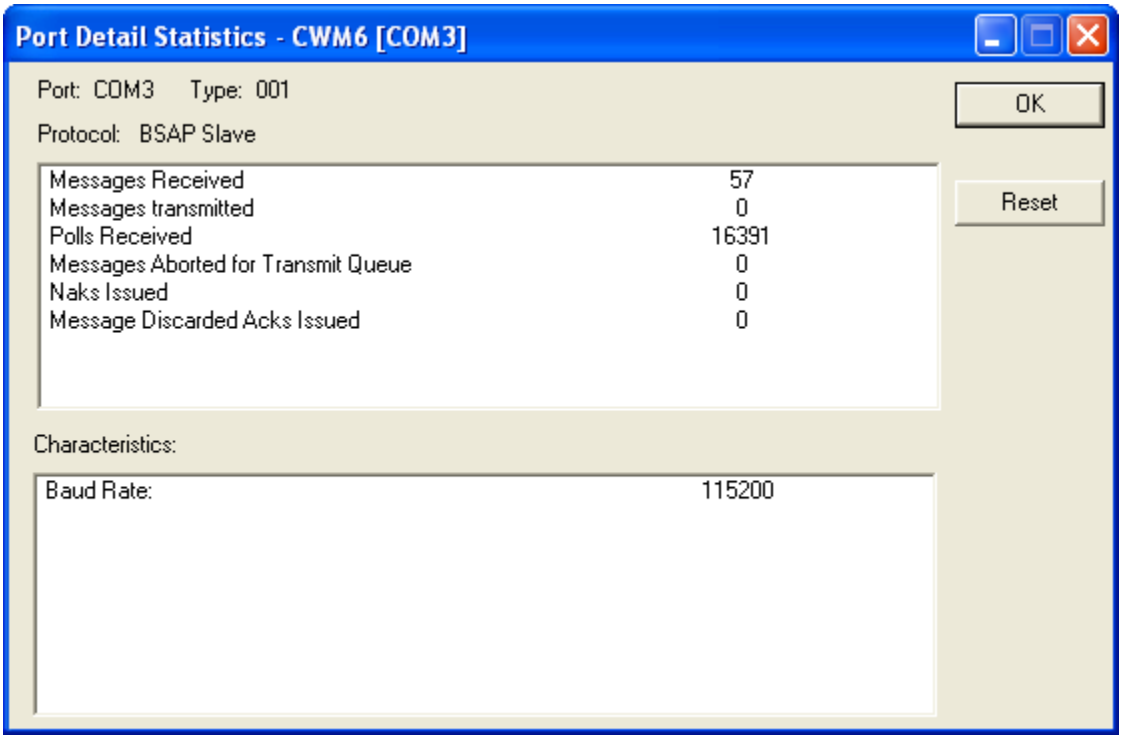
[2] *Information on the most popular custom protocols, used with Network 3000-series controllers, and the mode values which identify them, are included in the ACCOL II Custom Protocols Manual (document# D4066). Currently, ControlWave only supports MODBUS custom protocols.*

MsgRcv is the total number of messages received through this port. Note: Not all port types maintain this statistic. If they do not, the value will remain 0.

The send and receive counts can be reset, for *all* ports in the page, by clicking on the **[Reset]** push button.

Port Detail Statistics

For more detailed information on a particular port, click on the name of the port, and the Port Detail Statistics Window will appear. Information appearing in this window varies depending upon what type of port is defined.



The Port Detail Statistics Window is divided into two parts. The top part of the window displays statistics about the messages going through the port. These statistics may be reset by clicking on the **[Reset]** push button (users must be signed on with sufficient security to perform the reset.) The bottom part of the window displays port characteristics, such as the baud rate.

The pages that follow describe the statistics maintained for the various port types.

Master/Expanded Addressing Master Port Statistics

Messages Sent	is the total number of messages sent out through this port.
Messages Received	is the total number of messages received through this port.
Response Timeouts	A message or poll was sent to a slave but no response was received within the timeout period. The #NDARRAY should be used to eliminate polling of any nonexistent nodes.
Consecutive Response Timeouts	This problem is similar to response timeouts (see above), however, if this number is larger than the number of slaves on the line, the line has failed.
NAKs Received	A message from the master node is NAKed if it must be discarded because a buffer is not available. Increasing the number of buffers may help. Ensure that the master's poll period is set appropriately for maximum throughput.
CRC Errors	A message was received with correct framing; however, it failed the CRC check and was discarded. Usually this is due to noise on the line. The message is not lost; the slave will repeat the message because it did not receive an ACK.
Message Discarded ACKs Received	A message which is received by the slave but whose ACK is not received by the master is retransmitted by the master. The slave discards the duplicate message and advises the master by issuing an 'ACK, msg discarded' response. This is commonly caused by noise on the line.
Protocol Errors, Overflow Errors, Serial Number Errors	These are miscellaneous problems usually caused by noise on the line.

Slave, Pseudo-Slave, Pseudo-Slave with Alarms, Serial CFE or VSAT Slave Port Statistics

Messages Sent	is the total number of messages sent out through this port.
Messages Received	is the total number of messages received through this port.
Messages Aborted for Transmit Queue	When the poll period for the slave line expires without reception of a poll message from the master, messages queued to the slave port are

discarded in order to free up buffers. The slave port's poll period setting should be 1.5 to 3 times the poll period for the master node on this line to avoid unnecessary errors of this type.

NAKS issued — A message from the master node is NAKed if it must be discarded because a buffer is not available. Increasing the number of buffers may help. Ensure that the master's poll period is set appropriately for maximum throughput.

Message Discarded ACKs Issued — A message which is received by the slave but whose ACK is not received by the master is retransmitted by the master. The slave discards the duplicate message and advises the master by issuing an 'ACK, msg discarded' response. This is commonly caused by noise on the line.

RIOR Master Port Statistics (Network 3000 ONLY)

RIO 3331 Remote I/O Racks (RIOR) may only be used with DPC 3330, DPC 3335, or RTU 3310 units which support synchronous communication, and have AD or newer firmware.

When viewing the Port Detail Statistics for an RIOR Master Port, a 'transaction' refers to a message sequence in which the RIOR master node transmits a data request (or other message) to the RIO 3331, for which it expects an appropriate response. A 'transaction attempt' typically consists of 1 to 3 tries to complete a single transaction. A 'successful completion' means the transaction attempt was successful - i.e. the RIOR master node was responded to with a valid data message. In cases where the number of transaction attempts is greater than the number of successful completions, then errors have occurred which will be reflected in the error counts on the display.

The other statistics are:

CRC Events — A message received has failed its CRC check. This is usually due to noise on the line. **"CRC Events"** indicates the number of tries that have been made to complete a single message transaction which failed on the CRC check. Up to three tries will be made to complete a single transaction for any particular message. If three CRC events occur for any particular message, the CRC Errors count will be increased by 1, and the Transaction Attempts count will also be increased by 1.

CRC Errors — The CRC check has failed on three occasions to complete a transaction (for a particular message) and so that message must be discarded. Usually this occurs because of noise on the line. When an

error such as this occurs, the transaction attempt was unsuccessful.

Overflow Events Data is arriving at the RIOR master node faster than it can be processed. **"Overflow Events"** indicates the number of tries made to complete a message transaction which failed because of an overflow. If three such events occur for a message, the Overflow Errors count will be increased by 1, and the Transaction Attempts count will also be increased by 1.

Overflow Errors An Overflow Event has occurred on three tries to complete a particular message transaction. That message must be discarded. This condition is almost always caused by a hardware failure in the RIOR master node. When an error such as this occurs, the transaction attempt was unsuccessful.

Timeout Events The RIOR master node has transmitted a data request (or other message) to an RIO 3331 node, and a response has not been received within the specified timeout period. This can be caused by many things - the 3331 node is not powered on, the communication line has been unplugged, noise on the line, etc. Depending upon the number of Timeout Events which occur for any particular message, a Timeout Error may be generated, which causes the Transaction Attempts count to increase by 1, and the Timeout Errors count to be increased by 1.

Timeout Errors Unsuccessful tries (referred to as Timeout Events) have been made to complete a message transaction with an RIO 3331 Remote I/O Rack. This can be caused by many things - the 3331 node is not powered on, the communication line has been unplugged, noise on the line, etc. The number of Timeout Events which generate a Timeout Error varies depending on the circumstances. If an RIO 3331 node has been unresponsive on several previous transaction attempts, a single Timeout Event at the start of a transaction will cause the transaction attempt to be abandoned without retries. This will cause a Timeout Error to be generated, and increase the Timeout Errors count by 1, and the Transaction Attempts count by 1. If the RIO 3331 node is only occasionally unresponsive, retries will be made after a single Timeout Event, and up to three Timeout Events can occur before the Timeout Errors count will be increased and the Transaction Attempts count increased. In either case, a timeout error indicates the transaction attempt was not completed successfully.

RIOR Slave Port Statistics (Network 3000 ONLY)

RIO 3331 Remote I/O Racks (RIOR) may only be used with DPC 3330, DPC 3335, or RTU 3310 units which support synchronous communication, and have AD or newer firmware.

RIOR Slave Port statistics are only available when the OpenBSI Workstation is plugged in locally to Port A of the RIO 3331.

The statistics are:

Configuration Messages Received	Typically this number should be 1, since configuration messages are only sent when communication starts up.
Data Request Messages Received	This is a normal communication transaction.
Set Output Messages Received	This is a normal communication transaction for RIO 3331 nodes having outputs.
Set PDM Data Messages Received	This is a normal communication transaction for RIO 3331 nodes having pulse duration modulation inputs.
Set PDO Pulses Messages Received	This is a normal communication transaction for RIO 3331 nodes having pulse duration outputs.
Messages with Communications Errors	A message could not be successfully received due to a CRC check failure (typically caused by noise on the line), an overflow error or some other unspecified problem.
Invalid Messages	An unrecognizable message was received and discarded. This could be caused by noise on the line.
Heartbeat Timeouts	The RIO 3331 has not heard the once per second heartbeat (data request) from the 3310/3330/3335 RIOR master node.

LIU Master Port Statistics (Network 3000 – CFE 3385 / UCS 3380 ONLY)

NOTE: LIU Master Ports are ONLY available on the Auxiliary Ports (Aux 1 and Aux 2) of a CFE 3385 or UCS 3380 unit.

Timeouts due to No Ack	A message was sent to a slave but the automatic ACK generated by the LIU hardware was not received. The target node may have lost power or been disconnected from the network.
Consecutive Response Timeouts	This problem is similar to the preceding case, however, if this number is larger than the number of slaves on the line, the line has failed.
Poll Timeout Errors	The target node generated an automatic hardware ACK on reception of a poll (i.e., it exists and is powered up), but it did not generate a response. Target node probably requires a download.
Frame Check Errors	A message was received which failed a consistency check which uses a CRC code. Usually this is due to a loose connector or noise on the line (arc welder nearby, etc.).
Transmit Underruns	A data byte was not available quickly enough. Typically this is a problem with the LIU hardware.
Transmit Link 1 Errors	The LIU found a difference between the information it was attempting to transmit and the information it actually transmitted. Typically this is a problem with the LIU or modem hardware.
Transmit Link 2 Errors	This is similar to the preceding error, but affects the alternate link's hardware in a system which uses dual redundant communications hardware.
Receive Overruns	A data byte was received before the hardware was ready to accept it. Since all data transfers are via DMA, this is a hardware error.
Receive Aborts	A message abort request was detected. Usually this is due to noise; BSAP devices never deliberately transmit an abort.
Receive Buffer Overflows	More data was received than would fit in the buffer supplied. Usually this is due to noise on the line.
Receive Link 1 Errors	Carrier detect was present on link 2 but not on link 1. This will cause failover of communications to the alternate link. This may be a bad transmitter (this error will then occur at all nodes with which it communicates) or due to a bad receiver.

Receive Link 2 Errors Carrier detect was present on link 1 but not on link 2. This is similar to the preceding error, but for the alternate link.

LIU Slave Port Statistics (Network 3000 – CFE 3385, UCS 3380 ONLY)

NOTE: LIU Slave Ports are ONLY available on the Auxiliary Ports (Aux 1 and Aux 2) of a CFE 3385 or UCS 3380 unit.

Messages Aborted for Transmit Queue When the poll period for the slave line expires without reception of a poll message from the master, messages queued to the slave port are discarded in order to free up buffers. The slave port's poll period setting should be 1.5 to 3 times the poll period for the master node on this line to avoid errors of this type.

Transmit Underruns A data byte was not available quickly enough. Typically this is a problem with the LIU hardware.

No Acknowledges A message was sent to a slave but was not acknowledged by the slave. The target node may be off line or it may be out of buffers.

Transmit Link 1 Errors The LIU found a difference between the information it was attempting to transmit and the information it actually transmitted. Typically this is a problem with the LIU or modem hardware.

Transmit Link 2 Errors This is similar to the preceding error, but affects the alternate link's hardware in a system which uses dual redundant communications hardware.

Receive Frame Check Errors A message was received which failed a consistency check which uses a CRC code. Usually this is due to a loose connector or noise on the line (arc welder nearby, etc.).

Receive Overruns A data byte was received before the hardware was ready to accept it. Since all data transfers are via DMA, this is a hardware error.

Receive Aborts A message abort request was detected. Usually this is due to noise; BSAP devices never deliberately transmit an abort.

Receive Buffer Overflows More data was received than would fit in the buffer supplied. Usually this is due to noise on the line.

Receive Link 1 Errors Carrier detect was present on link 2 but not on link 1. This will

cause failover of communications to the alternate link. This may be a bad transmitter (this error will then occur at all nodes with which it communicates) or due to a bad receiver.

Receive Link 2 Errors Carrier detect was present on link 1 but not on link 2. This is similar to the preceding error, but for the alternate link.

Communications Front End (CFE) AUX Port Statistics – (Network 3000 – UCS 3380, CFE 3385 ONLY)

NOTE: The CFE statistics described, below, are strictly for CFE 3385 or UCS 3380 units which use the IEEE-488 interface. Statistics for serial CFEs are identical to those for BSAP Slave units.

NAKs issued A message from the Console node is NAKed if it must be discarded because a buffer is unavailable. Increasing the number of buffers may help. Unfortunately, the VAX systems can overrun the CFE. The VAX knows it did not get through and will retry; nothing is lost.

Message Discarded ACKs Issued A message which is received by the CFE but whose ACK is not received by the Console is retransmitted by the Console. When the CFE detects this, it discards the duplicate message and advises the Console by issuing an 'ACK, msg discarded' response. This can be caused by noise on the line.

CRC Errors An incorrect CRC was received from the Console. The message was discarded and therefore retried from the Console. This is probably caused by noise or a temporarily unplugged cable.

Timeout Hardware Resets The CFE has not received any message from the Console for 3 poll periods. All upgoing messages are flushed (like 'aborted for transmit queue') and the IEEE hardware is reset. This is probably caused by the cable being unplugged or the VAX Communications Task going down.

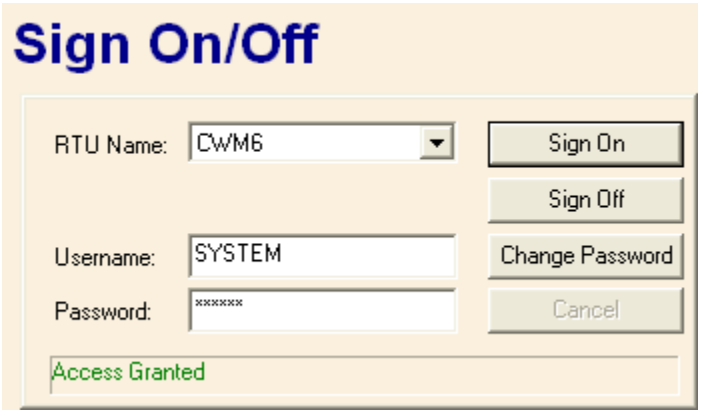
Out of Memory The IEEE multibus interface is having a memory access problem. This is a serious hardware problem with the CFE system or the IEEE 488 card.

Internet Protocol (IP) Port Statistics

The Internet Protocol (IP) Port statistics are described, below. These statistics are maintained for each IP communications port (either serial or Ethernet). In addition, RTU-wide statistics are maintained for IP communications (see the IP Statistics Page, later in this section).

Packets Received (Unicast)	The number of non-broadcast packets received at the current port. NOTE: Packets received will count both invalid packets (see RCV errors, below), and packets being routed through the RTU, in addition to packets intended for this RTU.
Packets Sent (Unicast)	The number of non-broadcast packets sent from the current port.
Characters Received	The number of characters received at the port. This includes all protocol characters, and characters included within badly formed packets.
Packets Received (Multi)	The number of broadcast packets received. These are mostly found on LANs such as Ethernet, and are information requests, such as locating a specific IP address.
Rcv Messages Discarded	The number of packets discarded due to frame-check errors (such as invalid check-sums).
Rcv Messages (Errors)	A catch-all error for invalid frames, which have been discarded.
Rcv Messages (Bad Protocol)	The number of messages, with valid format and checksums, which have been discarded due to containing an invalid protocol.
Characters Transmitted	The number of characters sent out the port. This includes all protocol characters.
Packets Sent (Multi)	The number of broadcast packets sent. These are mostly found on LANs such as Ethernet.
Send Errors	A catch-all error for invalid send frames. These frames are discarded. Errors in this type include attempting to send a packet which is too large.

The Security Sign-on Page is accessible by clicking on the **"Security"** category button and choosing the **"Sign On"** drop-down menu selection.



Selecting a Controller and Signing on

Choose the controller you want to sign-on to from the **"RTU Name"** list box. Next, enter the **"Password"** (or **"Username"** *and* **"Password"** depending upon how security was configured for this controller[3]). Finally, click on the **[Sign On]** push button. If the sign-on attempt is successful, the message 'Access Granted' will appear in the message area, in green text. Failure messages appear in red text, and informational messages appear in black text.

NOTE: To sign on to a 3808 transmitter, only enter the password; the 3808 does not support usernames, so leave the username blank.

[3] *ControlWave requires both a username and password. Most other controllers require only a password (username is left blank).*

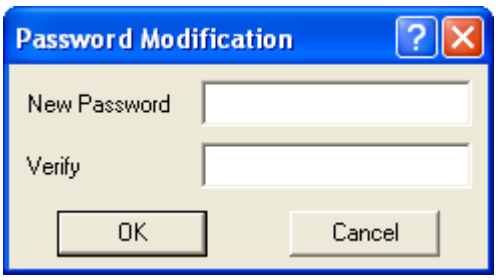
Signing Off from the Controller

Click on the **[Sign Off]** push button.

> IMPORTANT
>
> When terminating web page activity, you should always sign-off. Signing off is necessary to terminate the service 'Bservice' which facilitates web page communications.
>
> If you attempt to shut down OpenBSI (or Internet Explorer) without signing off *first*, Bservice will continue to run until a 15 minute timeout has expired, and will prevent a full shutdown of OpenBSI during that period.

Changing the Password (ControlWave-series ONLY)

To change the password for the currently signed on user, click on the **[Change Password]** push button. The Password Modification dialog box will appear. Enter the new password in the **"New Password"** field, then enter it in the **"Verify"** field, and click on **[OK]**.



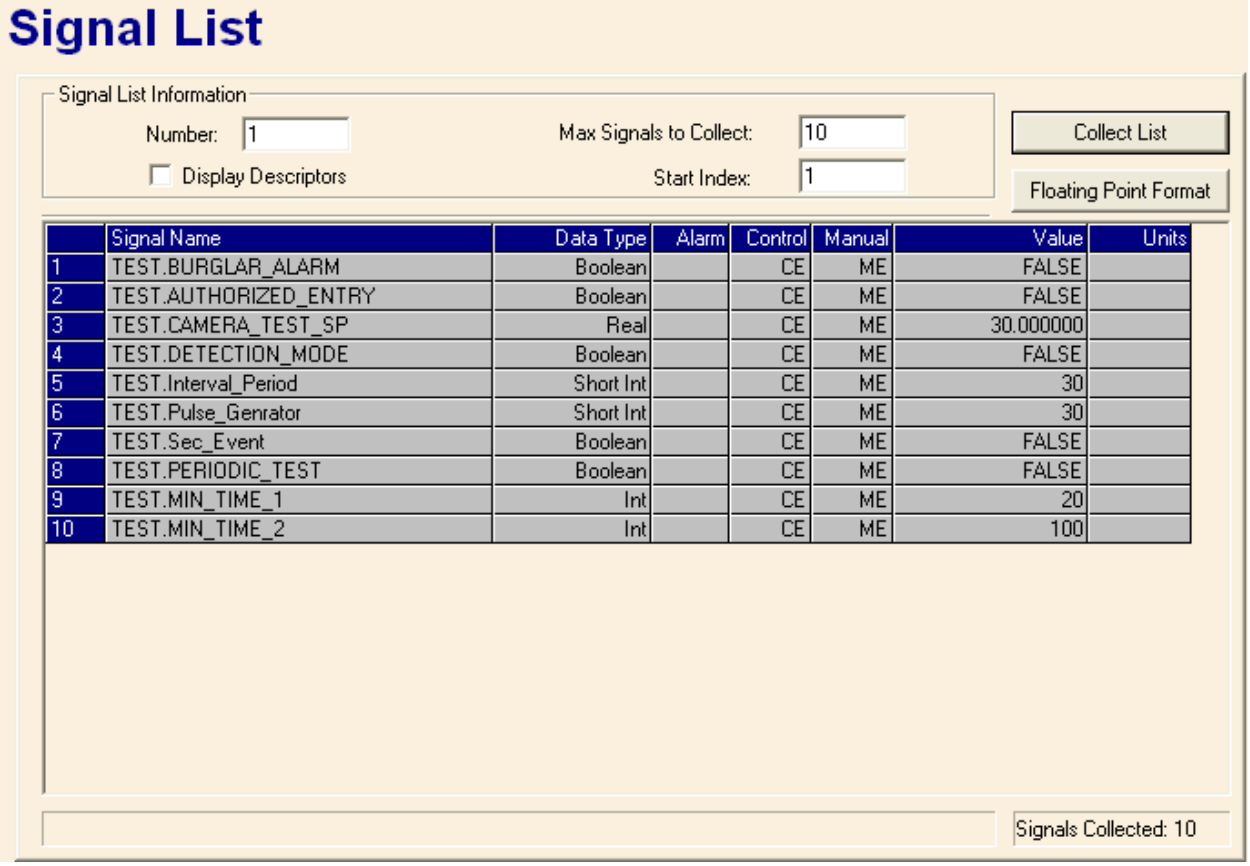
NOTE: If you attempt to change the password of a Network 3000-series controller, it will be rejected as an 'Illegal request'.

Timeout Occurs If There is No Data Request Within 15 Minutes

If, after logging on with Web_BSI, you do NOT issue a new data request within 15 minutes, i.e., the web pages sit idle, you will be logged off, automatically.

The Signal List page allows the contents of a signal list to be displayed on the screen. In order to successfully use this page, you must have already signed on to the controller which contains the signal list you want to display.

To access the Signal List page, click on the **"Signal Data"** category button, then choose the **"Signal List"** drop-down menu selection.



The Signal List page will display the signal name, data type, and current value for signals in the list. Use the scroll bar to bring additional elements of the list into view, if necessary.

Signal List Information:

Number — Enter the number of the signal list you want to view, here.

Start Index — If it is a long signal list, and you want to start viewing from a location other than the beginning, enter the number of the first element of the list you want to view, here.

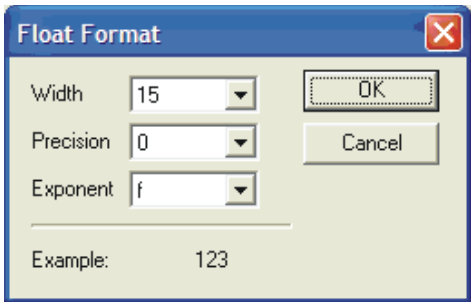
Max Signals to Collect — If you don't want to view the entire list, enter the maximum number of signals you want to display, here.

Display Descriptors If you check this, signal descriptive text, if it exists, appears in the **Signal Name** field, instead of the signal name. Once you check this, the control re-collects the list. (OpenBSI 5.8 and newer.)

Push Buttons:

Collect List Click here to have the web page retrieve the signal list from the controller.

Floating Point Format Calls up the Float Format dialog box. In this dialog box, you can specify the precision with which analog (floating point) values from the list are displayed.



Use the **"Width"** list box to specify the total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.

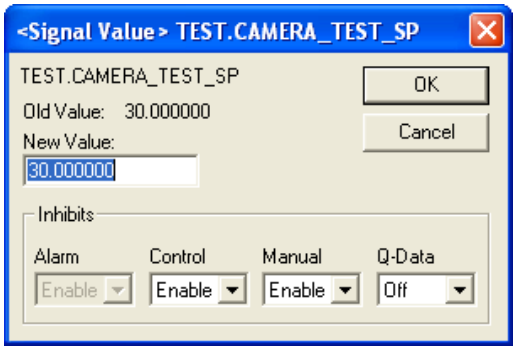
Use the **"Precision"** list box to choose the number of places to the right of the decimal point which should be displayed. This can range from 0 to 15. The default is 6.

Use the **"Exponent"** list box to choose the floating point format 'f', exponential notation 'e', or choose 'g' to have the Signal List control choose the best fit format.

Click on **[OK]** when finished.

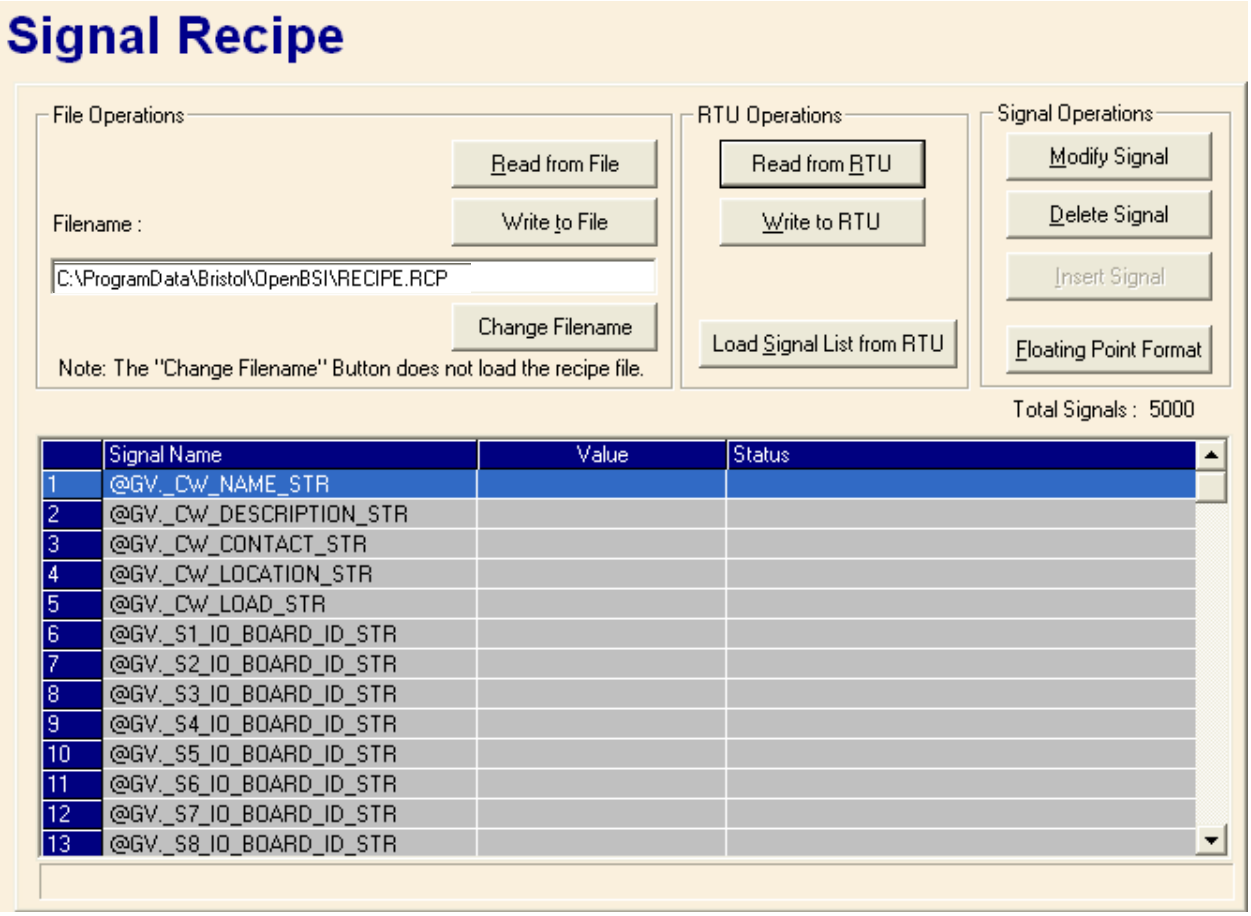
Changing A Signal's Value

If desired, you can change the value of individual signals in the list. To do this, either double-click directly on the value, or right-click anywhere on the line for a particular element and choose **"Change Signal Value"** from the pop-up menu. Enter the new value in the dialog box, and click on **[OK]**.



The Recipe page allows the user to save a set of initial values for a collection of signals in a file at the PC. The values to be saved in the recipe file can be loaded from the control strategy running in the controller, or the user can type them in manually. This user can open this file at a later time, and load the values to the signals in the RTU. This can be useful, for example, if various tuning parameters for the optimum performance of a process have been determined, and they should be saved for later use.

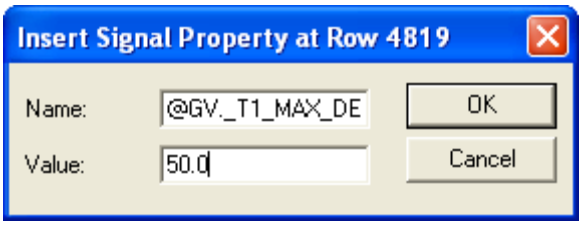
To access the Recipe page, click on the **"Signal Data"** category button, then choose the **"Signal Recipe"** drop-down menu selection.



Creating a Recipe

To create a recipe you must first specify the signals you want included in the recipe. One way to do this is to *either* right-click on the grid in the center of the Recipe page and choose **"Insert Signal"** from the pop-up menu, *or* click on the **[Insert Signal]** button.

In either case, a dialog box will appear in which you can enter the signal's name. If desired, you can also enter a value for the signal. Click on **[OK]** when you are finished. Repeat for each additional signal. The maximum number of signals in a recipe varies depending on the OpenBSI version. See the table, below for details:

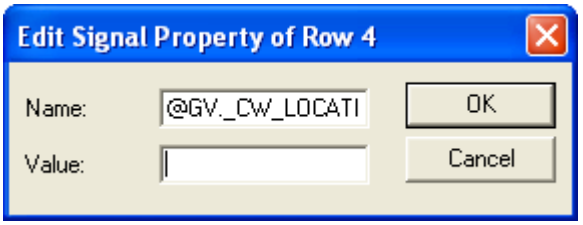


OpenBSI Version	Maximum number signals allowed in a recipe
5.4 and earlier	500
5.5	1000
5.6 and newer	5000
5.8 Service Pack 1 and newer	10,000

If you don't enter values for the signal when you insert the signal, you can load the current values in the running control strategy for all signals in the recipe by clicking on **[Read From RTU]**.

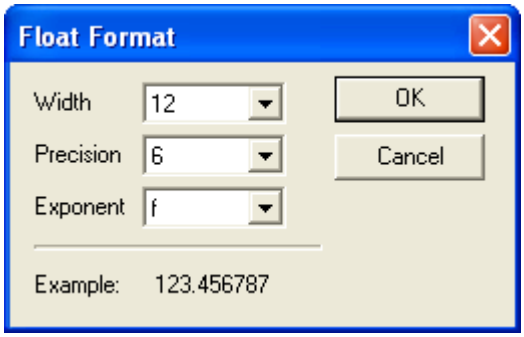
Another way to specify signals for the recipe is to load the signals from a signal list. To do this, click on the **[Load Signal List from RTU]** button, then specify the number of the signal list and click on **[OK]**.

If, as you are creating the recipe, you decide you want to change a signal or value for a particular entry, *either* right click on the entry and choose **"Edit Signal"** from the pop-up menu, *or* click on the **[Modify Signal]** button. Make changes, as desired, and click on **[OK]**.



If you want to delete a signal in the recipe, *either* right-click on the line for that signal and choose **"Delete Signal"** from the pop-up menu, *or* click on the **[Delete Signal]** button. You will be prompted to confirm the signal deletion.

Changing the Floating Point Format of Values



If desired, you can change the format in which values are displayed in the recipe window by clicking on the **[Floating Point Format]** button.

Use the **"Width"** list box to specify the total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 0 to 15. The default is 12.

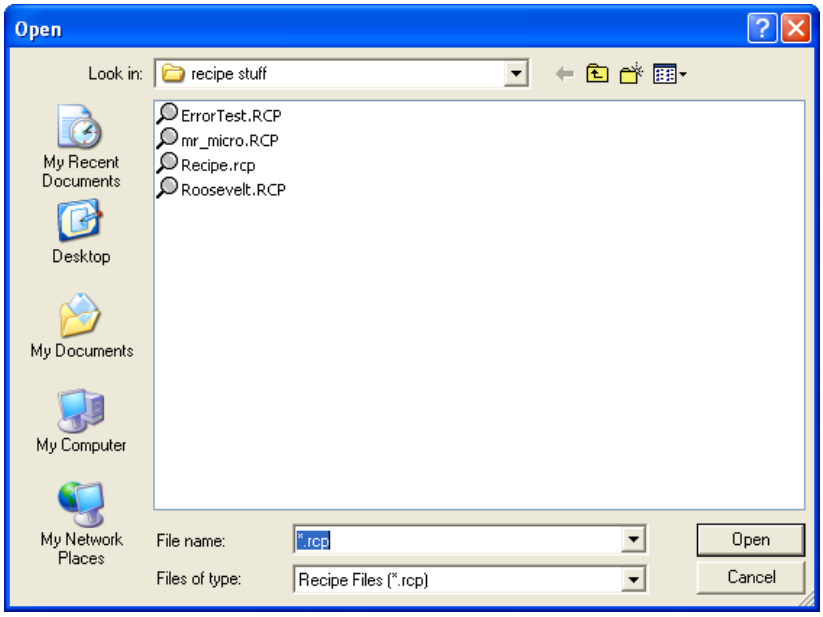
Use the **"Precision"** list box to choose the number of places to the right of the decimal point which should be displayed. This can range from 0 to 15. The default is 6.

Use the **"Exponent"** list box to choose the floating point format 'f', exponential notation 'e', or choose 'g' to have the Recipe control choose the best fit format.

Click on **[OK]** when finished.

Saving the Recipe

Type the path and filename for your recipe file in the **"Filename"** field or click **[Change Filename]** to select a recipe from the default recipe area. Standard recipe files are stored with a file extension of (.RCP). You also have the option of saving the file as a .CFG file (which is intended for use with Coastal Flow Measurement Inc. Flow-Cal™ software.)



Once you have specified the path and filename, click on the **[Write to File]** button; answer **Yes** to the confirmation prompt, and the control writes the recipe to the specified file.

Recalling a Saved Recipe, and Sending Its Values to the Controller

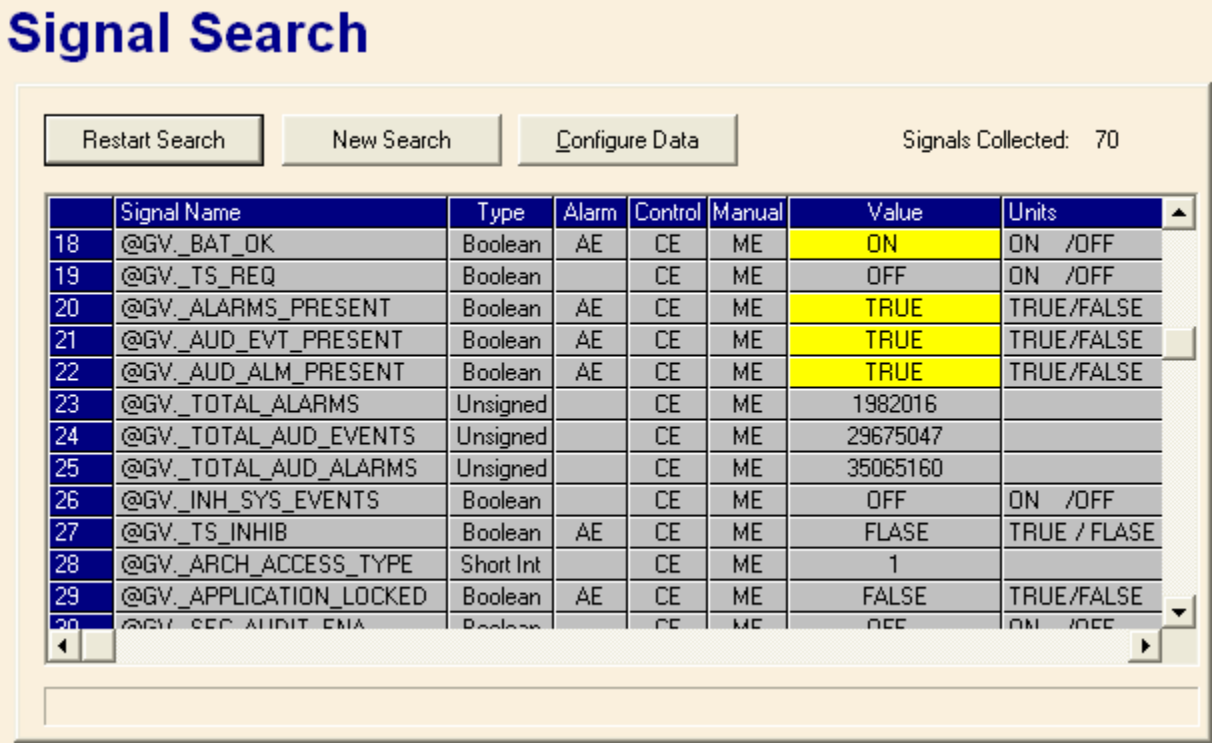
To recall a recipe which you have saved previously, use the **[Browse]** button to locate it, or type its path and filename in directly in the **"Filename"** field. Finally, click on the **[Read From File]** button, and the recipe will be brought into the web page.

Once the recipe file has been loaded, you can send the recipe values to the controller by clicking on the **[Write to RTU]** button; answer **Yes** to the confirmation prompt, and the control writes the recipe to the RTU.

The Signal Search page allows you to search for all signals which satisfy a user-defined criteria. In order to successfully use this page, you must have already signed on to the controller which contains the signals you want to display.

To access the Signal Search page, click on the **"Signal Data"** category button, then choose the **"Signal Search"** drop-down menu selection.

The main Signal Search window will appear. The push buttons in the window are described, below. In addition, the Search Criteria dialog box will appear (described later in this section).



NOTES:

- If you are communicating with a TeleFlow/TeleRTU series unit (3530-xx), you can search for a specific signal, or all signals, but other search criteria are not supported.

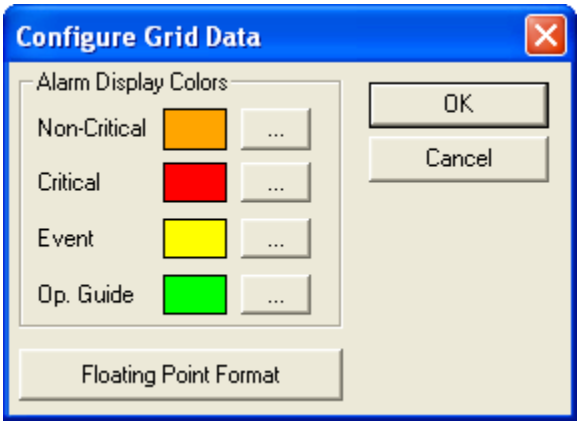
- If search criteria has already been specified in an HTML script, the search will start automatically, and the Search Criteria dialog box will NOT appear.

Push Buttons:

Restart Search Click here to re-run the search with the currently defined parameters. This allows data on the screen to be refreshed.

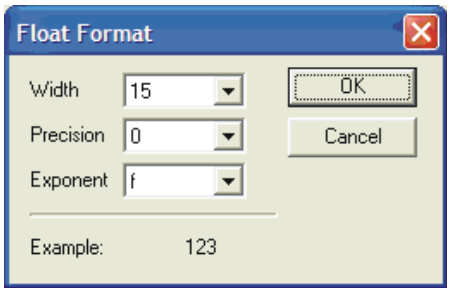
New Search This calls up the Search Criteria dialog box, from which you can specify the characteristics of the signals for which you want to search. The appearance of the Search Criteria dialog box varies depending upon whether you are communicating with a Network 3000 controller, or a ControlWave controller. See *'Search Criteria – Signal Search Properties'* for more information.

Configure Data This calls up the Configure Grid Data dialog box, from which you can specify the background colors which should be used when displaying signals which have passed particular alarm limits, as well as the floating point format which should be used for displaying numerical data.



Use the **[…]** buttons to call up a color palette from which you can select the color in which low and high alarms, and low-low and high high alarms should be displayed in the Signal Search window.

Use the **[Floating Point Format]** button to call up the Float Format dialog box, and specify the precision with which analog (floating point) values are displayed in the Signal Search window.



Use the **"Width"** list box to specify the total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.

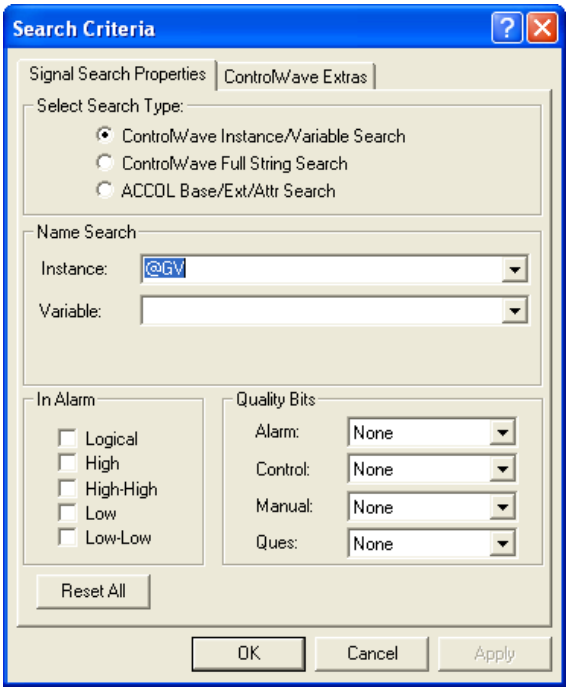
Use the **"Precision"** list box to choose the number of places to the right of the decimal point which should be displayed. This can range from 0 to 15. The default is 6.

Use the **"Exponent"** list box to choose the floating point format 'f', exponential notation 'e', or choose 'g' to have the Signal Search control choose the best fit format.

Click on **[OK]** when finished.

Search Criteria – Signal Search Properties

You can search for signals or variables based on their name in one of three possible search modes, and/or based on their alarm status or signal inhibit status.



Select Search Type:

ControlWave Instance/Variable Search Mode:

For ControlWave controllers you can search based on the POU "Instance" name(s), and/or the "Variable" name. Wildcards may be used in either of these fields.

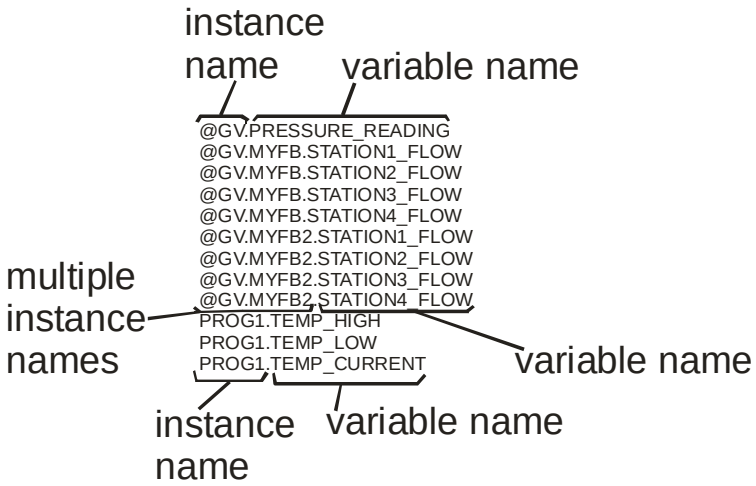
There can be multiple instance names associated with the same variable, for example, an instance for the program, followed by the instance for a function block, etc. Each instance is followed by a period '.' character, therefore an instance name is always to the *left* of the last period. The portion to the *right* of the last period is considered to be the variable name. Any variable must have been marked as 'PDD' in order to be found by the signal search.

Instance — The "Instance" name portion may be up to 32 characters long. If you do NOT use wildcard characters, the instance name must match *exactly* to be considered a valid match. For global variables the POU instance name would be '@GV'. If you leave the "Instance" field blank, any instance name is considered valid, and only the "Variable" field will be used in the search.

Variable — The "Variable" name may be up to 32 characters long. If you do NOT use wildcard characters, the variable name must match *exactly* to be considered a valid match. If you leave the "Variable" field blank, only the "Instance" field will be used in the search.

Some Examples:

Let's say you have a set of variables with the following names:



Here are some resulting matches based on this set of variables:

If you enter this in the "Instance" field:	*and* you enter this in the "Variable" field:	The following variables will be returned from the set of variables shown previously:
*	STATION1*	@GV.MYFB.STATION1_FLOW @GV.MYFB2.STATION1_FLOW
leave blank	TEMP*	PROG1.TEMP_HIGH PROG1.TEMP_LOW PROG1.TEMP_CURRENT
@GV.MYFB*	STATION2*	@GV.MYFB.STATION2_FLOW @GV.MYFB2.STATION2_FLOW
PROG	TEMP*	*No matches; because no wildcard following 'PROG'.*
PROG*	*leave blank*	PROG1.TEMP_HIGH PROG1.TEMP_LOW PROG1.TEMP_CURRENT
@GV.MYFB2	*leave blank*	@GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW @GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW
.	STATION3*	@GV.MYFB.STATION3_FLOW @GV.MYFB2.STATION3_FLOW
*	*leave blank*	@GV.PRESSURE_READING @GV.MYFB.STATION1_FLOW @GV.MYFB.STATION2_FLOW @GV.MYFB.STATION3_FLOW @GV.MYFB.STATION4_FLOW @GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW @GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW PROG1.TEMP_HIGH PROG1.TEMP_LOW PROG1.TEMP_CURRENT
.	*leave blank*	@GV.MYFB.STATION1_FLOW @GV.MYFB.STATION2_FLOW @GV.MYFB.STATION3_FLOW @GV.MYFB.STATION4_FLOW @GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW @GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW
*.MYFB2	*leave blank*	@GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW

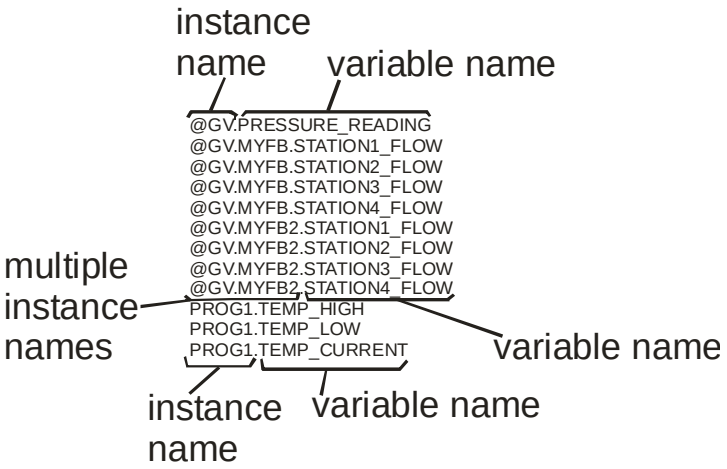
If you enter this in the "Instance" field:	*and* you enter this in the "Variable" field:	The following variables will be returned from the set of variables shown previously:
		@GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW
leave blank *or* *	STATION?_FLOW	@GV.MYFB.STATION1_FLOW @GV.MYFB.STATION2_FLOW @GV.MYFB.STATION3_FLOW @GV.MYFB.STATION4_FLOW @GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW @GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW
.MYFB2	STATION2_FL?W	@GV.MYFB2.STATION2_FLOW
PROG?	*leave blank*	PROG1.TEMP_HIGH PROG1.TEMP_LOW PROG1.TEMP_CURRENT
@GV.MYFB?	*leave blank*	@GV.MYFB.STATION1_FLOW @GV.MYFB.STATION2_FLOW @GV.MYFB.STATION3_FLOW @GV.MYFB.STATION4_FLOW @GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW @GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW

ControlWave Full String Search Mode:

For this search, you can enter a string that is in *either* the instance name or variable name.

The search string you enter can include wildcards to establish a pattern to be matched.

Here are some examples, using the same set of variables included in the previous sub-section.



If you enter this in the "String" field:	The following variables will be returned from the set of variables shown previously:
STATION?_F	@GV.MYFB.STATION1_FLOW @GV.MYFB.STATION2_FLOW @GV.MYFB.STATION3_FLOW @GV.MYFB.STATION4_FLOW @GV.MYFB2.STATION1_FLOW @GV.MYFB2.STATION2_FLOW @GV.MYFB2.STATION3_FLOW @GV.MYFB2.STATION4_FLOW
MYFB?.STATION2	@GV.MYFB.STATION2_FLOW @GV.MYFB2.STATION2_FLOW
1	@GV.MYFB.STATION1_FLOW @GV.MYFB2.STATION1_FLOW PROG1.TEMP_HIGH PROG1.TEMP_LOW PROG1.TEMP_CURRENT
@GV.P*	@GV.PRESSURE_READING

ACCOL Base, Extension, and Attribute Search Mode:

NOTE: Do NOT enter wildcard characters in this mode.

For Network 3000 controllers, you can search based on a portion of the signal's name. The "Base", "Extension" and "Attribute" fields include list boxes which allow easy selection from the available base names, extensions, and attributes in a given load.[4]

NOTE: You must search using the complete "Base", "Extension", or "Attribute", not part of it. For example, to search for an attribute of "FLOW," you must enter "FLOW," not "FLO," "FL," or "F."

If the Signal Search control is communicating with a ControlWave and the _USE_ACCOL_NAME system variable in your ControlWave project is set to TRUE, you can also use the "Base", "Extension" and "Attribute" fields. To work properly in this case, though, the signal names you search for must fit the ACCOL II signal naming convention, i.e. no more than 8 alpha-numeric characters for the base, no more than 6 for the extension, and no more than 4 for the attribute. In addition, characters such as the at sign '@' cannot be included. The underscore '_' may work if it's at the end of the search parameter, but it will not work at the beginning of the search parameter.

Notes For ControlWave Users:

To see all variables in the load (both global and local variables marked as 'PDD') start the search with only the **"Node"** name specified; leave all other fields blank.

Because your signals must follow naming conventions carefully in this mode, we recommend that when communicating with ControlWave that you use one of the other search modes, and leave _USE_ACCOL_NAME set at FALSE.

The standard IEC62591 STRING data type allows up to 80 characters. You can also create string variables using user-defined STRING data types of varying lengths. Be aware that in either case,

[4] *Network 3000 User Note: DataView uses the ACO and ACL files on the PC hard disk to create the Node, Base, Extension, and Attribute lists. Because not all versions of the EGM 3530 TeleFlow™ include an ACCOL load, some TeleFlow™ users must type the Node, Base, Extension, or Attribute directly; there is no list to choose from. This situation also occurs if the ACO/ACL file base name has not been specified as the Node Load File Name in the currently released NETDEF files.*

there are restrictions on displaying strings in programs outside of ControlWave Designer.

- ControlWave RTUs do not report strings that exceed 127 characters and behave as if the variable does not exist when data requests come in for that variable from software.
- Web_BSI web pages communicating over a serial connection can only display the first 64 characters of a ControlWave string variable.
- Web_BSI web pages communicating over IP can display up to 127 characters of a string variable's value.

In Alarm and Quality Bits

You can limit your search to only signals which are currently in a particular alarm state, or have inhibit/enable bits in a particular state.

If you are searching for analog alarms, you can specify that you only want alarms that have exceeded one or more of the four alarm limits by choosing one of the appropriate boxes ("High", "High-High", "Low", or "Low-Low"). If you only want to search for logical alarms, choose "Logicals".

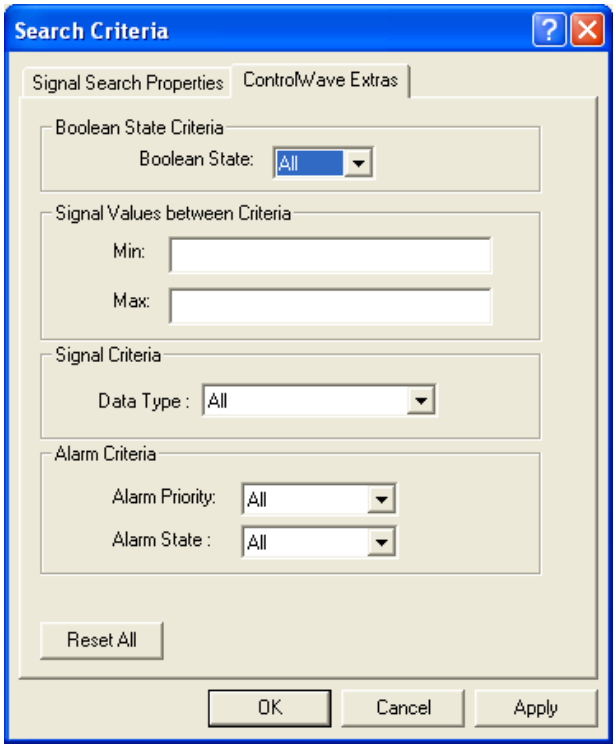
Another criteria you can use to limit your search is to specify that you only want signals that have certain inhibit/enable bits set.

For example, only signals that are control-inhibited, or only signals that are manually enabled. Use the "Alarm", "Control" or "Manual" list boxes to specify either 'Enable' or 'Inhibit' to limit the search to signals in those inhibit/enable states. Similarly, you can limit the search to only signals which have been marked questionable by setting the "Questionable" list box to 'Set'.

Click on the 'ControlWave Extras' tab to further refine your search.

ControlWave Extras Page

The 'ControlWave Extras' page includes additional search options, that are supported only for ControlWave controllers you are communicating to via IP.



You can use the **"Boolean State"** to limit the search to Boolean variables that are currently 'True' or are currently 'False'. If no choice is made, both of these states will be included in the search criteria.

For analog signals, you can specify a **"Min"** and **"Max"** value to define a range of signal values. Only signals which are currently within the defined range will be returned in the search.

To search only for signals of a particular data type, for example only 'Boolean' or only 'Short Int' choose the desired type in the **"Data Type"** field. If no selection is made, all data types will be included in the search criteria.

If desired, you can limit the search to signals which share a particular **"Alarm Priority"**, such as "critical", "non-critical", "operator guide", or "event."

For Boolean signals, you can specify that you only want those activated when they are in a particular state, i.e. those that are 'in alarm' when they are set to TRUE, or are 'in alarm' when they are set to FALSE, or are 'in alarm' when they change state.

Starting the Search:

If you are satisfied with your search criteria, and do not want to further refine the search criteria on the 'Signal Search Properties' and 'ControlWave Extras' pages, click on **[OK]** to start the search.

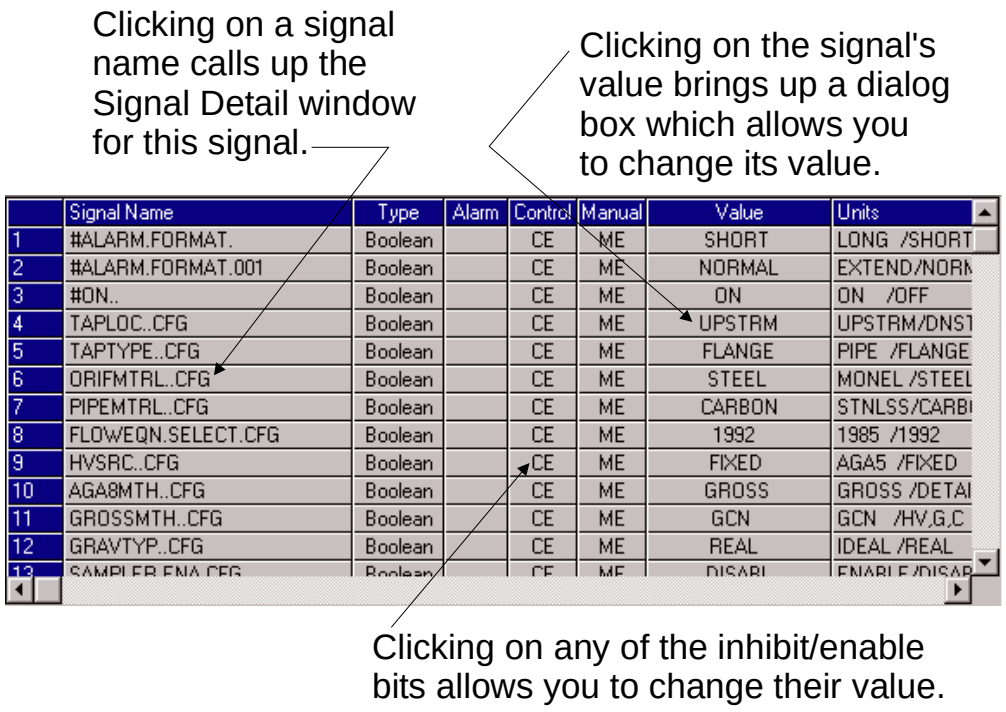
Alternatively, to erase all the criteria you have chosen, and start again, click on **[Reset All]**.

Once you have started the search, a signal window of all signals/variables which share the selected characteristics will appear. See *'Viewing Entries in the Signal Window'* for information

on using the entries in this window to change signal values, or to alter inhibit / enable bits. See *'Viewing Data for a Single Signal'* (later in this manual) for information on viewing more detailed signal information. NOTE: Only the first 5000 signals found can be displayed.

Viewing the Results of Your Search

After you have clicked on **[OK]** or **[Apply]** in the Search Criteria dialog box, the search will be initiated. The results of the search will be displayed in the Signal Search main window.



	Signal Name	Type	Alarm	Control	Manual	Value	Units
1	#ALARM.FORMAT.	Boolean		CE	ME	SHORT	LONG /SHORT
2	#ALARM.FORMAT.001	Boolean		CE	ME	NORMAL	EXTEND/NORM
3	#ON..	Boolean		CE	ME	ON	ON /OFF
4	TAPLOC..CFG	Boolean		CE	ME	UPSTRM	UPSTRM/DNST
5	TAPTYPE..CFG	Boolean		CE	ME	FLANGE	PIPE /FLANGE
6	ORIFMTRL..CFG	Boolean		CE	ME	STEEL	MONEL /STEEL
7	PIPEMTRL..CFG	Boolean		CE	ME	CARBON	STNLSS/CARBI
8	FLOWEQN.SELECT.CFG	Boolean		CE	ME	1992	1985 /1992
9	HVSRC..CFG	Boolean		CE	ME	FIXED	AGA5 /FIXED
10	AGA8MTH..CFG	Boolean		CE	ME	GROSS	GROSS /DETAI
11	GROSSMTH..CFG	Boolean		CE	ME	GCN	GCN /HV,G,C
12	GRAVTYP..CFG	Boolean		CE	ME	REAL	IDEAL /REAL
13	SAMPLER.ENA.CFG	Boolean		CE	ME	DISABL	ENABLE/DISAB

The total number of signals collected will be displayed in the **"Signals Collected"** field.

The fields included for each signal / variable in the window are:

Signal Name The ACCOL signal name or IEC 61131 variable name.

Type The data type of the signal or variable.

Alarm The current status of the alarm inhibit/enable flag. This flag determines whether or not alarms will be reported for this signal (assuming it is an alarm signal). AI = alarm inhibited, AE = alarm enabled. NOTE: For ControlWave users, alarm inhibiting a variable only has effect if no value is copied to the alarm function block during alarm processing.

Control The current status of the control inhibit/enable flag. Control inhibited means

that this signal's value is frozen and cannot be changed by logic in the control strategy program/application load, control enabled means that this signal's value can be changed by logic in the control strategy program/application load. CI = control inhibited, CE = control enabled.

Manual The current status of the manual inhibit/enable flag. Manual inhibited prevents operator changes to the signal; manual enabled allows operator changes to the signal: MI = manual inhibited, ME = manual enabled. NOTE: For ControlWave users, manual inhibiting a variable does NOT prevent it being changed by an operator running ControlWave Designer in on-line mode.

Value The current value of the signal / variable.

Units The engineering units for the signal. NOTE: For IEC 61131-3 users, engineering units only apply for alarm signals. Engineering units for alarm signals are specified within alarm function blocks.

Changing Inhibit / Enable Status Flags

If signals have been configured to use them, you can alter the value of the inhibit/enable status flags by clicking in the **"Alarm"**, **"Control"** or **"Manual"** fields for the particular signal. You will be prompted to confirm the change; then click on **[Yes]**.

Viewing Detailed Information About a Signal

To view detailed information about a signal, click on its name in the Signal Search main window, and a Detailed display about the signal will appear. This window will display the signal's current value, current inhibit/enable status bit values, and (if configured) a descriptor. If the signal is an alarm, alarm deadbands and limits also appear.

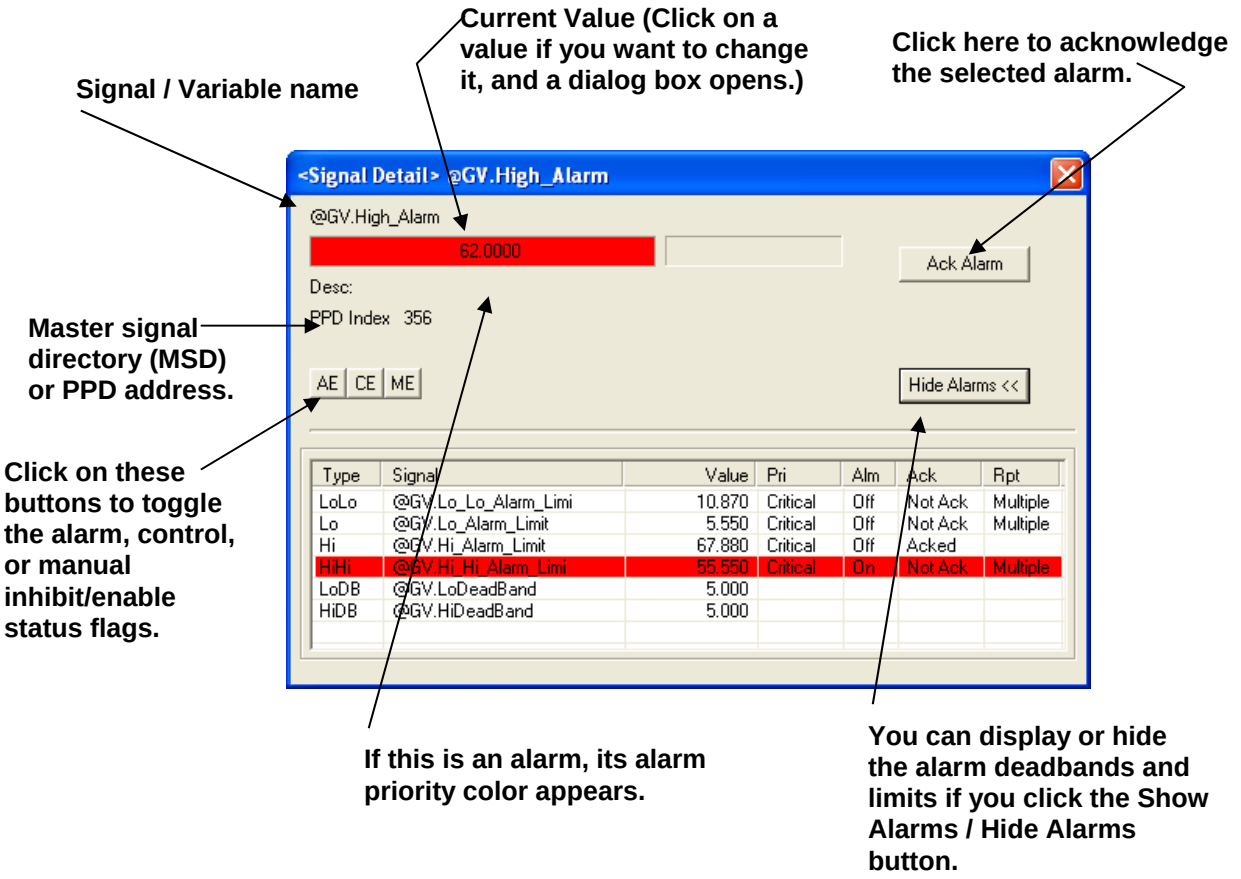
- To change the signal's value, click on the value, and a dialog box will appear allowing you to enter a new value.

- To change inhibit/enable bits, click on the Control Inhibit/Enable 'CI/CE', Manual Inhibit/Enable 'MI/ME' button of your choice.

In addition to the aforementioned items, if this signal is an alarm signal, its value is displayed with a background color corresponding to its alarm priority. In this case, you can:

- Optionally acknowledge the alarm by clicking on the **[Ack Alarm]** button.

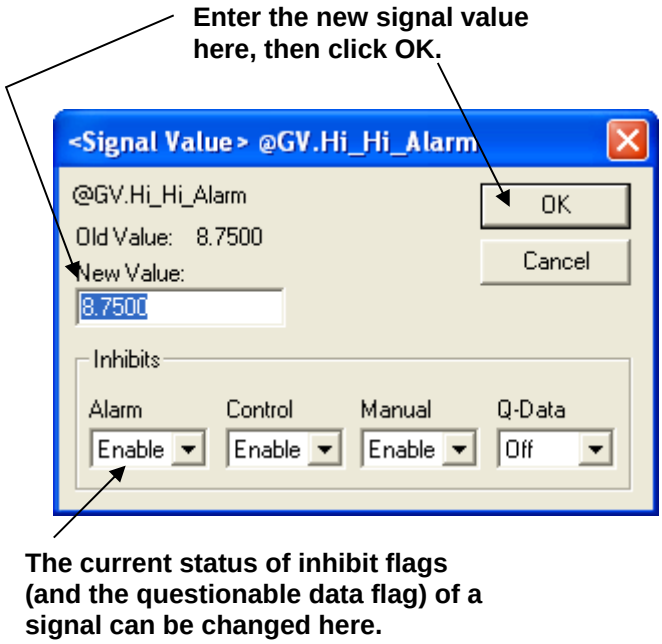
- Alter its Alarm Inhibit/Enable status from the 'AI/AE' button.
- View/hide alarm limit and deadband information by clicking on the **[Show Alarms]** or **[Hide Alarms]** buttons.



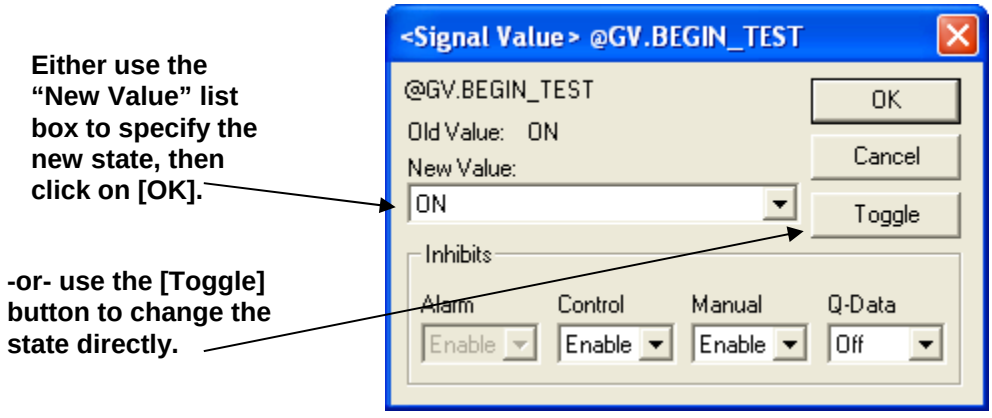
Changing Signal Values

To change a signal's value, either click on its value in the Signal Search main window, or in the Signal Detail window. In either case, a dialog box will appear which will allow you to change the signal's value.

For analog signals, enter the new signal value in the **"New Value"** field. Optionally, you can also change the value of the inhibit/enable and questionable data bits from the list boxes provided. When you have finished making changes, click on **[OK]**.

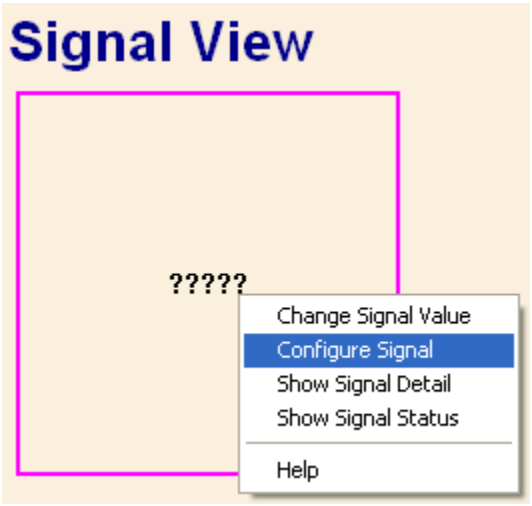


For logical (boolean) signals, *either* use the **"New Value"** list box to specify the new state of the signal, and click on **[OK]**, -*or*- use the **[Toggle]** button to change the state of the signal.



The Signal View page allows the value of a specific signal/variable to be displayed on the screen. In order to successfully use this page, you must have already signed on to the controller which contains the signal you want to display.

To access the Signal View page, click on the **"Signal Data"** category button, then choose the **"Signal View"** drop-down menu selection.



Configuring A Signal to Be Displayed in the Signal View Control

If a signal has not been configured, already, the Signal View Control will present a series of question marks on the screen '?????'.

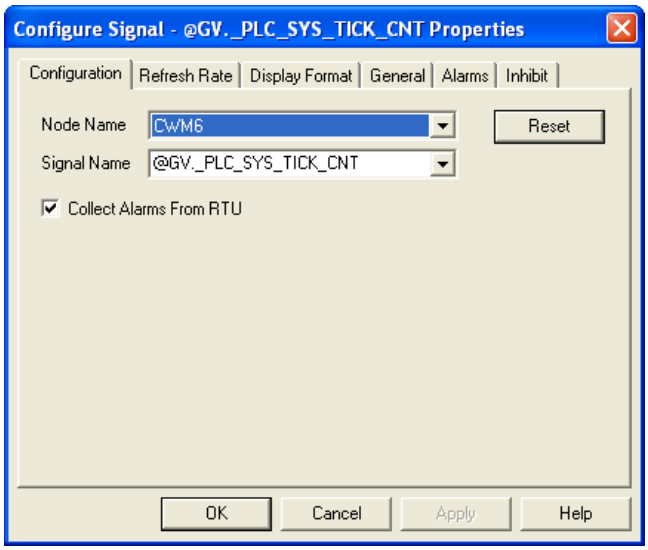
Right-click on the question marks, and choose **"Configure Signal"** from the pop-up menu. The Configuration page of the Configure Signal dialog box will appear:

NOTE: The Configure Signal dialog box contains multiple pages. To move between the various pages, click on the tab for that page. Clicking on **[OK]** in any of the pages will exit the dialog box, therefore, you should only click on **[OK]** when you have finished with all of the necessary pages. Clicking on **[Reset]** erases your entries, and replaces them with defaults.

Configuration Page

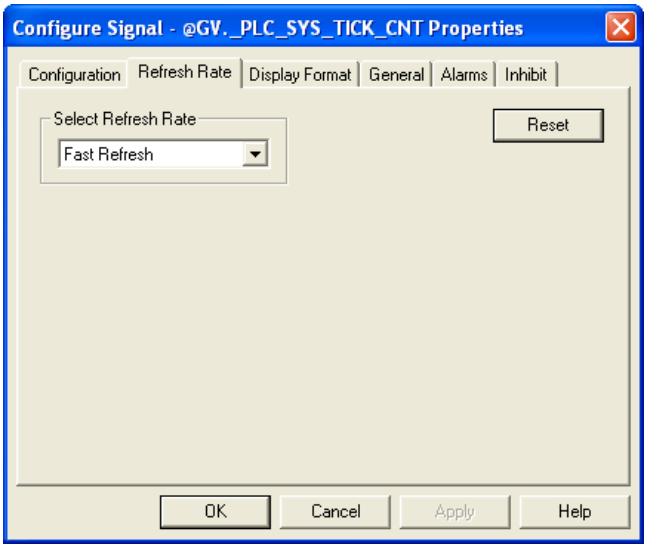
Select the controller from the **"Node Name"** list box, then enter the signal name using the **"Signal Name"** field.

If this is an alarm signal, for which you would like to collect alarm information (limits, deadbands from the RTU), check the **"Collect Alarms from RTU"** box.



Refresh Rate Page

The Refresh Rate page specifies how often data will be updated on the screen for this signal.



No Refresh 'No Refresh' means the signal value will only be presented once, and will not be updated.

Slow Refresh 'Slow Refresh' means the signal value will be updated at the slow rate; this varies depending upon the type of controller, for Network 3000 series nodes this would be 5 seconds.

Fast Refresh 'Fast Refresh' means the signal value will be updated at the fast rate; this varies depending upon the type of controller. The update will be as fast as possible.

NOTE: The default refresh rates are specified in the *DATASERV.INI initialization file* for OpenBSI.

IMPORTANT

When running a single web page that has a large number of Signal View controls (typically greater than 50), not all signal values may be displayed, and you may see question marks. A faster refresh rate may be necessary. If a faster refresh rate cannot be supported by the network, you may need to reduce the number of Signal View controls on that web page.

Display Format Page

The Display Format page allows you to specify how the signal data will be presented. The appearance of the 'Properties' section will vary, somewhat, based on the display format you choose. You have a choice of several different items which can be displayed for the signal.These are included in the 'Value' and 'Inhibits' and 'Custom' section of the Display Format page. Only ONE of the items can be selected.

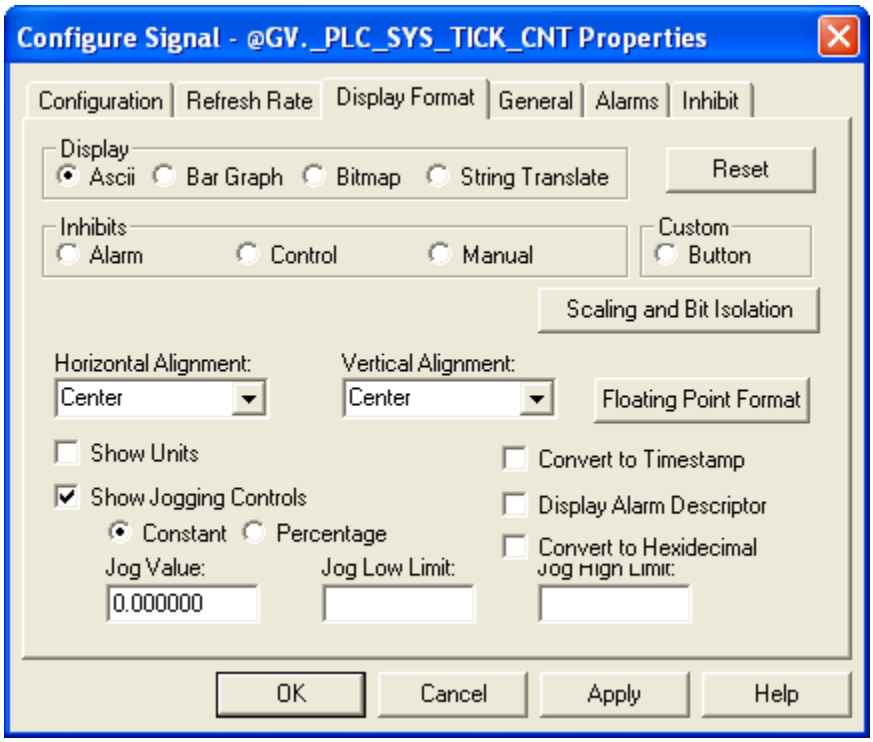
- If you want to display the signal's numerical value, choose **"ASCII"** as the display type.
- If, you want to depict the signal's value as a bar graph, choose **"Bar Graph"**as the display type.
- If you want to depict the signal's value using a pair of bitmaps, choose **"Bitmap"**.
- If you want to depict the signal's alarm inhibit bit, choose **"Alarm"**.
- If you want to depict the signal's control inhibit bit, choose **"Control"**.
- If you want to depict the signal's manual inhibit bit, choose **"Manual"**.
- If you want to display different text strings based on an analog value, choose **"String Translate"**.
- If you want to display text on a button, choose **"Button"**.

A description of the 'Properties' fields for each possible choice is included, below:

ASCII Value:

If your chosen display format is **"ASCII"** you can specify the horizontal and vertical alignment of the signal on the screen. The default is 'Center' for both the horizontal and vertical alignment.

If this is a Network 3000 controller, you can check the **"Show Units"** box to display engineering units for the signal.



If **"Convert to Timestamp"** is checked, the signal value will be displayed as a timestamp, in the same format as #TIME.000., _TIME_000, or _JULIAN_TIME i.e. *MM/dd/yyyy hh:mm:ss* where *MM* is the two digit month, *dd* is the two digit day, *yyyy* is the four digit year, *hh* is the two digit hour in 24-hour format, *mm* is the two digit minute, and *ss* is the two digit second. NOTE: If using a ControlWave unit and BSAP communication, you must use _JULIAN_TIME for your timestamp signal here.

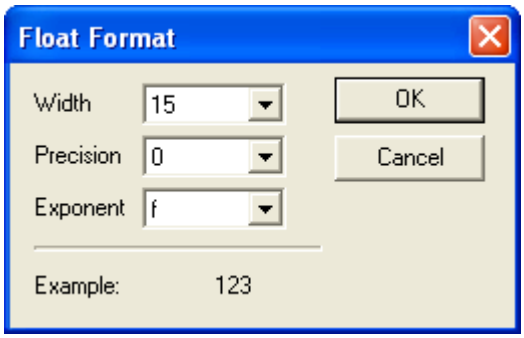
If **"Convert to Hexadecimal"** is checked, the signal value will be displayed in hexadecimal (base 16) format. Note: If you use this option, the value is read-only; the user cannot edit it. (OpenBSI 5.8 and newer.)

If **"Display Alarm Descriptor"** is checked, and the signal is an alarm, the alarm descriptive text will be displayed. whether or not the signal is currently in an alarm state

If **"Show Jogging Controls"** is checked, both [+] and [-] jog buttons will be displayed to increase or decrease, respectively, the value of the signal. If **"Constant"** is chosen, the **"Jog Value"** specifies a fixed value by which each click of the jog button will increase or decrease the value. If **"Percentage"** is chosen, the **"Jog Value"** is a percentage of the current signal value. **"Jog Low Limit"** specifies the lowest value the signal can be set to by the user clicking on the [-] jog button. **"Jog High Limit"** specifies the highest value the signal can be set to by the user clicking on the [+] button. NOTE: If a negative value is enter for the **"Jog Value"** it will be treated as a positive value.

Floating Point Format:

The **[Floating Point Format]** button calls up a dialog box which lets you specify the number of decimal places used to present the signal value.



Use the **"Width"** list box to specify the total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.

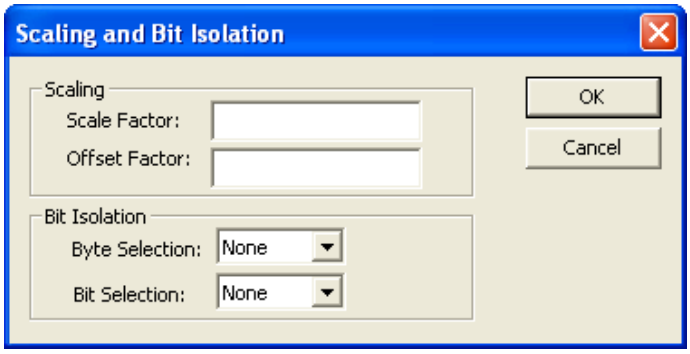
Use the **"Precision"** list box to choose the number of places to the right of the decimal point which should be displayed. This can range from 0 to 15. The default is 6.

Use the **"Exponent"** list box to choose the floating point format 'f', exponential notation 'e', or choose 'g' to have the Archive Collection control choose the best fit format.

Scaling and Bit Isolation (OpenBSI 5.8 and newer only):

Optionally, you can modify the ASCII value before you display it.

If you specify a **"Scale Factor"** SignalView multiplies the ASCII value by the scaling factor, and then displays the result. For example, if the ASCII value is 5.0 and the scale factor is 3.0, the value displays as 15.0.



If you specify an **"Offset Factor"** SignalView adds the offset factor, and then displays it. For example, if the ASCII value is 34.0, and the offset factor is 4.0, the value displays as 38.0.

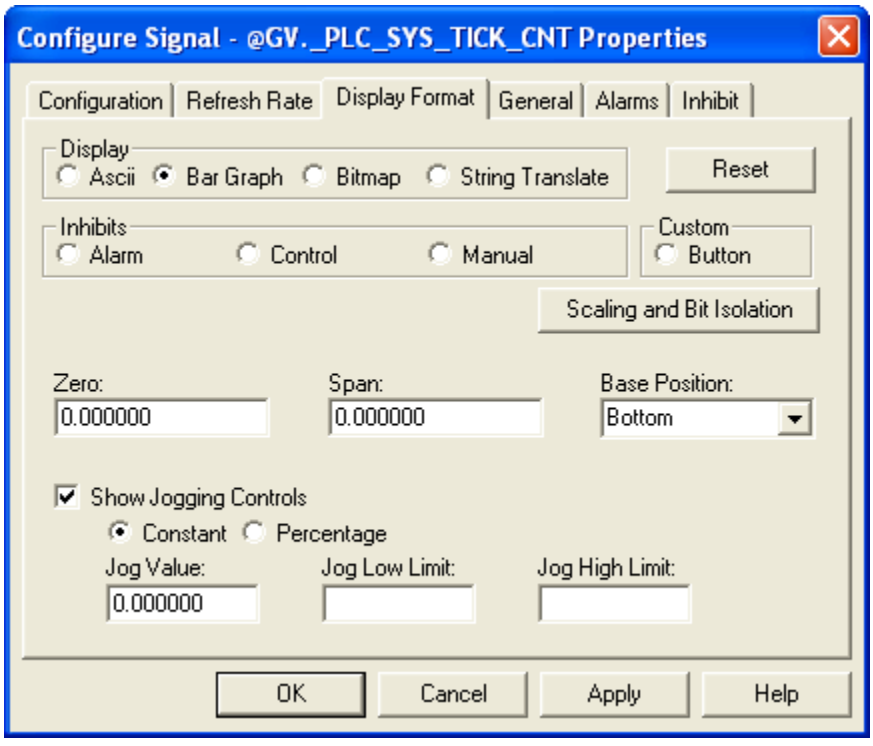
Bit isolation is useful only if the variable you display is in a non-floating point format and you want to extract a single bit from it and display that. If, for example, a variable in your ControlWave project is of type WORD, and you want to display the second bit of the first byte of the WORD, you would choose "0" for **"Byte Selection"** to choose the first byte (bytes are numbered 0 to 3), and you would choose "1" for **"Bit Selection"** to choose the second bit (bits are numbered 0 to 7).

NOTE: If you use scaling and bit isolation, the value displayed is read-only; the user cannot edit the value.

Bar Graph

If your chosen display type is **"Bar Graph"** you must enter the **"Zero"** and **"Span"** values which define the range of the signal.

If **"Show Jogging Controls"** is checked, both [+] and [-] jog buttons will be displayed to increase or decrease, respectively, the value of the signal associated with the bar graph. If **"Constant"** is chosen, the **"Jog Value"** specifies a fixed value by which each click of the jog button will increase or decrease the value.



NOTE: If a negative value is enter for the **"Jog Value"** it will be treated as a positive value.

If **"Percentage"** is chosen, the **"Jog Value"** is a percentage of the current signal value. **"Jog Low Limit"** specifies the lowest value the signal can be set to by the user clicking on the [-] jog

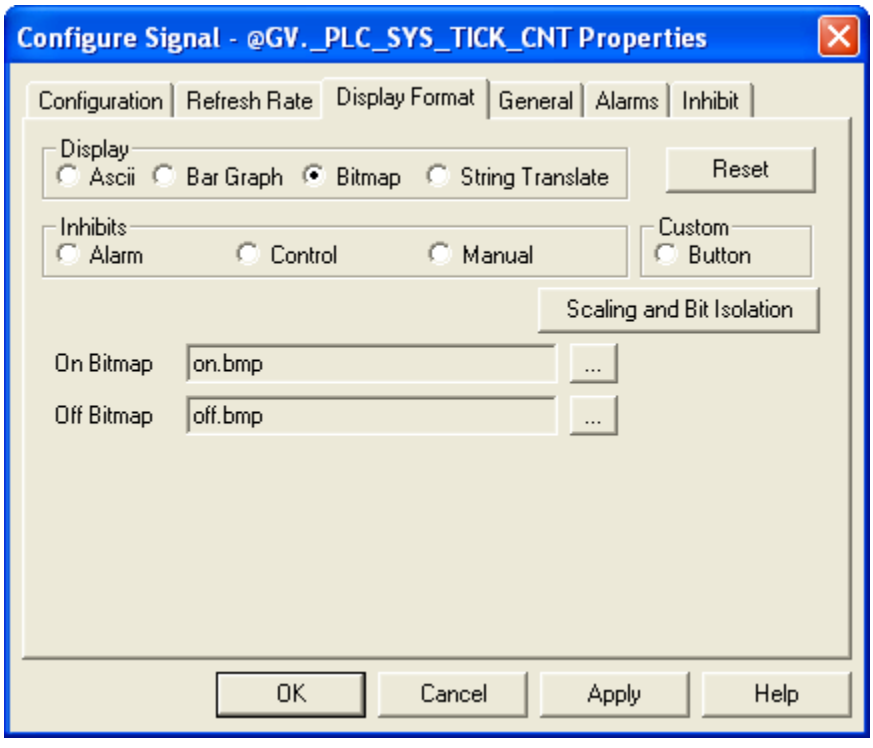
button. **"Jog High Limit"** specifies the highest value the signal can be set to by the user clicking on the [+] button.

The **"Base Position"** determines the direction in which the bar graph moves. The default is 'BOTTOM', which means the **"Zero"** is at the bottom of the graph, and the full **"Span"** is at the top of the graph. 'TOP' means the **"Zero"** is at the top of the graph, and the full **"Span"** is at the bottom of the graph. 'LEFT' means the left edge of the bar is the **"Zero"** value for the graph and the full **"Span"** is at the right edge of the bar. 'LEFT' means the left edge of the bar is the **"Zero"** value for the graph and the full **"Span"** is at the right edge of the bar. 'RIGHT' means the right edge of the bar is the **"Zero"** value for the graph and the full **"Span"** is at the left edge.

Bitmap

If your chosen display type is **"Bitmap"** use the **"ON Bitmap" […]** push button to specify the picture (bitmap) to be displayed when the signal is in its ON state (logical signals) or its non-zero state (analog signals).

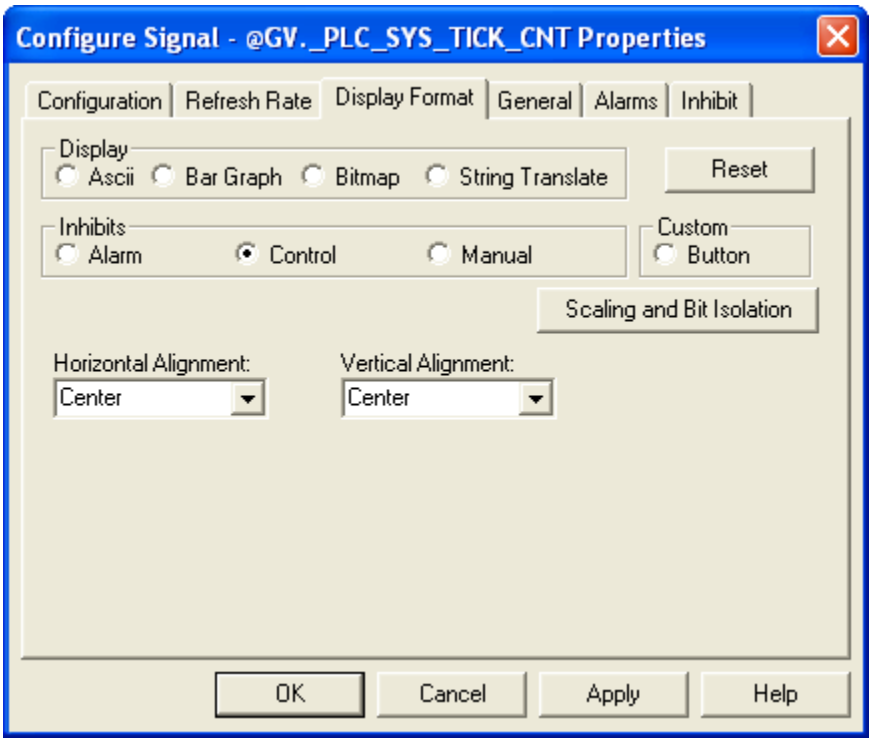
Use the **"OFF Bitmap" […]** push button to specify the picture (bitmap) to be displayed when the signal is in its OFF state (logical signals) or is zero (analog signals).



Inhibits: Alarm, Control, or Manual

If your chosen display type is one of the inhibit bits, *either* **"Alarm"**, **"Control"**, or **"Manual"**, the status of the chosen inhibit/enable bit will be shown. For example, if you choose **"Control"**,

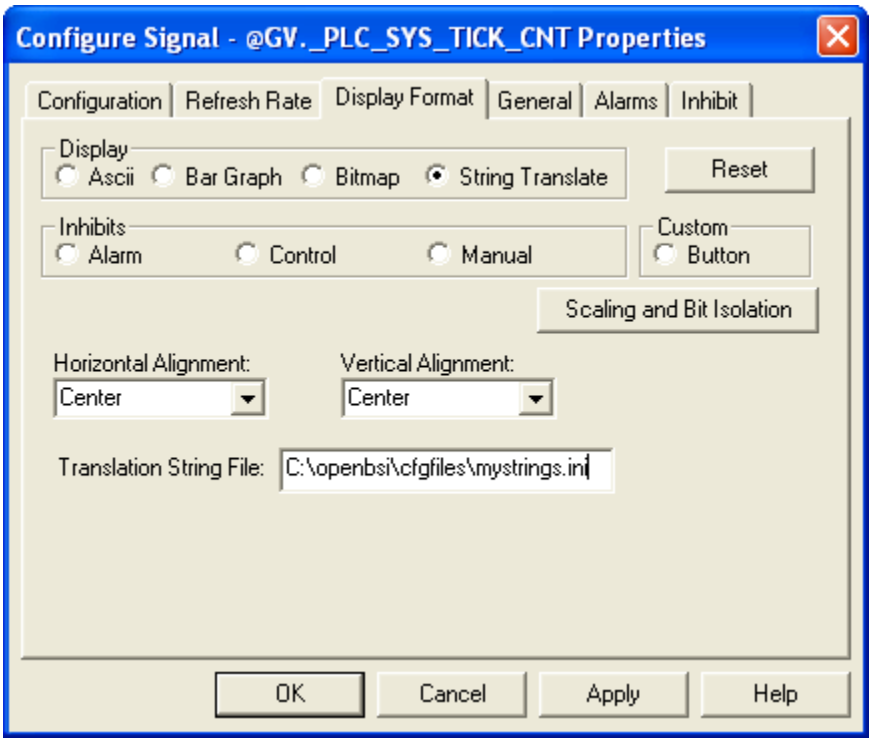
either 'CE' or 'CI' will be displayed (or user defined text, if you change the text in the Inhibit page), depending upon whether the signal is control enabled, or control inhibited, respectively.



You can specify the horizontal and vertical alignment of the inhibit/enable text on the screen. The default is 'Center' for both the horizontal and vertical alignment.

String Translate

If your chosen display type is **"String Translate"**, the truncated analog value of the signal will be used to select a text string for display. The text string must come from a pre-defined list of text strings, called the Translation String File. The path and name of this file must be specified in the **"Translation String File"**field.



Format of Translation File (OpenBSI 5.8 and newer):

An example translation string file is shown at right.

```
[STRINGS]
0 = string to display when truncated signal value is 0
10 = string to display when truncated signal value is 10
4 = string to display when truncated signal value is 4
7 = string to display when truncated signal value is 7
3 = string to display when truncated signal value is 3
```

The first entry in the file specifies the first string displayed in the drop-down menu, the second entry in the file specifies the second string displayed in the drop-down menu, and so on.

NOTE:Beginning with OpenBSI 5.8 you can have blank lines and gaps in your numbering scheme and you only need to define the strings you want to display for particular values. If the truncated value of a signal does not correspond to one of the entries in the file, SignalView displays the string "String Not Found."

Format of Translation File (OpenBSI 5.7 and earlier):

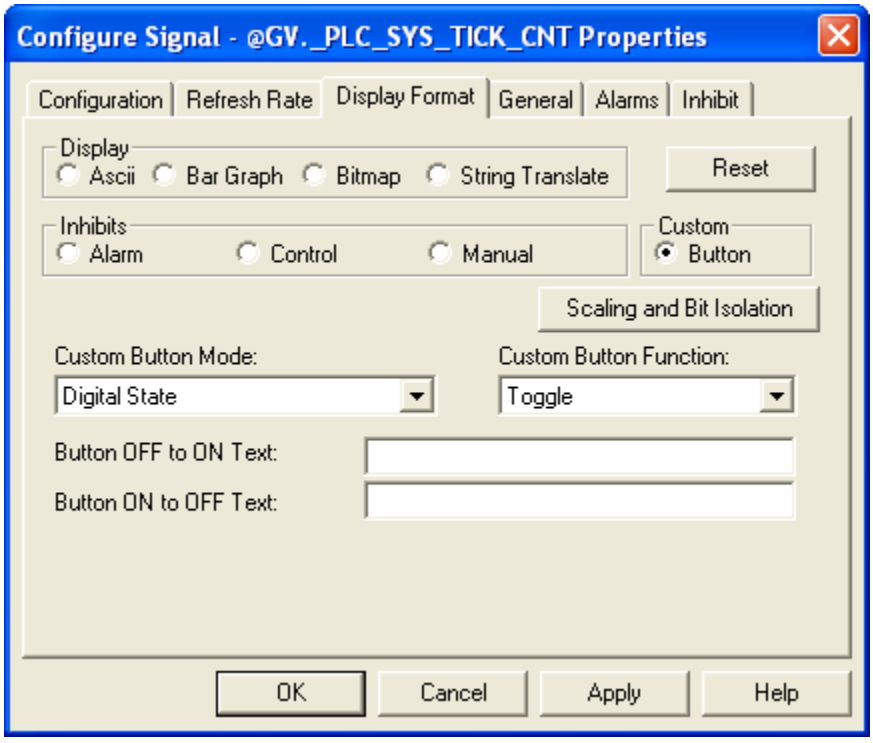
Prior to OpenBSI 5.8, there could be no blank lines or gaps in values in the strings file, and the number had to be sequential and contiguous, i.e. if you had strings you want displayed when the signal value is 3 or 5, you must also specify strings to be displayed when the value is 0, 1, 2, and 4.

[STRINGS]
0 = string to display when truncated signal value is *0*
1 = string to display when truncated signal value is *1*
2 = string to display when truncated signal value is *2*
3 = string to display when truncated signal value is *3*
: :
: :
n = string to display when truncated signal value is *n*

You can specify the horizontal and vertical alignment of the displayed text string on the screen. cThe default is 'Center' for both the horizontal and vertical alignment.

Custom: Button

If your chosen display type is **"Button"** a button will be displayed. The action performed in response to the user's clicking on the button are determined based on the **"Custom Button Mode"** and **"Custom Button Function"** list boxes.



The **"Custom Button Modes"** choices determine what aspect of the signal is affected when the button is clicked.

Custom Button Mode	Description
Digital State	In this mode, clicking on the button *may* change the state of a logical

	signal (or BOOL variable). Whether it is changed, and how it is changed, is governed by the choice in the **"Custom Function Button"**.
Manual Bit	In this mode, clicking on the button *may* change the state of the manual inhibit/enable bit. Whether it is changed, and how it is changed is governed by the choice in the **"Custom Function Button"**.
Control Bit	In this mode, clicking on the button *may* change the state of the control inhibit/enable bit. Whether it is changed, and how it is changed is governed by the choice in the **"Custom Function Button"**.
Alarm Bit	In this mode, clicking on the button *may* change the state of the alarm inhibit/enable bit. Whether it is changed, and how it is changed is governed by the choice in the **"Custom Function Button"**.
Questionable Bit	In this mode, clicking on the button *may* change the state of the questionable data bit. How it is changed is governed by the choice in the **"Custom Function Button"**.
Ack Alarm	In this mode, clicking on the button will acknowledge the alarm (if this is an alarm signal, and it is in an unacknowledged alarm state.)
Force Value	Clicking on the button will force an analog signal to the value specified in the **"Value"** field. NOTE: The **"Value"** field only appears in this mode.
Refresh Signal Data	In this mode, clicking on the button will force the web page to re-request all signal information (values, units text, etc.) from the current RTU. This is useful in situations where a program external to OpenBSI has modified signal data in some way, and so the web pages have not yet been updated with the modified properties. This same refresh operation may be activated programmatically by requesting a signal called PURGE.SPEED.CACHE. (Requires OpenBSI 5.6 Service Pack 1 or newer).

The **"Custom Button Function"** button determines the action taken when the button is clicked.

Custom Button Function	Action Taken
Force to ON	Forces the signal to its ON state. Has no effect if the signal is already ON.
Force to OFF	Forces the signal to its OFF state. Has no effect if the signal is already OFF.
Toggle	Forces the signal to its opposite state. If the signal is ON, it is changed to the OFF state, if the signal is OFF, it is changed to its ON state. Similarly, for inhibit/enable bits, if the signal is currently inhibited, it will be enabled, and vice versa. For the questionable bit, if the signal is currently set, it will be reset, and vice versa.
Force to Enable	Forces the inhibit/enable bit to the Enable state. Has no effect if

	the signal is already enabled.
Force to Inhibit	Forces the inhibit/enable bit to the Inhibit state. Has no effect if the signal is already inhibited.
Reset	Forces the questionable bit to its reset (cleared) state, i.e. OFF. Has no effect if the bit is already OFF.
Set	Forces the questionable bit to its set state, i.e. ON. Has no effect if the bit is already ON.

"Value" is the value to which the signal is set, when the 'Force Value' Custom Button Mode is used.

"Custom Button Constant Text" This is the text which will be displayed on the button. Constant text is used in all cases except when the **"Custom Button Function"** is 'Toggle'.

"Button OFF to ON Text", "Button ON to OFF text", "Button Enable to Inhibit Text", "Button Inhibit to Enable Text", "Buttton Reset to Set Text", Button Set to Reset Text"	When the **"Custom Button Function"** is toggle, the button text changes between two different text values based on the state of the signal, so text must be specified for both states. You should set the text to be whatever describes the action to be taken when the user clicks on the button. Once the button is pressed, the text will change to the text for the opposite state.

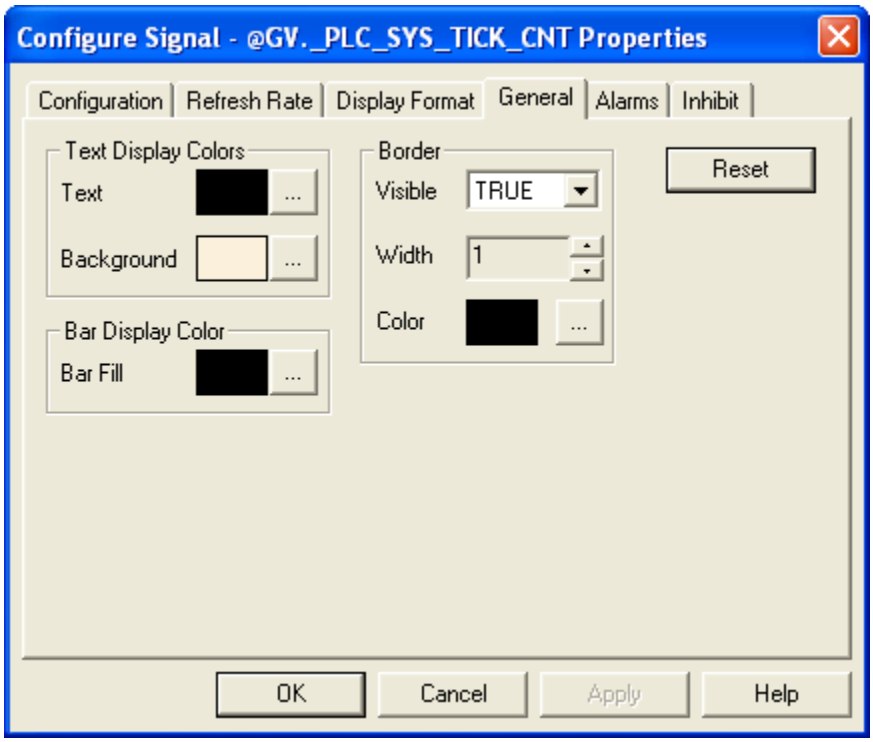
General Page

The General page sets various colors and properties.

The **"Text Display Colors"** section allows you to specify the colors in which the signal value will be presented. The **"Text"** color is only used when **"ASCII"**, **"Alarm"**, **"Control"**, or **"Manual"** is chosen as the Display type on the Display Format page. The **"Background"** color specifies the background color of the text, or if **"Bar Graph"** is chosen as the Display type on the Display Format page, the background color behind the bar of the bar graph.

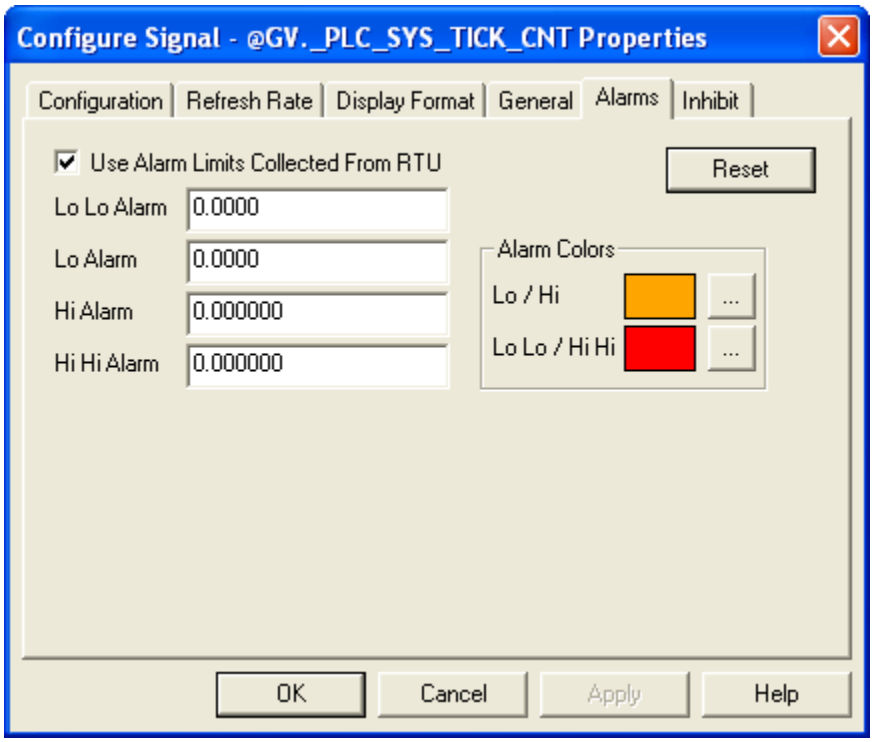
The **"Bar Fill"** specifies the color of the bar graph when the signal's value is in the normal range.

The Border**"Visible"** selection allows you to specify whether or not a box should appear surrounding the area where the signal data will be presented. You can also specify the **"Width"** and **"Color"** of the border.



Alarms Page

If this is an alarm signal, you should also specify one or more alarm limits (**"Lo Alarm"**, **"Hi Alarm"**, **"Lo Lo Alarm"**, **"Hi Hi Alarm"**). Alarm limits are thresholds beyond which an alarm state changes. For purposes of Signal View, they are used to determine when alarm colors should be altered within bar graphs.

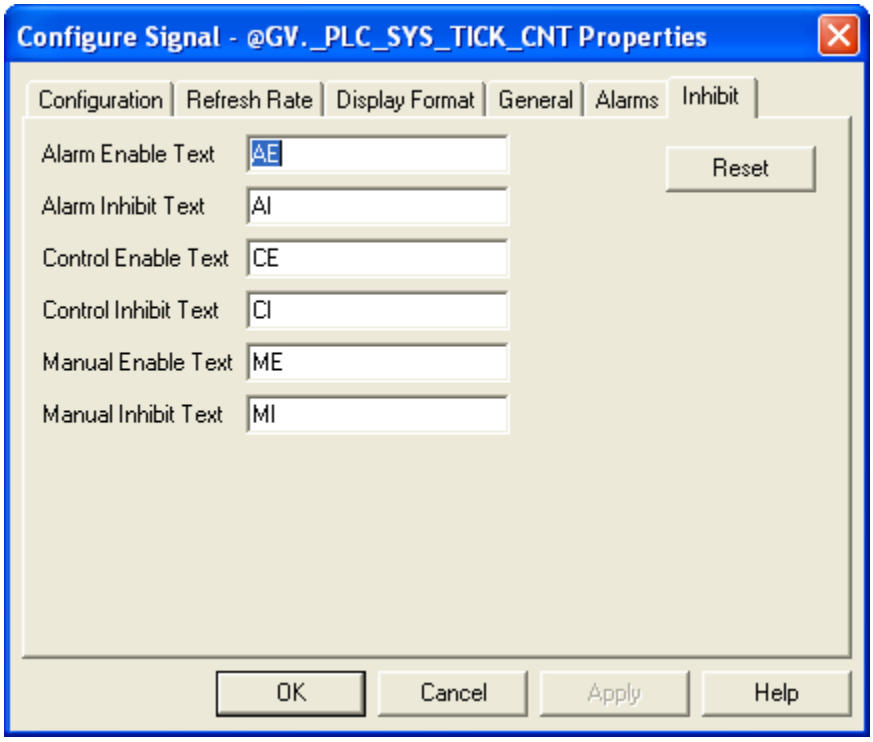


Alternatively, the alarm limits configured for the signal in the controller can be used by clicking on the **"Use Alarm Limits Collected from RTU"** check box.

The **"Alarm Colors"** specify the color of the bar graph when the signal's value is in the Lo/Hi Alarm range, or the Lo-Lo / HiHi Alarm range.

Inhibit Page

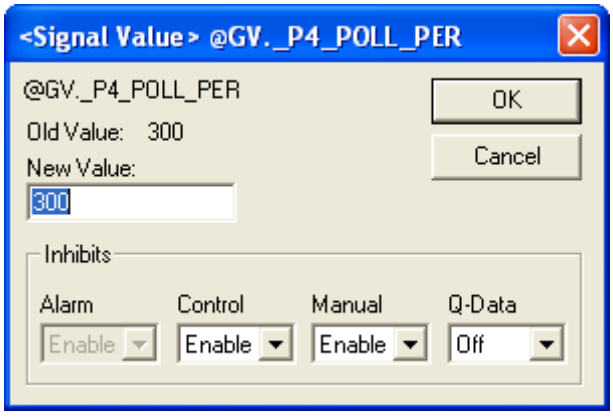
The Inhibit page lets you modify the text displayed when displaying **"Alarm", "Control",** or **"Manual"** inhibit/enable status bits. Type in the new text information as desired.



Changing the Value of A Signal

Right-click on the signal value, and choose **"Change Signal Value"** from the pop-up menu. The Change Signal Value dialog box will appear.

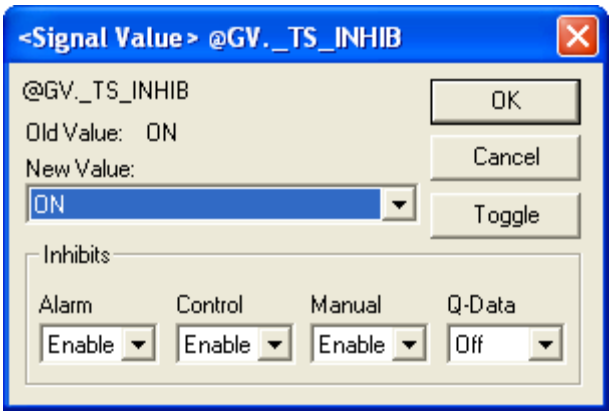
For analog signals, enter the new value, in the **"New Value"** field and click on **[OK]**.



Changing the Value of a Signal (in-line edit) (OpenBSI 5.8 and newer)

An alternative to changing the value in a dialog box is to click on the signal value. This opens an in-line change box around the value. You can then type in the new value and press the **[Enter]** key on the keyboard to send the new value to the signal in the RTU. To exit the in-line change box, press the escape key [**Esc**].

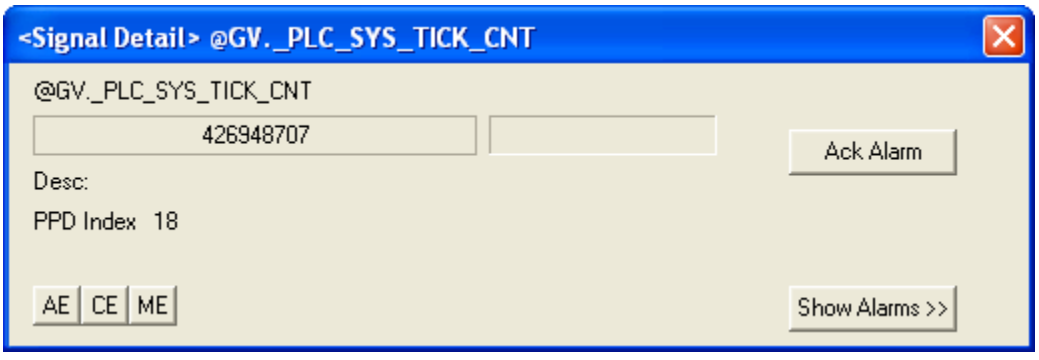
For logical signals, *either* choose the new state of the signal, from the **"New Value"** selection box, and click on **[OK]**, *or* use the **[Toggle]** button to choose the new state.



Alternatively, if you click on the logical signal (OpenBSI 5.8 and newer) a selection box opens for you to make an in-line selection. Use the **[Enter]** key to send it to the RTU, and press the **[Esc]** key to exit the change box.

Viewing Signal Detail Information

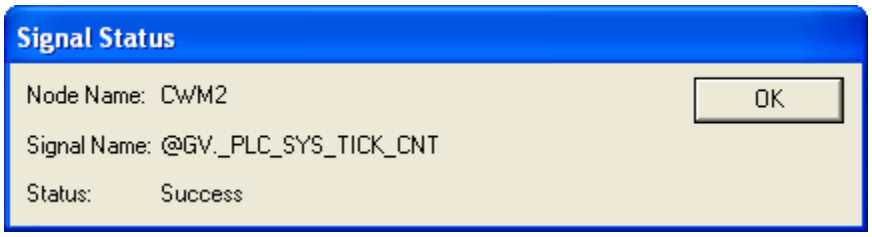
If desired, you can call up detailed information about this signal. To do so, right click on the signal name, and choose **"Show Signal Detail"** from the pop-up menu.



The Signal Detail window allows you to change the signal value (by clicking on it), and change inhibit/enable bits. It also displays the signal descriptor (if available) and gives the option to display alarm information, if this is an alarm signal. For more information on the Signal Detail window, see the *'Signal Search'* web page description.

Verifying That Communications Are Possible to a Particular Signal

Right-click on the signal value, and choose **"Show Signal Status"** from the pop-up menu. The Show Signal Status dialog box will appear. 'Success' will be displayed if the signal can be accessed; otherwise an error message will appear. Click on **[OK]** to exit the dialog box.



TeleFlow Calibration and Verification Notes

In addition to the standard web page set, there are certain other web pages and controls which have been created for use specificially with the TeleFlow product family (TeleFlow, TeleRecorder, TeleCorrector, etc). These include calibration and verification pages, damping and mode control, as well as controls for changing the expanded node addressing group number, and the date/time stored in the TeleFlow.

Notes about Calibration and Verification Pages

The Calibration and Verification web pages, use TeleFlow-specific ActiveX controls.

IMPORTANT

Before you can make use of the Calibration and Verification pages, you will need to edit the HTM files to include the correct ACCOL signal names for the **"Mode"** and **"Value"** signals in your TeleFlow's ACCOL load:

For example,

```
BBIControl.ModeSignalName="CALIB.MODE.";
BBIControl.ValueSignalName="STATPRES.VAL.LIVE";
```

The files you will need to edit are:

Title	Filename
Static Pressure (SP)	CAL_SP.HTM
Differential Pressure (DP)	CAL_DP.HTM
Temperature RTD (T)	CAL_TEMP.HTM
Verify Differential Pressure (DP)	CAL_VDP.HTM
Verify Static Pressure (SP)	CAL_VSP.HTM
Verify Temperature RTD (T)	CAL_VTEMP.HTM

Calling up the Web Pages from the Start Programs Menu

If these pages have been installed on your system, call them up using the appropriate sequence, shown below:

For the TeleFlow:
Start→Programs→OpenBSI Tools→Web Page Access → TeleFlow Pages

For the TeleFlow with the 2-Run ACCOL Load
Start→Programs→OpenBSI Tools→Web Page Access → TeleFlow TwoRun Pages

For the TeleRecorder
Start→Programs→OpenBSI Tools→Web Page Access → TeleRecorder Pages

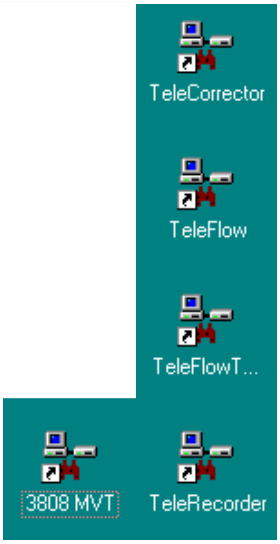
For the TeleCorrector
Start→Programs→OpenBSI Tools→Web Page Access → TeleFlow Pages

For the 3808 Transmitter
Start→Programs→OpenBSI Tools→Web Page Access → 3808 MVT Pages

For the 4088B
Start→Programs→OpenBSI Tools→Web Page Access → 4088B MVT Pages

Calling up the Web Pages via BSI Config Icons

If you installed the free BSI Config software on your system, a set of icons is included which allow you to call up these web pages via the LocalView program. Simply double-click appropriate icon, and the main menu web page for that product will be called up.



Where To Find More Information on the TeleFlow Web Pages

The TeleFlow web pages incorporate help information within the page. Please consult this help information for details on how to use these pages.

The Trend page lets you collect real-time data from either a Network 3000 or ControlWave series controller and display it graphically.

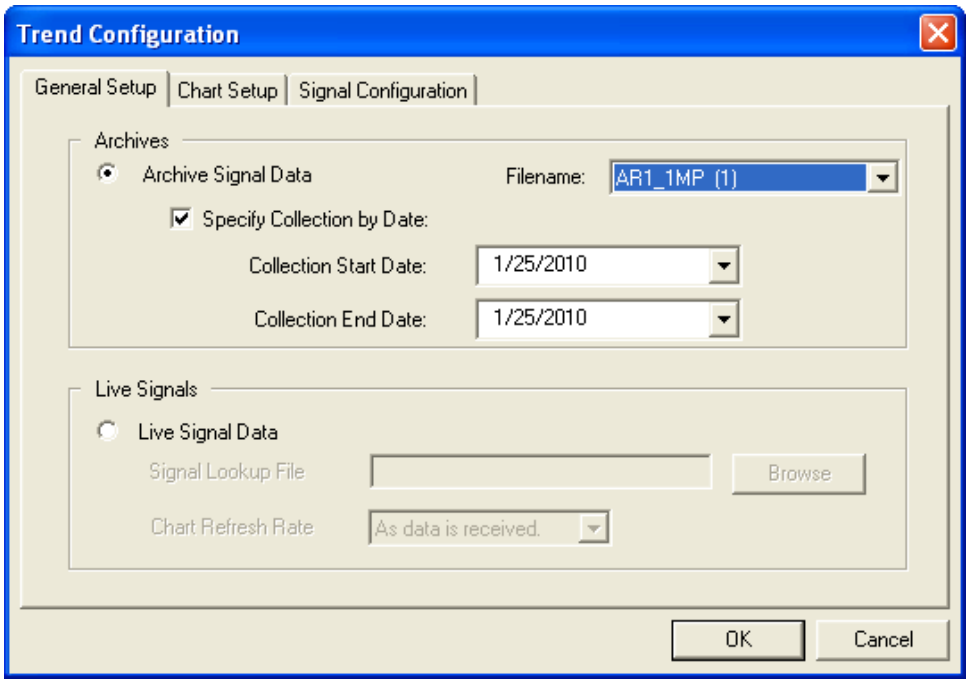
It also allows you to retrieve and display archive data from any archive file in a ControlWave controller[5] or from Network 3000 controllers which support archive files.

There are two ways to access the Trend page. One way is to click on the **"Signal Data"** category button, and then click on the **"Signal Trend"** drop-down menu selection. Another way is to click on the **"Historical Data"** category button, and then click on the **"Historical Trend"** drop-down menu selection.

Configuring a Historical Trend:

NOTE: Data for Historical Trends must come from an Archive file. Before you configure a Historical Trend, there must be an archive file already stored in the controller, or else there will be no data available for the trend. Network 3000 users specify archive file numbers, as do ControlWave users who are not connected via OpenBSI. ControlWave users communicating through OpenBSI specify archive file names. For this reason, the General Setup page varies based on the RTU type.

General Setup Page:



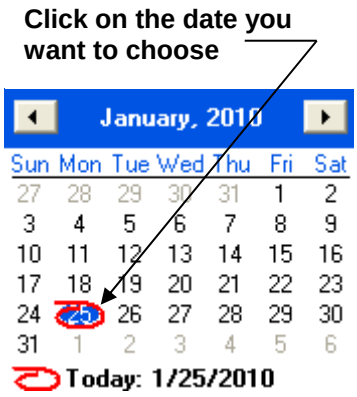
General Setup Page

[5] *The ControlWave / ControlWaveLP unit must have CWP03 or newer firmware.*

- Click on the **"Archive Signal Data"** choice.

- Depending upon the type of controller you are communicating with (ControlWave or Network 3000) and the type of communications, use either the **"Filename"** selection box to choose the archive file, or enter the archive file number in the **"Archive Number"** field.

- If, instead of trending the entire archive file, you want to see only a portion of the file, check the **"Specify Collection by Date"** box, and then use the **"Collection Start Date"** and **"Collection End Date"** fields to specify the range of days from the archive file that you want to include in the trend. These fields will call up a calendar from which you can click on the desired dates.



- Click on the 'Chart Setup' tab.

Chart Setup Page

On the Chart Setup page, you can change various settings which determine the appearance of the chart.

- Optionally, you can specify a user-defined range of signal values for the Y-axis (vertical axis) of the chart. This effectively limits the chart to only displaying signal values which fall into that range. To do this, check the **"User Defined Scale"** check box, then enter the maximum signal value you want displayed in the **"Maximum Y Value"** field, and the minimum signal value you want displayed in the **"Minimum Y Value"** field. If you do not specify any user-defined range, the range will automatically change as values in the archive file change.

- **"Y Grid Lines On"** and **"X Grid Lines On"** allow you to show/hide grid lines for the chart. Select them to show the grid lines; de-select them to hide the grid lines.

- If you want to use a different color for the grid lines than the default color, click on **"User Defined Color"**, then click on the **[…]** button to make a selection from the color palette. (See *'Using the Color Palette'* later in this section for details.

- The **"Display Date Format"** selection box allows you to specify how dates/times will be shown along the X-axis. The default 'locale specific' will choose whatever date format has been configured for your particular PC. Examples of other possible choices are shown below:

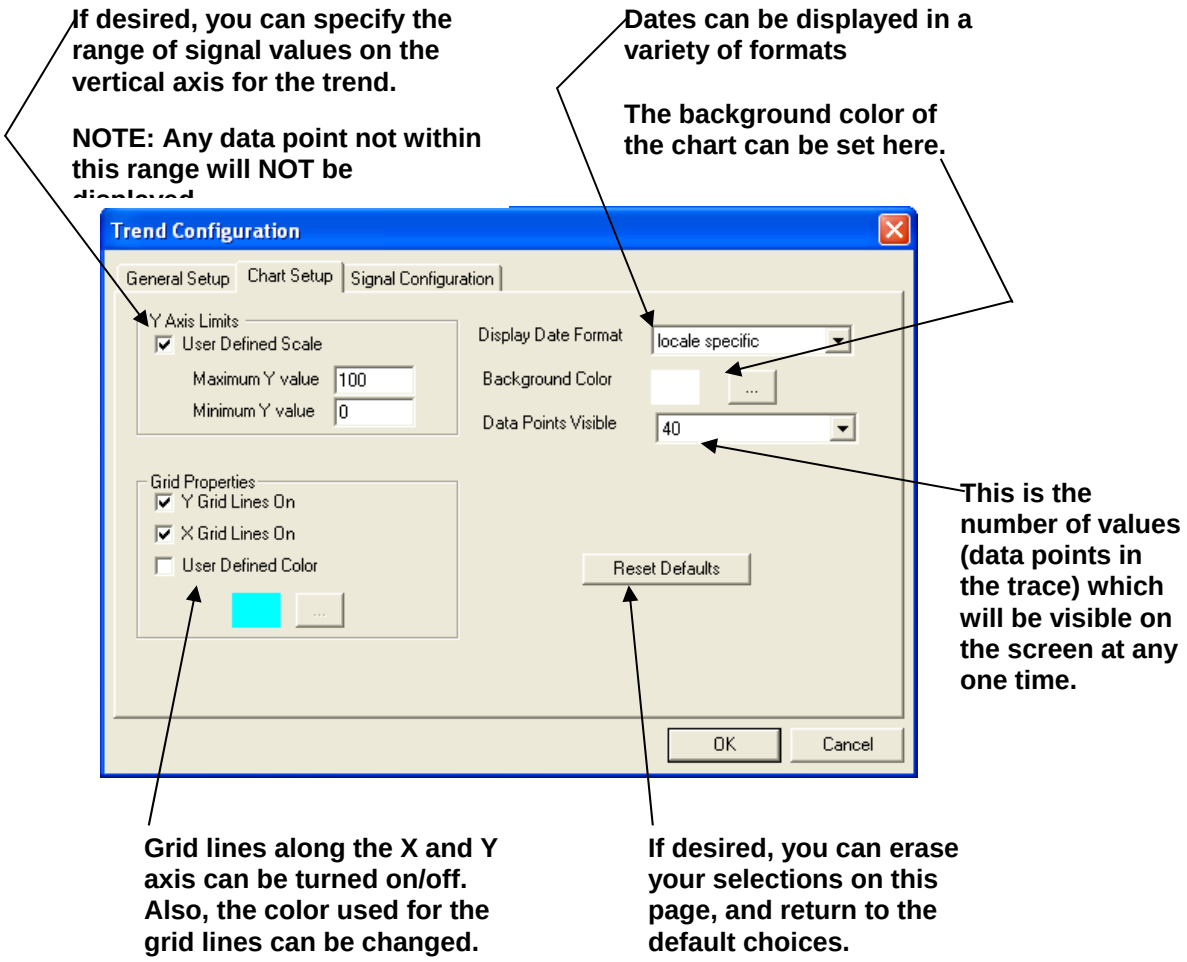
  To display the date Tuesday March 16th at 10:47:23.

Choice	Example:
'hh:mm:ss'	10:47:23
'MM:DD hh:mm:ss'	3:16 10:47:23
DD-hh:mm:ss'	Tue 10:47:23

- The **"Data Points Visible"** selection box allows you to select how many data points (individual signal values for a trace, from the archive file) will be visible on the screen at any one time.

- If you want to erase all of your selections on the 'Chart Setup' page, and replace them with the defaults, click on **[Reset Defaults]**.

When you are finshed with this page, click on the 'Signal Configuration' tab.

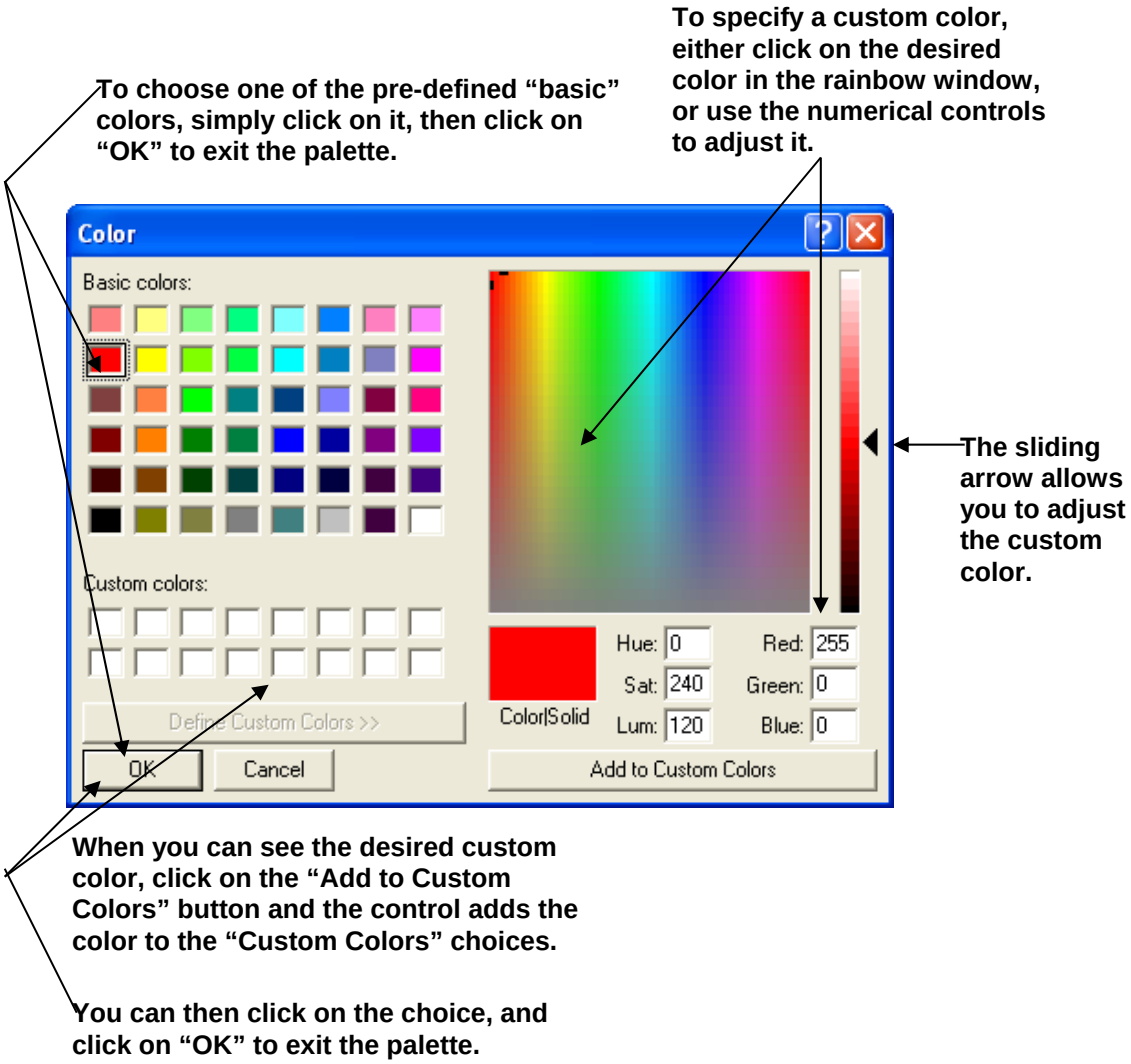


Using the Color Palette

The same color palette is used for setting the grid line color, background color, and the color of individual traces on the chart.

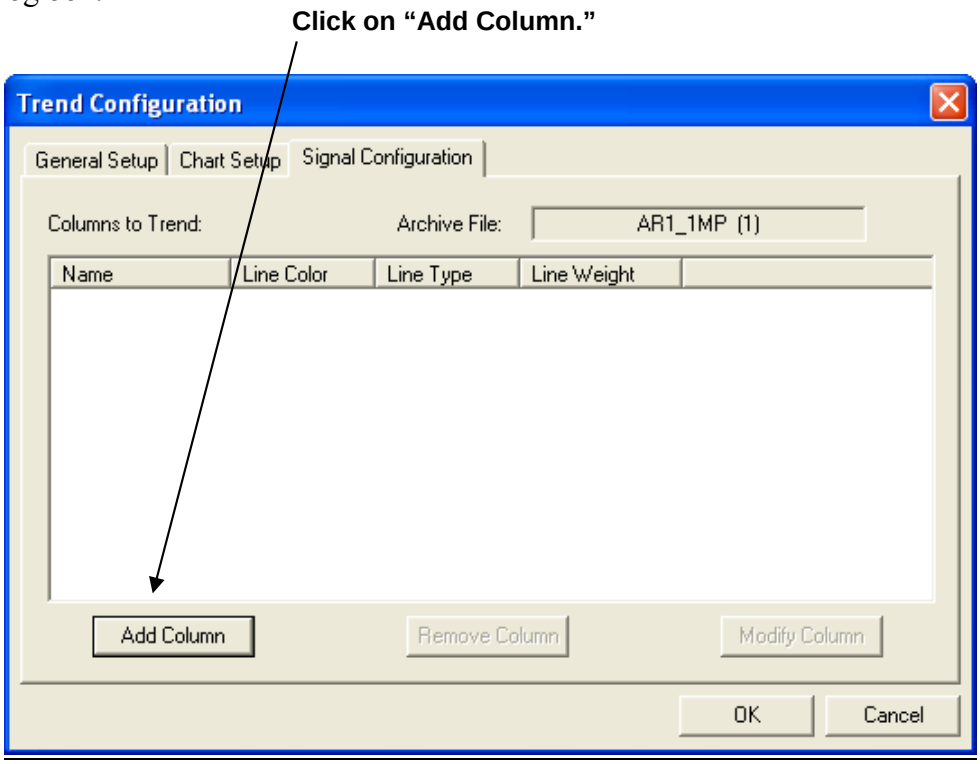
- If you want to use one of the basic pre-defined colors, simply click on the box representing that color among the 'Basic colors' and then click on **[OK]** and your selection will be made.

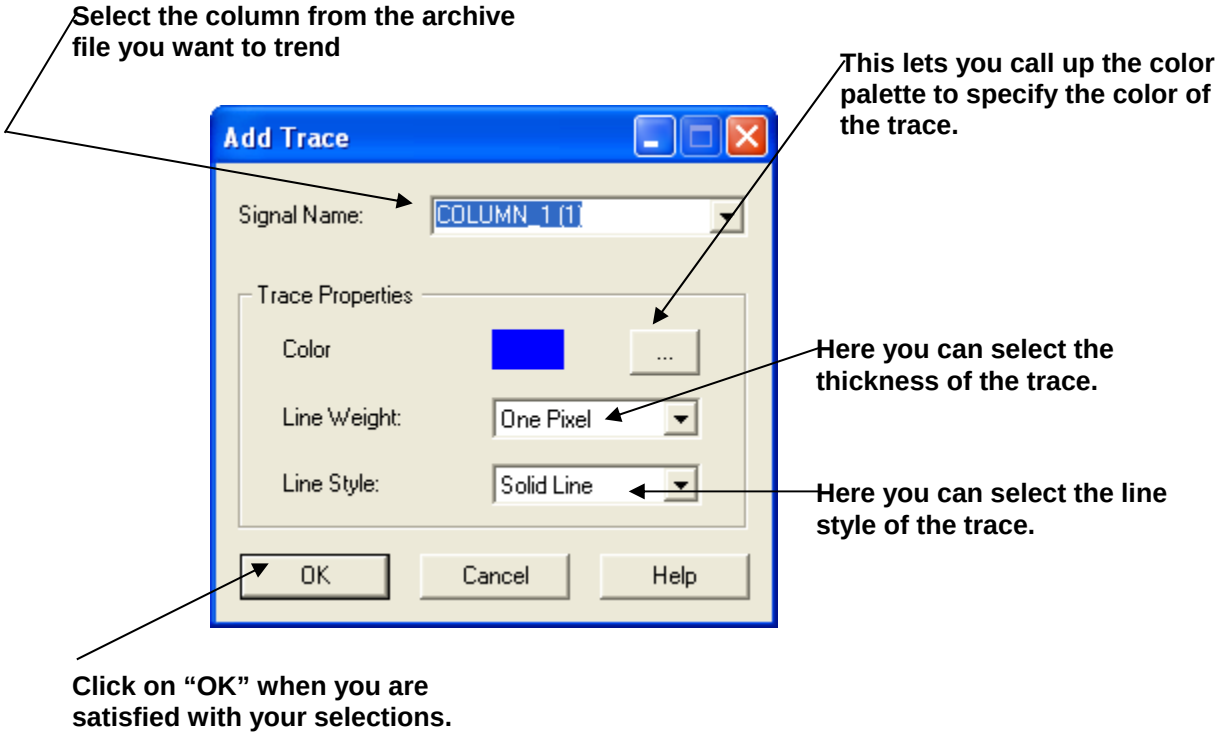
- If you want to specify a custom color, click on the desired color within the rainbow-like box in the right half of the palette. You can then use the sliding arrow along the vertical bar to further refine the color. Alternatively, you could enter numerical RGB (red, green, blue) values to specify the color. When you are satisfied with the color choice, click on **[Add to Custom Colors]** and the color will appear in the 'Custom colors' choices in the lower-left portion of the dialog box, click on it, then click on **[OK]** and your selection will be made.



Signal Configuration Page

On the Signal Configuration page, click on the **[Add Column]** button. This will call up the Add Trace dialog box.





In the Add Trace dialog box, use the **"Signal Name"** selection box to specify which column of the archive file will be providing the data for this trace.

To change the **"Color"** of the trace, click on the **[…]** button, and choose a color from the Color palette.

The thickness and style of the trace can be modified from the **"Line Weight"** and **"Line Style"** selection boxes, respectively.

Click on **[OK]** when you are satisfied with your selections.

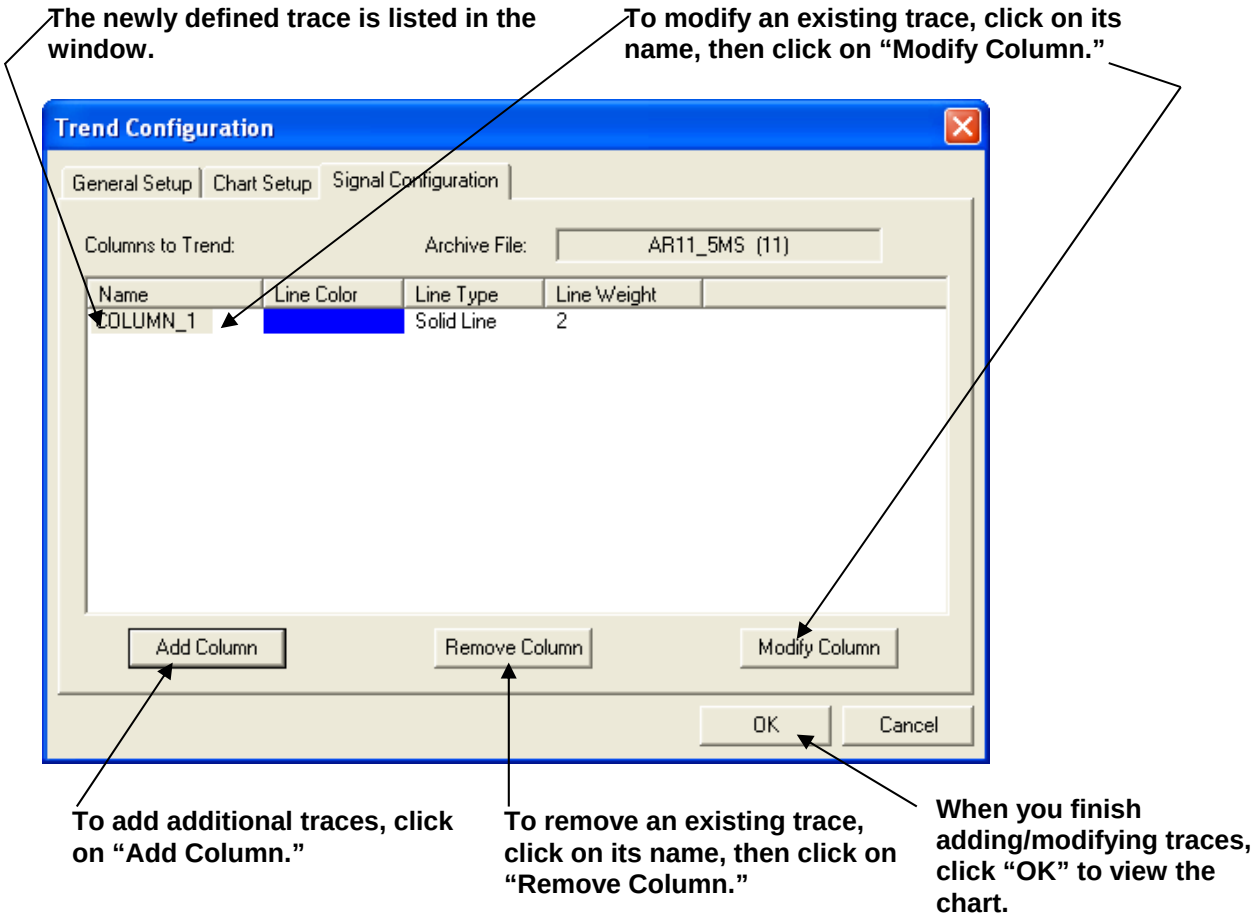
The newly defined trace will now appear in the **"Columns to Trend"** window of the Signal Configuration page.

Click on **[Add Column]** to repeat this process and add additional columns of the archive file to the chart.

To modify an existing trace, click on its name in the **"Columns to Trend"** window, then click on the **[Modify Column]** button. This calls up the Add Trace dialog box, allowing you to modify the trace.

To delete an existing trace, click on its name in the **"Columns to Trend"** window, then click on the **[Remove Column]** button.

When you have finished adding/modifying traces, click on **[OK]** to display your newly created chart. See *'Viewing the Trend Chart'* later in this section for more information.



Configuring a Live Real Time Trend:

The Real Time trend displays data collected directly from the RTU. It requires that signals used in the trend be identified in either one of two ways. The first way is simply to type the signal name in. The second way is to get the signal names from a Signal Lookup file.

ControlWave users can generate a comma separated variable (CSV) file, during the project build process, containing the names of all variables marked "CSV". The file is called PDD.CSV and is located in the directory:

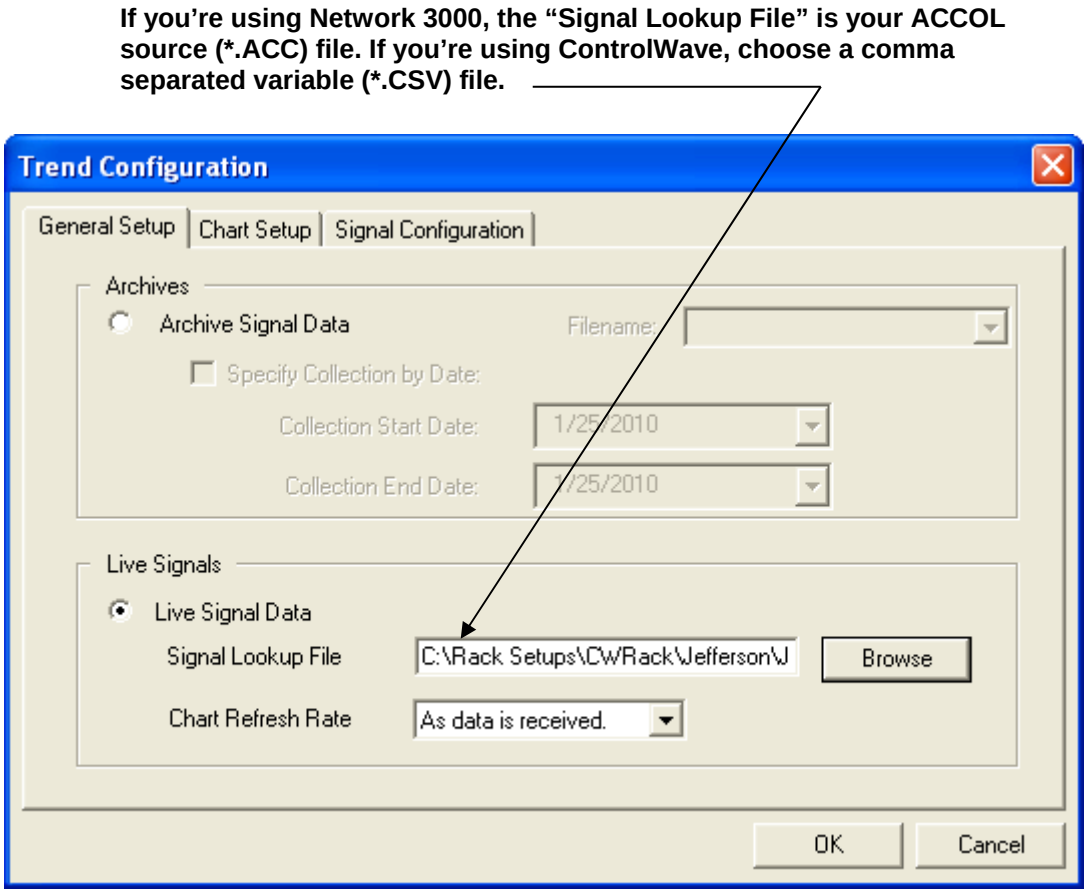
\Projects*projectname*\C*configuration_name*\R*resource_name*.

For example, if your project name is RPC3, with a configuration name of 'ControlWave' and a resource name of 'RTU_RESOURCE', you can find PDD.CSV in:

\Projects\RPC3\C\ControlWave\R\RTU_RESOURCE\pdd.csv

Network 3000 users can use an ACCOL source file (*.ACC) to identify the signal names.

General Setup Page:



- Click on the **"Live Signal Data"** choice.

- Use the **[Browse]** button to specify the path and filename of the **"Signal Lookup File"**, or type it in directly. The Signal Lookup File identifies a group of signals from the RTU, from which you can select a signal to be trended. For ControlWave users, this should be a comma separated variable (*.CSV) file. For Network 3000 users, this should be an ACCOL source (*.ACC) file.

- The **"Chart Refresh Rate"** selection box specifies how frequently the chart is updated with new data from the ControlWave. The default is as new data is received, but several different rates ranging from 1 second to 1 hour are supported. NOTE: For Network 3000 users, the chart refresh rate CANNOT be changed; data will be updated automatically.

- Click on the 'Chart Setup' tab.

Chart Setup Page

On the Chart Setup page, you can change various settings which determine the appearance of the chart.

- Optionally, you can specify a user-defined range of signal values for the Y-axis (vertical axis) of the chart. This effectively limits the chart to only displaying signal values which fall into that range. To do this, check the **"User Defined Scale"** check box, then enter the maximum signal value you want displayed in the **"Maximum Y Value"** field, and the minimum signal value you want displayed in the **"Minimum Y Value"** field. If you do not specify any user-defined range, the range will automatically change as values collected from the RTU change.

- **"Y Grid Lines On"** and **"X Grid Lines On"** allow you to show/hide grid lines for the chart. Select them to show the grid lines; de-select them to hide the grid lines.

- If you want to use a different color for the grid lines than the default color, click on **"User Defined Color"**, then click on the **[…]** button to make a selection from the color palette. (See *'Using the Color Palette'* earlier in this section for details.

- The **"Display Date Format"** selection box allows you to specify how dates/times will be shown along the X-axis. The default 'locale specific' will choose whatever date format has been configured for your particular PC. Examples of the other possible choices are shown below.

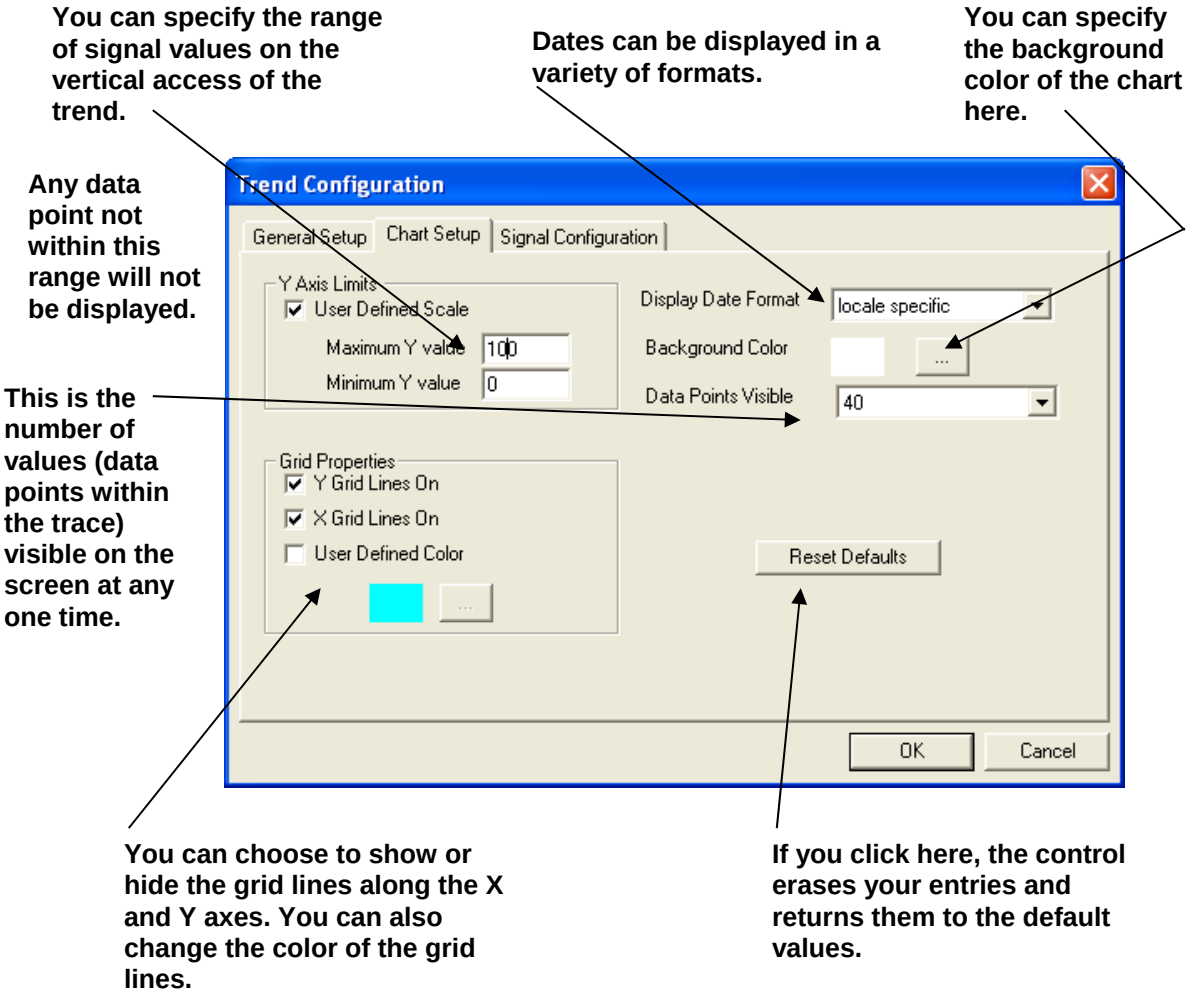
To display the date Tuesday March 16th at 10:47:23:

Choice	Example:
'hh:mm:ss	10:47:23
'MM:DD hh:mm:ss	3:16 10:47:23
DD-hh:mm:ss	Tue 10:47:23

- The **"Data Points Visible"** selection box allows you to select how many data points (individual signal values for a trace) will be visible on the screen at any one time.

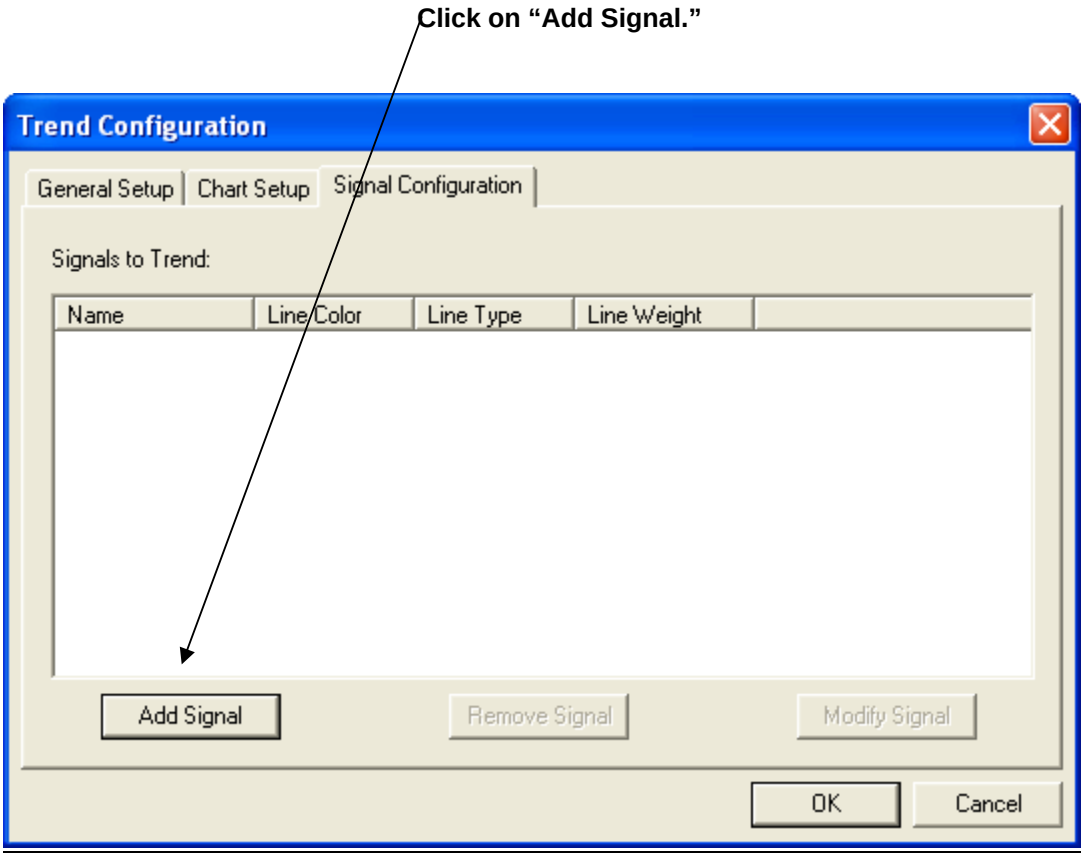
- If you want to erase all of your selections on the 'Chart Setup' page, and replace them with the defaults, click on **[Reset Defaults]**.

When you are finshed with this page, click on the 'Signal Configuration' tab.



Signal Configuration Page

On the Signal Configuration page, click on the **[Add Signal]** button. This will call up the Add Trace dialog box.

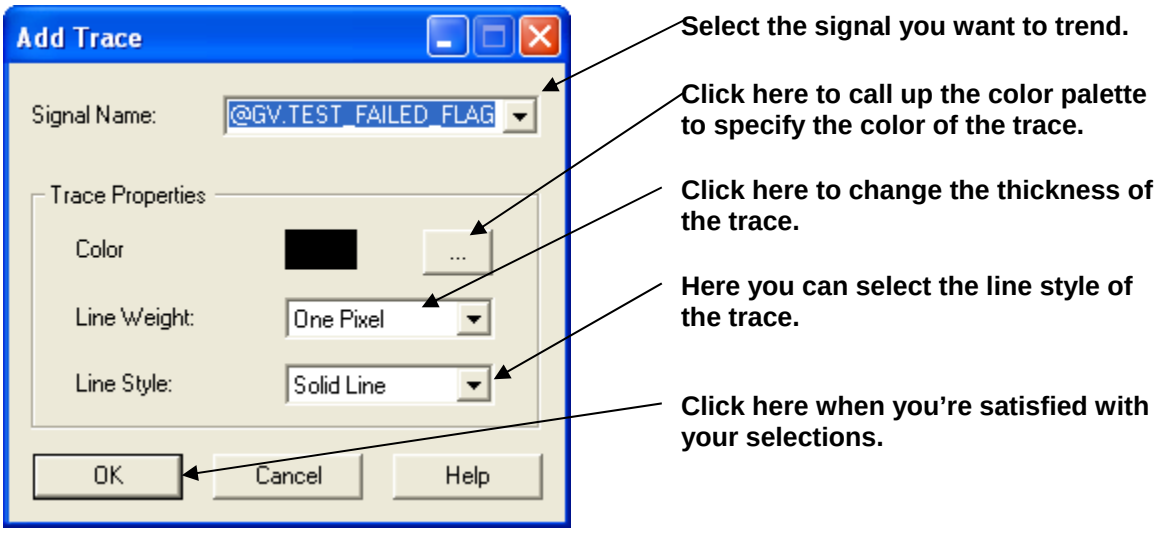


In the Add Trace dialog box, use the **"Signal Name"** selection box to specify which signal will be providing the data for this trace, or just type in the desired signal name.

To change the **"Color"** of the trace, click on the **[…]** button, and choose a color from the Color palette.

The thickness and style of the trace can be modified from the **"Line Weight"** and **"Line Style"** selection boxes, respectively.

Click on **[OK]** when you are satisfied with your selections.



The newly defined trace will now appear in the **"Signals to Trend"** window of the Signal Configuration page.

Click on **[Add Signal]** to repeat this process and add additional signals to the chart.

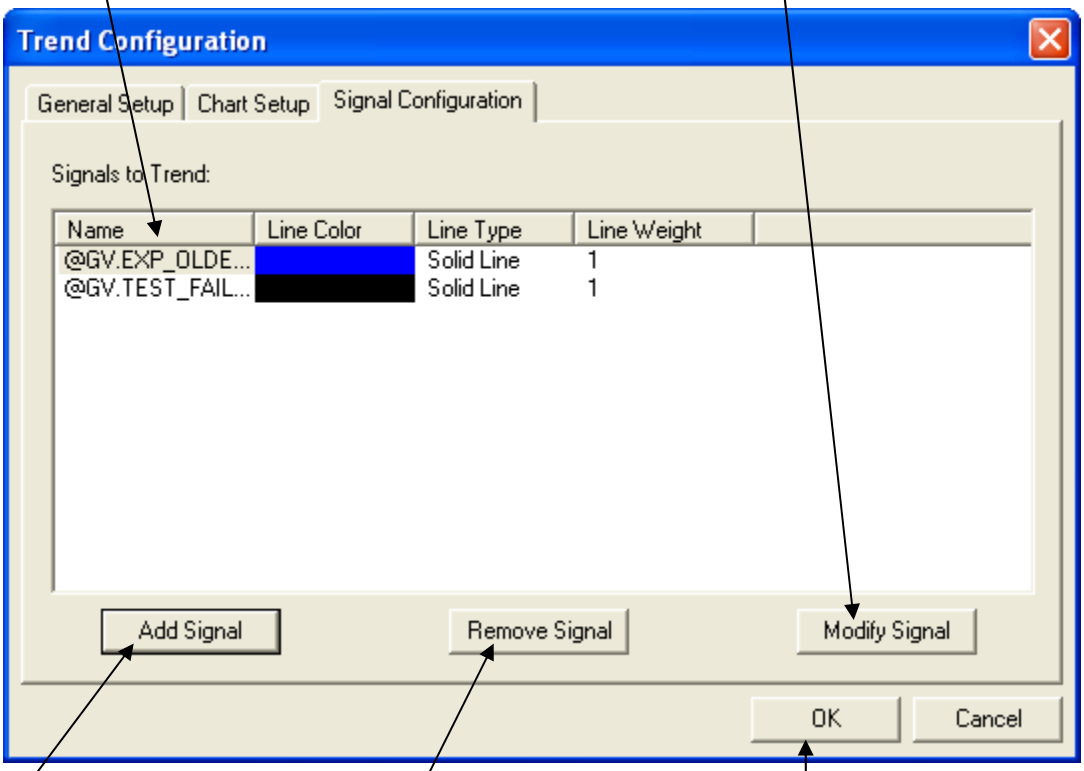
To modify an existing trace, click on its name in the **"Signals to Trend"** window, then click on the **[Modify Signal]** button. This calls up the Add Trace dialog box, allowing you to modify the trace.

To delete an existing trace, click on its name in the **"Signals to Trend"** window, then click on the **[Remove Signal]** button.

When you have finished adding/modifying traces, click on **[OK]** to display your newly created chart. See *'Viewing the Trend Chart'* later in this section for more information.

Each trace is listed in the window.

To modify an existing trace, click on its name then click on "Modify Signal."

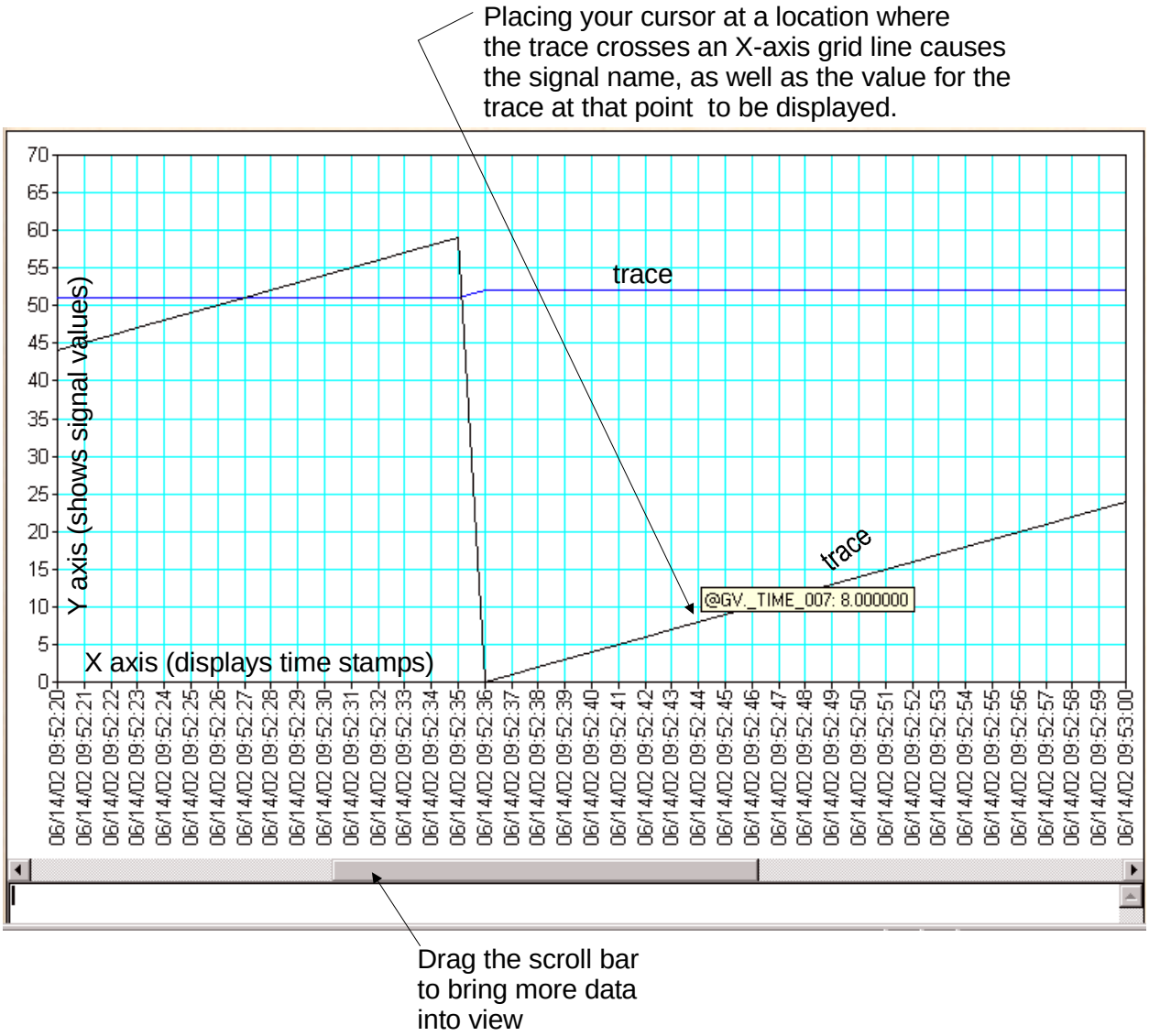


To add additional traces, click on "Add Signal."

To remove an existing trace, click on its name then click on "Remove Signal."

Click on OK when you finish adding/modifying the traces, and the trend viewer displays the chart.

Viewing the Trend Chart



Scrolling

To view data not currently shown on the screen, drag the scroll bar along the bottom of the chart.

NOTE: In Live Real Time charts, the chart will automatically scroll until it has displayed the maximum number of data points. Once this occurs, you must drag the scroll bar to the right to see newer data as it comes in.

Data Updates:

If you are collecting data via Internet Protocol (IP), the trend will only be updated when a value change occurs; otherwise the trace will stop. This is because IP data is not polled, it is only sent when changes occur.

If communication is via BSAP, and you are collecting data from an archive file, it may take a few seconds for the trace to initially appear. If the trace still does not appear, cancel the trend and call it up again.

Memory Considerations for Live Real Time Charts

Data for Live Real Time Trends is stored in active memory as it comes in. If you leave a chart open continuously (several hours), you could potentially exhaust your PC memory.

Viewing a data point along the trace

To view the value of a data point along a particular trace, move your cursor along the trace to a spot where it intersects with an X-axis grid line, and a small box will appear, displaying the value.

Zooming In

To zoom in, left-click and drag the cursor to the left or right to highlight the area of the chart you want to zoom in on. The chart will zoom in to display greater detail on that area. NOTE: Zooming is more useful for Historical Charts, since in Real Time charts, the zoom in view quickly zooms out when new data is received.

Zooming Out

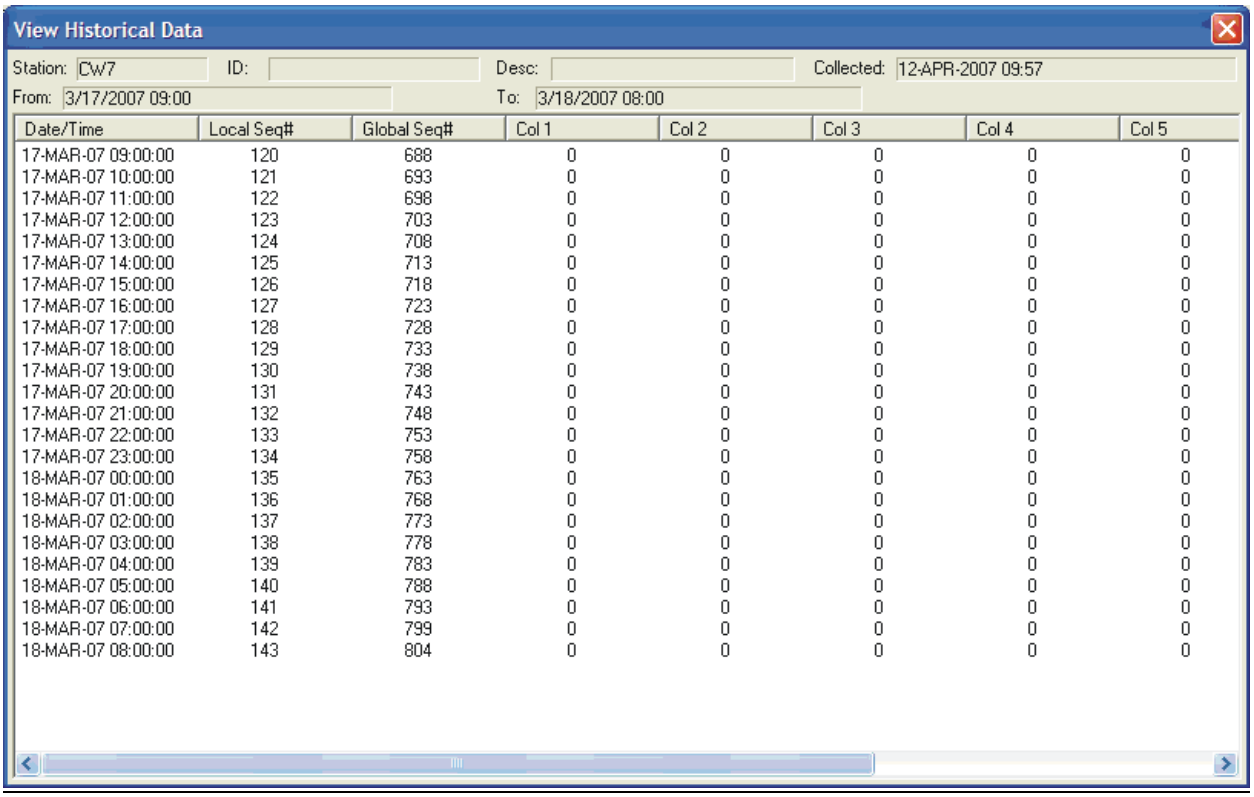
To zoom out, *right*-click within the chart, and choose either **"Zoom Out"** or **"Zoom Out All"**. If you have zoomed in multiple times, **"Zoom Out"** allows you to zoom back to the most recent previous zoom level. **"Zoom Out All"** causes the chart to zoom out the maximum amount.

Modifying the Chart

To modify the characteristics of your chart, *right*-click within the chart and choose **"Configure Trend"** from the pop-up menu. You can now proceed to modify the chart.

Off-Line View

The **"Off-Line View"** option displays the contents of array, archive, and audit data files that have been collected via the Historical Log Storage control, or the Harvester. This option is available whether or not OpenBSI communications are currently running.



View Historical Data

Station: CW7 ID: Desc: Collected: 12-APR-2007 09:57

From: 3/17/2007 09:00 To: 3/18/2007 08:00

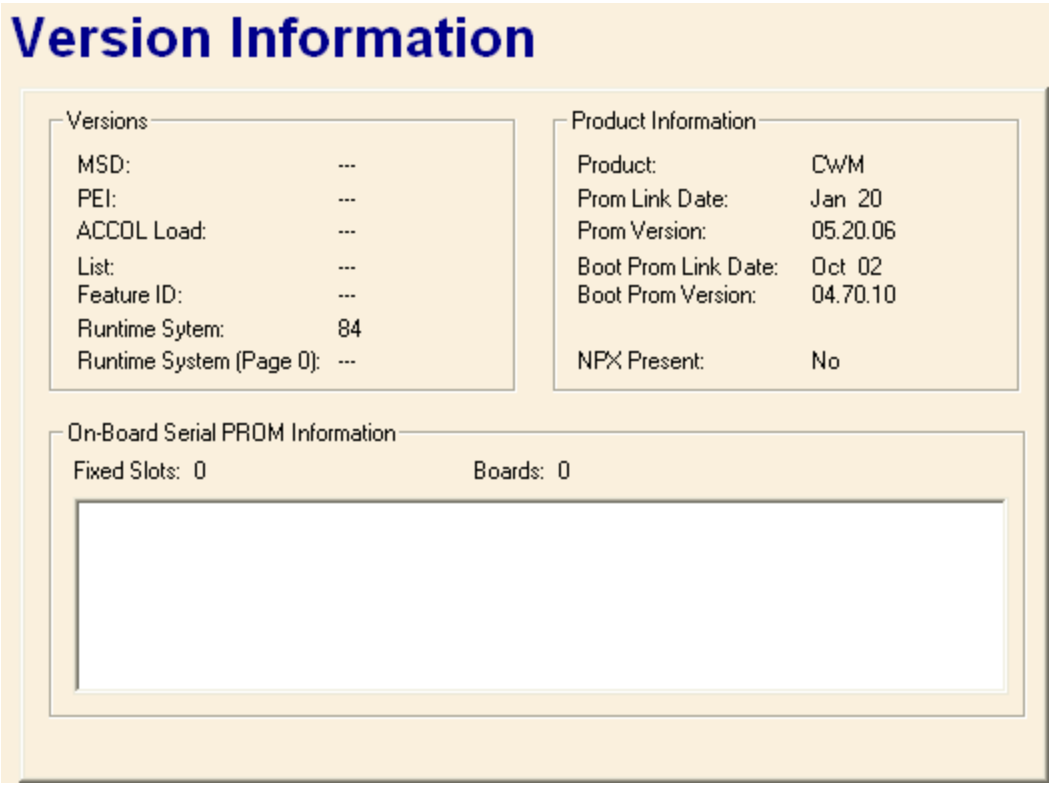
Date/Time	Local Seq#	Global Seq#	Col 1	Col 2	Col 3	Col 4	Col 5
17-MAR-07 09:00:00	120	688	0	0	0	0	0
17-MAR-07 10:00:00	121	693	0	0	0	0	0
17-MAR-07 11:00:00	122	698	0	0	0	0	0
17-MAR-07 12:00:00	123	703	0	0	0	0	0
17-MAR-07 13:00:00	124	708	0	0	0	0	0
17-MAR-07 14:00:00	125	713	0	0	0	0	0
17-MAR-07 15:00:00	126	718	0	0	0	0	0
17-MAR-07 16:00:00	127	723	0	0	0	0	0
17-MAR-07 17:00:00	128	728	0	0	0	0	0
17-MAR-07 18:00:00	129	733	0	0	0	0	0
17-MAR-07 19:00:00	130	738	0	0	0	0	0
17-MAR-07 20:00:00	131	743	0	0	0	0	0
17-MAR-07 21:00:00	132	748	0	0	0	0	0
17-MAR-07 22:00:00	133	753	0	0	0	0	0
17-MAR-07 23:00:00	134	758	0	0	0	0	0
18-MAR-07 00:00:00	135	763	0	0	0	0	0
18-MAR-07 01:00:00	136	768	0	0	0	0	0
18-MAR-07 02:00:00	137	773	0	0	0	0	0
18-MAR-07 03:00:00	138	778	0	0	0	0	0
18-MAR-07 04:00:00	139	783	0	0	0	0	0
18-MAR-07 05:00:00	140	788	0	0	0	0	0
18-MAR-07 06:00:00	141	793	0	0	0	0	0
18-MAR-07 07:00:00	142	799	0	0	0	0	0
18-MAR-07 08:00:00	143	804	0	0	0	0	0

Off-Line Trend

The **"Off-Line Trend"** option displays a graphical trend of array or archive data files that have been collected via the Historical Log Storage control, or the Harvester. This option is available whether or not OpenBSI communications are currently running.

The Version Information Page displays details on the version of software and firmware used with the given controller. This information may be requested by Emerson support personnel in order to determine the revision of software and firmware used at a particular customer site.

To access the Version Information Page, click on the **"Statistics"** category button, then choose the **"Version Info"** drop-down menu selection.



The **"MSD"** and **"PEI"** values are used, respectively, to identify discrepancies between the file version of the load executing in the controller, and the version originally downloaded. In general, these values are the same. If they are different, the discrepancy indicates that either an on-line edit has been made, or a file has become corrupted.

"ACCOL Load" indicates the version of ACCOL Tools software used to create this ACCOL load. (Only applies if this is an ACCOL device.)

"List" is the list version (used by Network Monitor software).

"Feature ID" is used by old versions of the ACCOL Tools, to coordinate firmware revisions.
Possible values are: FE - AA firmware and newer
0 - S.1 through S.3 firmware (3350/3380/3385)
FF - Pre-S firmware (3350/3380/3385)
00 - Not applicable

"Runtime System" refers to the firmware version installed, and **"Runtime System [Page 0]"** refers to the firmware revision of the load. In general, for all features to be supported, these should match, a discrepancy may indicate a *possible* incompatibility. Possible hexidecimal values for these fields are:

1 - 3350/3380/3385 loads (4.2 Tools/S3 firmware, or earlier)
2 - 3330 - version 4.2 Tools / S3 firmware
3 - 3350/3380/3385 loads (5.0 through 5.2 Tools, AA through AC firmware)
4 - 3330/3335 (5.0+ Tools, AA through AD firmware)
5 - 3350/3380/3385 (5.4 Tools; no firmware release associated)
6 - 3330/3335 (5.4+ Tools, AE through AJ.xx firmware)
8 - 3310/3330/3335 (5.9 Tools, AK firmware)
9 - 3310/3330/3335 (386EX Real Mode)
10- 3310/3330/3335 (386EX Protected Mode)
55- 3305 firmware
6A- 3308 firmware (A.01 to A.02 firmware)
6B- 3308 firmware (A.03 to C.04 firmware)
70 – ControlWaveLP, RTU 3340 firmware
80 - ControlWave firmware
84 – ControlWave MICRO firmware
85 – ControlWave EFM
86 – ControlWave GFC Classic
87 – ControlWave XFC
89 – ControlWave CW_30/CW_35/CW_10 (DPC 3330/DPC 3335/RTU 3310 Convergence)
8A – ControlWave GFC
8B – ControlWave Express
8C- ControlWave I/O Expansion Rack
8E – ControlWave CW_31 (RIO 3331 Convergence)
8F – ControlWave MICRO I/O Expansion Rack
96- 3530 firmware (fixed 'C' load)
A0- TeleFlow / 3530 firmware (ACCOL load)

If **"NPX Present"** is Yes, it indicates that this ACCOL load expects to be installed in a Network 3000 unit with the NPX math co-processor.

The version prefix appears in the **"Product"** field. NOTE: 186 and 386EX Real mode units do NOT use the **"Product"** field. Valid version prefixes include:

C3 ControlWave Convergence CW_10/CW_30/CW_35 firmware
CWE ControlWave EFM firmware
CWI ControlWave GFC Classic firmware
CWM ControlWave MICRO firmware

CWP ControlWave firmware

CWR	ControlWave I/O Expansion Rack
CWX	ControlWave XFC firmware
E1S	ControlWave GFC firmware
E3S	ControlWave Express firmware
LPS	ControlWaveLP firmware
PEX	386EX Protected Mode firmware with Ethernet and NPX math co-processor
PLS	386EX Protected Mode firmware
PLX	386EX Protected Mode firmware with Ethernet

"Prom Link Date" indicates the month and day this firmware was created. The firmware version appears in the **"Prom Version"** field. For 186 and 386EX Real Mode units, the full version name appears such as 'AK.03' or 'RMS02'. For Protected Mode users, the prefix is not included, and the version is encoded as: aa.bb.cc

where:	'aa' is the firmware version
	'bb' is the update revision
	'cc' indicates the beta revision

for example PLS00 with no updates or beta revisions would appear as 00.00.00.

Protected mode units also contain the **"Boot Prom Version"** and **"Boot Prom Link Date"**.

"On Board Serial PROM Information" displays serial numbers and other indentification information from I/O boards in the unit. This feature is only available for ControlWave/ControlWaveLP units.

Appendix A – ActiveX Controls

You can create your own user-defined web pages for use with ControlWave/Network 3000 controllers. This might be done to create customized displays for a controller which could serve as a simple human machine interface (HMI).

A series of ActiveX controls specific to ControlWave and Network 3000 controllers are provided for web page developers. Some of the controls may be used with *both* Network 3000 and ControlWave series controllers; others are restricted to one product family or the other.

These controls, which are the same controls used in the standard web page set, allow collection of various types of data (signal values, arrays, archives, etc.) They are automatically installed on your PC, when you install OpenBSI Network Edition or OpenBSI Local Edition from the OpenBSI CD.

Compatibility A-2
Notes About Creating Your Own Web Pages A-3
Standard Properties (Common to Multiple ActiveX Controls) A-3
Use of Parameters A-5
Notes about Specifying Colors: A-6
  Specifying RGB colors as Decimal Numbers A-6
Alarm Summary A-9
Archive Collection Control A-12
Array Collection Control A-13
Audit Collection Control A-15
Buffer Usage Control A-17
CPROM Control (Custom PROM) A-17
Crash Block Control A-18
File Transfer Control A-18
Historical Array Item View Control A-20
Historical Log Storage Control A-24
IP Statistics Control A-32
Node Routing Control A-32
OpenBSI Version Control A-32
Port Summary Control A-33
Recipe Control A-33
RTU Locator Control A-35
Security Control (Sign On) A-36
Signal List Control A-37
Signal Search A-38
Signal View Control A-41
Trend A-53
Version Information Control A-58
Write Signal Control A-59
Examples - Configuring ActiveX Controls in HTML A-62
  Configure Without Passing Any Parameters To The Control A-62

Configure With Passing Parameters To The Control A-62
Example - Configuring the Signal View Control A-63
Example - Displaying Data From Multiple RTUs on the Same Web Page A-67
Example – Retrieving a Value from SignalView using Javascript A-70
Tips for Creating a Simple HMI Using SignalView Controls A-72
Calling the Actual Controls in the HTML Body A-75

Compatibility

These ActiveX controls will only function in applications that support ActiveX, e.g. Microsoft® Internet Explorer, Frontpage, or Visual Basic. Our controls require Internet Explorer Version 5.0 (or newer).

These controls will NOT function in other browsers.

These controls utilize ATL, and as such, properties must be configured directly in HTML.

Notes About Creating Your Own Web Pages

- *In order to use any of these ActiveX controls, your web pages MUST include, somewhere, the Security Control (BBI Security Class) which allows the user to sign-on.* Once a user has signed on to an RTU successfully, it establishes a session between the current browser window, and that RTU. That session will remain active until the user signs-off, or signs-on to a *different* RTU.

- User-defined web pages can be built using any HTML creation package of your choice. *Instructions for creating web pages are beyond the scope of this manual.* Consult the documentation accompanying your HTML creation software.

- Web pages are stored on the OpenBSI workstation.

- When you have completed your user-created web pages, they should be stored on the PC, in the directory:

  *openbsi_installation_path***Projects***projectname***WebPages**

  where *projectname* is the name of the project file (.MWT) associated with this controller. Alternatively, you can store them in the *openbsi_installation_path***WebPages** directory. The default installation path for OpenBSI data is: \ProgramData\Bristol\OpenBSI\.

Standard Properties (Common to Multiple ActiveX Controls)

Property Name	Data type	Valid Choices	Purpose
BackColor	OLE_COLOR	Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue. Default: 0xFFCECE (powder blue)	Sets the background color.
BorderColor	OLE_COLOR	Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue.	Sets the color of the visible border.
BorderVisible	BOOL	0 - border hidden 1 - border visible Default: 0	Shows / hides the border.

BorderWidth	LONG	Default: 1	Defines the width (in pixels) of the border.
ForeColor	OLE_COLOR	Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue. Default: 0x000000 (black)	Defines the text color.
Height	INT	Range varies depending upon screen resolution.	Control's height on the screen (in pixels)
Left	INT	Range varies depending upon screen resolution.	Left starting position for the control on the screen (in pixels)
RTUName	STRING	Name must match that defined in NETDEF or via RTU Node Locator.	The name of the controller (node) to which this control will communicate.
Top	INT	Range varies depending upon screen resolution.	Top starting position for the control on the screen (in pixels)
Width	INT	Range varies depending upon screen resolution.	Control's width on the screen (in pixels)

List of GUIDs and Their Names

1A6E1B1E-1A00-11D4-A96A-AA000400ED04	BBI Buffer Usage Class
8FF58CED-1ADB-11D4-A96A-AA000400ED04	BBI CPROM Class
7EFFC9CE-1B6F-11D4-A96A-AA000400ED04	BBI Crash Block Class
8FF58CFE-1ADB-11D4-A96A-AA000400ED04	BBI IP Stat Class
610D248D-1AD5-11D4-A96A-AA000400ED04	BBI Node Routing Class
FC0E13AC-19F6-11D4-A96A-AA000400ED04	BBI Port Summary Class
AA6531F0-0A5C-11D4-B40B-00500472E15A	BBI RTU Locator Class
06A9C435-0A2B-11D4-B40B-00500472E15A	BBI Security Class
9139C3CD-2FE2-11D4-B457-00500472E15A	BBI Signal List Class
FC0E139E-19F6-11D4-A96A-AA000400ED04	BBI Version Info Class
15DCBC8F-3FCB-11D5-834B-00E029846704	BBI Recipe Class
6A0FF60C-BFD7-11D4-82E8-00E029846704	BBI Array Collection Class
7599A4BD-BFE2-11D4-82E8-00E029846704	BBI Audit Collection Class
8DEA3D9E-BFDC-11D4-82E8-00E029846704	BBI Archive Collection Class
C8009A0E-5BFE-11D5-8356-00E029846704	BBI Signal Search Class
221721DF-2F89-11D6-896F-00E029846704	BBI Trend Class
043CC160-3C5F-4268-9FE8-997EE1413C76	BBI Array Item View Class
2C786147-7FE3-4102-A988-3D78D07ADD2E	BBI Signal View Class
7036CFEE-8A78-4A1A-BF6B-655909722212	Alarm Client Class
BD01DB82-1A71-11D6-831D-00E029841671	BBI Log Collection Class
0A0EF0D2-C9C5-4DAD-9EAC-B109B539E2D8	BBI Software Version Class
B86708D4-7557-4AFB-86E0-CB6F58BAF19A	BBI Write Signal Value Class

Use of Parameters

Beginning with OpenBSI Version 4.2, our ActiveX controls support the use of parameters, as an alternative to scripting. Parameters are handled immediately when the control is opened; but the control must execute for them to be used. Parameters take the format

<**param name**="*parname"* **value**="*parvalue"*>

where

parname is the name of the parameter/property to be set, and

parvalue is the value to be assigned to the parameter/property

NOTE: When using parameters, inside the object tag, numbers cannot be expressed as hex values; they must be entered as their decimal equivalents.

Notes about Specifying Colors:

In the examples in this section, all color numbers are specified as hex numbers, except within parameter object tags, where they must be decimal numbers.

Specifying RGB colors as Decimal Numbers

In a web page, RGB colors are specified in reverse order as BGR. When using hex numbers, this is NOT a problem, since all you need to do is reverse the order of the hex number.

When using decimal numbers to specify the color, you must perform the following calculation:

rgb_color = red_color_number + (green_color_number x 256) + (blue_color_number x 256 x 256)

Forcing a Refresh of a Web Control

If you have implemented Javascript to dynamically alter a normally static portion of a web control, such as the color of an object, or the floating point display format of a number, you must set the property, and then run the execute() command to force a refresh.

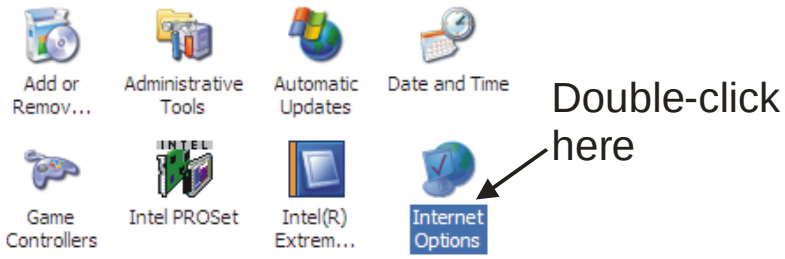
Troubleshooting Tip – Web Page Controls Not Functioning Properly

Changes to Internet Explorer's configuration affect the operation of OpenBSI web pages and controls. If your web pages function improperly, you must reset the Internet security settings, and then verify that Internet Explorer's current configuration enables JavaScript.

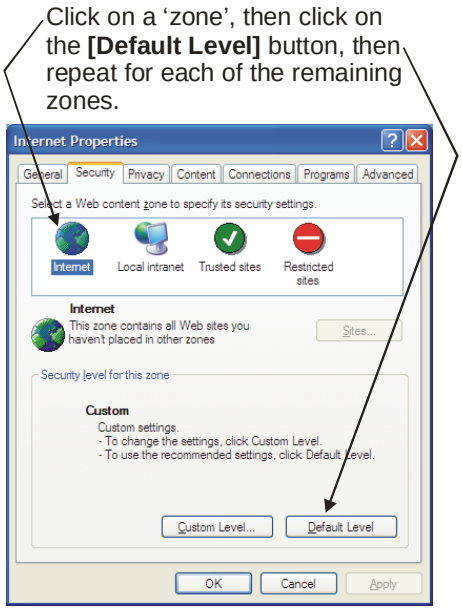
Resetting the Internet Security Settings

1. Click on **Start → Settings → Control Panel** to bring up the Windows Control Panel.

2. Double-click on **"Internet Options"**.



3. In the Internet Options dialog box, choose the 'Security' tab. There are four web content zones listed 'Internet', 'Local intranet', 'Trusted sites', and 'Restricted sites'. For each zone, click on it, then click on the **[Default Level]** button.



4. Now choose the 'Advanced' tab for the Internet Properties dialog box, click on the **[Restore Defaults]** button, then click on **[OK]**.

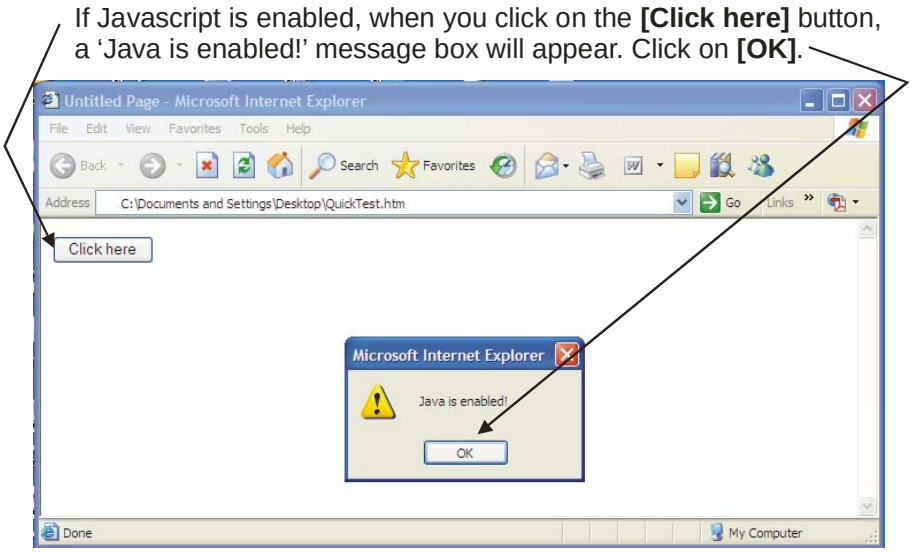
JavaScript should now be enabled. To verify this, perform the procedure below:

Verifying that Javascript is enabled

1. In a text editor, create a simple HTML file, called Quicktest.HTM and store it on your Windows Desktop. A sample you can use is included below:

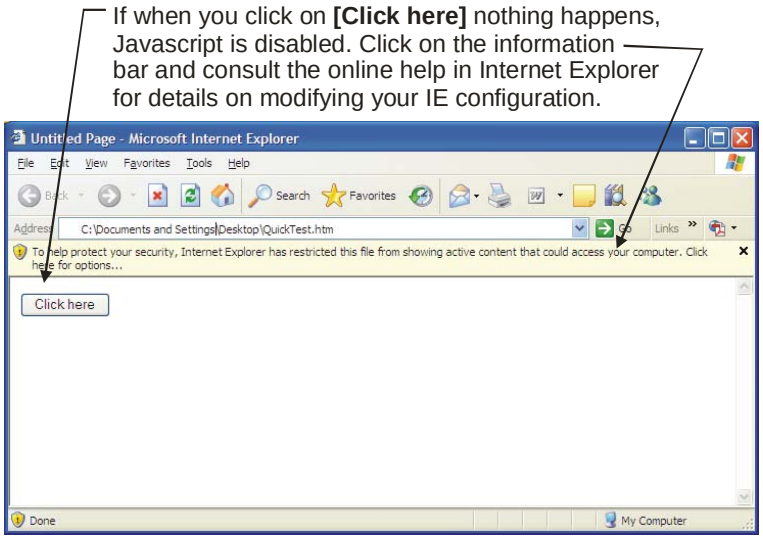
```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" >
<head>
    <title>Untitled Page</title>
</head>

<script language="javascript" type="text/javascript">
function QuickTest() {
 alert('Java is enabled!');
}
</script>

<body onload="QuickTest()">
<p><input type="button" value="Click here" onClick="QuickTest();"></p>

</body>
</html>
```

2. Start the HTML file you just created by double-clicking on its desktop icon. If JavaScript is enabled, when you click on the **[Click here]** button, you should see a message box that says 'Java is enabled!' Click on **[OK]** and you're done. JavaScript is enabled.



If, on the other hand, when you start the page, it includes an information message about blocked content, this indicates that JavaScript is disabled. You can verify that JavaScript is disabled by clicking on the **[Click here]** button – no message box should appear.

To enable JavaScript, click on the information bar at the top of the page, and follow the instructions in the Internet Explorer online help.



You will need to enable all JavaScript (ActiveX, Active Content, etc.) options. You will also need to disable Internet Explorer's information bar.

Alarm Summary

Object Name: Alarm Client Class

Used with: ControlWave, Network 3000; requires OpenBSI 5.3 or newer

Purpose: Displays all active alarms from one or more RTUs (subject to user-filtering). User must be logged on to each RTU for which alarms are being displayed.

CLSID: 7036CFEE-8A78-4A1A-BF6B-655909722212

Standard Properties: See *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

MenuSecurity This is a mask used to indicate which menu commands will be made available in the pop-up menu. A particular menu item will only be available if its bit is set to 1.

Bit Number	Menu item enabled by setting bit to1
0	Online
1	Ack
2	Ack All
3	Open
4	Save
5	Save As
6	Properties (View only)
7	Properties (View and Modify)

AlmSummaryBkColor
The background color of the alarm summary window. Default = 0x9B9CA4 (custom gray)

Columns A mask indicating which columns of alarm data should be presented in the Alarm Summary Window.

Bit Number	Column included by setting bit to1
0	signal value when alarm occurred
1	engineering units
2	alarm priority
3	alarm state
4	report type
5	alarm limit exceeded
6	ack state

7	descriptor
8	global sequence number
9	local sequence number
10	PDD index
11	global address
12	load version

CriticalColor sets the color for critical priority alarms. Default = 0x0000FF (RED)

NonCriticalColor sets the color for non-critical priority alarms. Default = 0xFF00FF (PURPLE)

OpGuideColor sets the color for operator guide priority alarms. Default = 0x00FFFF (YELLOW)

EventColor sets the color for event priority alarms. Default = 0xFFFF28 (custom CYAN)

NormalColor sets the color for alarms that have returned to NORMAL. Default = 0x00FF00 (GREEN)

FilterPriority can be used to exclude alarms of a particular priority from being displayed in the Alarm Summary.

Bit Number	When set to 1, exclude this priority
0	event
1	operator guide
2	non critical
3	critical

FilterLimit can be used to exclude analog alarms generated because they exceeded a particular alarm limit from being displayed in the Alarm Summary.

Bit Number	When set to 1, exclude this limit
0	low
1	high
2	low-low
3	high-high

FilterLogicalType can be used to exclude logical alarms of a particular type:

Bit Number	When set to 1, exclude this logical type
0	False
1	True
2	Change-of-state

FilterReport can be used to exclude alarms of a particular report type from being displayed in the Alarm Summary.

Bit Number	When set to 1, exclude this report type
0	no report
1	single
2	momentary
3	multiple

FilterDataType can be used to exclude alarms of a particular data type from being displayed in the Alarm Summary.

Bit Number	When set to 1, exclude this data type
0	analog alarms
1	logical alarms

FilterOffline when set to TRUE, all filtering options will also be applied when the Alarm Summary is used in off-line mode.

EnableLog when set to TRUE, alarm data records will be logged to a specified file.

OverwriteLog when set to TRUE, the existing alarm log file will be overwritten when the Alarm Summary is started.

DumpExtra when set to TRUE, extra alarm data such as the descriptor, local and global sequence numbers, PDD index, global address and version number will be written to the Alarm log file.

FilterLog when set to TRUE, filtering options will be applied not just to the Alarm Summary display, but also to the log file in both online and offline modes.

Logfile Specifies the path and filename of the Alarm Summary log file.

Method: Execute( ); When called as part of a script, you MUST include the

'BBIControl.Execute(): statement, or the control will NOT run.

See also: *Alarm Summary Web page*

Archive Collection Control

Object Name: BBI Archive Collection Class

Used with: Note: Requires OpenBSI 4.02 (or newer)

Purpose: Displays the contents of archive files in the controller.

CLSID: 8DEA3D9E-BFDC-11D4-82E8-00E029846704

Standard Properties: For BackColor, ForeColor, RTUName, Width, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

Number — The archive number to collect.

Filename — The archive file name to collect.

AllowFileChange — Determines whether the user will be permitted to specify other archive files, or can only look at one archive file:

- 0 Do not allow choice of a different archive file.
- 1 Allow a different archive file to be specified. (Default)

Oldfirst — Flag to determine whether the oldest archive records should be read *first*:

- 0 Read from beginning (default)
- 1 Read from end (oldest record first)

Save2file — Flag to determine whether collected snapshot should be saved to a file.

- 0 Do NOT save to file. (default)
- 1 Save to file.

SaveFilename — File name into which collected snapshot should

	be saved
SearchBy	Method for searching the archive file 0 Search by number (default) 1 Search by name
FreezeCol	Flag to determine whether timestamps should always be displayed in the first column: 0 Timestamps need not appear in 1st column (default) 1 First column always must show timestamp
Precision	Number of places to the right of the decimal point which should be displayed for a floating point number. This can range from 0 to 15. Default is 6.
Width	Total number of characters in the field (including the decimal piont) when displaying a floating point number. This can range from 0 to 15. Default is 12.

Notes: Beginning with OpenBSI 5.8, the Archive Collection control supports string-based archives with either one or two fields. If the archive has one field, that field contains the string data. If the archive has two fields, an ID occupies the first field, and the string data resides in the second field. The string data has a maximum of 127 characters.

See also: *Archive Collection Web Page*

Array Collection Control

Object Name: BBI Array Collection Class

Used with: Note: Requires OpenBSI 4.02 (or newer)

Purpose: Displays the contents of data arrays in the controller.

CLSID: 6A0FF60C-BFD7-11D4-82E8-00E029846704

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

Number	The number of the array to be collected. Default is 1.
Start	The row at which collection should start. (Allows the user to skip collection of all earlier rows.) Default is 1.
Type	Type of array. Only applies to Network 3000 series controllers: 0 Analog Array 1 Logical Array
ViewDateTime	Flag to determine how first column is displayed: 0 Show first column as a number (Default) 1 Show first column as a timestamp
FreezeCol	Flag to determine whether timestamps should always be displayed in the first column: 0 Timestamps need not appear in 1st column (default) 1 First column always must show 2 timestamp
Precision	Number of places to the right of the decimal point which should be displayed for a floating point number. This can range from 0 to 15. The default is 6.
Width	Total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 0 to 15. The default is 12.
ColWidth	Specifies a width of a column that overrides the width of columns including the row header column and time/date column. The default is -1 (normal sizing). You use the ColWidth to expand the column width to show signal descriptors (if available) or signal names instead of just row and column numbers. You also use this when using customized row and column headers. (OpenBSI 5.8 and newer.)

Headerfile — Specifies the path and name of an INI file containing customized row and column headers. The array control displays text from this file for row and column headers instead of row and column numbers. The default is the null string (row and column numbers used, instead of the header file.) Alternatively, the header file can specify that row and column headers come from signal lists (OpenBSI 5.8 and newer.)

Header File Format:
[HEADERS]
Col1=*text*
Col2=*text*
Col3=*text*
:
Row1=*text*
Row2=*text*
Row3=*text*
RowList=*listnum_for_rows*
ColList=*listnum_for_cols*

Where *text* specifies the headings you want to display for a particular row or column.

If a column or row is underfined (not in the file) the control displays the row or column number instead.

If you specify lists for RowList and ColList, the control ignores the *text* entries defined in the file, and instead, uses the signal list specified by *listnum_for_rows* to obtain headings for each row and *listnum_for_cols* to obtain headings for each column. Signal descriptors, if defined, provide the headings; otherwise the signal names specified in the list are used for the headings.

NOTE: You may need to use double-back slashes when specifying the path, as shown, below:
BBIControl. **HeaderFile**="C:\\ProgramData\\Bristol\\OpenBSI\\ RowCol_Hdr.INI"

See also: *Array Collection Web Page*

Audit Collection Control

Object Name: BBI Audit Collection Class

Used with: Note: Requires OpenBSI 4.02 (or newer)

Purpose: Displays the contents of the Audit Trail alarm and event buffers.

CLSID: 7599A4BD-BFE2-11D4-82E8-00E029846704

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

RecordType — Specifies the type of audit data to be collected:

0 Alarms and Events (default)
1 Events only
2 Alarms only

Save2File — Save collected snapshot to file flag

0 Do NOT save to file (default)
1 Save to file

SaveFilename — File name for snapshot data.

CreateFile — Determines whether a new snapshot file should be created, or an existing file should be appended:

0 Append existing file
1 Create new file (default)

Convert2Exted — Extended format flag

0 Use old format (default)
1 Use new format

Delimiter — Column delimiter to be used in snapshot file:

0 Space " " (default)
1 Comma ","
2 Semicolon ";"

Direction displayed. — Specifies the way audit records will be

0 Display oldest records first (at top)
1 Display newest records first (at top)

Period — Specifies that audit data collected should only be

from a specified period of time. Choices for the period are:

0	Today
1	This week
2	This month

StartDate — Specifies the starting date from which data will be collected. It must be specified in the format *mm-dd-yyyy* where *mm* is the two-digit month, *dd* is the two-digit day, and *yyyy* is the four-digit year.

Method: Execute( ); When called as part of a script, you MUST include the 'BBIControl.Execute(): statement, or the control will NOT run.

See also: *Audit Collection Web Page*

Buffer Usage Control

Object Name: BBI Buffer Usage Class

Used with: Network 3000 ONLY

Purpose: Displays statistics concerning the number of communication buffers in use in the Network 3000 controller. This allows engineers configuring the ACCOL load to determine whether or not there is a buffer shortage.

CLSID: `1A6E1B1E-1A00-11D4-A96A-AA000400ED04`

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Buffer Usage Web Page (Network 3000)*

CPROM Control (Custom PROM)

Object Name: BBI CPROM Class

Used with: Network 3000 ONLY

Purpose: To display a list of the custom communication protocols installed in the Network 3000 controller, along with details regarding the custom firmware version.

CLSID: 8FF58CED-1ADB-11D4-A96A-AA000400ED04

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Custom PROM INFO Web Page (Network 3000)*

Crash Block Control

Object Name: BBI Crash Block Class

Used with: ControlWave, Network 3000

Purpose: To display crash block information stored in the crash block area of controller memory from a previous system failure.

CLSID: 7EFFC9CE-1B6F-11D4-A96A-AA000400ED04

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Crash Blocks Web Page*

File Transfer Control

Object Name: File Transfer Class

Used with: ControlWave. Requires OpenBSI 5.6 Service Pack 1 (or newer)

Purpose: To transfer files (web pages, INI files, etc.) between a PC and a

ControlWave, and vice versa.

CLSID: FC8163E8-6D23-4AB4-846D-8926D4D87347

Standard Properties: For BackColor, RTUName, etc., see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

Mode — Specifies the direction of the file transfer.

1	Download to ControlWave
2	Upload to PC
3	Automatic file download to ControlWave (OpenBSI 5.7 or newer)
4	Automatic file upload to PC (OpenBSI 5.7 or newer)

DeviceFileName — Specifies the name of the file on the ControlWave to be transferred to the PC.

NOTES:
1) Not used in Mode 1; required in Modes 3 and 4.
2) If Signal property specified, the DeviceName property is ignored.
3) User can override this property by typing a different name into the **"Device File Name"** field on the web page.

Signal — This is a string variable. The value of the variable is the name of the file to be uploaded. NOTE: If specified, this overrides the DeviceName property.

PCPath — In Download Mode (Mode=1 or 3), specifies the path on the PC where the file to be downloaded currently resides. The actual file name must be specified via the PCFileName property. PCPath property is required for Mode 3.

In Upload Mode (Mode=2 or 4); specifies the destination path where the file being transferred from the ControlWave should be sent. PCPath property is required for Mode 4.

PCFileName — The name of the file to be transferred. NOTE: When in Upload Mode (Mode=2), if PCFileName is not specified, the name specified by DeviceName will be

used instead.

PCFileName property is required for Modes 3 and 4.

TransferStarted
Set to '1' automatically by the control once a file transfer has started.

TransferCompleted
Set to '1' automatically by the control once a file transfer has completed successfully. If the transfer is unsuccessful, will be automatically set to '2'.

TransferInprogress Set to '1' automatically by the control once a file transfer is in progress. Set to '0' automatically if a file transfer is not underway.

Execute( ); When called as part of a script, you MUST include the 'BBIControl.Execute(): statement, or the control will NOT run.

See also: *File Transfer Web page*

Historical Array Item View Control

Object Name: BBI Array Item View Class

Used with: ControlWave, Network 3000

Purpose: Displays the value of an array cell, and allows the user to change the value. There are various display formats, including plain text, bar graph, and alternating bitmaps for logical (bool).

CLSID: 043CC160-3C5F-4268-9FE8-997EE1413C76

Standard Properties: For BorderColor, BorderWidth, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:
ArrayNumber The number of the array you want to display. (This property is always required)

ArrayRow The row of the array containing the value to be

displayed.

ArrayColumn The column of the array containing the value to be displayed.

ArrayIsLogical When set to 1, indicates this is a logical array.

ReadOnlyArray When set to 1, indicates this is a read-only array, therefore, the value CANNOT be changed by the control.

Format Chooses the way the array value will be displayed. This property is always required.

0 Display as ASCII text
1 Display as a bar graph
2 Display alternating bitmaps (logical or bool ONLY)

BackColor The background color. Default: 0xFFFFFF (White)

FillColor Defines the fill color for bar graphs.

Horizontal Specifies the horizontal alignment of the ASCII text. (Only used when Format = 0)

0 Left
1 Center (default)
2 Right

Vertical Specifies the vertical alignment of the ASCII text. (Only used when Format = 0)

0 Top
1 Center (default)
2 Bottom

Direction Specifies the direction in which the bar graph will be drawn. (Only used when Format = 1).

0 Bottom is baseline of bar graph (default)
1 Top is baseline of bar graph
2 Left is baseline of bar graph
3 Right is baseline of bar graph

Zero	Specifies the lowest value (zero) considered valid for this signal. Only used with bar graphs (Format = 1). Default = 0.
Span	A value which is added to zero value, to define the range of valid values for this signal. Only used with bar graphs (Format=1). Default = 100.
OnBitmap	Specifies the path and filename of a BMP file to be displayed when the logical signal (BOOL variable) is ON. Only used when Format = 2. Default = NULL.
OffBitmap	Specifies the path and filename of a BMP file to be displayed when the logical signal (BOOL variable) is OFF. Only used when Format = 2. Default = NULL.
RefreshRate	Specifies the rate at which the screen will be refreshed with new data from the signal (variable): 0 No refresh 1 Fast refresh (Default: 500 milliseconds) 2 Slow refresh (Default: 5000 milliseconds) NOTE: These rates can be changed by editing the FastPub and SlowPub parameters in the DATASERV.INI file. See Appendix E in the *OpenBSI Utilities Manual* (document# D5081) for more information.
Precision	Number of places to the right of the decimal point which should be displayed for a floating point number. This can range from 0 to 15. The default is 6.
Width	Total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.
ShowDateTime	When set to 1, and if Column is set to 1, the array value will be displayed in a date/time format.
CollectAlarms	When set to 1, allows alarms to be collected from the controller. When set to 0, alarms won't be collected.

Method: Execute( ); When called as part of a script, you MUST include the 'BBIControl.Execute(): statement, or the control will

NOT run.

Here is an example using parameters to display a historical array item:

```
<object classid="clsid:043CC160-3C5F-4268-9FE8-997EE1413C76"
id="SignalView1" width="150" height="40">
<param name="_cx" value="5080">
<param name="_cy" value="5080">
<param name="BackColor" value="16777215">
<param name="BorderColor" value="0">
<param name="BorderVisible" value="1">
<param name="BorderWidth" value="1">
<param name="FillColor" value="0">
<param name="ForeColor" value="0">
<param name="RTUName" value="RTU">
<param name="ArrayNumber" value="22">
<param name="ArrayRow" value="1">
<param name="ArrayColumn" value="1">
<param name="ArrayIsLogical" value="0">
<param name="ReadOnlyArray" value="0">
<param name="Format" value="0">
<param name="Direction" value="0">
<param name="Zero" value="-9.9999E+03"> // MIN_FLOAT
<param name="Span" value="+9.9999E+04"> // MIN_FLOAT
<param name="LoAlarm" value="1.175494E-38"> // MIN_FLOAT
<param name="HiAlarm" value="1.175494E-38"> // MIN_FLOAT
<param name="LoLoAlarm" value="1.175494E-38"> // MIN_FLOAT
<param name="HiHiAlarm" value="1.175494E-38"> // MIN_FLOAT
<param name="Horizontal" value="1">
<param name="Vertical" value="1">
<param name="CollectAlarms" value="1">
<param name="RefreshRate" value="1">
<param name="Precision" value="3">
<param name="Width" value="7">
<param name="Units" value="0">
<param name="Rights" value="15">
<param name="AlarmColor" value="42495">
<param name="CriticalColor" value="255">
</object>
```

See also: *Array Item View Web Page*

Historical Log Storage Control

Object Name: BBI LogCollection Class

Used with: primarily the TeleFlow series; requires OpenBSI 4.1 (or newer)

Purpose: To collect TeleFlow log data (Daily log, Hourly log, 15 minute log, Alarm/Event log) and store it in files on the PC hard disk. Beginning with OpenBSI 5.0, live data lists can also be collected.

CLSID: BD01DB82-1A71-11D6-831D-00E029841671

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

RTUInit — The initialization process is only used with TeleFlow-series units; it involves fetching certain signals from the TeleFlow in order to determine the base name of the files where collected logs will be stored, as well as the archive file numbers (which vary depending upon whether this TeleFlow has a "C"-based load, or an ACCOL-based load).

If set to 0, no initialization will occur. 0 should be used for any RTU that is NOT a TeleFlow, as well as TeleFlows for which you do NOT want to use the initialization process.

When using TeleFlows, RTUInit should typically be set to 1; initialization will be performed before the actual collection process starts.

Folder — Specifies the directory where collected log files will be stored; if no entry is made here, the current directory will be used. When specifying the path for the folder, use double-slashes i.e. ‘c:\\logs’ instead of ‘c:\logs’

FileBaseName — This property is applicable when RTUInit is set to 0. It specifies the basename to be used for the log files that are collected. If not specified, the name of the target RTU will be used for the log file basename.

AutoCollect — Determines when logs will be collected: It is set as follows:

	0	the user has to start the collection via the **[Start Collection]** button. (default)
	1	any selected logs will be collected as soon as the control is loaded.

AuditReset — Determines when logs will be collected: It is set as follows:

0	When audit collection occurs, audit data remains in the RTU.
1	Once audit data is collected, it is cleared from the RTU.

FileMode — Specifies the creation mode for log files. It can be set to the following values:

0	create new log files (default)
1	append to existing log files. NOTE: It no log file exists, it will be created

SelectLogs — This property specifies which logs have been specified for collection. The number you choose should be the sum of the bits of the following:

1	Daily Log (BIT 0)
2	Hourly Log (BIT 1)
4	15 Minute Log (BIT 2)
8	Alarm/Event (Audit) Log (BIT 3)
16	1-Minute Log (TeleRecorder) (BIT 4)
32	Live Data (List) (BIT 5)

So, for example, if you want to select the daily log, the 15 minute log, and the live data log for collection, you would add 1 + 4 + 32 = 37. This means that if you are using decimal numbers for this property, 37 would be entered; if you are using hexadecimal numbers, you would enter 25. Column 1 and 2 of the table, below, can be used to select the proper numbers (decimal or hex) for your log selection.

Table for Selecting Logs Using Either Decimal or Hex Codes

Decimal Code	Hex Code 0x	Bit 5 set Live Data (List)	Bit 4 Set 1 Minute Log (TeleRecorder ONLY)	Bit 3 Set Alarm/Event (Audit) Log	Bit 2 Set 15 Minute Log	Bit 1 Set Hourly Log	Bit 0 Set Daily Log
0	0						
1	1						✓
2	2					✓	
3	3					✓	✓
4	4				✓		
5	5				✓		✓
6	6				✓	✓	
7	7				✓	✓	✓
8	8			✓			
9	9			✓			✓
10	A			✓		✓	
11	B			✓		✓	✓
12	C			✓	✓		
13	D			✓	✓		✓
14	E			✓	✓	✓	
15	F			✓	✓	✓	✓
16	10		✓				
17	11		✓				✓
18	12		✓			✓	
19	13		✓			✓	✓
20	14		✓		✓		
21	15		✓		✓		✓
22	16		✓		✓	✓	
23	17		✓		✓	✓	✓
24	18		✓	✓			
25	19		✓	✓			✓
26	1A		✓	✓		✓	
27	1B		✓	✓		✓	✓
28	1C		✓	✓	✓		
29	1D		✓	✓	✓		✓
30	1E		✓	✓	✓	✓	
31	1F		✓	✓	✓	✓	✓
32	20	✓					
33	21	✓					✓
34	22	✓				✓	
35	23	✓				✓	✓
36	24	✓			✓		
37	25	✓			✓		✓
38	26	✓			✓	✓	
39	27	✓			✓	✓	✓
40	28	✓		✓			
41	29	✓		✓			✓
42	2A	✓		✓		✓	
43	2B	✓		✓		✓	✓
44	2C	✓		✓	✓		
45	2D	✓		✓	✓		✓
46	2E	✓		✓	✓	✓	
47	2F	✓		✓	✓	✓	✓
48	30	✓	✓				
49	31	✓	✓				✓
50	32	✓	✓			✓	
51	33	✓	✓			✓	✓
52	34	✓	✓		✓		
53	35	✓	✓		✓		✓
54	36	✓	✓		✓	✓	
55	37	✓	✓		✓	✓	✓
56	38	✓	✓	✓			
57	39	✓	✓	✓			✓

Decimal Code	Hex Code 0x	Bit 5 set Live Data (List)	Bit 4 Set 1 Minute Log (TeleRecorder ONLY)	Bit 3 Set Alarm/Event (Audit) Log	Bit 2 Set 15 Minute Log	Bit 1 Set Hourly Log	Bit 0 Set Daily Log
58	3A	✓	✓	✓		✓	
59	3B	✓	✓	✓		✓	✓
60	3C	✓	✓	✓	✓		
61	3D	✓	✓	✓	✓		✓
62	3E	✓	✓	✓	✓	✓	
63	3F	✓	✓	✓	✓	✓	✓

Signal — This property is appicable only when RTUInit is set to 1. It specifies the name of a string signal to be fetched from the RTU during initialization. Its value will be used as the base name of the files to store the collected logs. The default value for this property is METERID..CFG. NOTE: Only loads running on Tele-products typically have this signal.

UseHarvNaming — Allows the user to specify that the Harvester file naming conventions for log files should be used.

0 Do NOT use Harvester file naming (default)
1 Use Harvester file naming

The table, below, details the Harvester file naming conventions:

File Type	File Format	File Naming Convention	Example File Name
Archive	Binary	*nnnnnnnn*_C*xxx.yyy*	RPC5_C001.000
Array	Binary	*nnnnnnnn*_A*xxx.yyy*	NORTHWD_A001.000
Audit	ASCII	*nnnnnnnn*_E*xxx.yyy*	FLOW3_E001.000
List	ASCII	*nnnnnnnn*_L*xxx.yyy*	PARKROAD_L001.000

Where:

Nnnnnnnn — the controller's node name (as defined in the NETDEF files)

Xxx — the structure number beginning with 001 (e.g. array number)

yyy — the file number ranging from 000 to 999

LogTeleFlow — Determines how logical values will be written in log files. (Requires OpenBSI 5.7 Service Pack 1 or newer)

0 ASCII - Write ON/OFF text (default)
1 Write raw binary value (0 or 1)

ConvertCSV — Specifies whether or not all logs should be converted to CSV files. (OpenBSI 5.8 or newer.)

0	Do not convert all logs to CSV files.
1	Convert all logs to CSV files.

StartDate — Specifies a date from which audit and archive collections should start in the format *mm-dd-yyyy* where *mm* is the two digit month, *dd* is the two-digit day, and yyyy is the four digit year. Data earlier than this date is omitted from the collection. If not specified or an invalid format, the entire log is collected. (OpenBSI 5.8 and newer.)

Methods: Interface methods can be used to set up user specific historical logs for collection. Use these methods to collect non-standard Tele-product historical logs, or logs from any other type of ControlWave, Network 3000 RTU.

The original interface methods support collection of archives, audit, and list files, including offline viewing, in which the user need not be logged into the RTU.

SetupArchive	Enables archive file collection.
SetupAudit	Enables audit collection.
SetupList	Enables list collection.

A newer set of extended interface methods were introduced in OpenBSI 5.7 that support the same functions, and some additional ones. These new methods should be used instead of the original methods whenever possible:

SetupExArchive	Enables archive file collection.
SetupExAudit	Enables audit data collection.
SetupExList	Enables list collection.
SetupExArray	Enables array collection. (Requires OpenBSI 5.7 Service Pack 1 or newer).

In addition, the Execute method MUST always be called for these methods to work.

Descriptions of the methods:

SetupArchive(*ArchiveNumber, FileDescription, FileExtension, Collect*)

where *ArchiveNumber* is the number of the archive file to be

collected.

FileDescription is user-defined text, e.g. 'Daily'

FileExtension is the file extension to be used for the log file created on the PC.

Collect is set to 1 to enable collection of this archive.

SetupExArchive(*ItemNumber, Description,FileExtension, CollectFlag, Basename*)

where *ItemNumber* is the number of the archive file to be viewed.

Description is user-defined text to be displayed on-screen, e.g. 'Daily'

FileExtension is the file extension to be used for the log file created on the PC.

CollectFlag is set to 1 to enable viewing of this archive.

Basename is the file basename of the archive file stored at the OpenBSI Workstation.

SetupAudit(*Description, FileExtension, Collect*)

where *Description* is user-defined text, e.g. 'Alarms/Events'

FileExtension is the file extension to be used for the log file created on the PC.

Collect is set to 1 to enable collection of the audit data.

SetupExAudit(*Description,FileExtension, CollectFlag, Basename*)

where *Description* is user-defined text to be displayed on-screen, e.g. 'Daily'

FileExtension	is the file extension to be used for the log file created on the PC.
CollectFlag	is set to 1 to enable viewing of the audit data.
Basename	is the file basename of the audit file stored at the OpenBSI Workstation.

SetupList(*ListNumber, FileDescription, FileExtension, Collect*)

where	*ListNumber*	is the number of the list to be collected.
	FileDescription	is user-defined text, e.g. 'List'
	FileExtension	is the file extension to be used for the log file created on the PC.
	Collect	is set to 1 to enable collection of this list.

SetupExList(*ItemNumber, Description,FileExtension, CollectFlag, Basename*)

where	*ItemNumber*	is the number of the list file to be viewed.
	Description	is user-defined text to be displayed on-screen, e.g. 'Daily'
	FileExtension	is the file extension to be used for the log file created on the PC.
	CollectFlag	is set to 1 to enable viewing of this list file.
	Basename	is the file basename of the list file stored at the OpenBSI Workstation.

SetupExArray(*ArrayNumber, Description,FileExtension, CollectFlag, Basename*)

where *ItemNumber*	is the number of the array to be viewed. NOTE: This is to collect a single array (pushdown, wrap, etc.); multiple-wrap arrays. however, may not collected via this method.
Description	is user-defined text to be displayed on-screen, e.g. 'Daily'
FileExtension	is the file extension to be used for the log file created on the PC.
,	
CollectFlag	is set to 1 to enable viewing of this array.
Basename	is the file basename of the array file stored at the OpenBSI Workstation.
CollectLog(*lognumber)*	Specifies that an individual log should be converted to CSV. (OpenBSI 5.8 or newer.)
where: *lognumber*	specifies the number of the log that the control will convert. This number is based on the position of the SetupEx method that defines the log. For example, if there are six SetupEx methods used to define six different logs, and *lognumber* is 4, then the log defined by the fourth SetupEx method in the files is converted to CSV.
HRESULT ConvertLog(int *lognum*)	This method converts the specified log collection *lognum* into CSV format. (OpenBSI 5.8 and newer.)
Execute( )	The 'BBIControl.Execute();' statement must be called after all properties have been configured, and all other applicable methods have been called. Otherwise the control will not run.

See also: *Historical Log Storage Web page NOTE*: Log files are in standard UOI format.

IP Statistics Control

Object Name: BBI IP Stat Class

Used with: ControlWave, Network 3000

Purpose: To display statistics on Internet Protocol (IP) communication activity.

CLSID: `8FF58CFE-1ADB-11D4-A96A-AA000400ED04`

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *IP Statistics Web Page*

Node Routing Control

Object Name: BBI Node Routing Class

Used with: ControlWave, Network 3000

Purpose: To display information about the Node Routing Table (NRT) stored in this controller.

CLSID: `610D248D-1AD5-11D4-A96A-AA000400ED04`

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Node Routing Table Web Page*

OpenBSI Version Control

Object Name: BBI Software Version Class

Used with: ControlWave, Network 3000
Requires OpenBSI 5.7 (or newer)

Purpose: To display the version of OpenBSI software running on this workstation.

CLSID: 0A0EF0D2-C9C5-4DAD-9EAC-B109B539E2D8

Standard Properties: For BackColor, ForeColor, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

Port Summary Control

Object Name: BBI Port Summary Class

Used with: ControlWave, Network 3000

Purpose: Displays statistics on the operation and quality of communications via specific communication ports on the controller.

CLSID: FC0E13AC-19F6-11D4-A96A-AA000400ED04

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Port Summary Statistics Web Page*

Recipe Control

Object Name: BBI Recipe Class

Used with: Note: Requires OpenBSI 4.02 (or newer)

Purpose: To allow a set of signals (variables) together with values to be stored in a file for later retrieval, and transmission to the controller. This provides a means to quickly assign new values to several signals (variables) at one time.

CLSID: 15DCBC8F-3FCB-11D5-834B-00E029846704

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

File — Recipe file from which to load signals. Default name is: RECIPE.RCP

Load — Flag to determine whether recipe should be loaded:
0 Do NOT load signal values from file (default)
1 Load signals from file

Precision — Number of places to the right of the decimal point which should be displayed for a floating point number. This can range from 0 to 15. The default is 6.

Width — Total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 1 to 15. The default is 12.

ExpIndex — Specifies the format of the exponent:
0 = Floating point format (f default)
1 = Exponential format (e)
2 = Control chooses best fit of e or f (g)

Methods:

HRESULT LoadFromFile(BSTR *filename*)
Loads the recipe control grid with the signals named *filename*. (OpenBSI 5.8 and newer.)

HRESULT WriteToFile(BSTR *filename*)
Writes all signals in the the recipe control grid to the file named *filename*. (OpenBSI 5.8 and newer.)

HRESULT LoadFromRTU()
Reads from the RTU the value of each signal contained in the current recipe. (OpenBSI 5.8 and newer.)

HRESULT WriteToRTU()
Writes to the RTU the value of each signal contained in the current recipe. (OpenBSI 5.8 and newer.)

HRESULT EditRecipeSignal(int *rownumber*, BSTR *signalname*, BSTR *signalvalue*)

Replaces the signal name and value at row position *rownumber* in the recipe with the new *signalname* and *signalvalue*. (OpenBSI 5.8 and newer.)

HRESULT DeleteRecipeSignal(int *rownumber*)
Deletes the signal name and value at row position *rownumber* in the recipe. (OpenBSI 5.8 and newer.)

HRESULT InsertRecipeSignal(int *rownumber,* BSTR *signalname*, BSTR *signalvalue*)
Inserts the new *signalname* and *signalvalue* at row position *rownumber* in the recipe. (OpenBSI 5.8 and newer.)

HRESULT FloatingPointFormat(short *precision,* short *width*, short *exponent*)
specifies the floating point format to use when displaying recipe values. (OpenBSI 5.8 and newer.)

HRESULT ShowControl()
Makes the recipe control visible on the screen. (OpenBSI 5.8 and newer.)

HRESULT HideControl()
Hides the recipe control so it is not visible on the screen. (OpenBSI 5.8 and newer.)

Execute( ) You MUST include this BBIControl.Execute() method, or else the recipe control will not run.

See also: *Signal Recipe Web Page*

RTU Locator Control

Object Name: BBI RTU Locator Class

Used with: ControlWave, Network 3000

Purpose: To identify which nodes are to be available for communication via the ActiveX controls. The RTU locator does this by loading proxy (*.PXY) files (created by NetView).

CLSID: `AA6531F0-0A5C-11D4-B40B-00500472E15A`

Standard Properties: For BackColor, ForeColor, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Node Locator Web Page*

Security Control (Sign On)

Object Name: BBI Security Class

Used with: ControlWave, Network 3000

Purpose: To sign on to the controller with the proper username and password.

CLSID: `06A9C435-0A2B-11D4-B40B-00500472E15A`

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: The special properties listed, below, are used for configuring automatic sign-on. This allows a user to sign-on automatically, without typing in a username and password.

UserName — The user name, as defined in the Security Configuration page. NOTE: When signing onto a 3808, omit the username.

Password — The password, as defined in the Security Configuration page.

StartSignOn — Flag to determine whether or not to perform automatic sign-on:

- 0 Prevent automatic sign-on
- 1 Perform automatic sign-on

SecurityLevel — (Requires OpenBSI 5.7 or newer) For BSAP users, this will return the security level (0 to 6) of the currently logged on user. If connecting via IP, this will return one of three values:

1 = User has read access

3 = User has write access
6 = User can change inhibit/enable settings

Methods:

ClearSignOn Flag to determine whether or not to perform automatic sign-off :

0 Prevent automatic sign-off
1 Perform automatic sign-off

See also: *Security Sign-On Web Page*

Signal List Control

Object Name: BBI Signal List Class

Used with: ControlWave, Network 3000

Purpose: To display a signal list (Network 3000) or list of variables (ControlWave).

CLSID: `9139C3CD-2FE2-11D4-B457-00500472E15A`

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

RefreshRate Specifies the rate at which the screen will be refreshed with new data from the list:

0 No refresh
1 Fast refresh (Default: 500 milliseconds)
2 Slow refresh (Default: 5000 milliseconds)

NOTE: These rates can be changed by editing the FastPub and SlowPub parameters in the DATASERV.INI file. See Appendix E in the *OpenBSI Utilities Manual* (document# D5081) for more information.

ListNumber The signal list number (Required)

Default: 0 (Invalid signal list)

StartIndex The starting position in the list from which signals should be displayed.

Default: 0 (Invalid start index)

ItemCount — The number of signals (beginning with the first signal as identified by StartIndex) to be displayed.

Default: 0 (No items to display)

ShowNames — Display the names of signals, along with the signal values.

0 Don't display signal names
1 Display signal names (Default)

The following property was added in OpenBSI Version 5.8.

DisplayDesc — Specifies that the control should display descriptive text (if it was defined) instead of signal names.

0 Display signal names (Default)
1 Display descriptive text

See also: *Signal List Web Page*

Signal Search

Object Name: BBI Signal Search Class

Used with: Network 3000, ControlWave. NOTE: Requires OpenBSI 4.1 or newer.

Purpose: To locate and display signals (or variables) in a controller which meet a user-specified criteria.

CLSID: C8009A0E-5BFE-11D5-8356-00E029846704

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

SignalText — The IEC 61131 variable name. Can include a wildcard '*' character. Search for signals containing this text.

Base — Search for signals with this ACCOL signal basename. (Not supported for ControlWave)

Extention — Search for signals with this ACCOL signal extension. (Not supported for ControlWave)

Attribute — Search for signals with this ACCOL signal attribute. (Not supported for ControlWave)

DataType — IEC 61131 data type. (Not supported for Network 3000). Must be one of the following:

0	Search for all data types
1	Search for Boolean (BOOL)
2	Search for Signed Small Integer (SINT)
3	Search for Signed Integer (INT)
4	Search for Signed Double Integer (UDINT)
6	Search for Unsigned Small Integer (USINT)
7	Search for Unsigned Integer (UINT)
8	Search for Unsigned Double Integer (UDINT)
10	Search for REAL
16	Search for Character String (STRING)
17	Search for Bit String Byte (BYTE)
18	Search for Bit String Word (WORD)
19	Search for Bit String Double Word (DWORD)
21	Search for Boolean (Bit 0 in byte)
22	Search for Boolean (Bit 1 in byte)
23	Search for Boolean (Bit 2 in byte)
24	Search for Boolean (Bit 3 in byte)
25	Search for Boolean (Bit 4 in byte)
26	Search for Boolean (Bit 5 in byte)
27	Search for Boolean (Bit 6 in byte)
28	Search for Boolean (Bit 7 in byte)

SignalType — (Not supported for Network 3000). Must be one of the following:

0	Search for all variable types
1	Search for non-Alarm variables
2	Search for variables in Alarm condition
3	Search for variables out of Alarm condition

Control — Control Inhibit/Enable bit. Can be one of the following:

0	Search for all signals
1	Search for signals that are Control Enabled
2	Search for signals that are Control Inhibited

Manual — Manual Inhibit/Enable bit. Can be one of the following:

0	Search for all signals
1	Search for signals that are Manual Enabled
2	Search for signals that are Manual Inhibited

Alarmbit — Alarm Inhibit/Enable bit. Can be one of the following:

0	Search for all signals
1	Search for signals that are Alarm Enabled
2	Search for signals that are Alarm Inhibited

Ques — Questionable data bit. Must be one of the following:

0	Search for all signals
1	Search for signals where questionable bit is Clear
2	Search for signals where questionable bit is Set

AlarmPriority — Only for analog alarm variables in ControlWave

0	Search for all alarm priorities
1	Search for variables in Non-Critical alarm priority
2	Search for variables in Critical alarm priority
3	Search for variables in Event alarm priority
4	Search for variables in Operator Guide alarm priority

AlarmLimit — The alarm limit for an analog signal

0	Search for signals at all alarm limits
1	Search for signals which are in Low-Low alarm
2	Search for signals which are in Low alarm
3	Search for signals which are in High alarm
4	Search for signals which are in High-High alarm

Logical — Only for Network 3000 controllers

0	Ignore logical signals in alarm
1	Search for logical signals in alarm

AlarmState — Only for BOOL alarms in ControlWave controllers

0	Search for BOOL variables in all alarm states

1 Search for BOOL variables in 'FALSE' alarm state
2 Search for BOOL variables in 'TRUE' alarm state
3 Search for change of state alarms

BooleanValue Current state of BOOL variable (ControlWave only)

0 Search for BOOL variables in any boolean state
1 Search for BOOL variables that are currently FALSE
2 Search for BOOL variables that are currently TRUE

MinValue The minimum value. Defines (with MaxValue) a range to search in. Search will be only for analog variables with values in this defined range. (ControlWave ONLY).

MaxValue The maximum value. Defines (with MinValue) a range to search in. Search will be only for analog variables with values in this defined range. (ControlWave ONLY).

Width Total number of spaces to use when displaying a floating point number. This can range from 1 to 15. The default is 12.

Precision Number of spaces to the right of the decimal point to use when displaying a floating point number. This can range from 0 to 15. The default is 6.

See also: *Signal Search Web Page*

Signal View Control

Object Name: BBI Signal View Class

Used with: ControlWave, Network 3000

Purpose: Displays the value of a signal (variable), and allows the user to change the value. There are various display formats, including plain text, bar graph, and alternating bitmaps for logical (bool).

CLSID: 2C786147-7FE3-4102-A988-3D78D07ADD2E

Standard Properties: For BorderColor, BorderWidth, ForeColor, BorderVisible, and RTUName see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties:

SignalName — The name of the signal (or variable) you want to display. (This property is always required)

Format — Chooses the way the value of the signal (or variable) will be displayed. This property is always required.

0	Display as ASCII text (all types of values)
1	Display as a bar graph (analog type values)
2	Display alternating bitmaps (logical or bool ONLY)
3	Display alarm inhibit / enable status bit
4	Display control inhibit/enable status bit
5	Display manual inhibit/enable status bit
6	Display text string; string selected based on analog value (analog type values ONLY)
7	Display a button for the user to click.

Rights — Specifies the privileges of the user. Each privilege is associated with a particular bit position. The decimal equivalent of the sum of the bits determines the privileges for the user. The bits are as follows:

0	No access rights (menu items disabled)
Bit0 set	Allow changes to signal's properties, value, and inhibits
Bit1 set	Allow configuration of signal properties
Bit2 set	Allow access to signal detail information
Bit3 set	Allow user to view status of signal collection

For example, if you enter a value of 5 for the Rights, it means both bit 0 and bit 2 are set. See the table of privileges, later in this section for details.

BackColor — The background color. Default: 0xFFFFFF (White)

FillColor — Defines the fill color for bar graphs.

AlarmColor Defines the fill color for bar graphs in 'LO' or 'HI' alarm.

CriticalColor Defines the fill color for bar graphs in 'HI-HI' or 'LO-LO' alarm.

AlarmEnableText Text displayed when alarm enabled. Default is "AE". Maximum of 20 characters allowed.

AlarmInhibitText Text displayed when alarm inhibited. Default is "AI". Maximum of 20 characters allowed.

ControlEnableText Text displayed when control enabled. Default is "CE". Maximum of 20 characters allowed.

ControlInhibitText Text displayed when control inhibited. Default is "CI". Maximum of 20 characters allowed.

ManualEnableText Text displayed when manually enabled. Default is "ME". Maximum of 20 characters allowed.

ManualInhibitText Text displayed when manually inhibited. Default is "MI". Maximum of 20 characters allowed.

Horizontal Specifies the horizontal alignment of the ASCII text. (Only used when Format = 0)

0	Left
1	Center (default)
2	Right

Vertical Specifies the vertical alignment of the ASCII text. (Only used when Format = 0)

0	Top
1	Center (default)
2	Bottom

Direction Specifies the direction in which the bar graph will be drawn. (Only used when Format = 1).

0	Bottom is baseline of bar graph (default)
1	Top is baseline of bar graph
2	Left is baseline of bar graph
3	Right is baseline of bar graph

Zero — Specifies the lowest value (zero) considered valid for this signal. Only used with bar graphs (Format = 1). Default = 0.

Span — A value which is added to zero value, to define the range of valid values for this signal. Only used with bar graphs (Format=1). Default = 100.

AlarmsFromRTU — When set to 1, alarm limits will be taken directly from the RTU. When set to 0, use user-defined alarm limits (LoLoAlarm, LoAlarm, HiAlarm, and HiHiAlarm).

LoLoAlarm — Specifies the lo-lo alarm limit value. Only used with bar graphs (Format=1). Default = 5.

LoAlarm — Specifies the lo alarm limit value. Only used with bar graphs (Format=1). Default = 10.

HiAlarm — Specifies the hi alarm limit value. Only used with bar graphs (Format=1). Default = 90.

HiHiAlarm — Specifies the hi-hi alarm limit value. Only used with bar graphs (Format=1). Default = 95.

OnBitmap — Specifies the path and filename of a BMP file to be displayed when the logical signal (BOOL variable) is ON. Only used when Format = 2. Default = NULL.

OffBitmap — Specifies the path and filename of a BMP file to be displayed when the logical signal (BOOL variable) is OFF. Only used when Format = 2. Default = NULL.

IniFile — Specifies the path and filename of a text file of strings (Format=6). The text string to be displayed is chosen based on truncated analog value of the signal. The format of the strings initialization file is shown below.

Format of Translation File (OpenBSI 5.8 and newer):

An example translation string file is shown below:

```
[STRINGS]
0 = string to display when truncated signal value is 0
10 = string to display when truncated signal value is 10
4 = string to display when truncated signal value is 4
7 = string to display when truncated signal value is 7
3 = string to display when truncated signal value is 3
```

The first entry in the file specifies the first string displayed in the drop-down menu, the second entry in the file specifies the second string displayed in the drop-down menu, and so on.

NOTE:Beginning with OpenBSI 5.8 you can have blank lines and gaps in your numbering scheme and you only need to define the strings you want to display for particular values. If the truncated value of a signal does not correspond to one of the entries in the file, SignalView displays the string "String Not Found."

Format of Translation File (OpenBSI 5.7 and earlier):
Prior to OpenBSI 5.8, there could be no blank lines or gaps in values in the strings file, and the number had to be sequential and contiguous, i.e. if you had strings you want displayed when the signal value is 3 or 5, you must also specify strings to be displayed when the value is 0, 1, 2, and 4.

```
[STRINGS]
0 = string to display when truncated signal value is 0
1 = string to display when truncated signal value is 1
2 = string to display when truncated signal value is 2
3 = string to display when truncated signal value is 3
        :                :
        :                :
n = string to display when truncated signal value is n
```

RefreshRate Specifies the rate at which the screen will be refreshed with new data from the signal (variable):

0 No refresh
1 Fast refresh (Default: 500 milliseconds)
2 Slow refresh (Default: 5000 milliseconds)

NOTE: These rates can be changed by editing the FastPub and SlowPub parameters in the DATASERV.INI file. See Appendix E in the *OpenBSI Utilities Manual* (document# D5081) for more information.

Precision Number of places to the right of the decimal point which should be displayed for a floating point number. This can range from 0 to 15. The default is 6.

Width — Total number of characters in the field (including the decimal point) when displaying a floating point number. This can range from 0 to 15. The default is 12.

Units — When set to 1, allows units text to be displayed. When set to 0, units text will not be displayed. NOTE: This option only applies when the Format parameter is 0.

ExpIndex — Specifies the format of the exponent:
0 = Floating point format (f default)
1 = Exponential format (e)
2 = Control chooses best fit of e or f (g)

CollectAlarms — When set to 1, allows alarms to be collected from the controller. When set to 0, alarms won't be collected.

The following properties for use with customized buttons were added in OpenBSI Version 5.1

BtnMode — The BtnMode (button mode) property defines which aspect of a signal will be modified when the user clicks on a button. The choices are:

0	Change the state of a logical signal (default choice)
1	Change the state of the manual inhibit/enable bit
2	Change the state of the control inhibit/enable bit
3	Change the state of the alarm inhbit/enable bit
4	Change the state of the questionable data bit
5	Acknowledge the alarm
6	Set the analog signal to a pre-configured value

BtnFunction — The BtnFunction (button function) property defines the action which will be taken on the signal when the user clicks on the button. Which function applies depends upon the mode (BtnMode) value.

If BtnMode is 0, then when the BtnFunction is:

BtnFunction Value	Action
0	A logical signal will be forced to its OFF state.
1	A logical signal will be forced to its ON state.

2	The state of the logical signal will be toggled. (Default choice)

If BtnMode is 1, then when the BtnFunction is:

BtnFunction Value	Action
0	The Manual Inhibit/Enable bit will be forced to ENABLE.
1	The Manual Inhibit/Enable bit will be forced to INHIBIT.
2	Toggle the state of the Manual Inhibit /Enable bit (Default choice).

If BtnMode is 2, then when the BtnFunction is:

BtnFunction Value	Action
0	The Control Inhibit / Enable bit will be forced to ENABLE.
1	The Control Inhibit / Enable bit will be forced to INHIBIT.
2	Toggle the state of theControl Inhibit / Enable bit (Default choice).

If BtnMode is 3, then when the BtnFunction is:

BtnFunction Value	Action
0	The Alarm Inhibit / Enable bit will be forced to ENABLE.
1	The Alarm Inhibit / Enable bit will be forced to INHIBIT.
2	Toggle the state of theAlarm Inhibit / Enable bit (Default choice).

If BtnMode is 4, then when the BtnFunction is:

BtnFunction Value	Action
0	The Questionable bit will be cleared (turned OFF).
1	The Questionable bit will be set (turned ON).
2	Toggle the state of the Questionable bit (Default choice).

If BtnMode is 5 or 6 the BtnFunction is ignored.

BtnSteadyText

The BtnSteadyText (button steady text) property defines the text which will be displayed on a button *except* when BtnFunction has a value of 2. *(The reason, it doesn't apply in that case, is because the button text is not steady when BtnFunction is 2 - i.e.in BtnFunction 2, the text changes based on how certain signal attributes change. Button text is defined, instead,via the BtnToggleOFFtoONText and BtnToggleONtoOFFText properties.)*

The text you specify should describe the action which will be initiated when the user clicks on the button. If you do not specify text using the BtnSteadyText property, the following defaults will be used, based on the value of BtnMode and BtnFunction:

BtnMode	BtnFunction	Default Text
0	0	Signal's OFF units text
0	1	Signal's ON units text
1	0	Text specified via the ManualEnableText property.
1	1	Text specified via the ManualInhbitText property.
2	0	Text specified via the ControlEnableText property.
2	1	Text specified via the ControlInhbitText property.
3	0	Text specified via the AlarmEnableText property.
3	1	Text specified via the AlarmInhbitText property.
4	0	"Reset QB".
4	1	"Set QB".
5	N/A	"Acknowledge Alarm"
6	N/A	"Force Value"

BtnToggleOFFtoONText

The BtnToggleOFFtoONText property defines the text displayed on the button, when BtnFunction is 2, and the attribute associated with this button is currently OFF (FALSE), and clicking on the button will change this attribute to ON (TRUE). For BtnMode0, the attribute is the logical signal's state; for BtnMode1 through 3, the attribute is the manual/control/alarm inhibit/enable bit, respectively. For BtnMode4, the attribute is the

questionable data bit.

The text you specify should describe the action which will be initiated when the user clicks on the button. The default text used for the ButtonOFFtoONText Property is based on the BtnMode:

BtnMode	Default Text
0	Signal's ON units text
1	Value of ManualInhibitText property
2	Value of ControlInhibitText property
3	Value of AlarmInhibitText property
4	"Set"

BtnToggleONtoOFFText

The BtnToggleONtoOFFText property defines the text displayed on the button, when BtnFunction is 2, and the attribute associated with this button is currently ON (TRUE), and clicking on the button will change this attribute to OFF (FALSE). For BtnMode0, the attribute is the logical signal's state; for BtnMode1 through 3, the attribute is the manual/control/alarm inhibit/enable bit, respectively. For BtnMode4, the attribute is the questionable data bit.

The text you specify should describe the action which will be initiated when the user clicks on the button. The default text used for the ButtonONtoOFFText Property is based on the BtnMode:

BtnMode	Default Text
0	Signal's OFF units text
1	Value of ManualEnableText property
2	Value of ControlEnableText property
3	Value of AlarmEnableText property
4	"Reset"

BtnForceValue — This property only applies when BtnMode is 6. The BtnForceValue property defines the value that the signal will be forced to once the user click's on the button. The default value is 0.

JogCtrlVisible — This property displays "+" and "-" jog control buttons which can be used to increment or decrement the value of an analog signal, either by a

	pre-defined constant, or by a certain percentage of the current value. The jog controls are displayed next to the signal's value when this property is set to '1'. The default for this property is '0'. *NOTE: Jog control buttons can only be used when the Format property is 0 'Ascii' or 1 'bar graph'.*
JogMode	This property is only applicable when JogCtrlVisible is 1. JogMode determines how the analog signal will be incremented or decremented when the user clicks on the "+" and "-" jog control buttons. A value of 0 for JogMode means that the increment/decrement will be by a user-specified constant. A value of 1 for JogMode means that the increment/decrement will be by a user specified percentage of the signal's current value. The default value for JogMode is 0.
JogValue	This property is only applicable when JogCtrlVisible is 1. This property specifies the value by which the analog signal will be incremented/decremented when the user clicks on the '+' or '-' jog control buttons. When JogMode is 0, it is a constant value, when JogMode is 1, it is a percentage of the signal's current value. The default value for JogValue is 0. If a negative value is specified, it will be treated as a positive value (i.e. absolute value will be used.)
JogLoLimit	This property is only applicable when JogCtrlVisible is 1. This property specifies the minimum value to which the user can decrement the signal value using the '-' jog control button. If left undefined, the signal value can be decremented as low as allowed by its particular data type.
JogHiLimit	This property is only applicable when JogCtrlVisible is 1. This property specifies the maximum value to which the user can increment the signal value using the '+' jog control button. If left undefined, the signal value can be incremented as high as allowed by its particular data type.
Descriptor	This property may be used when Format=0 ‘ASCII’. When set to ‘1’ the alarm descriptive text will be

displayed if this is an alarm signal, whether or not the signal is currently in an alarm state. When set to '0', alarm descriptive text will not be displayed. Requires OpenBSI 5.6 (or newer).

Timestamp — This property may be used when Format=0 'ASCII'. When set to '1' the the signal value will be displayed as a timestamp, in the same format as #TIME.000. or _TIME_000, i.e. *MM/dd/yyyy hh:mm:ss* where *MM* is the two digit month, *dd* is the two digit day, *yyyy* is the four digit year, *hh* is the two digit hour in 24-hour format, *mm* is the two digit minute, and *ss* is the two digit second. When set to '0' the timestamp will not be displayed.,. Requires OpenBSI 5.6 (or newer).

DocURL — Specifies the path (location) for web pages and INI files used by the control. Requires OpenBSI 5.1 (or newer).

The following properties are available beginning with OpenBSI 5.6 Service Pack 1 (or newer). Visual Basic support requires OpenBSI 5.7 (or newer).

Status — Reports the status of the most recent refresh operation for this signal.

0 = failure to refresh
1 = successful refresh

StatusText — If signal refresh is successful, this text will be set to 'Success'; otherwise, a text message describing the reason for the refresh failure is presented.

The following propety was added in OpenBSI 5.7 – it is NOT intended for use in webpages, but can be used in special application programs.

ValueChanged — Set to '1' when a new value is read from the RTU. This does NOT return to '0' automatically; it must be reset via a user program.

The following properties were added in OpenBSI Version 5.8. and are used to modify an ASCII value (Format=0) before you display it.

Hexadecimal — Displays the ASCII variable value in hexadecimal (base

16) format. Note: If you use this option, the value is read-only; the user cannot edit it.

0 Display value in decimal (default)
1 Display value in hexadecimal

ScaleFactor If you specify a ScaleFactor, the SignalView control multiples the ASCII value by the scale factor and displays the result.

OffsetFactor If you specify an OffsetFactor, the SignalView control adds the offset factor to the ASCII value and displays the result.

The next two properties (ByteSelection and BitSelection) are used together are are useful only if the variable you display is in a non-floating point format and you want to extract a single bit from it and display that. If, for example, a variable in your ControlWave project is of type WORD, and you want to display the second bit of the first byte of the WORD, you would specify "0" for **ByteSelection** to choose the first byte (bytes are numbered 0 to 3), and you would choose 1 for **Bit Selection** to choose the second bit (bits are numbered 0 to 7).

NOTE: If you use scaling and bit isolation, the value displayed is read-only; the user cannot edit the value.

ByteSelection Specifies a byte (0 to 3) from which you choose a single bit.

BitSelection Chooses the bit (0 to 7) from the byte identified by ByteSelection, and displays that bit as an ASCII value.

Method: Execute( ) When called as part of a script, you MUST include the 'BBIControl.Execute( );' statement or the signal data will NOT be collected.

See also: *Signal View Web Page*

Scaling and Bit Isolation (OpenBSI 5.8 and newer only):

Optionally, you can modify the ASCII value before you display it.

If you specify a **"Scale Factor"** SignalView multiplies the ASCII value by the scaling factor, and then displays the result. For example, if the ASCII value is 5.0 and the scale factor is 3.0, the value displays as 15.0.

If you specify an **"Offset Factor"** SignalView adds the offset factor, and then displays it. For example, if the ASCII value is 34.0, and the offset factor is 4.0, the value displays as 38.0.

Bit isolation is useful only if the variable you display is in a non-floating point format and you want to extract a single bit from it and display that. If, for example, a variable in your ControlWave project is of type WORD, and you want to display the second bit of the first byte of the WORD, you would choose "0" for **"Byte Selection"** to choose the first byte (bytes are numbered 0 to 3), and you would choose "1" for **"Bit Selection"** to choose the second bit (bits are numbered 0 to 7).

NOTE: If you use scaling and bit isolation, the value displayed is read-only; the user cannot edit the value.

Table of Privileges for Signal View Users (Values used with **Rights** property)

Use the value shown below with the 'Rights' property to obtain the *checked* privileges in columns 2 through 5	When checked, user is allowed to view the status of signal collections. (Bit 3)	When checked, user is allowed to view signal detail information (Bit 2)	When checked, user is allowed to view and configure signal properties (Bit 1)	When checked, user is allowed to change a signal's value, properties, or inhibits (Bit 0)
0				
1				✓
2			✓	
3			✓	✓
4		✓		
5		✓		✓
6		✓	✓	
7		✓	✓	✓
8	✓			
9	✓			✓
10	✓		✓	
11	✓		✓	✓
12	✓	✓		
13	✓	✓		✓
14	✓	✓	✓	
15	✓	✓	✓	✓

Trend

Object Name: BBI Trend Class

Used with: Network 3000 (models which support archive files)

ControlWave
NOTE: Requires OpenBSI 4.2 or newer; some trend features available in OpenBSI 4.1 but no scripting supported.

Purpose: Allows graphical display of variables (signals) either collected in real time, or from an archive file (historical).

CLSID: 221721DF-2F89-11D6-896F-00E029846704

Standard Properties: For BackColor, ForeColor, BorderColor, BorderWidth, BorderVisible, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: NOTE: These special properties may also be used as parameters.

YgridLines	Determines whether or not the Y access grid lines will be visible. (1 = visible, 0 = hidden).
XgridLines	Determines whether or not the X access grid lines will be visible. (1 = visible, 0 = hidden).
ChartBGColor	Specifies the background color (in RGB colors) of the window holding the chart. NOTE: This has no effect since the chart assumes all the space of this window. Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue. For example, if you want the background color to be red, enter: 0x0000FF
GridColor	Specifies the color (in RGB colors) of the grid lines. Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue. For example, if you want the grid color to be blue, enter: 0xFF0000
VisibleDataPoints	Specifies how many data points (individual signal values for a trace) will be visible at any one time.

Choice	Number of data points visible

0	10 data points
1	20 data points
2	30 data points
3	40 data points
4	50 data points
5	60 data points
6	70 data points
7	80 data points

DateFormat — The format of dates displayed along the X-axis can be one of the following:

Choice	Date Format
0	Locale specific (date format chosen based on whatever format has been configured for your particular PC.)
1	*hh:mm:ss*
2	*MM:DD hh:mm:ss*
3	*DD-hh:mm:ss*

where

hh=hours
mm = minutes
ss= seconds
MM = month
DD = day (either number or name)

MaxYValue — Specifies the maximum Y-axis value for the chart. Any values greater than this value will not be displayed.

MinYValue — Specifies the minimum Y-axis value for the chart. Any values less than this value will not be displayed.

Archive Methods:

SetStartDate(short *nMonth*, short *nDay*, short *nYear*)
Specifies the month, day, and year of the first record in the archive file to be displayed on the chart.

SetEndDate(short *nMonth*, short *nDay*, short *nYear*)
Specifies the month, day, and year of the last record in the archive file to be displayed on the chart.

SetArchiveNumber(short *nNumber*)

Specifies the archive file number from which data should be retrieved.

ShowColumn(short *nColNum*, OLE_COLOR *cTraceColor*, short *nLineStyle*, short *nLineWeigh, BOOL, reserved*)

Specifies the details for a particular column as follows:

nColNum The column number associated with this trace.

CTraceColor The color of the trace. Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue.

For example, if you want the trace color to be green, enter: 0x00FF00

nLineStyle The following choices are available:

Choice	Line Style
0	solid line
1	dashed line
2	dotted line
3	dash-dot line
4	dash-dot-dot line

nLineWeight The thickness of the trace in pixels. Choices are:

Choice	Line Weight
0	1 pixel
1	2 pixels
2	3 pixels
3	4 pixels
4	5 pixels

Live Signal Methods:

SetRefreshRate(short *nRefIndex*)

Refresh rate specifies how frequently the chart is updated with new data. NOTE: For Network 300 users, the refresh rate cannot be changed; data is updated as fast as possible.

Choice	Refresh Rate
0	Refresh with new data whenever it is received
1	1 second
2	5 seconds
3	10 seconds
4	30 seconds
5	1 minute
6	5 minutes
7	10 minutes
8	30 minutes
9	1 hour

ShowSignal(BSTR *bstrSigName*, OLE_COLOR *cTraceColor*, short *nLinesStyle*, short *nLineWeight*, BOOL reserved)

bstrSigName The signal name

cTraceColor The color of the trace. Enter RGB colors in Hex in the format 0x*bbggrr* where *rr* is the red, *gg* is the green and *bb* is the blue.

nLineStyle Following choices are available:

Choice	Line Style
0	solid line
1	dashed line
2	dotted line
3	dash-dot line
4	dash-dot-dot line

nLineWeight The thickness of the trace in pixels. Choices are:

Choice	Line Weight
0	1 pixel
1	2 pixels
2	3 pixels
3	4 pixels
4	5 pixels

Execute( ) For both live and historical trends in scripts, you MUST call the 'BBIControl.Execute( );' method, or else the

control will not function.

See also: *Trend Web Page (Historical Trend, Signal Trend)*

For an example of how to use this control, please see the Current_PlotTrendData.HTM web page, which is installed with the WebTeleCorrector web pages.

Usage Notes: If you are collecting data via Internet Protocol (IP), the trend will only be updated when a value change occurs; otherwise the trace will stop. This is because IP data is not polled, it is only sent when changes occur.

The following sample script shows how to use the Trend Control for off-line viewing:

```
BBIControl.GridColor=0xFFFFFF;
BBIControl.ChartBGColor=0xC8D0D4;
BBIControl.VisibleDataPoints=5;
BBIControl.DateFormat=1;
BBIControl.SetRefreshRate(2);
BBIControl.OffLineFile="C:\\ProgramData\\Bristol\\openbsi\\webpages\\RUN1.ARC";
BBIControl.ShowColumn(1, 0xff0000, 0, 2, 0);
BBIControl.ShowColumn(2, 0x00ff00, 0, 2, 0);
BBIControl.ShowColumn(3, 0x0000ff, 0, 2, 0);
BBIControl.Execute();
```

Version Information Control

Object Name: BBI Version Info Class

Used with: ControlWave, Network 3000

Purpose: Displays controller firmware version information.

CLSID: `FC0E139E-19F6-11D4-A96A-AA000400ED04`

Standard Properties: For BackColor, ForeColor, RTUName, see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties: None

See also: *Version Information Web Page*

Write Signal Control

Object Name: BBI Write Signal Value Class

Used with: Requires OpenBSI 5.7 (or newer)

Purpose: To allow a signal's value or inhibit status to be changed programmatically. The Write Signal Control attempts to convert a textual entry to a value or inhibit status, based on the signal's type.

CLSID: `B86708D4-7557-4AFB-86E0-CB6F58BAF19A`

Standard Properties: For RTUName, etc., see *Standard Properties (Common to Multiple ActiveX Controls)* earlier in this appendix.

Special Properties

SignalName The name of the signal to be updated in the RTU.

SignalValue The value to be sent to SignalName.

AlarmInhibit The updated status of the alarm inhibit bit to be sent to the RTU for SignalName. Valid entries are shown, below, and may be entered either as text prefixed by 'QB_' (for code readability purposes) or simply as integers:

0	No change to the alarm inhibit status. This may be useful in a programming loop.
1	Set to Alarm INHIBIT
2	Set to Alarm ENABLE
QB_UNUSED	Same as '0'
QB_INHIBIT	Same as '1'
QB_ENABLE	Same as '2'

ControlInhibit The updated status of the control inhibit bit to be sent to the RTU for SignalName. Valid entries are shown, below, and may be entered either as text prefixed by 'QB_' (for code readability purposes) or simply as integers:

0	No change to the control inhibit status. This may be useful in a programming loop.
1	Set to Control INHIBIT

2	Set to Control ENABLE
QB_UNUSED	Same as ‘0’
QB_INHIBIT	Same as ‘1’
QB_ENABLE	Same as ‘2’

ManualInhibit The updated status of the manual inhibit bit to be sent to the RTU for SignalName. Valid entries are shown, below, and may be entered either as text prefixed by ‘QB_’ (for code readability purposes) or simply as integers:

0	No change to the manual inhibit status. This may be useful in a programming loop.
1	Set to Manual INHIBIT
2	Set to Manual ENABLE
QB_UNUSED	Same as ‘0’
QB_INHIBIT	Same as ‘1’
QB_ENABLE	Same as ‘2’

Method: Execute( ) You MUST include this BBIControl.Execute() method, or else the control will not run.

The following are valid parameters for Execute():

Value	Update the signal’s value
Alarm	Update the signal’s alarm inhibit bit
Manual	Update the signal’s manual inhibit bit
Control	Update the signal’s control inhibit bit

(See examples, below).

The following example sets the value of signal ‘TEMP.SETPT.’ in the RTU called ‘RPC5’ to 24.3:

```
MyControl.Initialize();
MyControl.RTUName=”RPC5”
MyControl.SignalName=”TEMP.SETPT.”
MyControl.SignalValue=”24.3”
MyControl.Execute(“Value”);
```

The following example sets the signal ‘TANK.OVFLOW.ALRM’ in the RTU called ‘ELM_ST’ to alarm inhibit.

```
MyControl.initialize();
```

```
MyControl.RTUName=”ELM_ST”
MyControl.SignalName=”TANK.OVFLOW.ALRM”
MyControl.AlarmInhibit=”QB_INHIBIT”
MyControl.Execute(“Alarm”);
```

Silent RTU Login Communication Interface for JavaScript or VisualBasic Users

(This requires OpenBSI 5.8 and newer)

Class ID: 2829579D-4648-4BA2-BDED-AAE242646124

Advanced programmers can reference the ISilentRtuLogin communication interface within Javascript or VB programs run in TechView to access information on the currently logged on user, and use this information to restrict access to to certain items on a web page.

The available properties are:

CurrentRtuName	Returns the name of the RTU to which the user is signed on.
Privileges	Returns the privileges of the current signed on user.
SecurityLevel	Returns the security level of the current signed on user.
SignedOnUser	Returns the name of the current signed on user.

Examples - Configuring ActiveX Controls in HTML

Configure Without Passing Any Parameters To The Control

Inside the
<BODY> Section of the HTML File, Specify...

```
<object
classid="clsid:06A9C435-0A2B-11D4-B40B-00500472E15A" id="SignOnControl"
left="w" top="x" width="y" height="z">
</object>
```

Where,
clsid = 32 Digits (16 Bytes) Alpha Numeric Number shown in Table 1.
id = Local Name of the control (inside that Web Page Only). (Optional)
w = Numeric Number that specifies Control's Left Start Position. (Optional)
x = Numeric Number that specifies Control's Top Start Position. (Optional)
y = Numeric Number that specifies Control's Width. (Optional)
z = Numeric Number that specifies Control's Height. (Optional)

Most of the Standard Web Pages have this format.

Configure With Passing Parameters To The Control

Inside the
<BODY> Section of the HTML File is a name of the routine that is going to load all the parameters of the control as follows:

```
<body onload="LoadParameters ()">
```

LoadParameters is a Java Script routine that will load all the parameters.

Now, Inside <BODY> Section, specify

```
<object
classid="clsid:AFD4D52D-3C7A-11D4-A987-AA000400ED04" id="MySigPlot" left="w"
top="x" width="y" height="z">
</object>
```

Where,
clsid = 32 Digits (16 Bytes) Alpha Numeric Number shown in Table 1.
id = Local Name of the control (inside that Web Page Only). (Optional)
w = Numeric Number that specifies Control's Left Start Position. (Optional)
x = Numeric Number that specifies Control's Top Start Position. (Optional)
y = Numeric Number that specifies Control's Width. (Optional)
z = Numeric Number that specifies Control's Height. (Optional)

Example - Configuring the Signal View Control

Note: The example shown below includes certain parameters which would all NOT be used in the same object. This is in order to show proper syntax, but would NOT be done in actual use.

```
<html>
	<head>
		<title>Signal View</title>
		<link rel="stylesheet" type="text/css" href="stylesheets/WebBSI.css"
title="default" >

		<script language="javascript" >
			<!--

			function pageinit()
			{
				if (BBIControl)
				{

	////////////////////////////////////////////////////
					// Initialize the control ( if required )

	////////////////////////////////////////////////////

					InitControl ();


	////////////////////////////////////////////////////
				// Execute()
				// This function notifies the control that all parameters have
				// been entered and that the control should start a request

	////////////////////////////////////////////////////

					BBIControl.Execute();

				} // end if(BBIControl)
			}

			function InitControl()
			{
				if (BBIControl)
				{
				BBIControl.BackColor=0xDCF0FA;
				BBIControl.FillColor=0x000000;


	////////////////////////////////////////////////////////////////////////
				// Specify Access rights over here...
				//
				// Example: BBIControl.Rights = 5 (Bit 0 and Bit 2 are set).
				//

	////////////////////////////////////////////////////////////////////////

// 0 = No Access Rights (Menu items are disabled - default)
// Bit 0 set = Allow changes (Allow user to change signal's properties, value and
// inhibits)
// Bit 1 set = Configure Signal Properties (Allow user to view signal's properties)
// Bit 2 set = Show Signal Detail information (Allow user to view signal detail
// info)
// Bit 3 set = Show Signal Status (Allow user to view status of signal collection)

					//	BBIControl.Rights = 15;
	////////////////////////////////////////////////////////////////////
					// Specify Node (RTU) Name over here...	Compulsary
```

```
////////////////////////////////////////////////////////////////////////

                    //     BBIControl.RTUName="RTU";


////////////////////////////////////////////////////////////////////////
              // Specify Signal Name over here...     Compulsary
////////////////////////////////////////////////////////////////////////

                    //     BBIControl.SignalName="#TIME.007.";


////////////////////////////////////////////////////////////////////////
                    // Specify Colors...                    Optional
////////////////////////////////////////////////////////////////////////

                    //     BBIControl.BackColor=0x000099;
                    //     BBIControl.FillColor=0xFF0000;
                    //     BBIControl.ForeColor=0x000000;


////////////////////////////////////////////////////////////////////////
                    // Specify Formating Options....  Compulsary
////////////////////////////////////////////////////////////////////////

                    // 0 = Ascii Text - Default (All Type of Value)
                    // 1 = Bar Graph (For Analog Type Value)
                    // 2 = Bitmap (For Logical Type Value)
                    // 3 = Alarm Quality (Inhibit) Bit
                    // 4 = Control Quality (Inhibit) Bit
                    // 5 = Manual Quality (Inhibit) Bit
                    // 6 = Real to String translation (For Analog Type Value)

                    // BBIControl.Format=0;


////////////////////////////////////////////////////////////////////////
              // Text to be displayed for Quality Bits (20 characters maximum)
////////////////////////////////////////////////////////////////////////

       //     BBIControl.AlarmEnableText       = "";  // Default is "AE"
       //     BBIControl.AlarmInhibitText             = "";  // Default is "AI"
       //     BBIControl.ControlEnableText     = "";  // Default is "CE"
       //     BBIControl.ControlInhibitText    = "";  // Default is "CI"
       //     BBIControl.ManualEnableText             = "";  // Default is "ME"
       //     BBIControl.ManualInhibitText     = "";  // Default is "MI"


////////////////////////////////////////////////////////////////////////
                    // Additional Formating Options....     Optional
////////////////////////////////////////////////////////////////////////
// For ASCII TEXT Only
//     BBIControl.Horizontal = 1; // 0 = Left, 1 = Center (Default), 2 = Right
//     BBIControl.Vertical = 1;   // 0 = Top, 1 = Center (Default), 2 = Bottom
//     BBIControl.Width = 10;     // Width of floating point numbers (1-15)
//     BBIControl.Precision = 3;  // Precision of floating point numbers (0-15)

                    // For BAR GRAPH Only
                    // Direction =      0 - Bottom Base - Default
                    //                  1 - Top Base
                    //                  2 - Left Base
                    //                  3 - Right Base
                    //     BBIControl.Direction=0;
                    //     BBIControl.Zero=0;
```

```
//     BBIControl.Span=1500;
//     BBIControl.LoAlarm=100;
//     BBIControl.HiAlarm=1000;

// For BITMAP Only
//     BBIControl.OnBitmap="on.bmp"
// OnBitmap = Bitmap file To represent On Value (1)
//     BBIControl.OffBitmap="off.bmp"
// OffBitmap = Bitmap file To represent Off Value (0)


//     For Real to String Translation
//       BBIControl.IniFile=''\strings.ini''  // File of strings

////////////////////////////////////////////////////////////////////////
                    // Other Signal configuration    (Optional)

////////////////////////////////////////////////////////////////////////

// BBIControl.CollectAlarms = 1;
// 0 = Do not collect alarms (Default), 1= Collect Alarms
// BBIControl.AlarmsFromRtu = 1;
// 0 = Use User defined alarm limits (Default), 1 = Use Alarm Limits from RTU
// BBIControl.Units = 1;
// 0 = Do not show units (Default), 1 = Show units
// BBIControl.RefreshRate = 1;
// 0 = No refresh (Default), 1 = Fast refresh, 2 = Slow refresh


////////////////////////////////////////////////////////////////////////
// User Defined alarm limits     (Optional)
//
// NOTE: AlarmsFromRtu property should be set to 0 for these properties
//     to take affect
                    //

////////////////////////////////////////////////////////////////////////

                    //     BBIControl.LoLoAlarm = 0;
                    //     BBIControl.LoAlarm   = 0;
                    //     BBIControl.HiAlarm   = 0;
                    //     BBIControl.HiHiAlarm = 0;

                    }
              }

              // -->
       </script>

       <script language="JavaScript" src="scripts/WebBSI.js"></script>
       <script language="JavaScript" src="scripts/Initialize.js"></script>
</head>

<body id="id_body" class="cl_body" onload="DetectIE();pageinit();"
onclick="CloseAll();" onkeypress="CloseAll();">

       <div class="cl_image" >
              <img src="./images/Logo.bmp" >
       </div>

       <div id="id_title" class="cl_title">
              <p class="cl_title" >Signal View</p>
       </div>

       <div id="id_top_buttons" class="cl_top_buttons">
               
       </div>

       <div id="id_node_name" class="cl_node_name">
              Node name goes here
```

```
		</div>

		<!-- The side buttons and dropdown menus -->
		<div id="id_side_buttons" class="cl_side_buttons" >
			<script language="javascript" >
				<!--
				CreateButtons();
				// -->
			</script>
		</div>

		<!-- Content goes in here -->
		<div id="id_content" class="cl_content" >
			<object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E"
id="BBIControl" width="250" height="25">
				<param name="_cx" value="5080">
				<param name="_cy" value="5080">
				<param name="BackColor" value="16777215">
				<param name="BorderColor" value="0">
				<param name="BorderVisible" value="1">
				<param name="BorderWidth" value="1">
				<param name="FillColor" value="0">
				<param name="ForeColor" value="0">
				<param name="RTUName" value="RTU5ago">
				<param name="SignalName" value="@GV.PLC_SYS_TICK_CNT">
				<param name="Format" value="6">
				<param name="IniFile" value="\strings.ini">
				<param name="Direction" value="0">
				<param name="OnBitmap" value="on.bmp">
				<param name="OffBitmap" value="off.bmp">
				<param name="Zero" value="1.175494E-38"> // MIN_FLOAT
				<param name="Span" value="1.175494E-38"> // MIN_FLOAT
				<param name="LoAlarm" value="1.175494E-38"> // MIN_FLOAT
				<param name="HiAlarm" value="1.175494E-38"> // MIN_FLOAT
				<param name="LoLoAlarm" value="1.175494E-38"> // MIN_FLOAT
				<param name="HiHiAlarm" value="1.175494E-38"> // MIN_FLOAT
				<param name="Horizontal" value="1">
				<param name="Vertical" value="1">
				<param name="CollectAlarms" value="1">
				<param name="RefreshRate" value="1">
				<param name="Precision" value="0">
				<param name="Width" value="15">
				<param name="Units" value="0">
				<param name="AlarmsFromRtu" value="1">
				<param name="Rights" value="15">
				<param name="AlarmEnableText" value="AE">
				<param name="AlarmInhibitText" value="AI">
				<param name="ControlEnableText" value="CE">
				<param name="ControlInhibitText" value="CI">
				<param name="ManualEnableText" value="ME">
				<param name="ManualInhibitText" value="MI">
				<param name="AlarmColor" value="42495">
				<param name="CriticalColor" value="255">
				<param name="ExpIndex" value="0">
			</object>
		</div>

		<script language="javascript" >
			<!--
			AlignPage();
			// -->
		</script>

	</body>
</html>
```

Example - Displaying Data From Multiple RTUs on the Same Web Page

In some cases, it may be useful to display data from more than one RTU on the same web page. In order to do this, you will first need to be *signed on* to each of the RTUs you want to communicate with. Then, you will need a link to an actual web page that displays the data.

Signing On to Multiple RTUs

In the <head> section of the HTML code shown below, is a javascript function we named 'MultiSignOn'. (You could name it whatever you want.) It first calls the Security Sign On ActiveX control to sign onto an RTU named 'PARKROAD', and then calls it to sign onto another RTU named 'ELMSTRT'. We could have added additional calls for additional RTUs here, as well.) When the web page is loaded, it activates the 'MultiSignOn' function to perform automatic logins to each of these RTUs. Finally the web page includes a link to another page 'VIEWDATA.HTM', where actual data from the RTUs will be displayed.

```
<html>

<head>
<title>Sign On to Multiple RTU's</title>
<script language="javascript" >
<!--
      function MultiSignOn()
      {
            if (SignOnCtrl)
            {
                  // sign on to the first rtu
                  SignOnCtrl.RTUName = "PARKROAD";
                  SignOnCtrl.UserName = "SYSTEM";
                  SignOnCtrl.Password = "666666";
                  SignOnCtrl.StartSignOn(1);

                  // sign on to the second rtu
                  SignOnCtrl.RTUName = "ELMSTRT";
                  SignOnCtrl.UserName = "";
                  SignOnCtrl.Password = "666666";
```

```
                SignOnCtrl.StartSignOn(1);

            }
      }
// -->
</script>

</head>

<body onLoad="MultiSignOn()">

<p>

<object classid="clsid:06A9C435-0A2B-11D4-B40B-00500472E15A" id="SignOnCtrl"
width="335" height="154">
  <param name="_cx" value="8864">
  <param name="_cy" value="4075">
  <param name="BackColor" value="16777215">
  <param name="ForeColor" value="0">
  <param name="SecurityLevel" value="15">
</object>

</p>

<p><a href="viewdata.htm">viewdata.htm</a></p>

</body>

</html>
```

Collecting Data From Multiple RTUs (after having signed on as described previously)

In the <head> section of the HTML code shown below, is a javascript function we named 'DisplayData'. (You could name it whatever you want.) It first calls the Signal View ActiveX control to collect a signal value from an RTU named 'PARKROAD', and then calls it again to collect a signal from another RTU named 'ELMSTRT'. We could have added additional calls to display additional signal values from these RTUs.) When the web page is loaded, it activates the 'DisplayData' function to display data from each of these RTUs.

```
<html>

<head>
<title>Data from Multiple RTU's</title>

<script language="javascript" >
<!--
      function DisplayData()
      {
            if (SignalView1)
            {
                  SignalView1.BackColor=0xDCF0FA;
                  SignalView1.Execute();
            }
            if (SignalView2)
            {
                  SignalView2.BackColor=0xDCF0FA;
                  SignalView2.Execute();
            }
      }
// -->
</script>

</head>

<body onLoad="DisplayData()">

<p>PARK ROAD Signal="PARK.FLOW." : 
<object classid="clsid: 2C786147-7FE3-4102-A988-3D78D07ADD2E" id="SignalView1"
width="100" height="20">
  <param name="_cx" value="5080">
  <param name="_cy" value="5080">
  <param name="BackColor" value="16777215">
  <param name="FillColor" value="40960">
  <param name="ForeColor" value="0">
  <param name="BorderColor" value="0">
  <param name="BorderVisible" value="1">
  <param name="BorderWidth" value="1">
  <param name="RTUName" value="PARKROAD">
  <param name="SignalName" value="PARK.FLOW.">
  <param name="Format" value="0">
  <param name="RefreshRate" value="1">
  <param name="Precision" value="1">
  <param name="Width" value="0">
  <param name="Units" value="1">
  <param name="Rights" value="15">
</object>
</p>
<p>ELM STREET Signal="ELM.FLOW." : 
<object classid="clsid: 2C786147-7FE3-4102-A988-3D78D07ADD2E" id="SignalView2"
```

```
width="100" height="20">
  <param name="_cx" value="5080">
  <param name="_cy" value="5080">
  <param name="BackColor" value="16777215">
  <param name="FillColor" value="40960">
  <param name="ForeColor" value="0">
  <param name="BorderColor" value="0">
  <param name="BorderVisible" value="1">
  <param name="BorderWidth" value="1">
  <param name="RTUName" value="ELMSTRT">
  <param name="SignalName" value="ELM.FLOW.">
  <param name="Format" value="0">
  <param name="RefreshRate" value="1">
  <param name="Precision" value="1">
  <param name="Width" value="0">
  <param name="Units" value="1">
  <param name="Rights" value="15">
</object>
</p>
<p> </p>
</body>

</html>
```

Example – Retrieving a Value from SignalView using Javascript

This example (see HTML file, reproduced below) shows how to retrieve the value of the SignalView control via JavaScript. Once you have retrieved the value, you may manipulate it in any manner you wish. This demo retrieves the value and displays it in a text box.

Instructions

1) Configure the Signal View Control to retrieve a value from an RTU
2) Click on the Grab Value Button

When you click on the button, the "GrabValBtn_onclick()" function will be called. Inside the function, the value of the SignalView control will be retrieved. Once you have the value, you may perform more elaborate processing. This example simply displays the value. You can use this example as a starting point for more complex manipulation of the data.

See your Javascript documentation for more information about manipulating data in JavaScript.

```
<html>
<head>
<title>Grab Value</title>

    <script language="javascript">
    <!--
    function PageInit ()
    {
```

```
        if (BBIControl)
        {
            BBIControl.RTUName="RTU";
            BBIControl.SignalName="#TIME.007.";
            BBIControl.Execute();
        }
    }
    // -->
    </script>

    <script id=clientEventHandlersJS language=javascript>
    <!--
    function GrabValBtn_onclick()
    {
        if(BBIControl)
            document.F1.T1.value = BBIControl.ValueText;
    }
    //-->
    </script>

</head>

<body onload="PageInit();">

<p>Signal Value Grabber</p>

<object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E" id="BBIControl"
width="250" height="25" >
</object>

<table border="0" width="200" height="100%" align="left">
  <tr>
    <td width="100%" valign="top" align="left">
      <center>
      <form name="F1" method="post">
      <fieldset>
      <input name="GrabValBtn" type=button value="Grab Value" onclick="return
GrabValBtn_onclick()"><br>
      <input name="T1" readOnly type="text" maxlength="16" size="16"
ID="Text1">
      </fieldset>
      </form>
      </center>
    </td>
  </tr>
</table>

</body>
</html>
```

Tips for Creating a Simple HMI Using SignalView Controls

It is possible to create a simple human-machine interface (HMI) using web pages and SignalView ActiveX controls. Typically, this requires using several different SignalView controls, and various display formats. Often you will be using the same signal in different controls, to display different attributes of the signal, for example, its value, its inhibit status, etc.

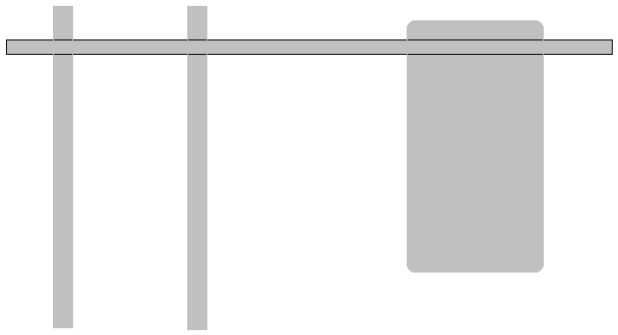
The choice of software for HTML creation is up to you, however, whatever software you use, it must be able to handle our ActiveX controls.

If you do not have HTML creation software, you can create a web page, by simply entering HTML code in a text file.

Here are some tips for doing this:

Creating Display Backgrounds

Using a graphical paint program, such as Microsoft® Paint which comes with Windows, create the display background. The display background would be any portion of the display which will NOT change.



For example, as part of a simple example, we created a structure of pipes and tanks which will form the background of our display (see figure above), and named it pipestructure.bmp.[6]

The background is specified by the 'background' attribute of the 'body' tag.

```
<body onload="PageInit();" class="Main" background="d:\pipestructure.bmp">
```

[6] *Standard HTML recommends either GIF or JPEG for graphical elements. We are using a BMP file because it can be easily created via Microsoft® Paint. If you use BMP files, you should verify that they function correctly in your browser.*

Creating an Initialization Script to Specify Properties of the SignalView Controls

To specify the properties of the various SignalView controls, we include a function called 'PageInit' in our page in javascript.

```
<script language="javascript" src="scripts/Initialize.js"></script>
    <script language="javascript">
        function PageInit ()
        {

            properties defined here….
```

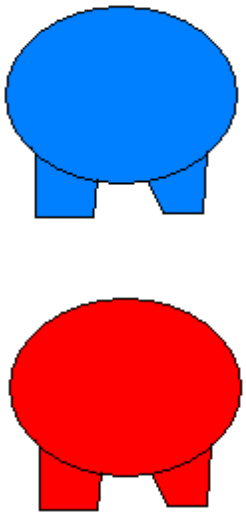
You don't have to use the name 'PageInit', but you must call the function later in the 'onload' attribute of the body tag, when you load to body of the web page.

```
<body onload="PageInit();" class="Main" background="d:\pipestructure.bmp">
```

Also, within the PageInit function, you will define properties for each individual SignalView control. Each SignalView control you use has an associated signal, and various properties to define depending upon which display format you choose.

Each of the controls you use within the function must have a unique name which you will reference in the HTML body when you call the control. For example, you might want to name the control 'pump1stat' if it will display the status of pump 1. The choice of names is yours.

Showing Alternating Bitmaps Based on a Signal's Logical Status

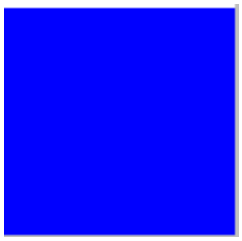


If you have a pump, or valve which has two states (ON/OFF), or (OPEN/CLOSED), you can show this graphically using alternating bitmaps. Create the bitmaps in two separate files using a graphical editing program such as Microsoft® Paint. Make sure that they are sized so that they take the same amount of screen space. For example, to show a pump in different colors depending upon whether or not it is running, use the same pump symbol, just change the colors. Then the two separate files must be called out as the 'OnBitmap' and 'OffBitmap' properties of the control.

In an HTML script, define the properties for the SignalView control, and use display format 2, which supports alternating bitmaps. In the code shown, below, the BOOL variable PUMP1STAT causes

```
pump1stat.RTUName="RTU5"
pump1stat.SignalName="@GV.PUMP1STAT";
pump1stat.Format=2;
pump1stat.OnBitmap="d:\pumprun.bmp"
pump1stat.Offbitmap="d:\pumpoff.bmp"
pump1stat.Rights = 15;
pump1stat.Execute();
```

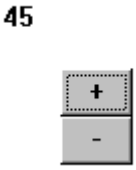
Using a Bar Graph to Display a Liquid Level



If you want to show the level of a liquid in a tank graphically, you can use SignalView's bar graph format. Use '1' for the Format, and be sure to specify the direction and size of the bar graph.

```
tank1graf.RTUName="RTU5";
tank1graf.SignalName="@GV.TANK_LVL";
tank1graf.Format=1;
tank1graf.Rights = 15;
tank1graf.Direction=0;
tank1graf.Zero=0;
tank1graf.span=60;
tank1graf.fillcolor=0xFF0000;
tank1graf.Execute();
```

Showing an Analog Value with/without Jog Controls



If you want to display an analog value, choose '0' for the format of the SignalView control. Optionally, you can include [+] or [-] jog buttons, which allow the operator to increase or decrease the signal value by some amount. This might be useful, for example, if you have an operator setpoint value. You can also leave out the jog controls by setting jogctrlvisible to '0'.

```
tank1sp.RTUName="RTU5";
tank1sp.SignalName="@GV.TANK_SETPOINT";
tank1sp.Format=0;
tank1sp.Rights = 15;
tank1sp.jogctrlvisible=1;
tank1sp.jogmode=0;
tank1sp.jogvalue=1;
tank1sp.jogLoLimit=0;
tank1sp.joghilimit=60;
tank1sp.Execute();
```

Creating a Button For the Operator To Click

Your display can include buttons for the operator to click, that can initiate a command. For example, to close a valve or start a pump. The button can have alternating text depending upon the state of the signal. Choose format '7' for the SignalView control.

```
pump1startstop.RTUName="RTU5";
pump1startstop.SignalName="@GV.PUMPSTARTSTOP";
pump1startstop.Format=7;
pump1startstop.BtnMode=0;
pump1startstop.BtnFunction=2;
pump1startstop.BtnToggleOFFtoONText="Start Pump Number 1";
pump1startstop.BtnToggleOntoOFFText="Stop Pump Number 1";
pump1startstop.Rights = 15;
pump1startstop.Execute();
```

Calling the Actual Controls in the HTML Body

So far, we've shown examples of properties being defined for each individual control.

In the <body> of your HTML code, you must call the SignalView controls (using the SignalView class ID number), and then reference the name of the control defined in the PageInit function.

For example, for the bar graph used to display a liquid level, you would call use the name "tank1graf" because that is what it was named when its properties were defined in the PageInit function.

```
<object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E" id="tank1graf"
width="115" height="150">
</object>
```

Positioning the Controls on the Screen

One of the hardest things about doing straight HTML code (without an HTML creation package) is positioning items on the screen. This may involve some trial and error, but one approach is to define a table using the <table> tag, plus the <tr> tag for table row, and <td> tag for the data in a table cell. You would define the rows and cells for the table, and insert object definitions that call the ActiveX controls within the cell which corresponds to the location on the screen you want the control to appear. You may need to adjust the width and height attributes to fine tune the placement.

Testing the web page with TIME signals

You may find it useful to test your web page using #TIME.007. or @GV._TIME_007 because it represents the current seconds into the minute of the system time. Because it changes rapidly, it gives you a chance to see how the analog value change affects different items in your page.

Refresh Rate Must Be Non-Zero

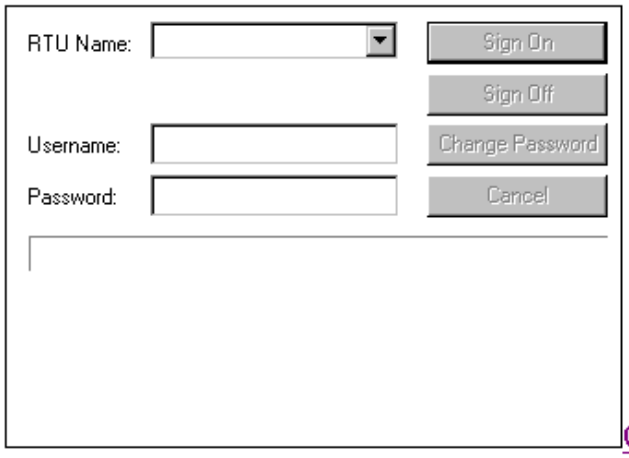
Make sure the refresh rate (RefreshRate attribute) for your SignalView controls is NOT '0'. It must be '1' or '2' or else your web page will not refresh.

Somewhere in Your Web Page Set, You Must Sign On to Establish A Session with the RTU

In order to actually collect data from the controller, one of your web pages MUST include the Security Sign-On Control, which allows the user to sign-on, and establish communications with a controller (RTU).

A simple web page for this purpose is shown below. Menu2.htm would be another page in your set of web pages, that you want the user to call up through the link.

```
<html>
<head> </head>
<body>
<object  classid="clsid:06A9C435-0A2B-11D4-B40B-00500472E15A" id="BBIControl"
width="335" height="240">
</object>
<a href="menu2.htm">Click here to bring up another menu</a>
</body>
</html>
```



Click here to bring up another menu

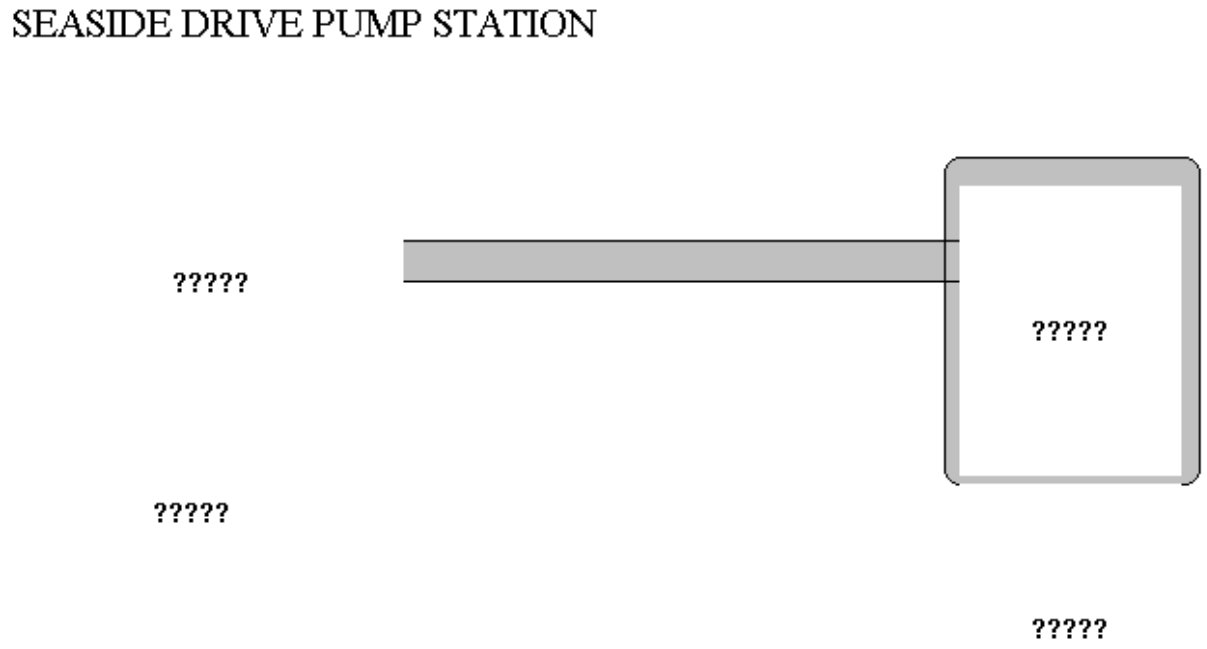
Sample Code For a Simple HMI Web Page (Menu2.htm)

```
<html>
<head>
</head>
    <script language="javascript" src="scripts/Initialize.js"></script>
    <script language="javascript">
        function PageInit ()
        {

                        pump1stat.RTUName="RTU5";
                        pump1stat.SignalName="@GV.PUMP1_STAT";
                        pump1stat.Format=2;
                        pump1stat.OnBitmap="d:\pumprun.bmp"
                        pump1stat.Offbitmap="d:\pumpoff.bmp"
                        pump1stat.Rights = 15;
                        pump1stat.RefreshRate = 1;
                        pump1stat.Execute();


                        tank1graf.RTUName="RTU5";
                        tank1graf.SignalName="@TANK1_LEVEL";
                        tank1graf.Format=1;
                        tank1graf.Rights = 15;
                        tank1graf.Direction=0;
                        tank1graf.Zero=0;
                        tank1graf.span=60;
```

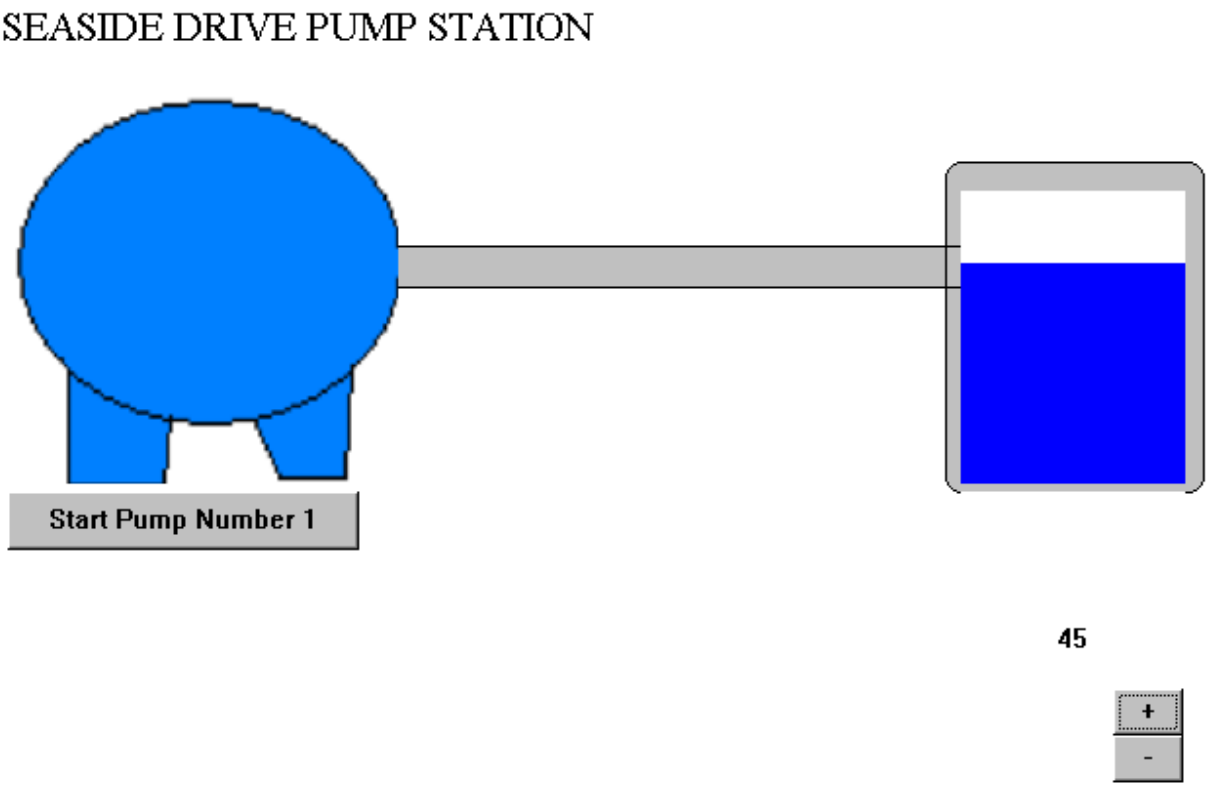
```
                        tank1graf.fillcolor=0xFF0000;
                        tank1graf.RefreshRate = 1;
                        tank1graf.Execute();


                        pump1startstop.RTUName="RTU5";
                        pump1startstop.SignalName="@GV.PUMP1_STARTCMD;
                        pump1startstop.Format=7;
                        pump1startstop.BtnMode=0;
                        pump1startstop.BtnFunction=2;
                        pump1startstop.BtnToggleOFFtoONText="Start Pump Number
1";
                        pump1startstop.BtnToggleOntoOFFText="Stop Pump Number
1";
                        pump1startstop.Rights = 15;
                        pump1startstop.RefreshRate = 1;
                        pump1startstop.Execute();

                        tank1lvl.RTUName="RTU5";
                        tank1lvl.SignalName="TANK1_LEVEL_SETPOINT";
                        tank1lvl.Format=0;
                        tank1lvl.Rights = 15;
                        tank1lvl.jogctrlvisible=1;
                        tank1lvl.jogmode=0;
                        tank1lvl.jogvalue=1;
                        tank1lvl.jogLoLimit=0;
                        tank1lvl.joghilimit=60;
                        tank1lvl.RefreshRate = 1;
                        tank1lvl.Execute();



                        }
    </script>

<body onload="PageInit();" class="Main" background="d:\pipestructure.bmp">

<p>
SEASIDE DRIVE PUMP STATION
<p>
<table>
      <tr valign="bottom">
            <td>

                  <object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E"
id="pump1stat" width="200" height="200">
                  </object>
            </td>

            <td width=280>
            </td>
            <td>
                  <object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E"
id="tank1graf" width="115" height="150">
                  </object>
            </td>
      </tr>
      <tr valign="top">
            <td>

                  <object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E"
id="pump1startstop" width="180" height="30">
                  </object>
```

```
            </td>

            <td width=280>
            </td>
            <td>
                  <object classid="clsid:2C786147-7FE3-4102-A988-3D78D07ADD2E"
id="tank1lvl" width="115" height="150">
                  </object>
            </td>
      </tr>
</table>
</body>
</html>
```

The figure below, shows the web page menu2.htm as it would appear when communications have NOT yet been established.



The figure below, shows the web page menu2.htm when communications have been established with controller RTU5.



Appendix B – File Tabs for Calibration Web Pages

Modifying/Extending File Tabs for Calling up Additional Pages

The choice of which pages are available in TechView is governed by a series of initialization files. The names of the initialization files are specific to the type of RTU used. The following names are allowed:

INI Filename:	Type of RTU:
CFG3508.INI	3508 transmitter
CFG3808.INI	3808 transmitter
CFG4088B.INI	4088B transmitter
CFGCWM.INI	ControlWave Micro
CFGATF1.INI	C-based Teleflow or 1 run load Teleflow
CFGATF2.INI	Teleflow 2 run load
CFGATC1.INI	Telecorrector
CFGTR2.INI	2 sensor Telerecorder
CFGTR4.INI	4 sensor Telerecorder
CFGEFM.INI	ControlWave EFM unit
CFGGFC.INI	ControlWave GFC unit
CFGXFC.INI	ControlWave XFC unit

The basic format for an initialization file is:

```
[PAGES]
LoginRetries=login_secs
LogoutRetries=logout_secs
stylesheet_statement
Page1=page_name_1
Page2=page_name_2
  :
Pagen=page_name_n

[APPLICATIONS]
Button1=app_button_1
Link1=path_and_application_name1 [arg1]… [argn]
          :          :
Button10=app_button_10
Link10=path_and_application_name10 [arg1]… [argn]

[page_name_n]
Button1=button_1
Button2=button_2
   :
Button14=button_14
Link1=path_and_htmlfile_1
Link2=path_and_htmlfile_2
:
Link14=path_and_htmlfile_14
(continued)
```

where: *stylesheet_statement*	references the appropriate cascading stylesheet (CSS) file. Users should not edit the *stylesheet statement*.
page_name	identifies the name of the page, which appears on the tab. This example shows a single page, however, others may be defined.
app_button	identifies a label for a button on the right hand side of the page, which the user can click on to launch another application, such as Internet Explorer, DataView, or WINUOI. Buttons must be numbered consecutively, without gaps in the numbering. Up to 10 application buttons can be defined. The [Close] button is always present, and is not counted towards the maximum number of 10 buttons.
path_and_application_name	indicates the drive and folder, and name of the application to be launched by the corresponding *app_button*.
[*arg1*]..[*argn*]	optional parameters for the command line to launch this application. NOTE: The argument %r is a standard argument that will automatically be replaced with the name of the RTU to which the user is currently logged on.
Login_secs	specifies the number of seconds over which attempts will be made to login into these pages. This value can range from 5 to 30 seconds. Any value for *login_secs* less than 5 will be treated as 5, and any value for *login_secs* greater than 30 will be treated as 30. This default value of 5 need not be increased, unless timeouts are occurring when trying to log into these web pages.
Logout_secs	specifies the number of seconds over which attempts will be made to log off from these pages. This value can range from 5 to 30 seconds. Any value for *logout_secs* less than 5 will be treated as 5, and any value for *logout_secs* greater than 30 will be treated as 30. This default value of 5 need not be increased, unless timeouts are occurring when trying to log off from these pages.
button_n	identifies the text that will appear on this button. NOTE: Buttons must be numbered consecutively, without gaps in the numbering. Up to 14 buttons may be defined.
path_and_htmlfile_n	specifies the path and HTM/HTML filename of the page that will be called up when the user clicks on the corresponding button.

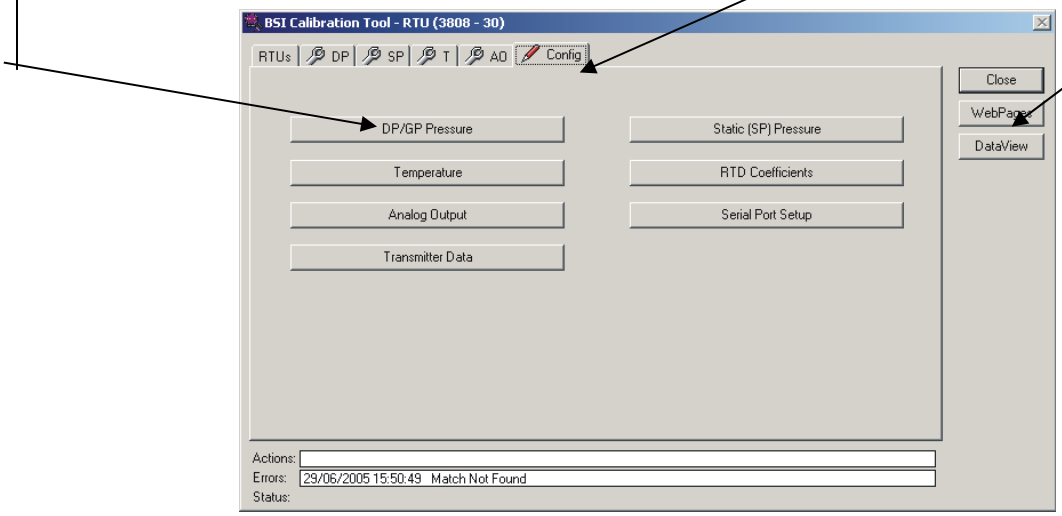
Appendix B – File Tabs for Calibration Web Pages

Example:

[PAGES]
StyleSheet=d:\ProgramData\Bristol\OpenBSI\Web3808\StyleSheets\STStyles.css
Page1=Config
LoginRetries=*15*
LogoutRetries=*15*

[Applications]
Button1=WebPages
Link1=IE
Button2=DataView
Link2=c:\bsi_config\dataview.exe %r

[Config]
Button1=DP/GP Pressure
Button2=Static (SP) Pressure
Button3=Temperature
Button4=RTD Coefficients
Button5=Analog Output
Button6=Serial Port Setup
Button7=Transmitter Data
Link1=C:\bsi_config\Web3808\Configuration_Pressure.htm
Link2=C:\bsi_config\Web3808\Configuration_Static.htm
Link3=C:\bsi_config\Web3808\Configuration_Temperature.htm
Link4=C:\bsi_config\Web3808\Configuration_RTDcoefficients.htm
Link5=C:\bsi_config\Web3808\Configuration_AnalogOutput.htm
Link6=C:\bsi_config\Web3808\Configuration_SerialPort.htm
Link7=C:\bsi_config\Web3808\Current_TransmitterData.htm



This page is intentionally left blank

Addendum to D5081, D5087: Starting Web Pages or Programs using LocalView (*.LVG) Files

This addendum applies to the following manuals:

D5081 – *OpenBSI Utilities Manual*
D5087 – *Web_BSI Manual*

If desired, you can associate programs (or web pages) with particular controllers, and then start them automatically when establishing communications via LocalView.

Alternatively you can generate icons on the Windows™ desktop to activate the web page or program for a particular controller.

These capabilities are useful, for example, if an operator frequently needs to call up a particular web page or program, for a particular controller, they can do it simply by starting a particular LocalView (*.LVG) file, *or* by clicking on a pre-configured icon on the Windows™ desktop which activates the LVG file.

Associating a Web Page with a Particular Controller:

Note: If this is the first time you are communicating with a particular controller using web pages from this PC, you must use the Locator web page *first* to identify the controller (see "*Locating Nodes*", below). Otherwise, you can skip to *"Specifying the Web Page Path and Filename"*.

Locating Nodes

You use the Locator page to identify which controller(s) you would like to communicate with, from this PC. The controllers can be identified either by loading proxy files, or by loading OpenBSI information. In either case, they will be displayed as icons in a tree on the left side of the page.

Note: You will need to run the Node Locator page the *first time* you use web pages with a particular controller, from this PC. After that, you should not need to use it again, unless you are communicating with a different node, using a different PC, or if your network configuration has changed.

You can start WebBSI by clicking as follows:

Start > Programs > OpenBSI Tools > Web Page Access > Standard Pages

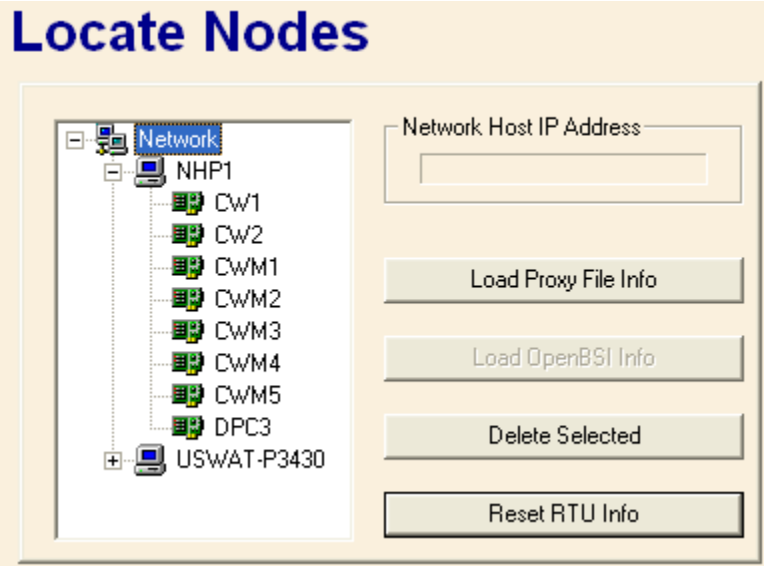


Figure 1. – Locate Nodes

The Node Locator Page is accessible by clicking on the "Security" category button (along the left-hand side of the first WebBSI page), and choosing the "Locate Nodes" drop-down menu selection.

Field	Description
Network Host Address	Displays the primary IP address of the Network Host PC (NHP). Click on the icon for the Network Host PC in the tree at left, if the address is not visible.
Load Proxy File Info	Loads proxy import files (.PXY). These files identify those controllers (RTUs) to which this PC should have access. **Note**: Proxy files are created through the "Proxy Export" feature in NetView. See *"Creating and Exporting A Proxy File"* in *Chapter 6* of the *OpenBSI Utilities Manual* (document# D5081).
Load OpenBSI Info	Loads information about accessible controllers from the OpenBSI NETDEF database. **Note**: This button is inaccessible if a proxy file has already been loaded.
Delete Selected	Deletes the currently selected RTU from the tree, thereby eliminating access to that RTU from this PC.
Reset RTU Info	Deletes the entire tree. This allows you to re-define the accessible RTUs, either by loading a proxy file, or loading OpenBSI information.

Specifying the Web Page Path and Filename

Specify the web page you want to associate with this controller.

Figure 2. – Associating a Web Page with the Controller

To associate a web page with a particular controller start LocalView, open a new LVG file, and configure communications, as usual, but specify the path and filename of the web page in the **"Web Access Startup Page"** field of LocalView's RTU Setup page. Then click **Next**.

On the next page in LocalView, specify “WebPage” for the command line entry, then click **Finish** to initiate communications.

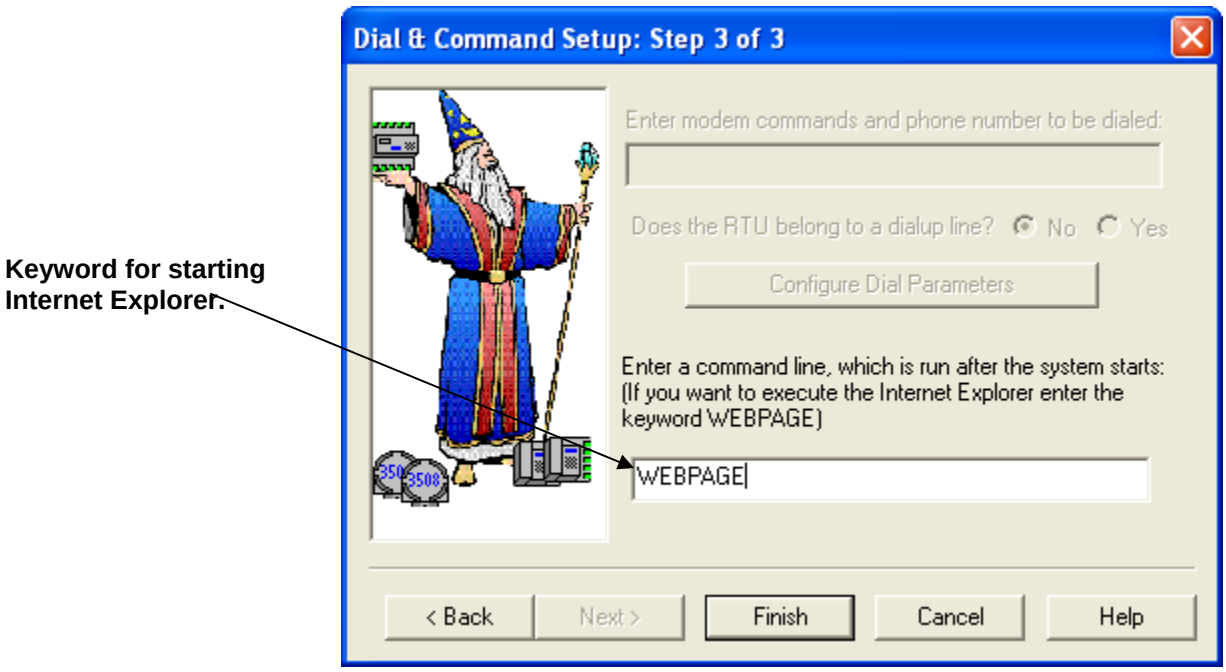


Figure 3. Web Page Command Line Keyword

Once communications are established, LocalView calls up Microsoft® Internet Explorer® and displays the specified web page.

If desired, you can generate a shortcut icon for calling up this web page with this controller in the future. See *Creating a Shortcut Icon for an LVG File* later in this addendum.

Associating a Program with a Particular Controller:

To associate a program with a particular controller start LocalView, open a new LVG file, and configure communications, as usual, but on the Dial and Command Setup page, specify the path and filename of the program (executable) you want to associate with this controller.

Specify the path and file name of the program you want to associate with this controller. This causes LocalView to start that program once it establishes communications with the controller.

Figure 4. Associating a Program with the Controller

Once communications are established, LocalView starts the specified program.

If desired, you can generate a shortcut icon for calling up this program with this controller in the future. See *"Creating a Shortcut Icon for an LVG File"* later in this addendum.

Creating a Shortcut Icon for an LVG File

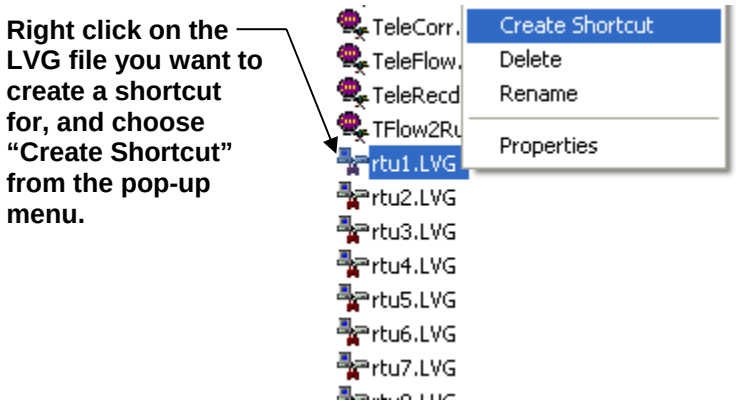


Figure 5. Creating a Shortcut

Once you have created an LVG file in LocalView that contains an association between a particular controller, and a particular web page, or program, locate that file (usually they will be in your ACCOL directory). The name of the LVG file will be whatever name you assigned to it when you started up LocalView.

Now, right click on the LVG filename, and choose **"Create Shortcut"** from the drop-down menu.

Finally, drag the shortcut onto your desktop. You can rename it, if desired.

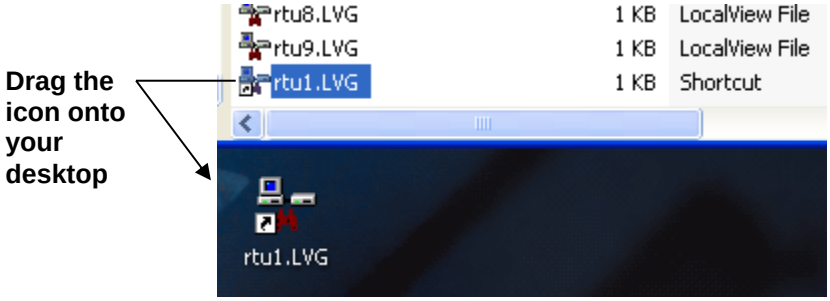


Figure 6. Dragging the Shortcut onto Your Desktop

Now, simply double-clicking on this icon will start LocalView communications with the specified controller, *and* start the specified program or web page.

This page is intentionally left blank

For customer service and technical support,
visit *www.EmersonProcess.com/Remote/Support*.

Global Headquarters,
North America, and Latin America:
Emerson Automation Solutions
Remote Automation Solutions
6005 Rogerdale Road
Houston, TX 77072 U.S.A.
T +1 281 879 2699 | F +1 281 988 4445
www.EmersonProcess.com/Remote

Europe:
Emerson Automation Solutions
Remote Automation Solutions
Unit 8, Waterfront Business Park
Dudley Road, Brierley Hill
Dudley UK DY5 1LX
T +44 1384 487200 | F +44 1384 487258

Middle East/Africa:
Emerson Automation Solutions
Remote Automation Solutions
Emerson FZE
P.O. Box 17033
Jebel Ali Free Zone – South 2
Dubai U.A.E.
T +971 4 8118100 | F +971 4 8865465

Asia-Pacific:
Emerson Automation Solutions
Remote Automation Solutions
1 Pandan Crescent
Singapore 128461
T +65 6777 8211 | F +65 6777 0947

© 2001–2016 Remote Automation Solutions, a business unit of Emerson Automation Solutions. All rights reserved.

This publication is for informational purposes only. While every effort has been made to ensure accuracy, this publication shall not be read to include any warranty or guarantee, express or implied, including as regards the products or services described or their use or applicability. Remote Automation Solutions (RAS) reserves the right to modify or improve the designs or specifications of its products at any time without notice. All sales are governed by RAS terms and conditions which are available upon request. RAS accepts no responsibility for proper selection, use or maintenance of any product, which remains solely with the purchaser and/or end-user.