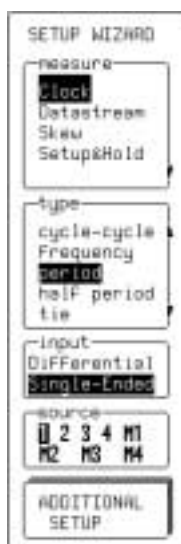


Taking Your First Measurements

Setup Wizard:

The Setup Wizard is a unique capability of the Jitter and Timing Analyzer. It performs the requisite scope setup chores while simplifying measurement procedures to a few menu selections or button pushes. It also greatly simplifies display of the various time, statistical, numerical and spectral views of jitter, and maximizes the accuracy and repeatability of the scope. However, the Setup Wizard in the analyzer does not prevent you from operating any of the front panel controls if, at any time, you feel you must make non-standard settings or perform custom operations.

Before starting your measurements, it may be helpful to quickly verify that the clock or data signals are live and present at the input to the scope. To do this, press the front panel **AUTO SETUP** pushbutton. This will display the signals and verify that your probing or cable setup is correct before you proceed with measurements. If the signal does not appear satisfactory, adjust the coupling, probe, connection, etc. and press **AUTO SETUP** again.



Setup Wizard menu 1 of 2

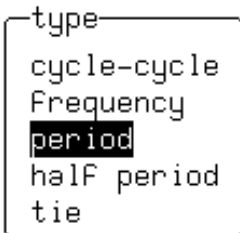
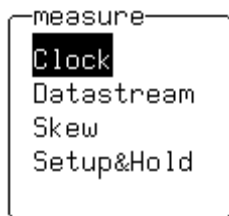


Setup Wizard menu 2 of 2

In the "Setup Wizard" menus, you may make selections in any order and move between menus to complete the selections. Changes made in the first menu, and in the "Measurement Setup" menu, will result in a new display

calculation. However, nothing will happen to the currently displayed clock or datastream acquisition (Trace A) until you press the **Start Acquisition** soft key on the second menu. If you exit the Setup Wizard at any time (by pressing the **RETURN** button once from the first menu, or by pressing a front panel button that brings up a new menu), and then re-enter, all previous settings will have been saved as the default settings. The same is true if you power the unit OFF and then ON again.

Setup Wizard Menu 1



In the first Setup Wizard menu, the measurement type and input must be selected.

1. **Measure** – From the **measure** menu, select one of the following signal measurement types:
 - **Clock** (single clock line)
 - **Datastream** (telecom, datacom signals)
 - **Skew** (skew-type measurement on two clock instruments or on identical data streams on different pins)
 - **Setup/Hold** (data-clock relationship)

To make your selection, use the soft keys to the right of the menu box to toggle up or down through the menu.

2. **Type** – The **Type** menu is a listing of jitter measurement types that can be performed on the clock or datastream signal.

The selection in this list will control the selection of jitter measurement types whenever a JitterTrack or Histogram is displayed, and whenever measurements are active and either the Jitter Data or Jitter Stat groupings are displayed. If you are unfamiliar with the various jitter measurement types, refer to Chapter 3 for more information.

Here is the complete list of jitter types:

- **Duty Cycle**
- **Cycle-Cycle (with n-cycle selection)**
- **Frequency**
- **Period**
- **Half Period**
- **Time Interval Error**



- Width
- Skew
- Setup
- Hold

The list of jitter measurement types is context sensitive based on the selection in the **Measure** menu. For instance, if **Datastream** is chosen in the **Measure** menu, choices for **Cycle-cycle**, **Frequency**, **Period**, and **Width** jitter would appear. Different choices appear if **Clock** or **Setup & Hold** are chosen from the **Measure** menu. If **Skew** is chosen, there is no **Type** menu at all, since there is only one choice.

To make a selection, use the soft keys to the right of the menu box to toggle up or down through the menu.

3. **Input** – If you have chosen **Clock** or **Datastream** in the **Measure** menu, this menu will appear. If you have a single line coming into the scope, or are using a differential probe, select **Single-Ended** from the **Input** menu. For two lines going into the scope, choose **Differential**. If you are using the AP-265 Differential and Single-Ended Edge conditioner, follow the on-screen directions for use.

If you have selected **Skew** or **Setup&Hold** from the “measure” menu, this menu will not appear since you must connect the clock and/or data signals as described by the on-screen prompts.

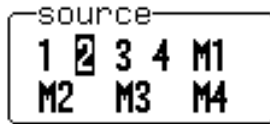
Note:

For skew-type measurements, use Channel 2 for the clock reference and Channel 3 for the second clock. The reference clock must be of equal or higher frequency than Clock Two. If it is not, make clock 2 the reference clock.

To make a selection, use the soft key to the right of the menu box to toggle through the menu.

4. **Source** – This determines the channel(s) that the analyzer is receiving signals from.

If you have selected **Clock** or **Datastream** from the **Measure** menu and **Single-Ended** from the input menu, this menu will appear. Select Channels 1, 2, 3, or 4 or Memory 1, 2, 3, or 4 (M1, M2, M3, or M4). The Memory selections make it easy

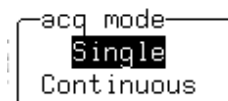
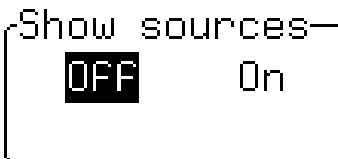
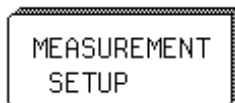


to swap data files with other LeCroy users, or recall old clock/datastream signal acquisitions for later analysis. Waveforms can be loaded into memories by pressing the **WAVE STORAGE** button on the front panel. For instructions on how to do this, refer to the *WavePro Operator's Manual*.

If you have selected **Skew** or **Setup & Hold** from the **Measure** menu, this menu will be replaced by instructions for hooking up the two signals to Channels 2 and 3. For example, when you select **Setup & Hold** from the **Measure** menu, you will be instructed to use Channel 2 for the clock reference and Channel 3 for data.

5. To access the second Setup Wizard menu, press the soft key to the right of **Additional Setup**.

Setup Wizard Menu 2



In the second Setup Wizard menu (labeled **More Setup**), you must adjust the specifics of the measurement and acquisition, then **Start Acquisition** to capture signal data.

1. **Measurement Setup** – This allows you to set the level at which the jitter measurement is made, and whether it is made from the positive or negative edge. (Cycle-cycle, half period, and TIE have additional settings for this parameter). Two-signal functions such as setup, hold, and skew allow you to set level and polarity for each signal (polarity can be set to positive, negative, or both).
2. **Show Sources** – This menu selection appears if you chose a differential input in the previous menu. **Showing Sources ON** will display the differential CK and CK BAR Sources in addition to the A (CK – CK BAR) trace.
3. **Acq(uisition) Mode** – This determines whether the analyzer is going to capture one long clock or signal acquisition for detailed analysis, or continually acquire and accumulate statistical data on multiple acquisitions.

Select **Single** if you wish to make one acquisition and then perform multiple analyses on it. Select **Continuous** if you wish to accumulate data from more edges than can be acquired in one acquisition at the maximum sampling rate. You may also select **Single** and manually trigger multiple

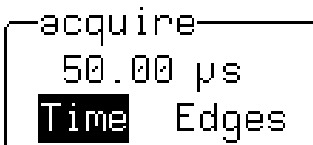
times (using the front panel **SINGLE** button in the trigger area) to accumulate a larger data set for statistical analysis.

Note:

The LeCroy Jitter and Timing Analyzer has deep memory and short processing times. This allows operations that are not possible on other jitter measurement scopes, like synchronization of jitter and clock data, analysis of the clock or datastream for modulation effects, and capture of long records for large n-cycle evaluation. Therefore, you should always attempt to do your testing with a single long acquisition.

For instance, a J-260 analyzer with a 32 Mpts record length and sampling at 16 GS/s can capture a 2 ms long acquisition. If you are measuring a 50 MHz clock, that equates to 100,000 edges. If you are measuring a 266 MHz clock, that equates to over 500,000 edges.

The analyzer calculates and displays your data very quickly. As a typical example, for 50 MHz clock and 10,000 edges, it takes approximately 12 seconds to acquire and display the clock signal, a JitterTrack, and measurements.



4. **Acquire** – This sets the total length of the acquisition to achieve the required sample size. The sampling rate is always kept at 16 GS/s (Single-ended) or 8 GS/s (differential) to maximize accuracy. Since the analyzer has deep memory, many edges can be acquired with one acquisition. If more edges are needed than can be acquired in a single acquisition, consider multiple acquisitions to achieve the required sample size.

Acquisition length may be set in either time or edges. The soft knob to the right of the menu controls the numerical value, and the soft key toggles between **TIME** and **EDGES**.

If **TIME** is selected, the time/div setting on the jitter analyzer will be set so as to result in the acquisition time desired. If **EDGES** is selected, the analyzer will sample the signal, determine the period, and set the acquisition to be of long enough time to include the required number of edges.

Note:

Since the time base of the analyzer has fixed settings, it is not possible to acquire the exact number of edges unless the clock frequently is a multiple of 1,2, or 5. If that is not the case, the

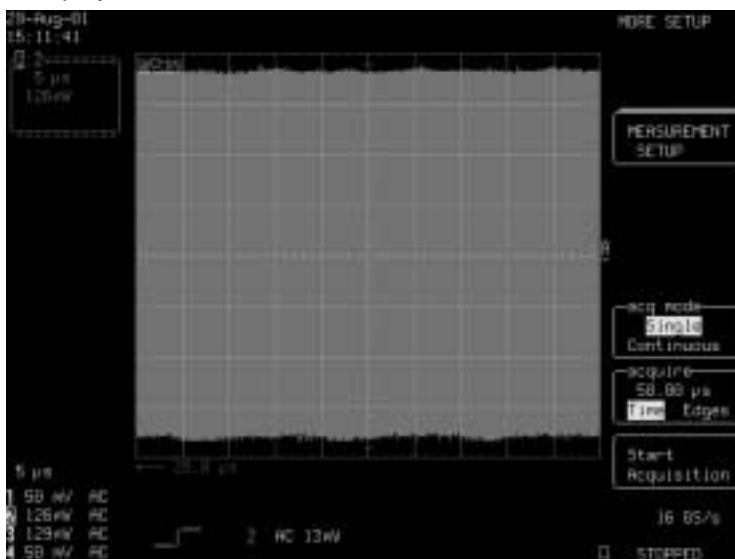


Jitter and Timing Analyzers

time base will be set to acquire more than the desired number of clock edges. You may then use the cursors to get measurement data on only the desired number of edges.

Start
Acquisition

5. **Start Acquisition** – This initiates the acquisition by activating the analyzer's triggering. Press the soft key for **Start Acquisition**. The analyzer will acquire the clock signal and display it in Trace A as shown below.



Note that in the case of differential inputs, the Trace A may not be maximized vertically. Since Traces A, B, C, and D have 16 bits of vertical resolution, measurement accuracy will not suffer.

You are now ready to do further measurement, views, and analysis.

Note:

The front panel trigger button for **NORMAL** trigger performs exactly the same function as the **START ACQUISITION** soft key when ACQ MODE is set to **Continuous**. The **SINGLE** trigger button performs the same function as the **START ACQUISITION** soft key when ACQ MODE is set to **Single**. Using the trigger buttons can save time by not returning to the *Setup Wizard* menu if your setup has not changed.

Clock Zoom

Jitter measurement and analysis often require the acquisition of single, long record lengths with thousands of clock edges for analysis. LeCroy's SMART MEMORY provides the capability to do this quickly and easily. However, users of the long memory scopes often feel uncomfortable at not being able to see edge detail on a long memory acquisition.

LeCroy Clock Zoom solves this problem by providing the ability to quickly create a zoom on the clock trace to allow you to verify that the signal was acquired properly and was suitable for further measurement. In addition, the Clock Zoom allows easy synchronization of the JitterTrack with the clock signal. This enables determination and further analysis of the exact clock edge where high jitter was present.

To display the Clock Zoom trace on the screen, press the front panel **CLOCK ZOOM** button (located below the **SETUP** button) after you have displayed a clock signal on the screen. A second trace with 100:1 horizontal zoom factor will be automatically displayed on the screen. This trace will always be Trace D. If the horizontal zoom is not sufficient to resolve the clock edges (and it may not be on long memory acquisitions), adjust the front panel horizontal **ZOOM** knob until the resolution is sufficient for your needs.

The **Clock Zoom** menu will be displayed along with the trace. Pertinent sections of the menu are described below.



1. **Clock Zoom ON/OFF** – When the Clock Zoom button is pressed, this will be defaulted to ON. To turn it off, and not display the clock Zoom, press the Clock Zoom button again. To remove the Clock Zoom ON/OFF menu from the screen, press the Return button at the bottom-left of the front panel.
2. **Multi-Zoom ON/OFF** – When only the Original Clock Signal (trace A) and the **CLOCK ZOOM** Trace (Trace D) are displayed, this control permits zooming of the traces to be synchronized (**MULTI-ZOOM** ON) or unsynchronized, with only the **CLOCK ZOOM** being affected by changes to the front panel horizontal **ZOOM** knob (**MULTI-ZOOM** OFF).

If other Jitter Views are displayed (i.e. JitterTrack, Histogram, Jitter FFT, etc.), then the Multi-Zoom control affects all displayed traces except Trace A and the Trace C Histogram.



3. **Overlay Grids** – Superimposes all displayed traces on one large grid. If you wish that the A Trace not be superimposed, simply use the **A** button to turn it off.
4. **Play/Reverse Menus** – Scrolls the zoom trace across the screen. When playing, the menu is labeled STOP.
5. **Scroll By** – Scrolls by divisions per second or number of divisions. Use the soft key to the right of the menu to toggle back and forth. Use **div/s** to scroll continuously for viewing. Use **Number of Divisions** for waveform processing.
6. **Speed** – The soft knob to the right of the menu is used to set the scroll speed.

If a Clock or Datastream signal is being measured, the **clock zoom** will be a zoom of the clock or datastream signal being measured.

If you are performing skew measurements between two signals, the **clock zoom** will be zoom of the Clock Reference input to Channel 2.

If you are performing setup or hold measurements between clock and data, the **clock zoom** will be a zoom of the Clock Reference input to Channel 2.

Reference Chapter 1 of the WavePro *Operator's Manual* for more information on the menus displayed for **CLOCK ZOOM**.

Note:

The **Multi-Zoom** feature in the Jitter and Timing Analyzer differs somewhat from that of the WavePro. For instance, the trace labels for Trace A (clock signal) and Trace C (Histogram) will always have dotted top and bottom edges, even though they are not always multi-zoomed. In addition, the **Multi-Zoom** menu will always display Trace A as being included in the multi-zoom, even if it is not. Furthermore, the Histogram (Trace C) will only be zoomed if it is the last trace button pressed. If you do not want the Histogram to zoom with your time and frequency domain traces, simply press **JITTERTRACK** or **CLOCK ZOOM** first before using the **zoom** control.

Jitter Views Toolbar

The Jitter Views Toolbar provides fast, easy access to jitter views, measurements, and analysis. Once you have acquired your signals, this toolbar makes it easy to display time, statistical, measurement, or spectral views of jitter quickly. In addition, certain other functions are performed automatically as new views are added, such as modification of the display to allow viewing of all the waveforms.

If you have not already acquired and displayed signals using the Setup Wizard, do so now (accessed by pressing the **SETUP** button directly over the Jitter Views group of buttons).

JitterTrack

The JitterTrack Function/display is a time-vs.-time display that charts the evolution of these waveform attributes:

- **Duty Cycle**
- **Cycle-cycle deviation (including n-cycle with Start selection)**
- **Frequency**
- **Period**
- **Half Period**
- **Time Interval Error**
- **Pulse Width**
- **Skew**
- **Setup**
- **Hold**

For instance, **JitterTrack** of Period charts the timing error of the period of a signal compared to the average period of the signal. The timing error is displayed in the vertical scale, and the horizontal scale remains synchronized with the original clock or data signal. This allows easy determination of sources of high jitter by comparing the JitterTrack to the original signal.

To learn more about **JitterTrack**, refer to Chapter 3.

To display the **JitterTrack** for the type of measurement that you selected in the Setup Wizard, simply press the **JITTERTRACK** button. The **JitterTrack** will be displayed, along with the menu



shown at left. In most cases, you will not need to modify anything in this menu. The menu items are described below:



1. **JitterTrack ON/OFF** – When the **JITTERTRACK** toolbar button is pressed, this will be defaulted to ON. To turn it off, and not display the **JitterTrack**, press the **JITTERTRACK** toolbar button again. To remove the **JitterTrack** ON/OFF menu from the screen, press the **RETURN** button at the bottom-left of the front panel.
2. **Find JitterTrack** – Under certain conditions, the **JitterTrack** may not be correctly scaled, or may not be displayed. Pressing the soft key to the right of **FIND JITTERTRACK** will scale and/or display the **JitterTrack**. If the **JitterTrack** is still not displayed, make sure the measurement level is set correctly.
3. **MultiZoom & Auto Scroll** – This provides the capability to modify the zoom presets, and also to scroll through the waveform at a user-specified speed. The zoom default is to synchronize the **JitterTrack** with the clock signal. Access this menu only if you wish to change the default, or if you wish to perform scrolling. Reference your *WavePro Operator's Manual* for more information on **MultiZoom** and **Auto Scroll**.
4. **More Jitter Setup** – Allows advanced JitterTrack setup to be easily accessed, if necessary. Generally speaking, you should not need to access this menu. Reference Chapter 3 for more information on the items in this menu.
5. **Type** – This menu duplicates information in the *Setup Wizard's* Type menu. This makes it easy to change the **JitterTrack** measurement without having to go back to the *Setup Wizard*. This is extremely helpful if, after acquiring a signal, you wish to measure different types of jitter on the same signal, such as period, half period, and cycle-cycle.

To make a selection, use the soft keys to the right of the menu box to toggle up or down through the menu, or use the soft knob to scroll through the menu.

6. **Source** – This menu duplicates information in the Setup Wizard's Source menu. This makes it very convenient to connect clock or data signals to each channel of the analyzer, then simply switch between those signals to quickly view jitter measurements and views without having to return to the *Setup Wizard* menu.

Note:

The selection made in the **Type** menu will change the Type selection in the *Setup Wizard*, and will also change the relevant settings for histograms and measurements to ensure that all time, statistical, and measurement data is consistent for one type of jitter measurement. If you do not wish for this to be the case, you will have to use **ADVANCED SETUP**. Refer to Chapter 3 for more information.

The same is true of the selection made in the **Source** menu.

Histogram

The Histogram **Function/display** plots the statistical distribution in value of the following timing parameters:

Duty Cycle	duty @ lv
Duty Cycle Error	Delta wid @ lv
Cycle-Cycle	Delta p @ lv
Frequency	freq @ lv
Period	p @ lv
Half Period	hperj @ lv
Time Interval Error	tie @ lv
Width of Pulse	wid @ lv
Skew	skew
Setup	setup
Hold	hold

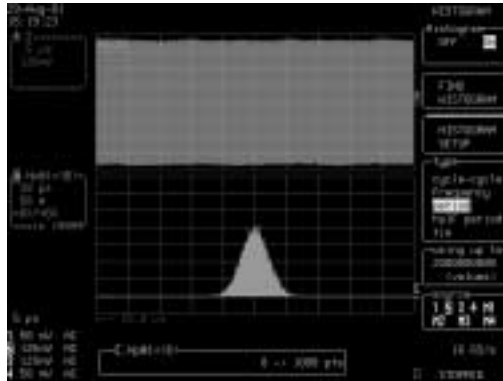
The histogram bar (horizontal) axis is divided into intervals, or bins. The height of each bar in the plot is proportional to the number of data points contained in the bin. The higher the bar, the more points there are in the bin and in the area of the waveform that it represents.



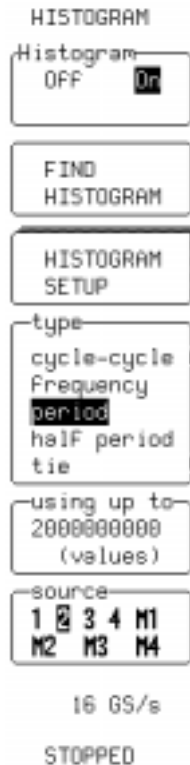
Jitter and Timing Analyzers

The distribution of the data (whether it is random or deterministic) can provide invaluable information for determining the source of the jitter.

To learn more about Histograms, refer to Chapter 4.



To display the Histogram for the type of measurement that you selected in the *Setup Wizard*, simply press the **HISTOGRAM** button. The Histogram will be displayed, along with the menu displayed at the left and described below:



1. **Histogram ON/OFF** – When the **HISTOGRAM** toolbar button is pressed, this will be defaulted to ON. To turn it off, and not display the Histogram, press the **HISTOGRAM** toolbar button again. To remove the **Histogram ON/OFF** menu from the screen, press the **RETURN** button at the bottom-left of the front panel.
2. **Find Histogram** – Under certain conditions, the Histogram may not be correctly scaled, or may not be displayed. Pushing the soft key to the right of **FIND HISTOGRAM** will scale and/or display the Histogram. If the Histogram is still not displayed, make sure that the measurement level is set correctly.
3. **Histogram Setup** – Allows advanced Histogram setup to be easily accessed, if necessary. Generally speaking, you should not need to access this menu. Reference Chapter 4 for more information on the items in this menu.
4. **Type** – This menu duplicates information in the *Setup Wizard Type* menu. This makes it easy to change the Histogram measurement without having to go back to the *Setup Wizard*. This is extremely helpful if, after acquiring a signal, you wish to histogram different types of jitter on the same signal, such as period, half period, and cycle-cycle.

To make a selection, use the soft keys to the right of the menu box to toggle up or down through the menu.

Note:

The selection made in the **Type** menu will change the Type selection in the *Setup Wizard*, and will also change the relevant settings for **JitterTrack** and measurements to ensure that all time, statistical, and measurement data is consistent for one type of jitter measurement. If you do not wish for this to be the case, you will have to use **Advanced Setup**. (Refer to Chapter 4 for more information.)

5. **Using up to XXXX Values** – During continuous acquisitions, the Histogram will accumulate data up to the number set in this menu. The default value is the maximum (2 billion values) allowed by the software. You may adjust this lower if



Jitter and Timing Analyzers

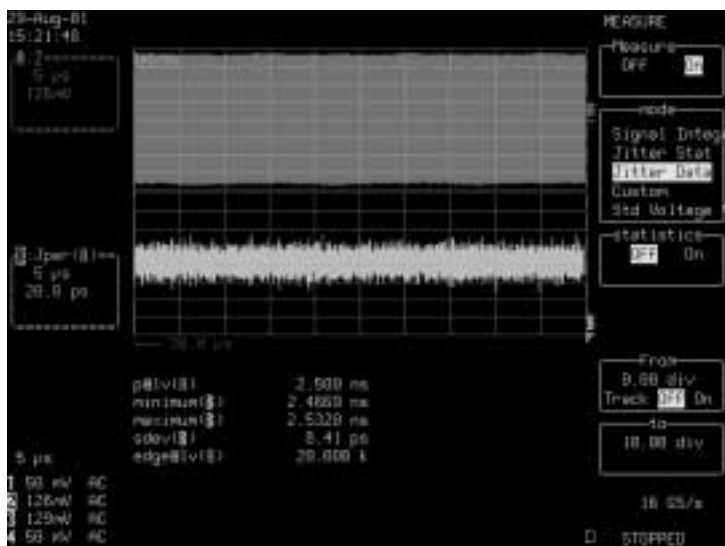
you wish; however, when you turn the histogram off using the **HISTOGRAM** toolbar button, the value will automatically be reset to the default value.

If you wish to clear the values from the Histogram and begin acquiring new data, you may press the front panel **CLEAR** **SWEEPS** button at the lower-right of the front panel.

Measure

Measure allows you to gather quantitative data on the information contained in the various jitter views. The Jitter and Timing Analyzer makes this easy by providing custom measurement views specifically tailored to jitter measurements.

To display the Measurements at the bottom of the screen, simply press the **MEASURE** button. The Measurements will be displayed, along with the menu displayed at the right and



described below:

1. **Measure ON/OFF** – When the **MEASURE** toolbar button is pressed, this will be defaulted to ON. To turn it off, and not display the Measurements, press the **MEASURE** toolbar button again. To remove the Measure ON/OFF menu from

The Measurement Tools

the screen, press the **RETURN** button at the bottom left of the front panel.

Note:

All measurements can be “gated” so that measurements are only being performed on part of the time or frequency domain waveforms. It is important to realize when cursors are ON and gating measurements, so that you do not report erroneous results.

If a histogram is displayed, the cursors must completely enclose the histogram width if Jitter Stat measurement mode is selected. Otherwise, the histogram parameters in Jitter Stat will report incomplete information.

2. **Mode** – Lists various pre-defined measurement groupings, of which three (**Jitter Stat**, **Jitter Data**, and **Signal Integ**) are specific to jitter measurements. Other views list standard parameters in logical groups and allow you to determine which channel or trace should be measured.

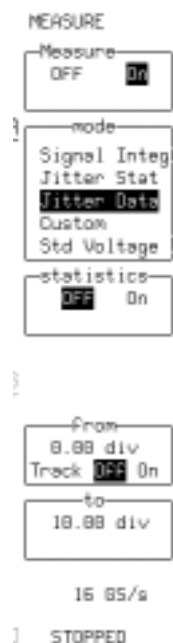
The custom jitter measurement groupings are as follows:

Jitter Stat – Provides an average value of the timing parameter on the top line, and measurement statistics of data contained within the histogram display on the next four lines. **Jitter Stat** provides accumulated data from a single or continuous acquisition. It is generally used when it is desired to accumulate data over a number of acquisitions.

Definitions of the listed parameters are as follows:

Timing Parameter (A) – the relevant timing parameter based on the Type selection in the *Setup Wizard*, **JitterTrack**, or **Histogram** menus. Reference Chapter 5 for more information.

The timing parameter is shown with either an **(A)** or a **(2,3)** after it to signify the Trace or Channels it is measuring. Trace A is simply a copy of the clock or datastream signal. Channels 2 and 3 are the inputs for Skew, Setup, and Hold measurements.





Low (C) – The value of the leftmost populated bin in the histogram. This is not the lowest actual numerical value in the histogram.

The parameter is shown with a **(C)** in parentheses because it is being performed on Trace C, which is always defined, by default, as the Histogram.

High (C) – the value of the rightmost populated bin in the histogram. This is not the highest actual numerical value in the histogram.

Range (C) – The difference between the value of the rightmost and leftmost populated bins in the histogram.

Sigma (C) – The standard deviation of the data in the histogram.

Refer to Appendix B in the manual for more information about these parameters.

Jitter Data – Provides an average value of the timing parameter on the top line, and timing-related parameters for a single acquisition on the next four lines.

Definitions of the listed parameters are as follows:

Timing Parameter (A) – the relevant timing parameter based on the Type selection in the *Setup Wizard*, **JitterTrack**, or Histogram menus. Refer to Chapter 5 for more information.

The timing parameter is shown with either an (A) or a (2,3) after it to signify the Trace or Channels it is measuring. Trace A is simply a copy of the clock or datastream signal. Channels 2 and 3 are the inputs for Skew, Setup, and Hold measurements.

Minimum (B) – the lowest value of the timing parameter, as measured in a single acquisition of the **JitterTrack**. The parameter is shown with a **(B)** in parentheses because it is being performed on Trace B which, by default, is always defined as the **JitterTrack**.

Maximum (B) – the highest value of the timing parameter, as measured in a single acquisition of the **JitterTrack**.

Sdev (B) – the standard deviation of the timing parameter data in the **JitterTrack**.

Edge @ Iv (A) – the number of edges in the unzoomed clock for Trace A.

Refer to your *WavePro Operator's Manual*, Chapter 11, for more information on these parameters.

Signal Integrity – If a Clock or Datastream signal is being measured, this selection provides information about the clock or datastream signal being measured.

If you are performing skew measurements between two signals, it provides information on the Clock Reference input to Channel 2.

If you are performing setup or hold measurements between clock and data, it provides information on the Clock Reference input to Channel 2.

Rise (A) – the duration of the clock waveform's rising transition from 10% to 90%, averaged for all rising transitions between the cursors.

Fall (A) – the duration of the clock waveform's falling transition from 90% to 10%, averaged for all falling transitions between the cursors.

R20-80% (A) – the duration of the clock waveform's rising transition from 20% to 80%, averaged for all rising transitions between the cursors.

F80-20% (A) – the duration of the clock waveform's falling transition from 80% to 20%, averaged for all falling transitions between the cursors.

Pk-Pk (A) – the difference between the highest and lowest points in the waveform.

Custom – This menu contains temporary custom setups that are created by the user. These temporary custom



setups are overwritten whenever any of the above three measurement mode selections are made.

For information on defining the Custom parameter modes to suit your specific needs, refer to Chapter 11 in the *WavePro Operator's Manual*.

3. **Statistics** – Additional statistics can be displayed on each measurement by turning statistics ON.
4. **From/To** – All parameters can be “gated,” that is, they can be measured only between cursor values. This is very helpful if you wish to measure parameter values for only a certain number of edges.

The **From** menu defines the leftmost cursor. You can adjust it using the soft knob to its right. Use the soft key to select whether you want this cursor to move in unison (track) with the rightmost cursor, or not. The cursor position, in divisions, is displayed in the menu box.

The **To** menu displays the position, in divisions, of the rightmost cursor. The soft knob to the right of this menu adjusts the position of the rightmost cursor.

If cursors have Track ON, both cursors can be adjusted in unison with the leftmost cursor's soft knob.

Example:

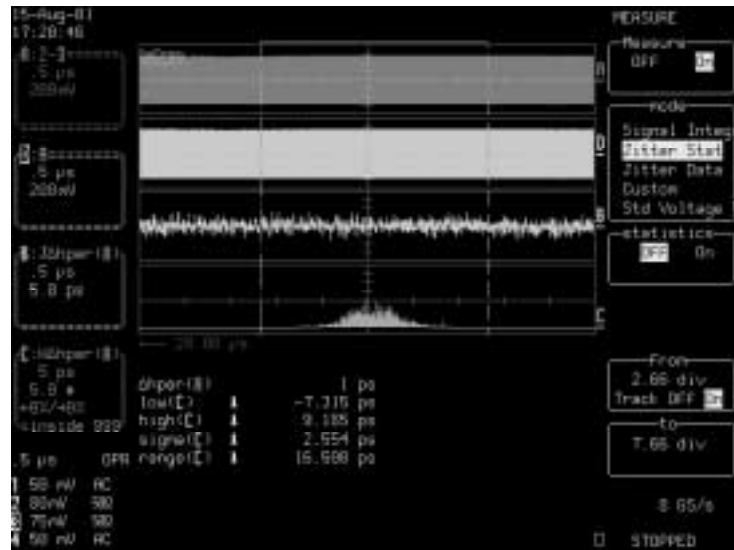
Input a 400 MHz differential clock signal into the analyzer; start acquisition for 1,000 edges; display the Clock Zoom, JitterTrack, and Histogram for half period jitter. Also display Measurements (Jitter Data grouping). Notice that the edge @ Iv measurement shows 2,000 edges in the acquisition, but you only want to measure jitter on 1,000 edges.

If the Measure menu is not displayed, display it, and use the lower soft knob (to the right of the To menu) to move the rightmost cursor over to 5,000 divisions. The edge @ Iv reading is now 1,000 edges. Press **CURSORS** and turn Reference Cursor Track to ON (if Track OFF/ON isn't displayed in the Measure menu). Use the upper soft knob (to the right of the From menu) to select which 1,000 cycles you wish to measure (if desired), and read your results.

The Measurement Tools

Change Measure mode to Jitter Stat and read the results. If the cursors enclose the histogram, Low, High, and Sigma should be almost equivalent to Minimum, Maximum, and Sdev, respectively. If cursors don't enclose the histogram, these results will differ.

Note that the results will also differ if you have accumulated multiple acquisitions in the histogram (Minimum, Maximum, and Sdev only report data on the last acquisition).



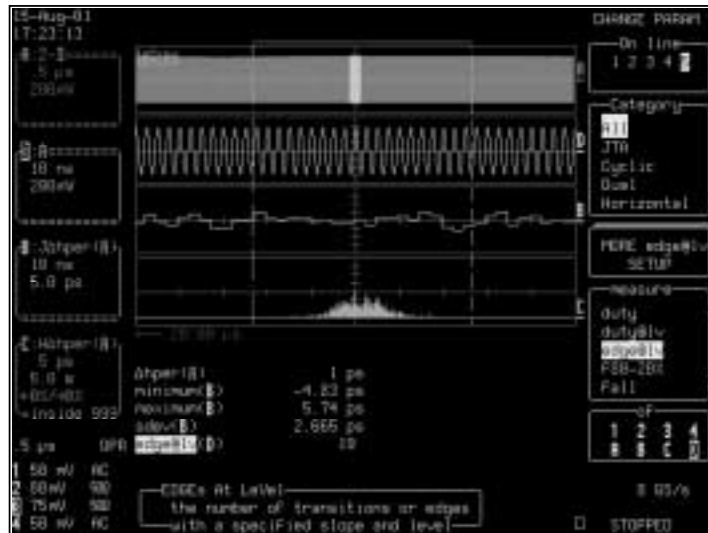
Now use the front panel **ZOOM** controls to adjust the horizontal zoom on the Clock Zoom (Trace D) and JitterTrack (Trace B) until you can see individual clock signals. Note that the Jitter Stat measurements are unaffected by the zoom adjustment. Switch to Jitter Data measurements and note that the minimum, maximum, and sdev measurements are affected by zooming.

Change the measure mode to Custom, select **CHANGE PARAMETERS**, and change parameter On-line 5 (edge @ 1v) to be of the Clock Zoom (D) instead of the unzoomed clock (A) by adjusting the Source in the Of menu to D.



Jitter and Timing Analyzers

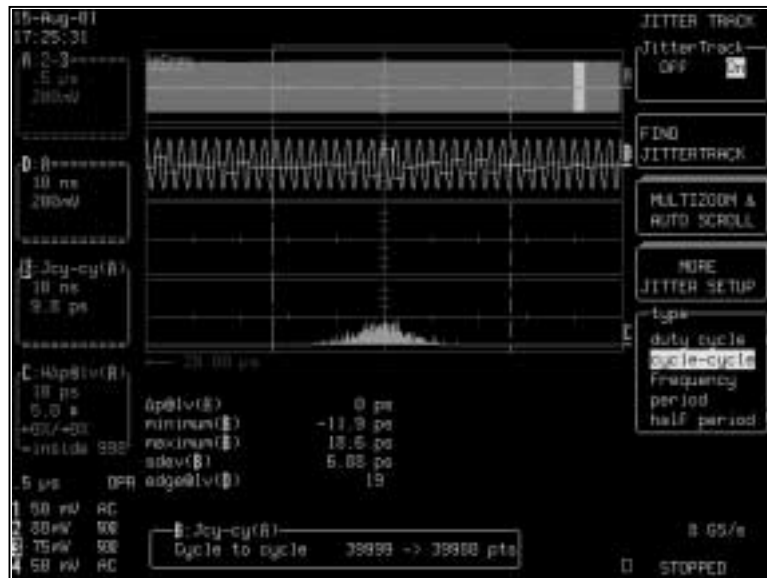
Note that the histogram display will not zoom unless it is the last function “touched.” If you do not wish to zoom the histogram, press the **CLOCK ZOOM** or **JITTERTRACK** buttons to display the menu; then perform the zoom.



Now press the **JITTERTRACK** button to display the JitterTrack menu. Change Type to cycle-cycle. Notice how all the data is instantly recalculated and displayed. Display the measurement group you desire and take readings.

The Measurement Tools

Locate a jitter peak in the JitterTrack display. Position this peak in the center of the display using the front panel **HORIZONTAL POSITION** knob in the Analysis Control section. Use the front panel horizontal **ZOOM** knob to expand the zoom around this point until you can clearly see the clock edges and JitterTrack display. Reposition the zoom, if necessary, to the center and use the front panel **VERTICAL POSITION** knob in the ANALYSIS CONTROL section to overlay the JitterTrack and Clock Zoom. Since these two displays are synchronized, you can easily correlate high jitter to a specific clock edge.



Done? Press the front panel **RESET** button in Analysis Control to return the display to an unzoomed state.

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