

NAVIGATING GIGAVIEW 1.1.0

For the SIA-3000

# **Features of GigaView**

- One button solution for multiple DataCom compliant standards jitter testing.
- Comprehensive and versatile jitter analysis software enables users to quickly understand the performance of their clock/PLL circuits as well as data communications protocols (DataCom).
- Enhanced macros capabilities that further simplify data logging and accelerate the tool setup and analysis of clock and data signals.
- Plot Interpreter helps the user understand the various plots shown by *GigaView*.
- Composite plot allows overlaying of previously saved data with current data.

# Introduction

This guide introduces a new user to the basic controls and features of *GigaView* version 1.1.0. Refer to the user's manual and the Help files provided in the *GigaView* software for more detailed information on the *GigaView* functions and features. The Initial *GigaView* screen is shown to the right (Figure 1).

## **Initial Dialog Bar**

There are two main sections of this initial screen that users should familiarize themselves with. The Dialog Bar menu along the right side of the screen allows the Oscilloscope



Figure 1 – Initial GigaView Screen

tool, Clock, Data Standards or a broad category of application tools to be opened directly. Each category contains one or more analysis tools that are specific to the category. The dialog bar is present throughout testing and provides menus that control each tool. The dialog bar changes to control the current active tool (window). Figures 2-7 illustrate the breakdown of each category.

5	Ţ <sup>®</sup> <sup>1</sup>	Complete Analysis of Clock Amplitude and Timing Characteristics	Clock Analysis
Ĩ	Period Histogram RJ, DJ, TJ Pulse Width	Basic Statistics of Clock Timing Measurements	Histogram
ਸ਼ੁਸ਼ਾ 	Jitter Spectrum → Statestiller	Analyze Long Term Frequency Effects and Identify Jitter Sources	High Frequency Modulation
Sector and the sector	Average, Min., Max., 1-sigma	Plot Measurement Results Over Time	Strip Chart
	Transfer Function Bode Plot Poles and Zeros Lock-in Time	Analyze PLL Performance and Confirm Design Goals	PLL Analysis
		Other Specialized Clock Analysis Tools	Other Clock Tools

Figure 2 - Clock Category



Figure 3 - Multi-Channel Category



Figure 4 - DataCom Category

Figure 5 - Data Standards Category



Figure 6 - Utilities Category

Figure 7 - Help Category

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Tool	Edit	Action	Calibration	Macro	Display	View	Accessories	Help		
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Figure 8- Menu Bar

Figure 8 is a close up view of the *GigaView* menu bar. The menu bar contains specific configuration controls such as the Composite Plot icon, macro pull down menu, help and the calibration menu. Under the help menu you can find the Getting Started Wizard, the Plot Interpreter and online documentation. This toolbar will be present at all times in *GigaView* and will show the controls for the current active tool (window). Some of the icons are not active until a tool has been selected. Many of these controls are also buttons on the front panel.

The following is an overview of each of these controls:

New Tool button: Opens a new tool or tools allowing many tools to be utilized at one time. "Tool" on the Front Panel (Figure 9) performs the same function. When chosen, the dialog bar seen on the right side of the initial *GigaView* screen (Figure 1) will appear allowing the selection of a new tool. The new tool appears as a new window.



Figure 9 - Front Panel Acquire Controls

- Copy Button: Copies the current active view to the clipboard.
  - Clear Button (also on Front Panel, see Figure 9): ERASES measurements (plot and summary) in the current active tool. The dialog bar settings are not changed.
  - Run/cycle button (also "Run" on Front Panel, Figure 9): This button repetitively acquires or cycles new measurements. Either the Disable All button or the Single Acquire/Stop Run button will stop cycling.
    - Disable all button: The Stop command halts all measurements. ("Disable" on the Front Panel, Figure 9, will halt ALL measurements in ALL tools.)

- Single Acquire/Stop Run button (also "Single/Stop on Front Panel, Figure 9): Acquires a single measurement (a histogram, for example). It is also used to stop a series of measurements from being taken after the "Run" button is pressed. This controls only the current active tool.
- Pulse find button (also "Pulse Find" on Front Panel, Figure 9): Determines the threshold voltages based on the current Tool settings. This function is only available with the Auto option under the Voltage menu in any tool.
- Toggle Marker Mode Button: Activates marker bars. Pressing the button toggles between horizontal, vertical and both sets of markers. Once the marker bars are activated, right clicking on them to drag and drop may move them. From the Front Panel (Figure 9), press, "Enable" to activate markers and "Select" to choose a marker to move. Once a marker is selected, use the thumbwheel knob to position it. Marker values and Delta are displayed to the right (Figure 10).
- Record/Stop Macro Button (Figure 11): Record a series of steps or keystrokes that can then be saved. To save a particular macro, go to the Menu Bar and select Action, Macro, Save.



Figure 10 – Markers Enabled

Playback Macro Button (Figure 11): After recording or recalling a saved macro (.vbs file) uses the playback button to run the macro. To load a particular macro, go to the Menu Bar and select Action, Macro, and Load.



Figure 11 – Front Panel Macro Buttons

The SIA-3000 provides the capability of creating custom macros to repeat common keystrokes using the Macro Record and Playback. The Macro interface is based on Microsoft's Visual Basic Script Language that includes the ability to control program execution

using conditional and looping statements.

Note that in the initial *GigaView* screen (see Figure 1), the macro record button is highlighted indicating that the option to begin recording a macro is available to the user at this point. The Playback button is grayed out because a specific macro has not been selected. To select a macro file, on the Menu Bar, select Macro and Load.... This panel (see Figure 12) will list the \*.vbs files residing in whichever folder or directory is chosen. Macro files (.vbs) will be depicted with a Visual Basic script icon Script icon the macro by pressing the Playback Button Script on the top toolbar.



Figure 12 – Open Macro Dialog Box

Macros can also be edited. This provides the ability of adding and/or deleting steps. Message boxes can be added to the macro to prompt other users to connect the instrument in a specific manner or to adjust certain external parameters.

To edit a macro, go the to the Menu Bar and select Macro and Edit.... This will open the Macro Edit Dialog Box (see Figure 13).

New View Button: Adds a new view of the currently Active Tool. Each tool has many different views associated with it (Figure 14). By adding a new view you can see many views of the same tools simultaneously. To change views in a particular window, select that window and use PgUp or PgDn on the keyboard or use the "View" selection on the Dialog Bar.

#### **Multiple Views**

The example on the right shows multiple views of the Histogram tool with Tail-Fit<sup>TM</sup> algorithm enabled. The top window shows the histogram; the middle window, a bathtub curve view; and the bottom window, a statistics view.

As with all Microsoft<sup>®</sup> Windows based programs, the dimensions of any window added during this procedure can be changed to facilitate better viewing. Regardless of subsequent measurements, these window dimensions will remain the same until another window/view is added or a window is closed. See Figure 14.

Front panel controls in Figure 15 allow you to perform operations on the active view. Maximize View will expand the active view to full screen. Next will change which view/tool is active. Close will close the current view/tool. Add View will add a copy view of the active view that can then be changed.

Values on Plot: Displays chosen Summary values on the plot. To display only some values, go to the Menu bar, select Display, Values on Plot.... From the list of choices, select specific measurement values to display. Annotations such as part numbers, environmental conditions, or other pertinent test setup notes may be added to the Summary View. To add an annotation, go to the Menu Bar, select Edit, then Annotation. This will open a dialog box for text entry.



Figure 13 – Macro Edit Popup Box



Figure 14 - Multiple Views



Figure 15 - View Controls on the Front Panel

- Composite Plot Button: This button opens the composite plot tool that allows you to label and overlay previously run plots with current plots.
- Calculator Button: This button opens the Microsoft<sup>®</sup> Calculator.
- NAVIGATING GigaView for the SIA-3000 © WAVECREST Corporation 2003

- Windows Explorer Button: This button opens the file explorer window. Use this to search, move or delete files from the SIA-3000 internal hard drive.
- Wordpad Button: This button opens the Microsoft<sup>®</sup> Wordpad. You can cut and paste items into this text editor that you can then use in a report or spreadsheet.
- PHelp Topics Button: This button opens the SIA-3000 *GigaView* help. From here you can explore the help contents and search for help topics.
- Help arrow Button: This button can be used to inquire about any tool control/setting on the Dialog Bar. If you don't know what a control/setting in a tool is for, you can first click on this button and then click on the setting to open a help file about this setting. You can also use this to access help about anything else in the *GigaView* window.
- GigaView files.
  - Save Tool Button: This function allows users to save *GigaView* files.

The *GigaView* software allows users to recall and save measured data and tool settings. Actions such as changing views, zooming and enabling markers can be performed on recalled data. Setup and data files can be shared to simplify site-to-site correlation or configurations.

Files can be saved in a variety of formats. Figure 16 shows the file save formats. The following is a brief overview of each of these formats:

- Current *GigaView* tool Settings & Data (\*.vtd):

Use of this file extension saves the measurement data that appears in all the available views / plots of the analysis tool that is currently being using. Regardless of how many tools were open, users should be aware that when saving data as a .vtd file, only the active window / tool will be saved. When a (.vtd) file is opened the saved tool will open to the default view regardless of the number of plots that were being displayed at the Current GigaView Tool Settings & Data (\*.vtd Current GigaView Tool Settings & Data (\*.vtd) Current GigaView Tool Settings (\*.vts) All Open GigaView Tool Settings (\*.vas) All Open GigaView Tool Settings (\*.vas) Macro Files (\*.vbs) Windows Bitmap (\*.bmp) JPEG Raster Image (\*.jpg) Plot Data (\*.txt)

### Figure 16 – Save Tool Formats

time that the user saved the tool and the data. Once open, the user may display the other saved views.

- Current *GigaView* tool Settings (\*.vts):

Use of this file extension saves the current active Tool settings only. It does not save any measurement data. When a (.vts) file is opened, the saved tool will open all the views of the tool that were open at the time that the file was created. Also, the dialog bar menu settings will be the same as when the file was created. In cases where geographically separated groups of *GigaView* users are working on the same or associated projects, (.vts) files can be sent via e-mail to run the same test with the same settings. Once open, a user can immediately begin testing.

- All Open *GigaView* Tool Settings & Data (\*.vad):

Use of this file extension saves all tools that are open along with their respective dialog bar settings *and* the measurement data that appears in all the available views for those tools. This allows an entire "study" to be saved. When a (.vad) file is opened, the saved tools will open to the views that were open at the time that the user created the file and display measurement data that was displayed at the time. Once open, the views of the saved tool/s and measurement data can be manipulated.

- All Open *GigaView* Tool Settings (\*.vas):

Use of this file extension saves all tools that are open along with their respective dialog bar settings. It does not save any measurement data. When a (.vas) file is opened, the saved tools will open to the views / plots that were open at the time that the user created the file. Assuming that an instrument is connected, once the file is open users can immediately begin to take measurements.

- Macro Files (\*.vbs) File extension used with saved macro files.
- Windows Bitmap (\*.bmp):

This option saves the current active View as a graphics (.bmp) image. The user can then access this file through a draw or paint program for inclusion into a document and/or printing. (.bmp) files save images in great detail so these file types are typically large.

- JPEG Raster Image (\*.jpg):

This option saves the current active View as a graphics (.JPEG) image. The user can then access this file through a draw or paint program for inclusion into a document and/or printing. This format has less detail than (.bmp) files and uses less memory than the (.bmp) format.

- Plot Data (\*.txt):

This option saves the XY coordinates of the active *GigaView* window as a (.txt) file. A few tools, like histogram, store the raw histogram measurements. These values can be imported into a spreadsheet for further analysis.

### **Configuration Menu**

Go to the Menu Bar and select Edit, then Configuration; the panel in Figure 17 is displayed.

Customize Plot line, grid line, background and font colors.

This window also allows you to configure GPIB addresses for external Wavecrest hardware.

The Pattern Path and Data Path buttons allow you to change directories if you frequently save data patterns and measurement data to directories other than C:\GigaView.

Typically, Margins and Axis labels are displayed (Figure 18). When the No Margins option is selected or checked, plot legends and labels will not be displayed when more than one tool or view is open (Figure 19). No Margins allows many plots to be displayed on the screen. To see legends, select a view and maximize it.

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Figure 17 - Configuration Menu

For Configuration Menu changes to be activated, the Apply button must be clicked on before closing and exiting the configuration menu panel. Clicking on Reset will set all parameters to default settings.





Figure 18 – No Margins (de-selected)

Figure 19 – No Margins (selected)

### **Print Previews**

On the Menu Bar, under Tool, choose Print Preview. The active tool will become the file that is printed. The preview shows what will be printed. The information from the Summary view is automatically added to each plot for printing including annotations.

A print options dialog appears when Print is chosen. Each possible view for that tool is shown as a page to print. Single pages may be printed or all pages in a range. Also the print view colors are changed to provide a white background with black text—no matter the configuration. To Print with Background colors, select Print Color Background in the Configuration menu (Figure 17).

### Status Bar

Since some measurements may take longer to acquire than others, the GigaView screen includes a status bar in the lower right corner.

The status bar is located at the lower right hand corner of the GigaView screen. The word "RUN" will appear along with a horizontal black bar that will grow and move from left to right to indicate progress (refer to Figure 20) as well as a measurement timer which shows the total elapsed time of the current measurement. This feature is active whenever the instrument is taking a measurement or a series of measurements.



Figure 20 - Status Bar

There is also a section of the status bar that display the XY coordinates of the mouse. When the mouse is moving over a plot, this area displays the XY coordinates of the mouse. The units are the units of the plot that the mouse is over.

### Zoom on plot

The "Hold Zoom" feature holds zoom settings from the mouse and cursor when "RUN" is pressed (see Figure 21).

To zoom in on area of interest and remain zoomed in during subsequent measurements, activate the "Hold Zoom" feature. Go to the Menu Bar; select Display, and Hold Zoom. With "Hold Zoom" active, the Vertical and Horizontal scaling knobs on the front panel have the same effect as using the mouse.



Figure 21 - Zoomed-in View

### **Composite Plot**

The composite tool overlays or displays several different views of saved (similar) data. Any data sets (with the same XY axes) can be used such as FFT, histogram, 1sigma vs. period, etc. Figure 22 depicts a Composite Plot of the High Freq Mod Analysis tool 1-sigma views of an input (magenta trace) to a clock recovery circuit and the recovered clock output (green trace). This allows saved results to be compared to current measurements or multiple runs of measurements to be compared to each other.



Figure 22 - Composite Plot Tool

### Summary

The new features of the SIA-3000 GigaView software provide a new user interface and enhanced analysis tools. Multiple Data Communication standards test tools offer a one-button solution for compliant testing. The GigaView diagnostic tools combine to form a user-friendly and powerful analysis package for jitter and timing measurements.

Feel free to contact us:

# WAVECREST Corporation 7626 Golden Triangle Dr

7626 Golden Triangle Di Eden Prairie MN 55344 www.wavecrest.com

1(952)-646-0111