



Abstract:

This document describes how to use the Trend Viewer primitive in Crimson® 3, as well as some of its limitations.

Products:

G3 Series HMI / G3 Kadet HMI / Graphite® HMI / Graphite® Controllers / Modular Controller / Data Station Plus / ProductVity Station

Use Case: Trending Data

Visualizing information from the Data Logger in a graphical form on the HMI or web server's display.

Required Software:

Crimson 3

Introduction

The Trend Viewer primitive is used to visualize a data log created in the Data Logger section of Crimson 3, refer to the Using the Data Logger section of the Crimson 3 User Manual (click *Help-Contents* in the Crimson 3 menu bar) for further information.

Add a Trend Viewer to a Display Page

1. Click on *Display Pages* in the Navigation Pane.
2. Select or create a page to which a Trend Viewer will be added.
3. Click on *Primitives* in the Resource Pane.
4. Click on *System Primitives* from the Categories list.
5. Click and drag a *Trend Viewer* from the Resource Pane into the Editing Pane.

Configuring the Trend Viewer Properties

Options Tab

1. Data Log
 - Select the log that will be visualized with this Trend Viewer
2. Data Display
 - a. Trend Lines
 - Typical line graph
 - b. Trend Lines with Bars
 - Typical line graph with additional bar graph that gives an appearance of the area below the line being filled in
3. View Width
 - The initial amount of data to be displayed, can be adjusted later with the Trend Viewer's zoom buttons
4. Pen Mask
 - A bit mask of which pens to display
 - Bit0 represents the first tag in the log's Contents, bit1 is the second tag, etc...
 - In Figure 1: a Pen Mask of 1 will display only the Temperature pen, 2 would display only Pressure, 3 would display Temperature and Pressure, 4 would display Level
 - Using binary can help with visualization: 0b110 (6 decimal), this will show the pens for Pressure and Level
5. Show Values
 - Option to display current pen values in a numeric format on the Trend Viewer
6. Show Cursor
 - Setting this to Yes and touching the display or clicking on the web server inside of the Trend Viewer will cause a vertical line to appear at the closest data point to the touch/click. The time of that data point is displayed, as well as the numeric value of each of the visible pens. The Right and Left buttons move one data point in the corresponding direction.
7. Data Values
 - Location where the values from the two previous properties are displayed
8. Time Axis
 - Select if gridlines should be displayed on the Time (X) Axis

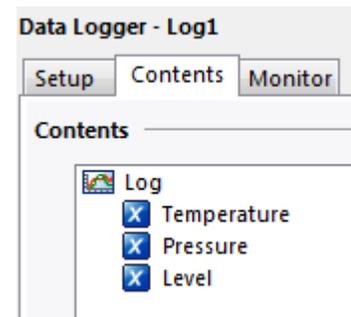


Figure 1

9. Data Axis
 - a. None
 - Does not show any gridlines on the Data (Y) Axis
 - Uses individual tag's limits (defined on the tag's Format tab) as Data Axis limits
 - b. Major Only
 - Shows only one set of gridlines on the Data (Y) Axis
 - Uses individual tag's limits (defined on the tag's Format tab) as Data Axis limits
 - c. Major and Minor
 - Shows two sets of gridlines on the Data (Y) Axis
 - Uses individual tag's limits (defined on the tag's Format tab) as Data Axis limits
 - d. Automatic
 - Automatically displays gridlines based on Minimum and Maximum limits defined in the Trend Viewer's properties
 - Uses the Minimum and Maximum limits defined in the Trend Viewer's properties as Data Axis limits

Format Tab

- Configures Color and Font selections for the Trend Viewer

Buttons Tab

- Configures Labels and translations for each button of the Trend Viewer

Time Tab

- Configures Time and Date format of the Trend Viewer

Pens Tab

- Configures the color for each pen in the Trend Viewer

Bars Tab

1. Bar Mask
 - Similar to the Pen Mask property on the [Options tab](#), selects which bars to display
2. Number of Bars
 - Configure the number of bars to be displayed across the Trend Viewer
 - 0 will draw one bar per data point
 - Screen performance is impacted negatively by a higher number of bars
3. Bars
 - Configure the bar colors

Usability

Historical Data

1. Kadet HMIs
 - Limited to a history of 5 minutes
2. G3 Series HMI / Graphite HMI / Graphite Controllers / Modular Controller / Data Station Plus / Productivity Station
 - 4 MB of RAM, evenly divided for all data logs, allocated for historical data
 - Each data point is stored as a 32-bit value, which translates into roughly 1M historical samples
 - The following equation can be used to find a rough estimate of available historical data
$$H = (1,000,000 / L / T) * U$$
 - H** is the historical period in seconds
 - L** is the number of logs configured in the database
 - T** is the number of tags in the log
 - U** is the Update Rate of the log
3. On the non-Kadet models, the historical data is stored in RAW files on the memory card which is read at power up to fill in the historical data.
 - This information is lost, along with the CSV log files when a file with a different database identifier (selected when using File-Save As or a completely different database) is loaded into the unit

For more information: <http://www.redlion.net/support/policies-statements/warranty-statement>