Reference

CSA8000 Communications Signal Analyzer

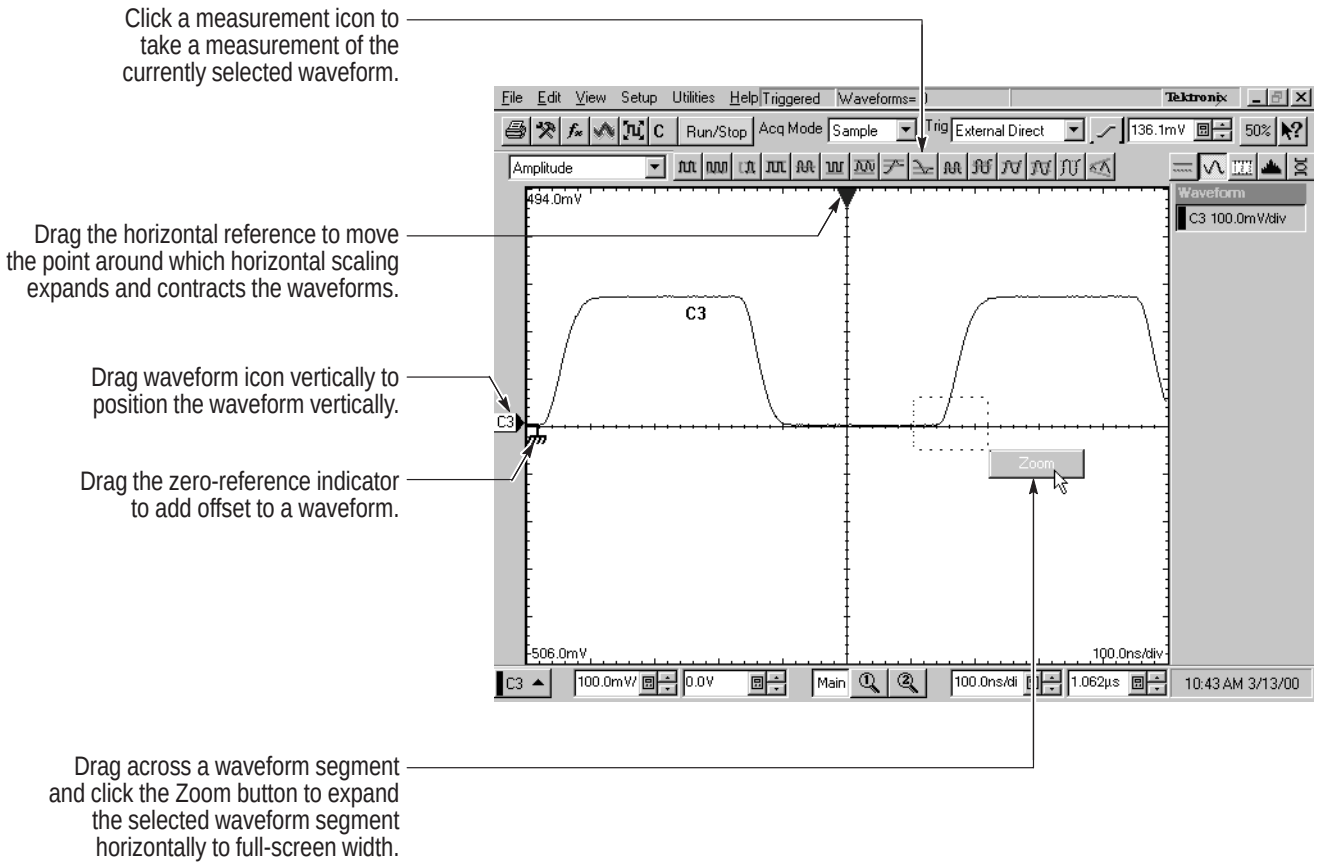
TDS8000 Digital Sampling Oscilloscope

071-0437-00

071043700

To Use the Screen Controls

Use the mouse to select waveforms, menus, and buttons. You can also drag with the mouse to do the following operations.

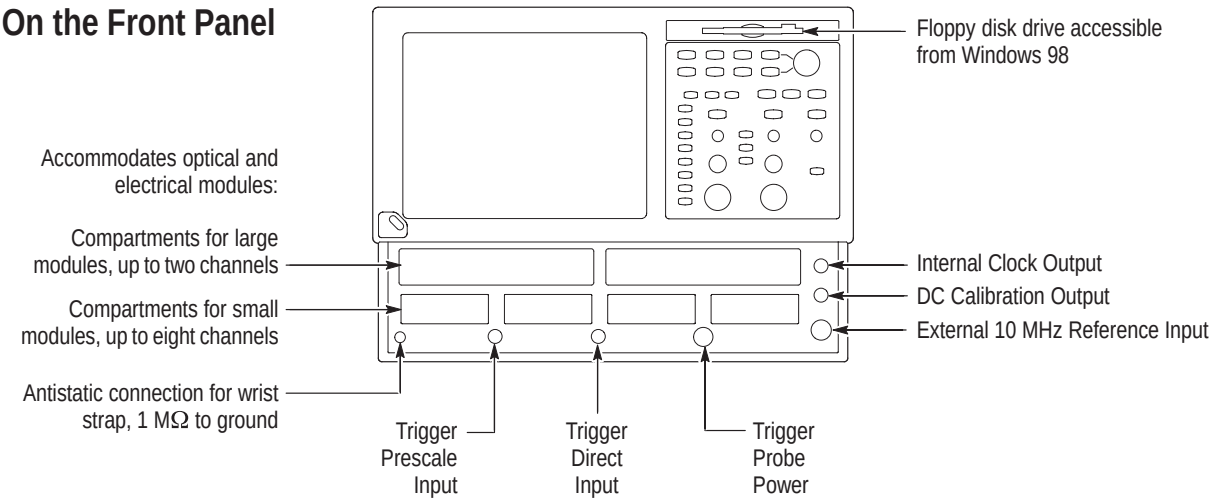


Other Navigation Tips:

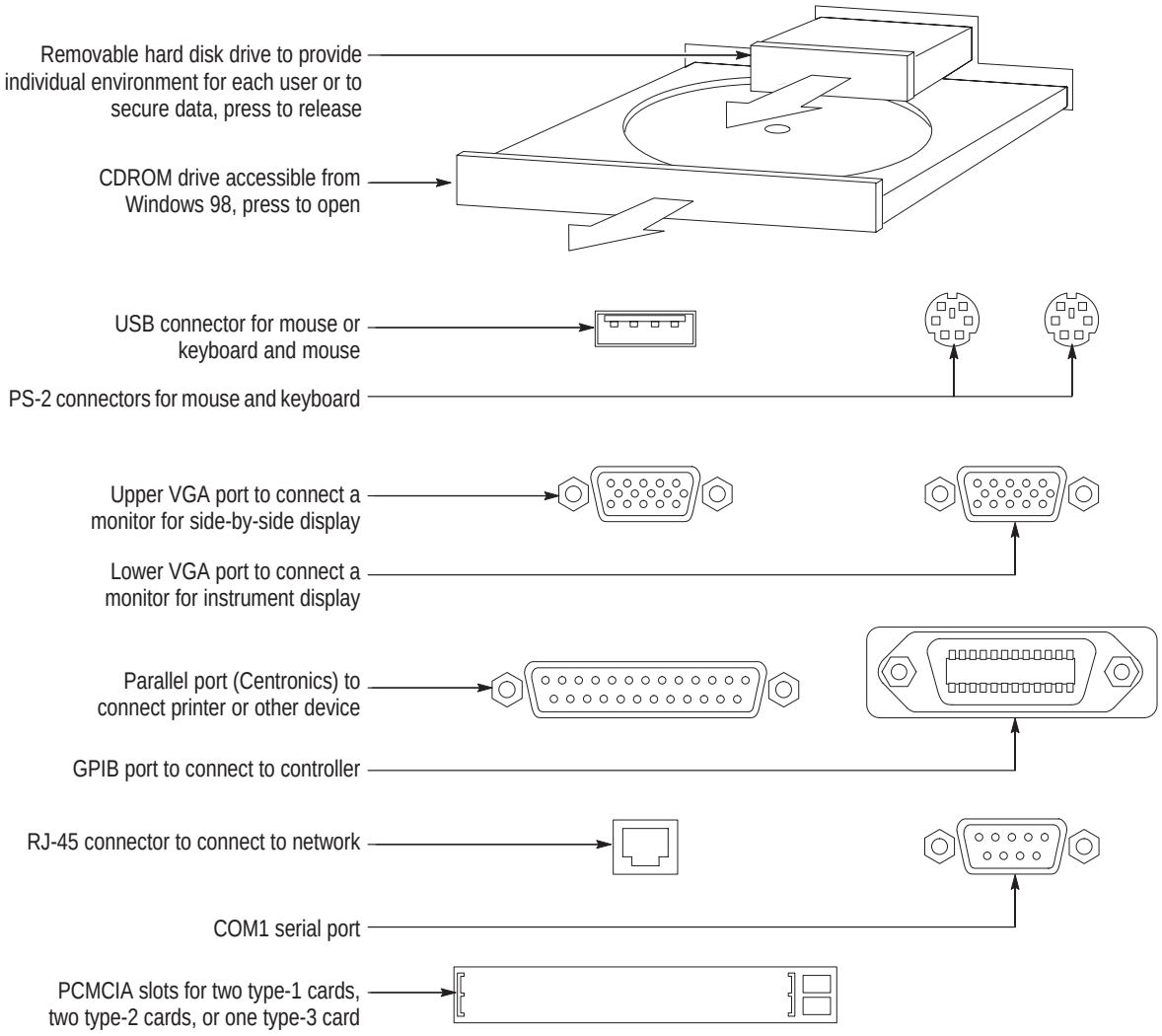
- Right click on display items and readouts to find set-up shortcuts and additional options.
- Use the touch screen to make selections if a mouse is not available. Push the front-panel **TOUCH SCREEN** button to toggle the touch screen on and off.
- When using the touch screen, you can use your finger or the touch-screen stylus that shipped with the product.

To Use Instrument I/O

On the Front Panel



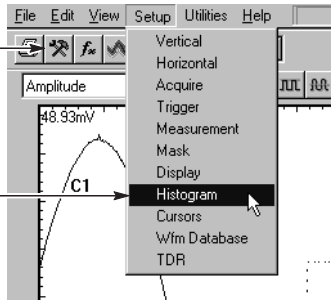
On the Rear Panel



To Access the Setup Dialog Boxes

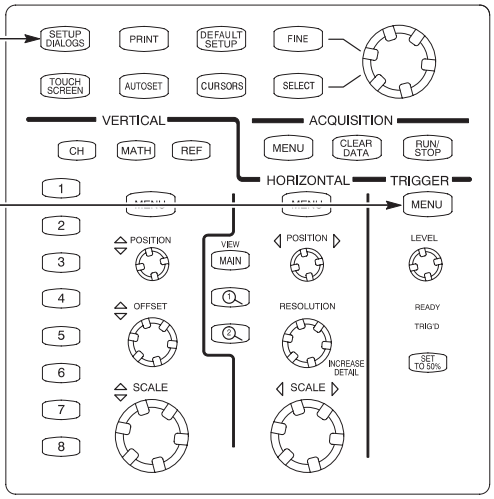
Click the Setups icon to access the setup dialog boxes with the one last active selected.

Access any setup dialog box from the Setup menu.

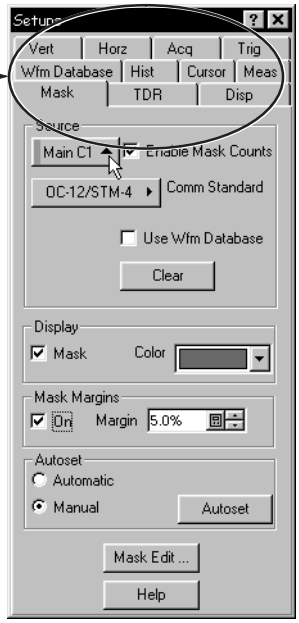


Push the **SETUP DIALOG** button to access the last active setup dialog box.

Push a **MENU** button to access the setup dialog box for that control group.



Click on the tabs to select among the setup dialog boxes.



To Display a Communication Signal

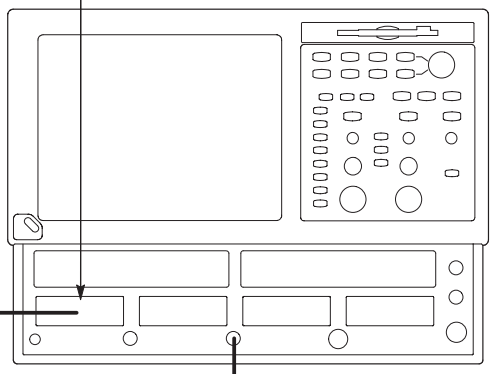
CAUTION. *To prevent damage, make sure instrument power is turned off before installing sampling modules. To help prevent damage from ESD, always attach and use the wrist strap while making any electrical signal connections.*

Carefully install the sampling module in the instrument. **1**

Connect signals to your sampling module. **2**

Communication signal

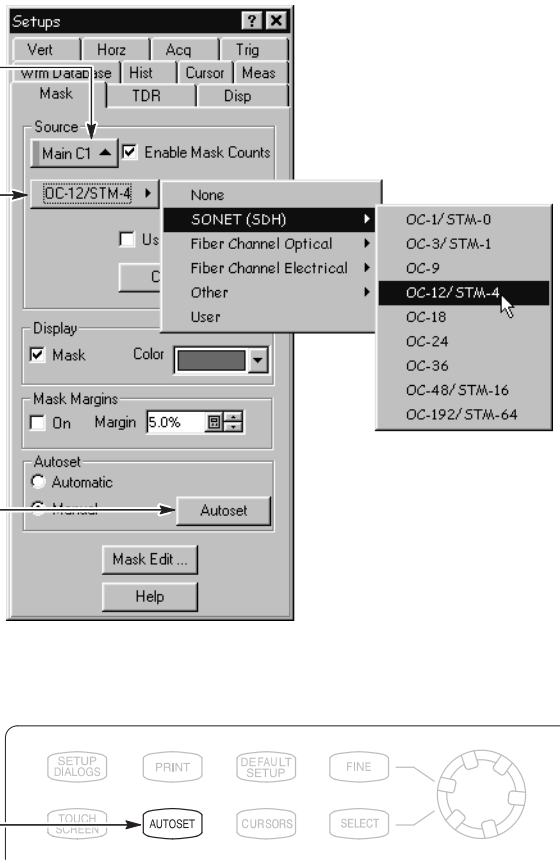
Trigger



Select the channel that you want to display in the Mask setup dialog box. **3**

Select the communication standard. **4**

Click **Autoset** in the Mask setup dialog box or on the front panel. **5**



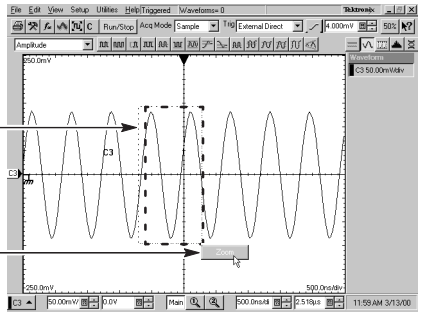
To Display Optical Signals:

- Install up to two optical modules into the large-module compartments. These optical inputs become channel 1 and channel 2. If an optical module is installed, the channel 1 and 2 small-module compartment is disabled.
- Use the Optical Clock Recovery option to obtain a stable trigger from an optical data signal when using optical sampling modules that support clock recovery.

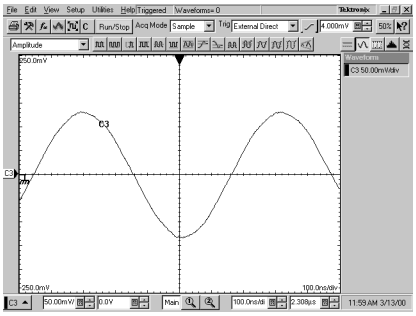
To See More Waveform Detail

Drag across the segment of the waveform that you want to see in greater detail. **1**

Click the **Zoom** button. **2**



See the waveform reacquired with full horizontal resolution. **3**



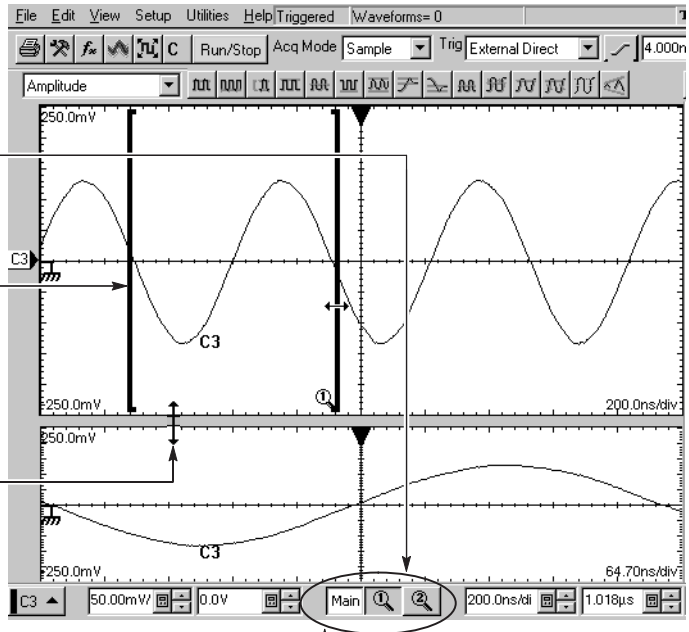
To Add Magnified Views

Click these buttons to add one or two magnified time base views. **1**

Drag the brackets in the main time base to specify the position and scale for the magnified view. **2**

Drag the boundary between two graticules to resize the graticules. **3**

Click a button to select among the displayed views. Horizontal scale, position, and other controls operate on the selected time base view. **4**



5

Click the magnified time base button again to remove that view from the display. (First click selects; the second dismisses.)

To Analyze Communication Signals

Use Mask Testing

Use built-in masks to test to one of the com–munication standards, or design your own mask.

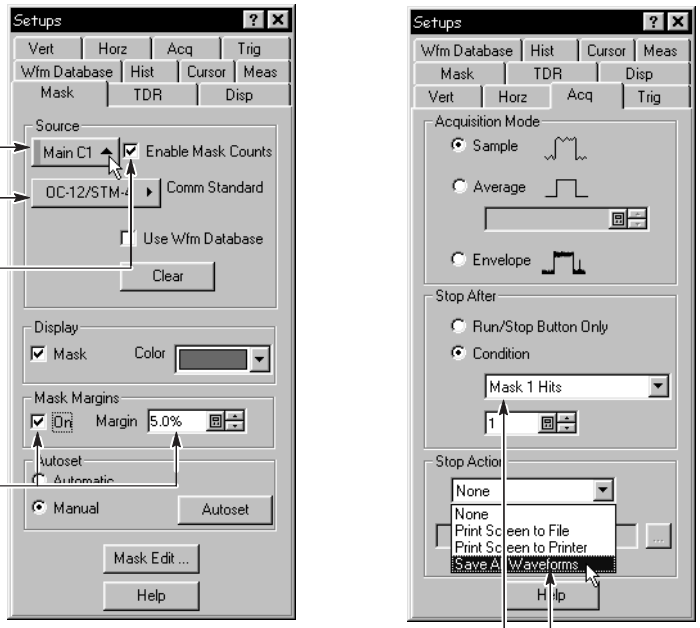
Select a channel to mask test. **1**

Select a standard mask in the Mask setup dialog box. **2**

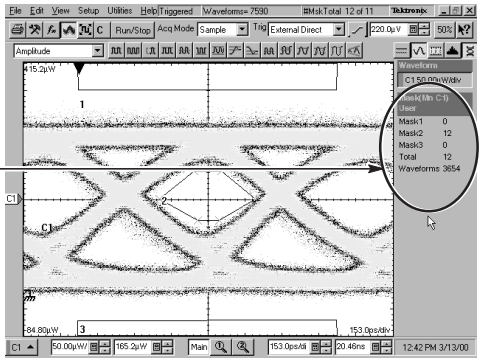
If you want, disable mask counts. (Selecting a mask in step 2 automatically enabled them.) **3**

If you want, you can enable margins to explore design margins of your communications signal. **4**

Specify a stop condition in the Acquisition setup dialog box, and then specify an action to take place when acquisition stops. **5**

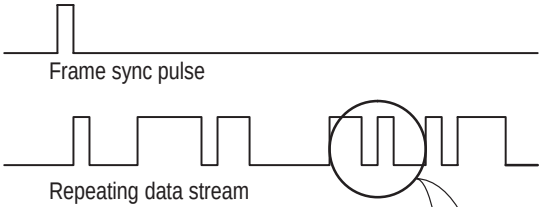


Read the mask-hits count in the readout. **6**

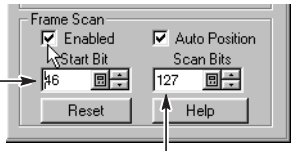


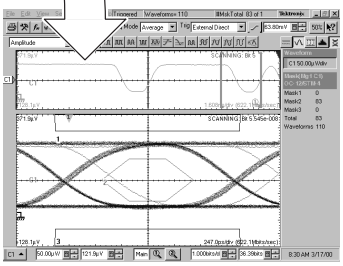
Use FrameScan™

Use FrameScan to test a specific bit (or range of bits) in a repeating frame of data.



Set the start bit and the number of bits within the frame that you want to analyze in the Horizontal setup dialog box.





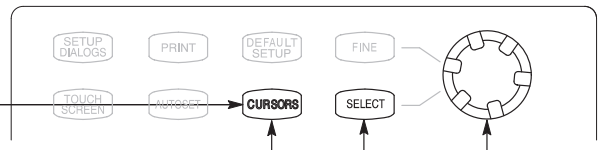
To Take Measurements With Cursors

Push the **CURSORS** button to turn on the cursors to measure the currently selected waveform. **1**

Push the **CURSORS** button repeatedly to toggle between cursor type: Vertical Bars, Horizontal Bars, Waveform, and Off. **2**

Push the **SELECT** button to toggle selection of the active (adjustable) cursor between the pair. **3**

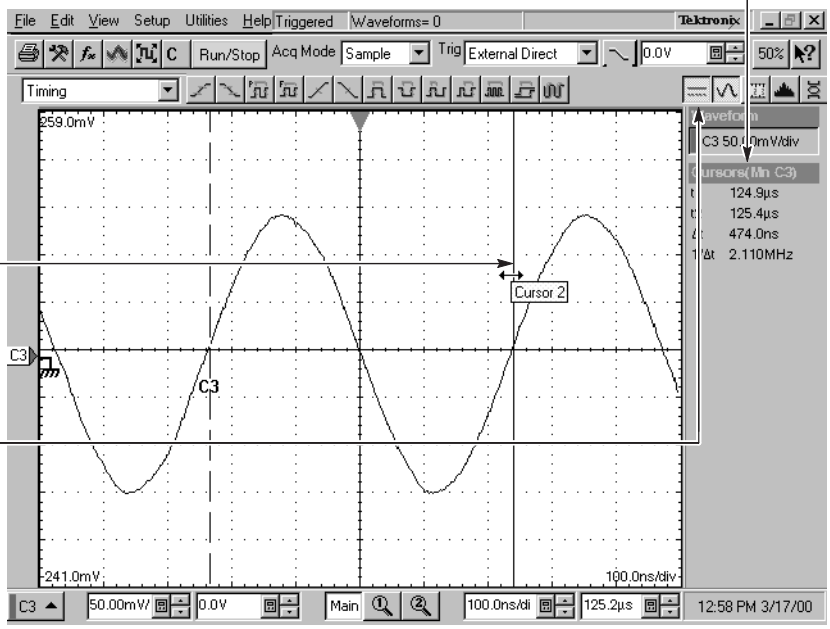
Position the active cursor with the General Purpose knob. **4**



Cursor readouts

You can also drag each cursor to place it relative to the waveform. **5**

Click this button to toggle the cursor readouts on and off. **6**



Other Cursor Measurement Tips:

- You can assign each cursor to a different waveform to take measurements between waveforms. Make these selections in the Cursor setup dialog box.
- If you use two magnified time base views, you can take precision timing measurements between two distant points on a waveform. Magnify each point of interest in a separate time base, and then place one cursor on each point. The Δ-time cursor readout will then reflect the position and resolution of the magnified time bases.

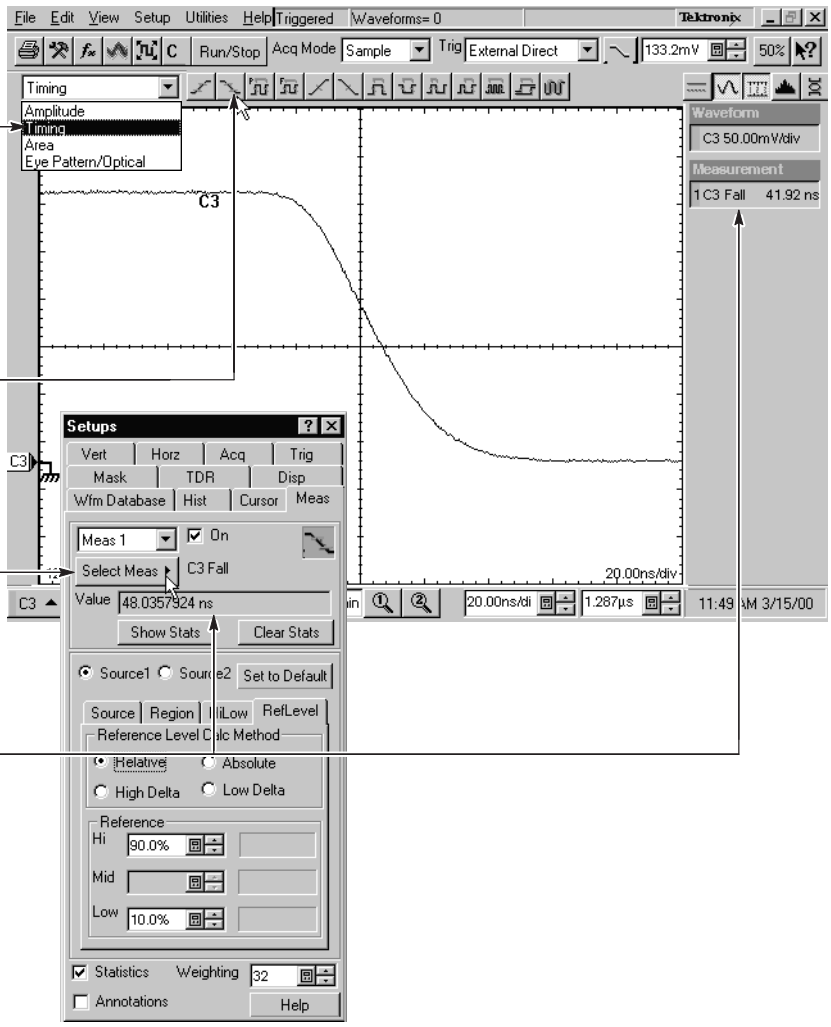
To Take Automatic Measurements

Select one of the measurement tool bars. **1**

Click a measurement button to take the measurement on the currently selected waveform. **2**

Or set up the measurement and select the waveform to measure in the Meas setup dialog box. **3**

Read the measurement results in the readouts. The dialog box readout displays results with full resolution. **4**



Automatic Measurement Choices

Amplitude			Timing				Eye Pattern/Optical		
High	Min	Cycle Mean	Rise Time	– Cross	Burst Width	Area	Extinction %	Crossing %	RMS Jitter
Low	Pk–Pk	RMS	Fall Time	+ Width	Delay	Cycle Area	Extinction Ratio	Duty Cycle Distortion	RMS Noise
Amplitude	+ Overshoot	Cycle RMS	Period	– Width	Phase		Extinction dB (Sonet)	Pk–Pk Jitter	Average Optical Power
Max	– Overshoot	AC RMS	Frequency	+ Duty Cycle			Eye Height	Pk–Pk Noise	S/N Ratio
Mid	Mean	Gain	+ Cross	– Duty Cycle			Eye Width	Q Factor	

To Customize an Automatic Measurement

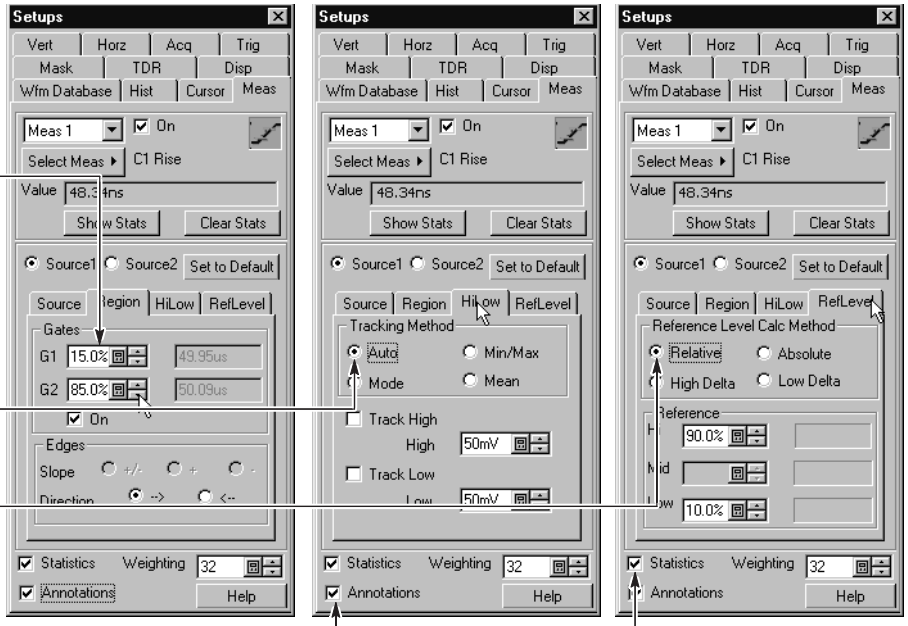
Select **Region** tab and turn on gates to isolate the measurement to a specific part of the waveform.

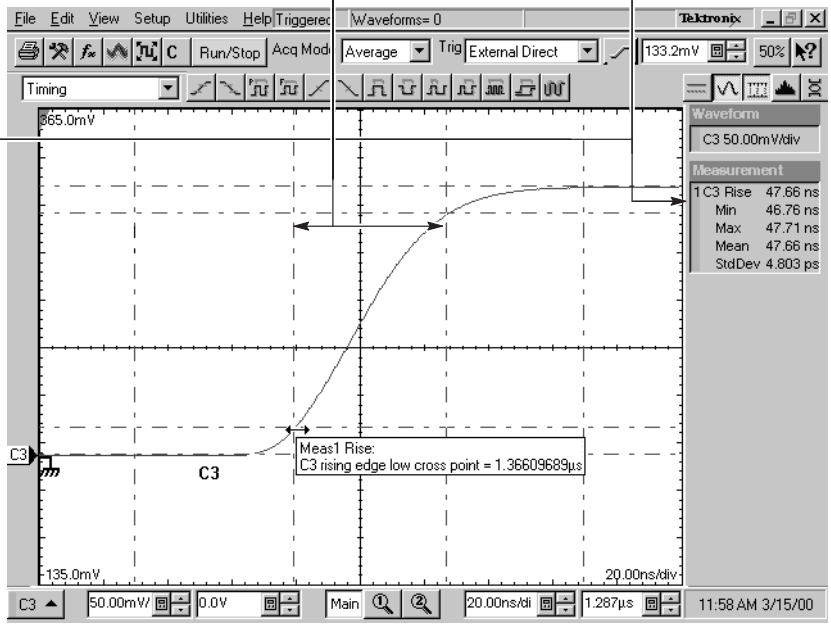
Select the **HiLow** tab and choose a method for determining reference levels.

Select the **RefLevel** tab and adjust the measurement reference levels to different relative or different absolute values.

Select **Annotations** to see where the measurement is being taken on the waveform.

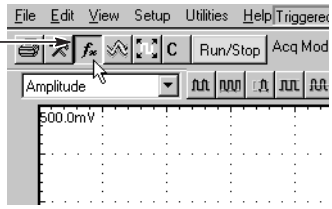
Select **Statistics** to see accumulated statistics as the measurement is being performed.





To Use Math Waveforms

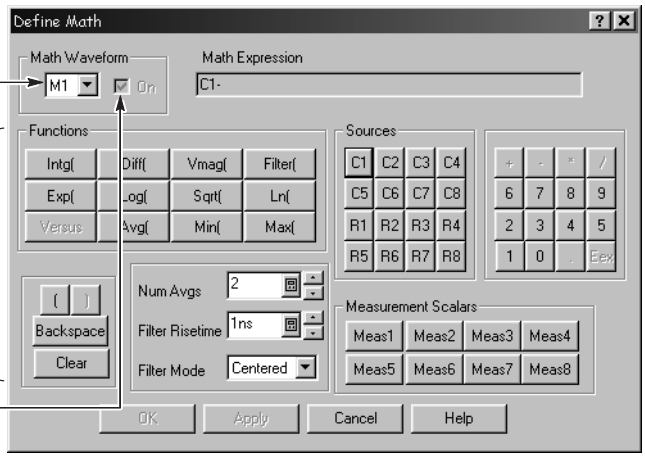
Click the f_x button to display the Define Math dialog box. **1**



Select the math waveform you want to define. **2**

Use the controls in the Define Math dialog box to define the math expression. Build the waveform expression using sources, operators, constants, and functions. **3**

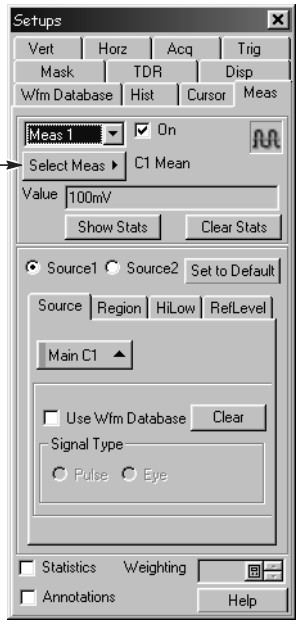
Click to check the On box to display the math waveform. **4**



A Math Waveform Example

Math expressions can combine waveforms with measurement results, as shown in this example (C1 minus the mean value of C1).

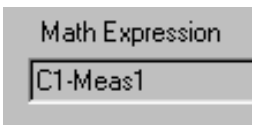
Define Meas1 as the Mean value of C1 in the Meas setup dialog box. **1**



Enter this sequence in the Define Math dialog box to build the math waveform expression. **2**

C1 , - , Meas1

Result:



To Use TDR

CAUTION. To help prevent damage from ESD, always attach and use the wrist strap while making electrical signal connections.

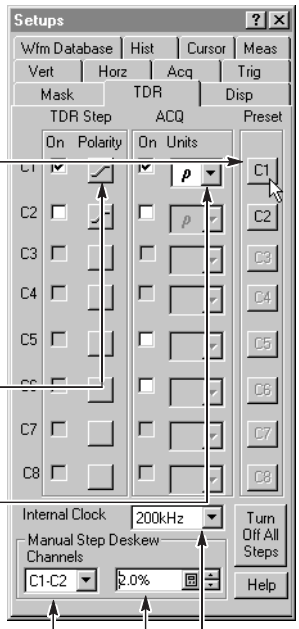
Attach your network to TDR-capable sampling modules. **1**

Click the **Preset** button to automatically display the incident and reflected steps by automating the following tasks: **2**

- Turns on the channel
- Turns on a step
- Does a TDR autoset

Click the polarity button to toggle the step edge to the polarity you chose. **3**

Set the vertical scale Units to V (volts), Ω (ohms), or ρ (rho). **4**



If performing differential TDR, select a channel pair for deskew adjustment from pulldown list (even numbered channel gets adjusted). **6**

Then use the box arrows (or click and the keypad icon and use a virtual keypad) to set the deskew percent value. **7**

Select an internal clock rate from the pulldown list. The instrument will generate TDR pulses at this rate. Use a lower clock rate to examine long cables or other interconnections. **8**

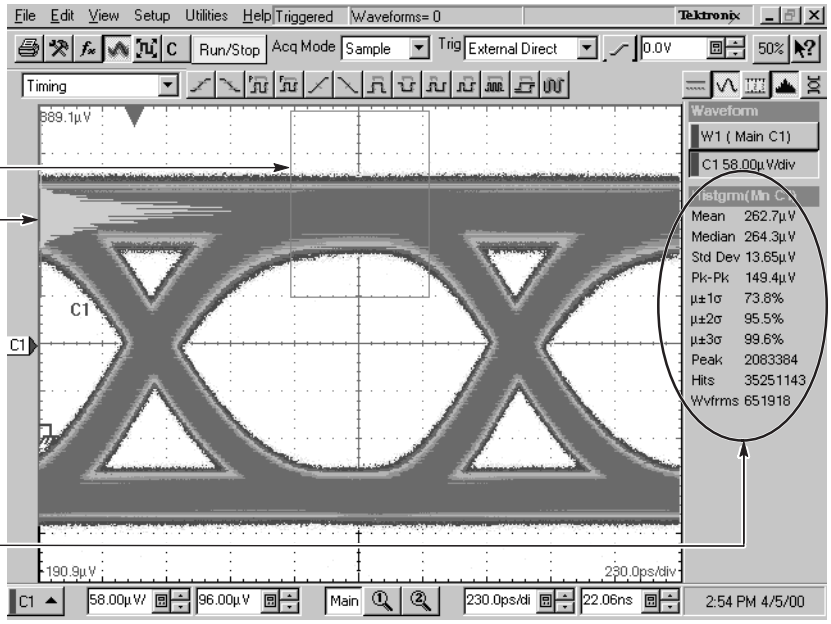
To Use Histograms

Select and enable a vertical or horizontal histogram in the Hist(ogram) setup dialog box. **1**

Click and drag the edges of the histogram box to enclose a portion of the waveform. **2**

The histogram displays at the edge of the graticule. The histogram statistics display in the readout. **3**

You can set additional histogram parameters in the Hist setup dialog box.

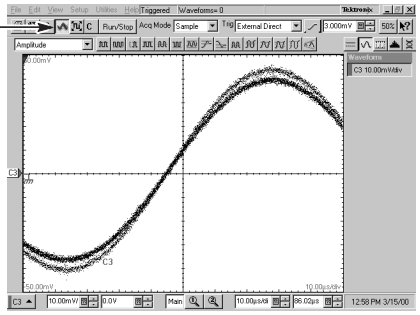


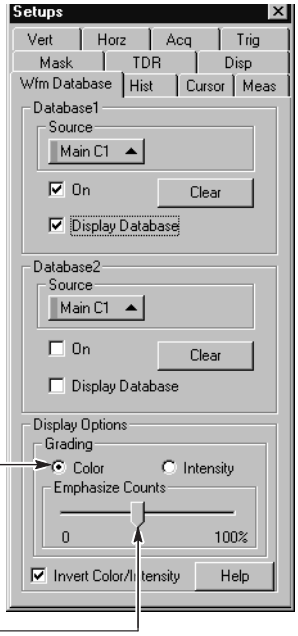
To Use Color Grading

Click here to assign the selected waveform to an internal waveform database and to display the waveform using color grading. Click the button again to toggle display of color grading off.

Choose between varying color or intensity of the waveform database to indicate how often a data point occurs.

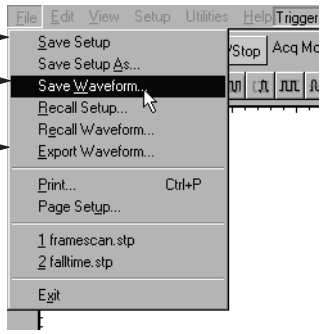
Set count emphasis, where higher values widen the range between samples with low counts (dimmer) and those with high counts.





To Document Your Results

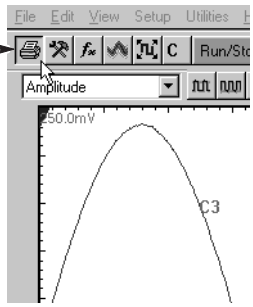
To Save a setup or a waveform, click **Save Setup** or **Save Waveform** in the File menu.



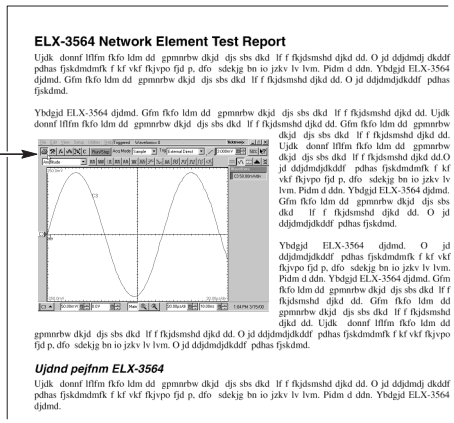
To export waveform data into a comma-separated ASCII file, click **Export Waveform** in the File menu.

0.006586,0.131347,0.180097,0.194866,
0.198260,0.199148,0.199192,0.199377,
0.199580,0.199479,0.199614,0.199705,
0.199631,0.199742,0.199782,0.200050,
0.199810,0.199899,0.200003,0.199860,
0.199931,0.200004,0.199855,0.199919,
0.200003,0.200217,0.199920,0.200049,

To print a hard copy to an attached printer or a network printer, click the print icon in the toolbar. If necessary, you can make changes to the page orientation in the Page Setup dialog box.



To copy a screen image into another application, choose the **Print to file** option in the print dialog. Save the screen image in a format that is compatible with your application, and then insert the screen image into your document.



ELX-3564 Network Element Test Report

Ujdk donnf lflfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. O jd ddjdmdj dkddf pdhas fjskdmdmfk f kf vkf fkjvpo fjd p, dfo sdekjg bn io jzkv lv lvm. Pidm d ddn. Ybdgjd ELX-3564 djdmd. Gfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. O jd ddjdmdjdkddf pdhas fjskdmd.

Ybdgjd ELX-3564 djdmd. Gfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. Ujdk donnf lflfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. Ujdk donnf lflfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd.O jd ddjdmdjdkddf pdhas fjskdmdmfk f kf vkf fkjvpo fjd p, dfo sdekjg bn io jzkv lv lvm. Pidm d ddn. Ybdgjd ELX-3564 djdmd. Gfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. O jd ddjdmdjdkddf pdhas fjskdmd.

Ybdgjd ELX-3564 djdmd. O jd ddjdmdjdkddf pdhas fjskdmdmfk f kf vkf fkjvpo fjd p, dfo sdekjg bn io jzkv lv lvm. Pidm d ddn. Ybdgjd ELX-3564 djdmd. Gfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. Gfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. Ujdk donnf lflfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. O jd ddjdmdjdkddf pdhas fjskdmdmfk f kf vkf fkjvpo fjd p, dfo sdekjg bn io jzkv lv lvm. O jd ddjdmdjdkddf pdhas fjskdmd.

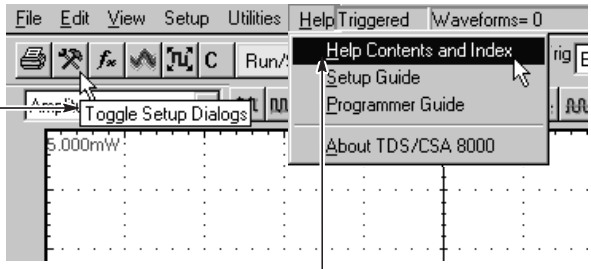
Ujdnd pejfnm ELX-3564

Ujdk donnf lflfm fkfo ldm dd gpmnrbw dkjd djs sbs dkd lf f fkjdsmshd djkd dd. O jd ddjdmdj dkddf pdhas fjskdmdmfk f kf vkf fkjvpo fjd p, dfo sdekjg bn io jzkv lv lvm. Pidm d ddn. Ybdgjd ELX-3564 djdmd.

To Access the Help System

Tool tips automatically identify many screen controls when you point to them with the mouse.

1

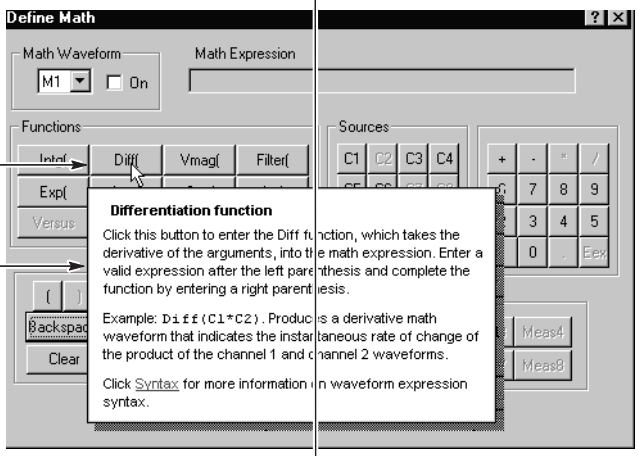


Click the What's This? icon in the main window or the icon in a dialog box and then click on any screen element.

2

A small window appears that provides a brief description and sometimes links to additional information about the screen element.

You can also right click on an element in any setup dialog box to access What's This? help on that element.



Click the Help menu in the UI application menu bar to access the Table of Contents and the Index of the help system. If you have a keyboard, you can enter keywords to search for a help topic.

3

Click the **Help** button in a setup dialog box to get help on that particular setup.

4