NaqsView
Version 2.10

User Guide

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NaqsView Version 2.10 User Guide

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This product uses the Java™ 2 Runtime Environment (J2RE) Standard Edition, which includes code licensed from RSA Security, Inc. Some portions licensed from IBM are available at http://oss.software.ibm.com/icu4j/

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Chapter 1 Getting Started

NaqsView provides an intuitive interface to view realtime state-of-health (SOH) data from NaqsServer, and to send mass centring and basic calibration commands to NaqsServer. NaqsView can also show historical SOH data via visual cues and with time-SOH history plots.

NaqsView provides 6 predefined SOH viewers, and the option to create custom viewers:

- Instrument Voltage and Temperature
- Environmental State of Health
- Satellite Modem State of Health
- RM4 Voltage and Temperature
- Instrument GPS
- Mass Position and Centering
- option to create custom SOH viewers based on any available data bundle type.

NaqsView communicates with NaqsServer and DataServer via TCP/IP socket, so it can be run either on the NaqsServer machine or on any machine that has an Internet connection to the NaqsServer. An active DataServer is required to generate history plots.

1.1 Installing NaqsView

NaqsView is part of the Naqs Client package, included on the Nanometrics software installation CD.

1.1.1 Install NaqsView

On Windows:

1. If the directories `c:\nmx\bin` and `c:\nmx\user` do not already exist on the computer, create them.
2. From either a command prompt or Windows Explorer, open the installation CD directory `Win32\NaqsClient\`*version number*
3. Copy all files from the `bin` directory into the `c:\nmx\bin` directory.
4. Check the system path, and add the directory `c:\nmx\bin` if it is not already included.

5. Optionally, create a shortcut (Section 1.1.2).

On Solaris or Linux:

- See the acquisition workstation installation instructions.

1.1.2 Create a shortcut

The optional parameter *settingsFile* specifies a settings file to load on startup (see also Section 1.4, “Saving NaqsView settings,” on page 5).

On Windows:

1. Create a shortcut on the desktop to the file `naqsview.bat`.
2. Right click on the shortcut icon and choose Edit.
3. Edit the startup parameters to use a specific settings file rather than the default:
   `javaw -cp c:\nmx\bin\NaqsView.jar NaqsView` *settingsFile*

On Solaris or Linux:

- See the acquisition workstation installation instructions.

1.2 Starting NaqsView

NaqsView runs in the Java runtime environment version 1.4.2_0*x* or later.

You can start a NaqsView session from a shortcut or from the command line.

1.2.1 Start NaqsView

- Start NaqsView with the desktop shortcut, if you have defined one.

If you are not using a shortcut:

On Windows:

1. Open a command prompt.
2. Change directories to your working directory. Unless you have defined a different working directory, this will be `nmx\user`.
3. Start NaqsView from the command line:
   `NaqsView` *settingsFile*
   where the optional parameter *settingsFile* specifies a settings file to load on startup (see also Section 1.4, “Saving NaqsView settings,” on page 5). If no settings file is specified, or if you wish to change connection settings for the current session, you will need to enter parameters for this session.

On Solaris:

- Open a command window and type in `naqsview`.
  A warning will be displayed indicating that the settings file does not exist if:

- This is the first time you have started NaqsView, and the initial settings file `naqsview.ini` does not yet exist.
  - To prevent this warning from being displayed next time you start NaqsView, save the settings to `/nmx/user/naqsview.ini` before closing NaqsView.
- You have changed the settings file name or location to a new *path/settingsFile* since the last session.
  - To prevent this warning, edit the file `naqsview` in `/nmx/bin`. Change the text "naqsview.ini" to the name of the new settings file. Include the path if the new settings file is not in the working directory.

1.2.2 Connect to NaqsServer

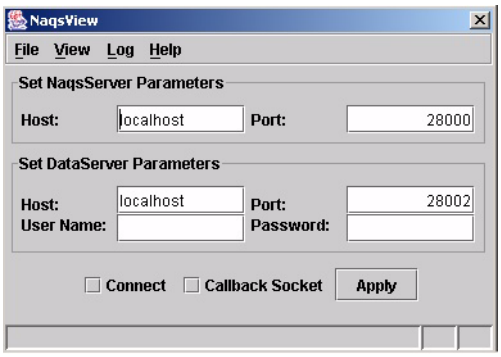
1. Specify connection settings to access data for this session, using the options in the main NaqsView window (Figure 1-1). (If you have specified a settings file, the settings saved in that file will load automatically.)
   a) In the panel labelled Set NaqsServer Parameters, type in values for the NaqsServer Connection Manager:
      - IP address or Host name
      - Port number

      (These values are defined in the `Naqs.ini` file; see also the NaqsServer documentation.)
   b) In the panel labelled Set DataServer Parameters, type in values for the DataServer:
      - IP address or Host name
      - Port number
      - User Name
      - Password

      (These values are defined in the [Users] section of the `dataserver.ini` file; see also the DataServer documentation.) If historical SOH data are not required, these fields may be left blank.

Note If you are running multiple NaqsServers that use the same station parameters for different networks, ensure you are obtaining historical data from the correct source: Make sure the DataServer is connected to the specified NaqsServer.

Figure 1-1 The main Naqsview window

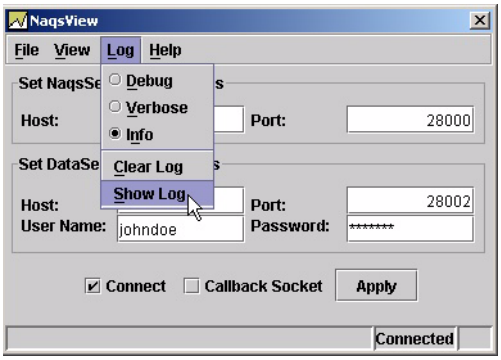


2. Connect to NaqsServer:
   a) Click to select the Connect check box.
   b) If the NaqsServer Datastream service has been configured to operate in call-back mode, select the Callback Socket check box.
   c) Click Apply to set the connection parameters.

   When you click Apply, NaqsView will connect to NaqsServer and will report any connection errors in the log. The connection status is shown in the right-hand field of the status bar (Figure 1-2).

Note You can edit the connection parameters at any time; click Apply to set the new parameters. The viewers will update, but any open history plots will not.

Figure 1-2 Example NaqsView session



1.3 Using the NaqsView log

The log shows messages related to the operation of NaqsView since NaqsView was started. You can use this information to monitor operation. (For example to determine if data are arriving, and to diagnose connection problems.) The log normally operates in a scrolling mode so that new messages are always visible at the bottom of the log window. The log options are available from the Log menu (Figure 1-2). For a description of these options, see Section A.1.3 on page 24.

1.4 Saving NaqsView settings

You can save all NaqsView settings—such as connection parameters, channel selections, history plot settings, and the size and placement of windows—to a settings file. You can save these settings at any time during a NaqsView session either to a new settings file, or to the current settings file if you want to replace the current settings.

You can start new NaqsView sessions with saved settings, or load different settings during a running session of NaqsView.

Note The settings file is a binary format and cannot be edited manually.

1.4.1 Save NaqsView settings to a file

To save a new settings file:

1. From the File menu, choose Save As....
2. In the browser window, choose the path and type in a file name.
3. Click Save. (To exit without saving the changes, click Cancel.)

To overwrite settings in the current settings file with the new settings:

- From the File menu, choose Save.

1.4.2 Load a saved settings file

NaqsView will automatically connect to NaqsServer and restore all window sizes and settings when it loads a settings file. There are two ways to load NaqsView settings that you have saved:

- Specify the name of the settings file when you start NaqsView, either predefined as part of the shortcut target or as a command-line argument:

  `NaqsView` *settingsFile*

- Load the settings using the Open option of the NaqsView File menu:

  File > Open... > *filename*

1.4.3 Rename a settings file on Solaris or Linux

- To change the name of the settings file, edit the file `/nmx/bin/naqsview`. Replace the current settings file name (initially, `naqsview.ini`) with the new settings file name.

1.5 Opening the Help file

Note You must have a PDF reader installed to open the help file from NaqsView.

- To open the help file, from the Help menu choose Help topics.

1.5.1 Define the location of the PDF executable

The first time you try to open the help file, a dialog box may prompt for the path to the PDF reader executable. To set the initial path:

On Windows:

1. Right click on either the shortcut on the desktop or the Programs menu item for the PDF reader.
2. From the pop-up menu, choose Properties.

   The Target text field shows the full path to the executable.

On Solaris or Linux:

- If the PDF reader is in the path, type the name of the executable (typically `acroread`) into the dialog box.
- If the PDF reader is not in the path and you do not know where the executable is or if it is installed, contact your system administrator for more information.

To change the file location:

1. From the Help menu, choose Change pdf Reader.
2. In the Help Viewer Chooser, specify the full path to a PDF reader executable.

1.6 Quitting NaqsView

- From the File menu, choose Exit.

  If you have changed any settings during the session, the Save Settings dialog box provides the option to save the changes. (See also Section 1.4.)

Chapter 2 Using NaqsView

NaqsView provides tools to view SOH data, and to send commands to NaqsServer for mass position and centring, and basic calibration.

2.1 Viewing SOH data

NaqsView provides 6 predefined state-of-health (SOH) viewers, and the option to create custom viewers based on any active data bundle type:

- Instrument Voltage and Temperature
- Environmental State of Health
- Satellite Modem State of Health
- RM4 Voltage and Temperature
- Instrument GPS
- Mass Position and Centering
- Custom

Each SOH viewer provides a tabular view of selected SOH information, and command options along the bottom of the viewer.

2.1.1 Working with SOH viewers

Basic options are the same for both predefined and custom viewers.

2.1.1.1 Open an SOH viewer

You can open predefined viewers, and custom viewers that have already been defined. (See Section 2.1.2 on page 10 for information on how to create new custom viewers.)

To open a predefined viewer:

- From the View menu, choose the viewer (for example, Instrument Voltage and Temperature).

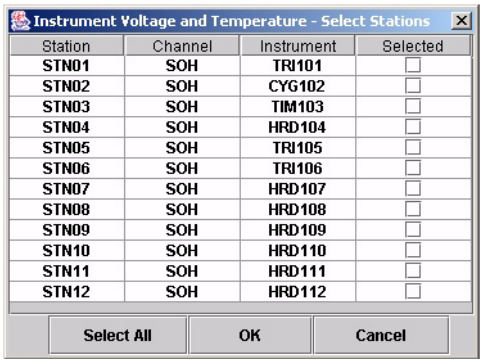
To open an existing custom viewer:

1. From the View menu, choose a custom viewer (for example, Authentication Status).
2. Choose Show from the sub-menu.

2.1.1.2 Select stations to view

1. On the SOH viewer, click Select Stations. This will display a table of available stations (Figure 2-1).

Figure 2-1 Station selector window



2. Select some of the stations or all stations:

   - To select some stations, click the check box to select ☑ each station that you wish to have displayed in the viewer. (To remove a station that you do not want to display, click the check box to deselect it ☐.)
   - To select all stations at once, click the Select All button. (After you have clicked the Select All button, the label changes to Deselect All. If you click the button now, all stations will be deselected.)

3. Click OK to accept the new selections. (To exit from the dialog box without making any changes, click Cancel.)

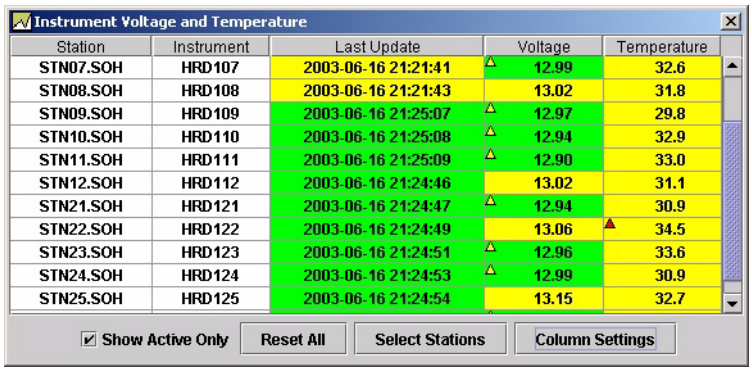
2.1.1.3 View active stations only

You may have many stations selected but wish to view only the active stations—those that are transmitting data. (Some stations may be relatively inactive—either not transmitting data, or transmitting data at long intervals. An inactive station row has a Last Update time of zero (1970-01-01 00:00:00).)

- Click the Show Active Only checkbox (Figure 2-2).

  This will remove inactive station rows from the display. If a station becomes active, the row will be added to the display automatically.

Figure 2-2 A predefined SOH viewer (Instrument Voltage and Temperature)



2.1.1.4 Sort data

You can sort the data in a table using the values in any column:

- To sort on a given column, click on the column title header. To sort in the opposite order, click again on the same column header.
- To restore to the default sort order, click the first column header.

2.1.1.5 Customise viewer and column names in predefined viewers

For the predefined SOH viewers, you can customise table and column names by editing the `NaqsView.properties` file in the working directory. You can restore all edited values to the default values stored in the original `NaqsView.properties` file. The `NaqsView.properties` is a text file. Any line beginning with the symbol # is read as a comment. The format of each line is *MachineCode* = *LabelString*

Note The working directory must contain a `NaqsView.properties` file in order for you to use customised properties. (You can copy this file from the user directory, or start NaqsView in the working directory and then choose File > Restore Default Properties to create the initial copy.)

2.1.1.5.1 Customise a value

1. In the working directory, open the file `NaqsView.properties`.
2. Edit the label string. Do not edit the machine code. For example:
   - To change the name of the time column of all the viewers from Last Update to Time, change the line:

     `lastupdate.name = Last Update`

     to:

     `lastupdate.name = Time`
   - To change the name of the Voltage column of the Instrument Voltage and Temperature viewer to Battery Voltage, change the line:

     `ivat.voltage.name = Voltage`

     to:

```
ivat.voltage.name = Battery Voltage
```

3. Save the edited `NaqsView.properties` file.
4. Apply the changes to the viewer(s): In the NaqsView File menu, choose Reload Properties.

2.1.1.5.2 Restore to the default values

To overwrite all customised table and column names with the default values from the original `NaqsView.properties` file, and apply these changes to the viewer(s):

- In the NaqsView File menu, choose Restore Default Properties.

2.1.2 Working with custom SOH viewers

For any active data bundle (for example, Authentication Status), you can create a custom SOH viewer to monitor data.

A bundle is active if NaqsView has received a packet containing the bundle during this session, or if the bundle was in the buffer when NaqsView was started. Shortly after starting NaqsView there may be only a few bundles available, but more will be available later, depending on the SOH reporting intervals. If no bundles are available, check whether you are connected to a valid, running NaqsServer.

- The general features of a custom viewer—such as opening an existing viewer, table formats, and data sorting options—are the same as for predefined SOH viewers. See Section 2.1.1.
- All rows in a custom viewer have a Station, Instrument, and Last Update column. The remaining data columns are defined by the bundle type. The columns available will be the same as those in the `.csv` file created when SOH data are extracted using SohReader or Sohextrp. See the documentation for Playback, State-of-Health Files Description. (Playback is a set of Nanometrics utilities installed with your NaqsServer.)
- The threshold values for custom viewers initially use a default set (either the generic set 0, 10, 20, 30, or for some bundles a set more specific to the typical values for the bundle type). See Section 2.1.3 on page 11 for information on visual indicators of the SOH status, and Section 2.1.3.4 on page 13 for information on editing the threshold values.
- The SOH pop-up menu options—Reset, History, and Report—are the same as for predefined viewers. See Section A.3 on page 29.

2.1.2.1 Create a custom viewer

1. In the View menu, choose Custom.

Note NaqsView will wait up to 10 seconds for the first data bundles to arrive. If no bundles arrive in that time, NaqsView displays a message that no bundles are active. If this happens, check whether you are connected to a valid, running NaqsServer.

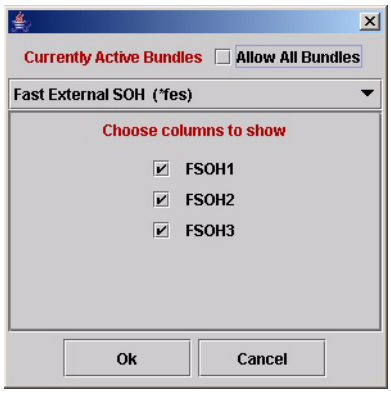
2. In the dialog box for currently active bundles (Figure 2-3), choose the data bundle of interest from the drop-down list. To add all possible bundles to the list of

options, select Allow All Bundles (for example, when plotting SOH ringbuffer data from inactive stations).

The names of the bundles are the same as described in the documentation for Playback, State-of-Health Files Description.

3. Click to select ☑ or deselect ☐ columns to display, and then click OK. (To exit without creating the custom viewer, click Cancel.)

Figure 2-3 A custom viewer configuration



2.1.2.2 Select data columns to view

For any existing custom viewer, you can change which data columns are displayed.

1. Open the dialog box for the selected data bundle in either of two ways:
   - In the custom viewer, click the Edit button.
   - In the NaqsView window, choose View > *data bundle* > Edit.
2. In the dialog box for the currently active bundle, click to select ☑ or deselect ☐ data columns to display.
3. Click Ok to apply the settings. (To discard the changes, click Cancel.)

2.1.2.3 Close a custom viewer

- In the View menu, choose the viewer of interest, then choose Hide from the submenu.

  The viewer is still available in the main View menu.

2.1.2.4 Delete a custom viewer

- In the View menu, choose the viewer name, then choose Delete from the submenu.

2.1.3 Monitoring SOH status in the current session

NaqsView stores the minimum and maximum values for each parameter. It latches these values to the last reported minimum or maximum since NaqsView was started.

You can view the minimum and maximum values, and you can reset these to the current value. You can edit the thresholds for colour-coding of the current status.

2.1.3.1 About SOH visual cues

For some parameters, NaqsView provides visual indicators of the current status (as colour-coding of parameter cells), and historical information (arrow symbols to show whether parameter values have exceeded the defined range during the current session):

- Some columns use colour codes to provide a qualitative grading of the value for each station listed in the viewer, using this convention:
  - Green – The value is within the acceptable range.
  - Yellow – The value is marginal and should be monitored closely.
  - Red – The value is out of range, indicating a possible problem.
- The thresholds for the Last Update column are not editable. The colour of the Last Update cell depends on the difference between time stamp of the arriving bundle and the system time, using this convention:
  - Green – The time stamp is between 10 seconds ahead and 2 minutes behind the system time.
  - Yellow – The time stamp is either more than 10 seconds ahead of system time, or more than 2 minutes behind system time.
  - Red – The time stamp is either more than 30 seconds ahead of system time, or more than 5 minutes behind system time.
- For parameters that have editable thresholds, an arrow symbol may be displayed within the cell to indicate historical information about the parameter values during the current session. Display of the arrow is based on the minimum and maximum values stored since NaqsView was started:
  - An up-arrow indicates that the value in the cell has breached the upper thresholds.
  - A down-arrow indicates that the value in the cell has breached the lower thresholds.
  - The arrow will be yellow if the Marginal threshold was breached and red if an out-of-range threshold (either Low or High) was breached.
- Arrow symbols are not shown for:
  - Values in the Last Update column.
  - These SOH status conditions:
    - The current status is equal to the stored value for a breached threshold (either minimum or maximum).
    - Minimum and maximum values are within the acceptable range.

2.1.3.2 View the minimum and maximum SOH values

- Right click on the parameter cell and choose Report from the pop-up menu.

  A report window will display the current, minimum, and maximum values.

2.1.3.3 Reset the minimum and maximum SOH values

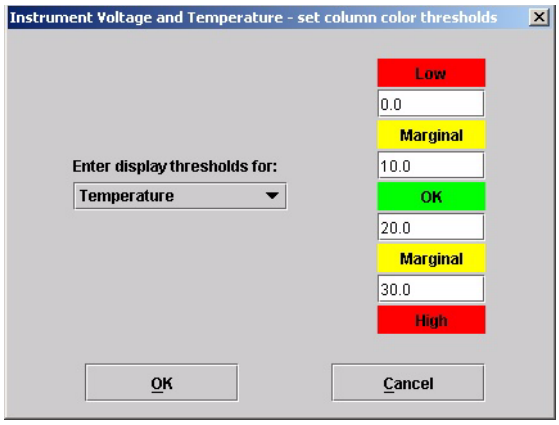
You can reset parameter minimum and maximum values to the current value:

- To reset a single parameter, right click on the parameter cell and choose Reset from the pop-up menu.
- To reset all values in a row, right click on the station cell and choose Reset from the pop-up menu.
- To reset all values in a column, right click on the column header cell and choose Reset from the pop-up menu.
- To reset all the values in a table, click the Reset All button at the bottom of the viewer.

2.1.3.4 Set SOH thresholds for colour-coded parameters

1. Click the Column Settings button.
2. In the Set column color thresholds dialog box (Figure 2-4), choose the viewer column from the drop down list.
3. Edit the threshold display settings as desired, then click OK. (To exit from the dialog box without making any changes, click Cancel.)

Figure 2-4 Set column thresholds



2.1.4 Plotting SOH history data

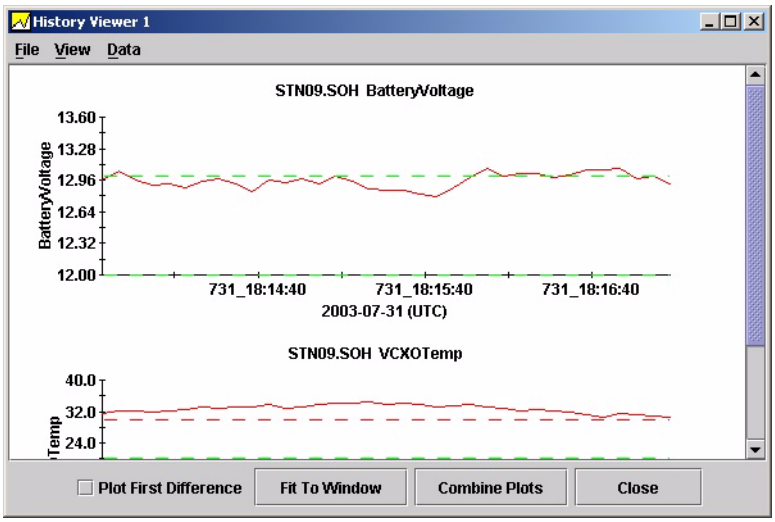
Note Plotting SOH history data requires an active DataServer.

You can create plots of time versus some state of health parameter in the History Viewer. You can plot the data for a station, a data column, and a data cell. Plots that have the same vertical axis label can be combined, and multiple plots can be contained in one History Viewer. Use either predefined or custom viewers to view data from active stations. To view history data from inactive stations, use a custom viewer (Section 2.1.4.3).

- Each plot is labelled with the station name and the parameter name. For example, STN09.SOH BattVoltage (Figure 2-5).

- The horizontal axis shows day and time (*mmdd_hh:mm:ss*), and the axis label shows the date or date interval.
- The vertical axis shows the range for the selected SOH parameter. The label is identical to the column header for the same parameter when the bundle is saved to a `.csv` file using SohReader or Sohextrp. For header names, see the documentation for Playback, State-of-Health Files Description.
- History Viewer settings are included in settings files (see Section 1.4, “Saving NaqsView settings,” on page 5).
- SOH data are created at regular intervals. If the interval of two values to be plotted changes, there will be a break in the plot line to indicate missing data.

Figure 2-5 A history plot window



2.1.4.1 Select the time interval for the plot

The time interval for an SOH history plot may be any time for which there are SOH data; it is not limited to the data for the current NaqsView session.

1. Ensure that the system time is accurate on the computer that is running NaqsView. NaqsView uses an interval based the system time to access data via DataServer, therefore a system time set to a future date will result in no data being found.
2. In the viewer, right click on the data item you wish to plot—a station, a data column, or a data cell—and then choose History from the pop-up menu.

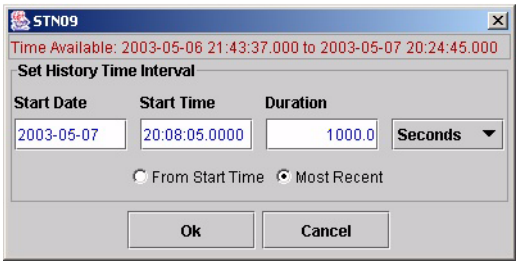
Note If other History Viewers are currently open, you have the option to select one of these viewers as the destination for this data plot. See Section 2.1.4.9, “Add data to an existing history viewer,” on page 18.

3. In the Set History Time Interval dialog box, select the time interval for the plot (Figure 2-6). (For a data cell, the Time Available section shows the extent of available data for that cell.):
   - To choose a start date, start time, and duration, select the option From Start Time.

- To choose the most recent data, select the option Most Recent.

4. Type in the date and time and/or the duration (these values will update each other as appropriate).
5. From the drop-down list, choose units for the duration (seconds, minutes, hours, or days).
6. Click Ok to generate the history plot. (To exit without generating a plot, click Cancel.)

Figure 2-6 Choose the time interval of SOH data to plot



2.1.4.2 Select data to view

- In general, right click on a cell to select data to view. Note these options and conditions:

These conditions apply to both predefined and custom viewers:

- Ensure that the system time is accurate on the computer that is running NaqsView. NaqsView uses an interval based the system time to access data via DataServer, therefore a system time set to a future date will result in no data being found.
- If a row in a viewer has not received any SOH data during the current session, the Last Update column will show January 1, 1970.

These options and conditions apply to predefined viewers only:

- Options for viewing data for a cell depend on whether there is one or more than one bundle types underlying the cell.
  - If there is only one underlying bundle type for a cell, choose the relevant data:
    - Right click on the cell, and then use the dialog box to choose a data item from the bundle.
  - If there is more than one bundle type underlying a cell, choose the relevant data:
    i. Right click on the cell. This will open a pop-up menu listing the relevant bundle types.
    ii. Choose a bundle type from the pop-up menu. This will open a dialog box listing the relevant data items.
    iii. From the dialog box, choose a data item from the bundle and click OK. This data item is now the data value that will be plotted if you right click on the cell again. At that time, the menu will now be that of an ordinary cell.

There is no attempt to check that the correct value for that cell was chosen. To correct an error, close and restart NaqsView.

- Should an SOH bundle arrive from NaqsServer after the data type is set, it will be reset to the bundle and data item.
- If you select a History Viewer from a station cell and no bundles have arrived, a History Viewer will open but no data will be found unless a cell has had its bundle and data type set as described above.
- If you select a History Viewer from the column header, a History Viewer will open. If any cell is undefined, no data will be found unless the cell has had its bundle and data type set as described above.

2.1.4.3 View SOH data from inactive stations

To view ringbuffer SOH data from inactive stations:

1. Add the relevant channel information to the `Naqs.stn` file if it is not already in the file. (Note that the added station should have a unique name.)
2. Restart NaqsServer and DataServer.
3. Start NaqsView if it is not already running.
4. In the View menu, choose Custom.
5. If the bundle type of interest is not in the drop down list, select the Show All Bundles check box (Figure 2-2 on page 9).
6. Select the bundle of interest.
7. Select data to view in a History Viewer (see Section 2.1.4.2).

2.1.4.4 Plot first differences

First differences of the data are each value minus the previous value. Accumulated data such as serial port packet counts are often best viewed as first differences. When a first difference plot is created, it is indicated on the x-axis label that it is a first difference plot.

- To plot first differences, select the Plot First Difference checkbox ☑.
- To view unprocessed data, deselect the Plot First Difference checkbox ☐.

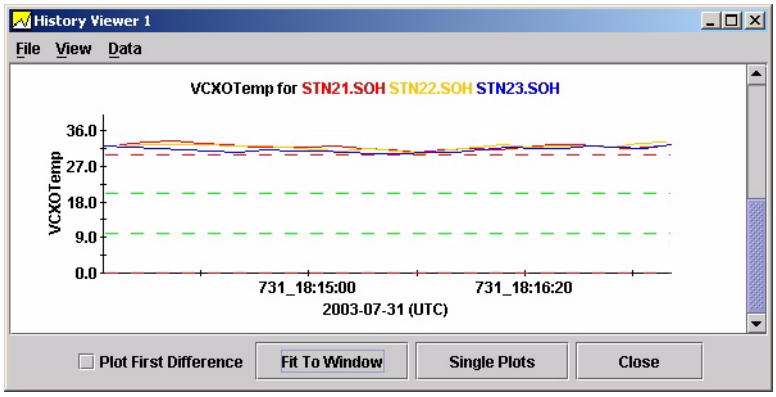
2.1.4.5 Combine and separate plots

You can combine plots that have the same vertical axis label, combine all plots into a single plot with a legend, and separate combined plots into single plots:

- To combine plots that have the same vertical axis label, either click the Combine Plots button or pull down the plot View Menu and choose Combine Plots.

  The colour of the station name in the top label will change to correspond to the colour of the plot as well as put data with the same label on the plot. The option button is now Single Plots (Figure 2-7).

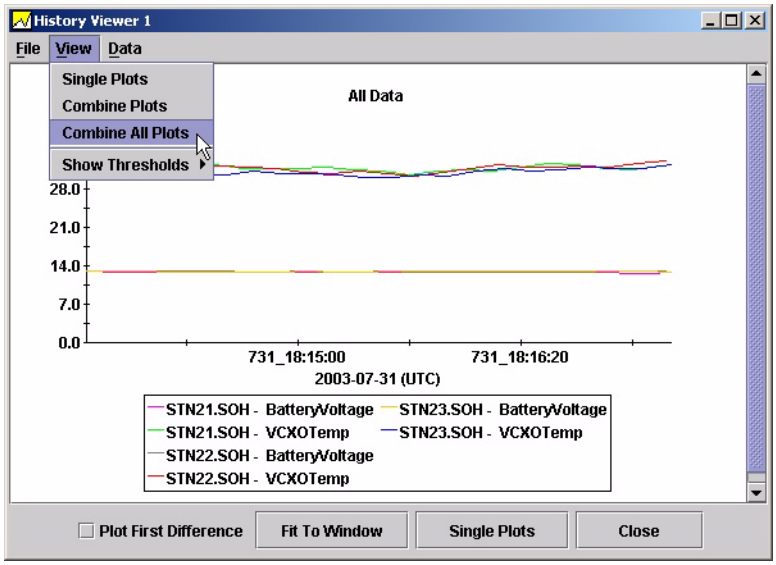
Figure 2-7 History viewer combined plots



- To combine all plots into a single plot with a legend, in the View menu choose Combine All Plots (Figure 2-8).

  This feature is not saved in plot settings.

Figure 2-8 Single combined plot with a legend



- To separate a combined plot into single plots, click the Single Plots button.

2.1.4.6 Change the history viewer window layout

Window layout options are a scrolling window (the default layout), and all plots displayed in the visible area of the window:

- To fit all the plots in the visible area of the window, click the Fit To Window button.

  The plots will be squeezed into the window without a scroll bar. You may have to enlarge the window to see the individual plots. The option button is now Scroll.

- To display the plots in a scrolling window, click the Scroll button.

2.1.4.7 View the plot thresholds

Thresholds defined in the viewers may also be shown on plots. The default is to show only the thresholds visible within the data and within the marginal limits. The marginal limits will be plotted as green, dashed, horizontal lines. If the data exceed these limits, red threshold lines may be visible, indicating data has exceeded the marginal range. Plot threshold settings are included in settings files. (See also Section 2.1.3.1, “About SOH visual cues,” on page 12, and Section 1.4, “Saving NaqsView settings,” on page 5.)

- In the plot View menu, choose Show Thresholds, and choose an option:
  - Default
  - All
  - None

2.1.4.8 Change the time interval

1. In the plot Data menu, choose Change Times.
2. In the Set History Time Interval dialog box, select the time interval for the plot (Figure 2-6 on page 15):
   - To choose a start date, start time, and duration, select the option From Start Time.
   - To choose the most recent data, select the option Most Recent.
3. Click OK to update the plots.

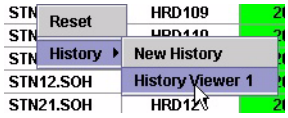
2.1.4.9 Add data to an existing history viewer

If a history viewer is open, you have the option to plot additional data in the viewer. You can add data through the menu for a station, an individual parameter, or a column. For individual and station data, you can drag the cell and drop it in an existing history viewer. This drag and drop feature is not available for the column header cell.

Note If you are using a Java version earlier than version 1.4.1_04, do not drop a cell into a history viewer from another NaqsView. The action will crash the NaqsView receiving the drop.

- To add all data for a station, or data for an individual parameter, either:
  - Drag and drop the station or parameter cell onto the history viewer.
  - Right click on the data cell or station cell and choose the existing viewer you wish to add the data to (Figure 2-9).
- To add column data, right click on the column header and choose the existing viewer you wish to add the data to (Figure 2-9).

Figure 2-9 Add data to an existing viewer through the menu



2.1.4.10 Edit plot characteristics

You can edit plot characteristics during the current session—such as axis labels, range, and tick marks—using options in the plotting library that is used by NaqsView. No other documentation is available for the plotting library, but with some experimentation, you can see how the features can be used to change the appearance of a plot.

The plot editor will apply only to the selected plot. Changes made to the plot in this manner will not be saved.

- Shift-click on the plot to open the plot editor.

2.1.4.11 Print plots

You can print a selected plot, and all plots in a history viewer:

- To print a selected plot, right click on the plot of interest and choose Print Plot.

  The plot will be printed in portrait format on a half page.

- To print all the plots, in the File menu choose Print All Plots.

  If the history viewer is set to Scroll, there will be a single plot on each half page. If the viewer is set to Fit To Window, all the plots will be squeezed onto a single page.

2.1.4.12 Save data

You can save the underlying bundle data of a plot, and save all the data for all the plots:

- To save the underlying bundle data of a plot, right click on the plot and choose Save Data. In the Save dialog box, choose the destination directory for the data.

  The entire bundle is saved to a `.csv` file of the same format as that saved using SohReader or Sohextrp.

- To save all the data for all the plots, in the plot File menu, choose Save All Data.

  All the bundles underlying all the plots in the viewer will be saved in `.csv` format.

2.1.4.13 Delete a plot

1. In the Data menu, choose Delete Plots.
2. From the list of available plots, choose the plot to delete. There will be no warning dialog.

- To recreate a deleted plot, find the cell of interest and drag it to the history viewer, or right click on the cell and choose an existing history viewer.

2.2 Calibrating sensor channels

Note Some sensors do not support calibration; NaqsView will not allow you to select channels that cannot be calibrated.
Some sensors do not permit individual channels to be calibrated, so selecting one channel may force other channels on the same digitiser to be selected as well. In this case, NaqsView will prompt you to accept the implicit selections.

NaqsView provides a basic calibration utility. For additional calibration options, use Nanometrics Calibrate.

The Sensor Calibration viewer shows a tabular display of seismic channels, with information about the sensor for each channel. You can sort the table and select which channels to display as for any SOH viewer (see Section 2.1 on page 7).

Nanometrics digitisers (Trident and HRD-24) perform calibration by sending a signal to the sensor. NaqsView allows you to set the frequency, amplitude, and duration of the sine wave calibration signal.

The calibration DAC on Nanometrics digitisers can produce a maximum signal amplitude of 5 volts. The corresponding maximum signal amplitude (in micrometres per second) is computed for each selected channel and displayed in the last column of the table. If you specify a calibration amplitude greater than the maximum, the amplitude will be reset to the maximum.

2.2.1 Calibrate one or more sensor channels

1. Choose Sensor Calibration from the View menu to open the viewer.
2. Click on the appropriate checkbox in the Selected column of the table to select a channel to be calibrated ☑. (To remove a channel that you do not want to display, click the check box to deselect it ☐).
3. Set the calibration signal characteristics:
   a) Click the Signal Settings button in the Sensor Calibration window.
   b) In the Calibration Settings dialog box, edit values for the calibration signal frequency (in hertz), amplitude (in micrometres per second), and duration (in seconds).
   c) Click OK to accept the new settings. (To close the dialog without saving the changes, click Cancel.)

   The signal characteristics are shown at the bottom of the Sensor Calibration window.
4. Send the calibration command to NaqsServer: Click the Calibrate button.

   NaqsView will prompt you for a calibration password, send the command to NaqsServer, and report the result. For security reasons you must enter the password each time you send a calibration command.

- Optionally, to view the calibration result online, run Waveform side-by-side with NaqsView.

2.3 Mass centring

Note Some sensors do not support mass centring; NaqsView will only allow you to select digitisers that have at least one channel that supports mass centring. Stations that have not received the FastExternalSohBundle will not be selectable.

The Mass Position and Centering viewer shows a tabular display of digitisers with real-time mass position SOH information, and the sensor type and number of channels supporting mass centring on each digitiser. The Mass Centering viewer shows all stations from NaqsServer. You can sort the table, select stations, and set colour-coding thresholds for the SOH columns as for any SOH viewer (see Section 2.1 on page 7).

2.3.1 Centre the mass on one or more sensors

1. From the View menu, choose Mass Position and Centering.
2. Click on the appropriate checkbox in the Selected column of the table to select one or more channels to centre.

   This actually selects digitisers; all channels on each selected digitiser are centred simultaneously.
3. Click the Mass Center button to send the mass centre command to NaqsServer.

   NaqsView will prompt you for a password, send the command to NaqsServer, and report the result. For security reasons you must enter the password each time you send a mass centring command.

   A few minutes after sending the mass centre command, you should see a change in the mass position for the selected digitisers. The exact delay will depend on the sensor type and on the configured SOH reporting frequency for the digitiser.

Appendix A UI Main Elements

This section provides an overview of the NaqsView user interface main elements—the options available from the main menus, overviews of the SOH viewers, and overviews of the SOH pop-up menus.

A.1 NaqsView main menus

NaqsView has four main menus—File, View, Log, and Help (Figure 1-1 on page 4).

A.1.1 File

The File menu provides file management options, listed in Table A-1.

Table A-1 File menu options

Option	Description
Open	Load a NaqsView settings file from disk, selectable from a browser window.
Save	Save the current NaqsView settings using the current file name.
Save As	Save the current NaqsView settings to a new file name.
Restore Default Properties	Restore the default viewer and column names by overwriting the NaqsView.properties file in the current working directory with the original `NaqsView.properties` file.
Reload Properties	Apply the viewer and column name definitions from the `NaqsView.properties` file in the current working directory.
Exit	Exit from the NaqsView program.

A.1.2 View

Each item in the View menu opens a separate viewer window showing selected state-of-health information, or providing controls for mass centring. These viewers are provided:

- Instrument Voltage and Temperature
- Environmental State of Health
- Satellite Modem State of Health

- RM4 Voltage and Temperature
- Instrument GPS
- Mass Position and Centering
- Custom

See Section A.2, “SOH viewers,” on page 24 for a summary of the options in each of these windows.

A.1.3 Log

The Log menu provides options for controlling the log that is displayed in the NaqsView log window. Log menu options are listed in Table A-2.

Table A-2 Log menu options

Option	Description
Debug	Set the log verbosity to display all messages.
Verbose	Set the log verbosity to display additional (less important) messages than would be displayed with the Info setting.
Info	Set the log verbosity to display significant messages.
Clear Log	Clear all log messages from the display.
Show Log	View the log in a separate window.

A.1.4 Help

The Help menu provides the options listed in Table A-3. See also Section 1.5, “Opening the Help file,” on page 5.

Table A-3 Help menu options

Option	Description
Help topics	View a PDF copy of the user guide.
Change pdf Reader	Define a different location for a PDF executable.
About NaqsView	View the current NaqsView version information.

A.2 SOH viewers

This section lists the controls and displayed variables for each of the SOH viewer windows. All predefined viewer windows except Mass Position and Centering have the set of controls as described in Table A-4.

Table A-4 SOH viewer basic controls

Control	Description
Show Active Only	• Check box. • Select to show only the stations for which NaqsView is receiving bundles.

Table A-4 SOH viewer basic controls (Continued)

Control	Description
Reset All	• Control button. • Reset the minimum and maximum values for all cells in the table.
Select Stations	• Control button. • Select which stations to display in the table.
Column Settings	• Control button. • Set colour-coding thresholds for each column.

A.2.1 Instrument Voltage and Temperature

The Instrument Voltage and Temperature window shows battery voltage and temperature readings for selected 12 V instruments, including digitisers and Libra transceivers. (See Table A-4 for basic controls and Table A-5 for column definitions.)

Table A-5 Instrument Voltage and Temperature column definitions

Column	Definition
Station	The station name for this instrument.
Instrument	The instrument type and serial number.
Last Update	The time of the last SOH update for this instrument.
Voltage	The supply voltage to this instrument.
Temperature	The internal temperature of the instrument in degrees Celsius.

A.2.2 Environmental State of Health

The Environmental State of Health window shows the external state of health readings for selected instruments. The units and scaling for these channels are user-defined in the configuration for the corresponding instrument. Each channel may be scaled separately. See Table A-6 for column definitions, and Table A-4 on page 24 for basic controls.

Table A-6 Environmental State of Health column definitions

Column	Definition
Station	The station name for this instrument.
Instrument	The instrument type and serial number.
Last Update	The time of the last SOH update for this instrument.
Channel 1	The scaled SOH reading for channel 1.
Channel 2	The scaled SOH reading for channel 2.
Channel 3	The scaled SOH reading for channel 3.

A.2.3 Satellite Modem State of Health

The Satellite Modem State of Health window shows the internal state of health for selected Libra transceivers. See Table A-7 for column definitions, and Table A-4 on page 24 for basic controls.

Table A-7 Satellite Modem State of Health column definitions

Column	Definition
Station	The station name for this instrument.
Instrument	The instrument type and serial number.
Last Update	The time of the last SOH update for this instrument.
Voltage	The supply voltage to the instrument.
Controller Temp	The Comms Controller board temperature in degrees Celsius.
SSPB Temp	The SSPB temperature in degrees Celsius.
Modem Temp	The satellite modem temperature in degrees Celsius.
10MHz Freq Err	The frequency error of the 10MHz clock in hertz.

A.2.4 RM4 Voltage and Temperature

The RM4 Voltage and Temperature window shows battery voltage and temperature readings for selected RM4s. RM4s use a 5V power supply. See Table A-8 for column definitions, and Table A-4 on page 24 for basic controls.

Table A-8 RM4 Voltage and Temperature column definitions

Column	Definition
Station	The station name for this instrument.
Instrument	The instrument type and serial number.
Last Update	The time of the last SOH update for this instrument.
Voltage	The supply voltage to this instrument.
Temperature	The internal temperature of the instrument in degrees Celsius.

A.2.5 Instrument GPS

The Instrument GPS window shows the status of the timing system for the selected instrument. (Some instruments—such as the Janus Communications Controller, Cygnus with NMXbus, and EuropaT—use a TimeServer, essentially a GPS-disciplined clock that can also provide backup timing, while instruments such as the Carina Transceiver and the HRD use GPS timing directly.) The data shown will depend on the timing system used for the selected instrument.

The type of GPS engine used—Trimble or Rockwell—depends on the instrument. Fields which are not computed for a specific GPS type are left blank.

Each line may contain data from more than one bundle type, so some of the data in a line may be older than other data. The older data will be greyed out.

See Table A-9 for column definitions, and Table A-4 on page 24 for basic controls.

Table A-9 Instrument GPS column definitions

Column		Definition
Station		The station name for this instrument.
Instrument		The instrument type and serial number.
Last Update		The time of the last SOH update for this instrument.
Clock State		The state of the instrument internal clock:
	Fine lock	The clock is phase-locked and within 20 µs of GPS (or TimeServer) time.
	Coarse lock	The clock is phase-locked to the GPS (or TimeServer).
	No lock	The clock is free-running with temperature compensation, because there is no solution from the GPS.
GPS State	(Trimble GPS engine, used by Libra transceivers, Europa-IP digitisers.)	
	Doing Fixes	The GPS is navigating and computing time and 3D position .
	No time	The GPS is not computing the time (for example, if no satellites are available).
	Needs init	The GPS needs to be initialized.
	PDOP too high*	The GPS is not computing the time because PDOP is too high.
	Acquiring	The GPS is tracking fewer than 4 satellites.
GPS State	(Rockwell GPS engine, used by HRDs and non-IP Europa digitisers.)	
	3D Nav	The GPS is navigating and computing time and 3D position.
	2D Nav	The GPS is navigating and computing time and 2D position.
	Tracking	The GPS is unlocked but tracking one or more satellites.
	Searching	The GPS is unlocked and searching for satellites.
	GPS Off	The GPS is powered off.
	Error	The GPS is in an error state.
	Time Err (ns)	The worst estimate of the clock error in nanoseconds.
	# Satellites	The number of usable satellites being tracked by the GPS engine.
	PDOP*	The position dilution-of-precision.
	TDOP*	The time dilution-of-precision.
	Max S/N ratio	The maximum signal to noise ratio (dB) for any satellite.

* PDOP and TDOP are standard estimates of the GPS solution error, with lower values indicating a better solution. The GPS engine will not generate a solution if the PDOP is too high.

A.2.6 Mass Position and Centering

The Mass Position and Centering window shows mass position for all stations form NaqsServer, and provides options to centre the mass on sensors that support mass centring. Stations that have not received the FastExternalSohBundle will not be selectable. See Table A-10 for column definitions and Table A-11 for basic controls.

Table A-10 Mass Position and Centering column definitions

Column	Definition
Station	The station name for this instrument.
Selected	Indicates if this instrument is selected for mass centring.
Instrument	The instrument type and serial number.
Last Update	The Ttime of the last SOH update for this instrument.
Mass Pos 1	Channel 1 mass position.*
Mass Pos 2	Channel 2 mass position.*
Mass Pos 3	Channel 3 mass position.*
Sensor Type	The primary sensor type connected to this digitiser.
Channels	The number of channels which support mass centring on this instrument .

* In units as configured on the digitiser—voltage (active high or active low), or current

Table A-11 Mass Position and Centering controls

Control	Description
Show Active Only	• Check box. • Select to show only the stations for which NaqsView is receiving bundles.
Select Stations	• Control button. • Select which stations to display in the table.
Column Settings	• Control button. • Set colour-coding thresholds for each column.
Mass Center	• Control button. • Send a mass-centring command to NaqsServer.

A.2.7 Custom

The column definitions for a custom viewer are defined by the selected data bundle type. (For descriptions of the data bundles, see the documentation for Playback, State-of-Health Files Description.) Each custom viewer also has the View sub-menu options described in Table A-12, and the basic controls described in Table A-13.

Table A-12 Custom viewer sub-menu options

Option	Description
Show	Open an existing custom viewer on the desktop.
Hide	Hide an existing custom viewer that is open on the desktop.

Table A-12 Custom viewer sub-menu options

Option	Description
Edit	Select which data columns to display in the custom viewer.
Delete	Delete the custom viewer from NaqsView.

Table A-13 Custom controls

Control	Description
Show Active Only	• Check box. • Select to show only the stations for which NaqsView is receiving bundles.
Reset All	• Control button. • Reset the minimum and maximum values for all cells in the table.
Select Stations	• Control button. • Select which stations to display in the table.
Column Settings	• Control button. • Set colour-coding thresholds for each column.
Edit Columns	• Control button. • Choose columns to show from those available for this bundle type in this viewer.

A.3 SOH pop-up menus

Individual data cells, data column headers, and station cells present right click pop-up menus (Figure A-1).

- The individual data cell menu has the options Reset, History, and Report. The selection applies to the individual cell.
- The data column header menu has the options Reset and History. The selection applies to all the cells in the column.
- The station menu has the options Reset and History. The selection applies to all the cells in the row.

Figure A-1 An SOH viewer showing all pop-up menus

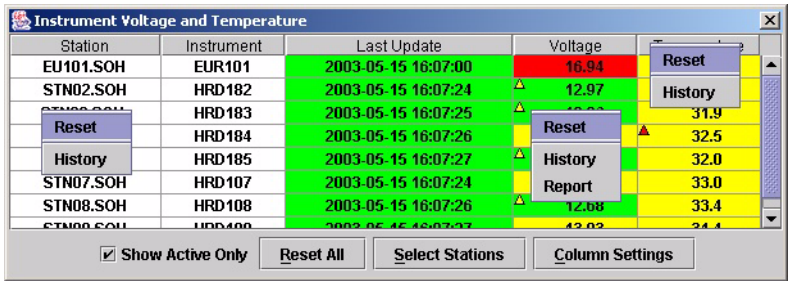


Table A-14 SOH pop-up menu options

Option	Description
Reset	Reset the minimum and maximum values to the current value: • A pop-up menu option for an individual data cell, all values in a column, all values in a station row. • A command button option for all values in a table.
History	Set the time interval to plot SOH history, in a new or an existing history viewer.
Report	View a report window showing the current value, and the minimum and maximum values reached during the current NaqsView session.

A.4 History viewer menus

The History Viewer has three main menus—File, View, and Data (Figure 2-7 on page 17).

A.4.1 File

The File menu provides history plot file management options, listed in Table A-15.

Table A-15 History Viewer File menu options

Option	Description
Save All Data	Save all plotted data to individual files in a directory selectable from the Save To dialog box (defaults to the current working directory).
Print All Plots	Open a print window and select options to print all plots.
Exit	Exit from the History Viewer.

A.4.2 View

The View menu provides history plot display management options, listed in Table A-16. (Additional display options applicable only during the current session are available from the pop-up plot library: Shift-click on the data plot to open the library.)

Table A-16 History Viewer View menu options

Option	Description
Single Plots	Split combined plots out into individual plots.
Combine Plots	Combine individual plots with the same vertical axis into a single plot.
Combine All Plots	Combine all individual plots into a single plot with a legend.
Show Thresholds	Show thresholds as horizontal lines on the plot. Options are Default, All, None.

A.4.3 Data

The Data menu provides history plot data management options, listed in Table A-17.

Table A-17 History Viewer Data menu options

Option	Description
Change Times	Edit the start and end times, and duration, of the data to plot.
Delete Plots	Delete selected or all plots. Options are • For a viewer showing single plots or combined plots, select from the plot list. • For a viewer showing all combined plots, select the option delete all plots.