Reference

Tektronix

TDS 410A, TDS 420A & TDS 460A Digitizing Oscilloscopes

070-9220-00

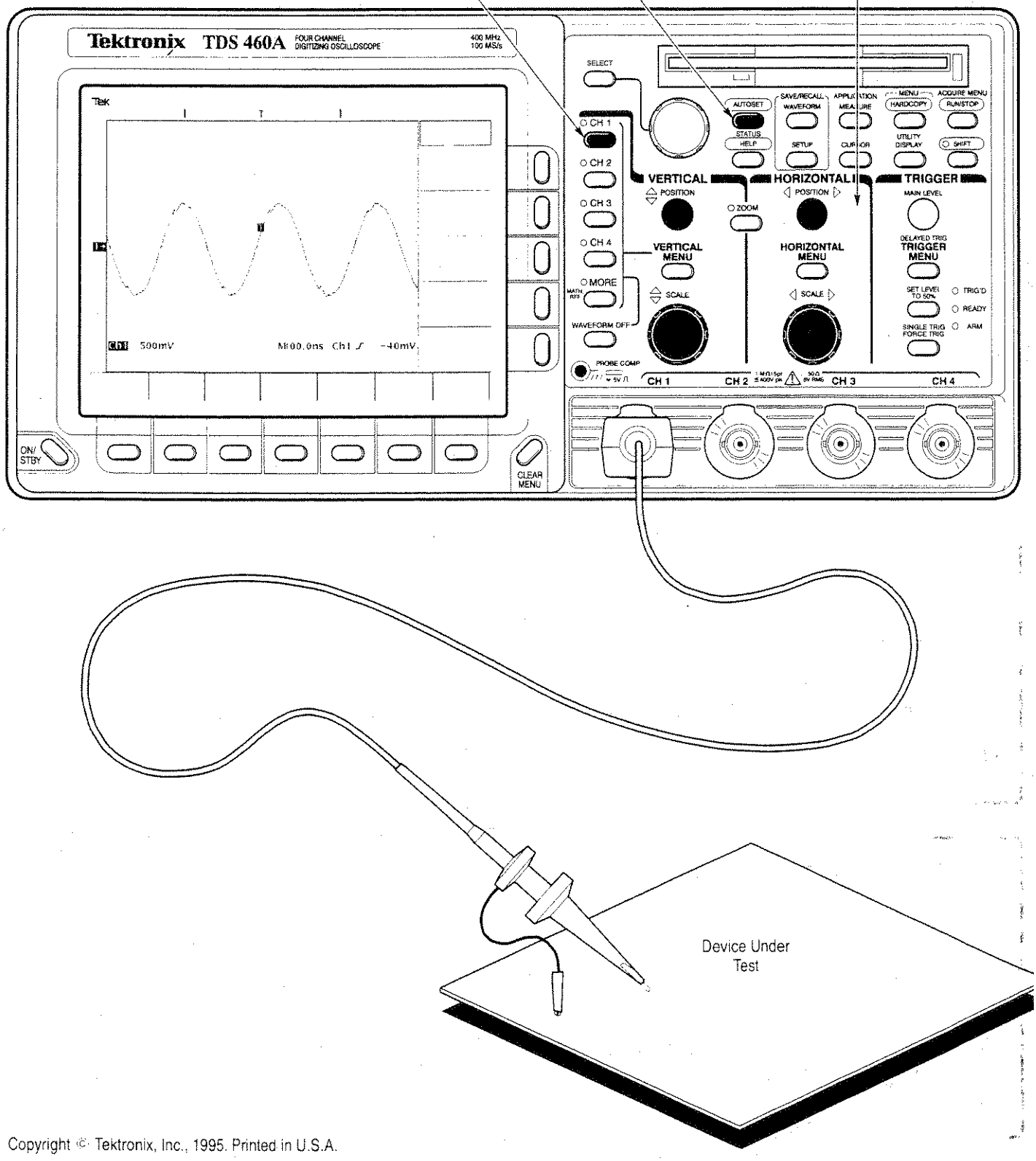
To Display a Waveform:

1 Attach a probe to **CH 1** and hook it up to your signal.

2 Press **CH 1** button.

3 Press **AUTOSET.**

4 Adjust **VERTICAL** and **HORIZONTAL POSITION** and **SCALE** as desired.



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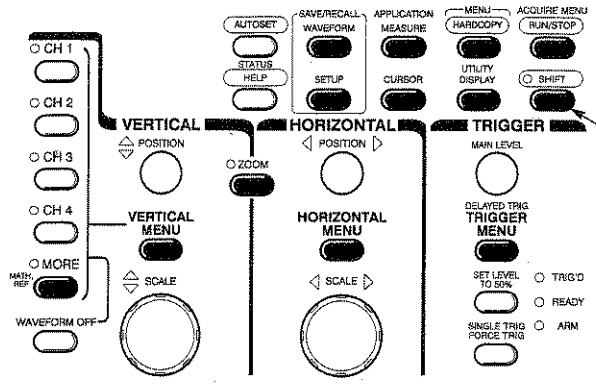
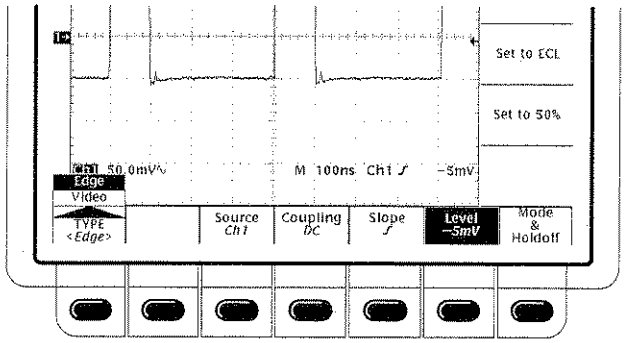
To Set Up Using a Menu:

1 Press any of the front panel menu buttons.

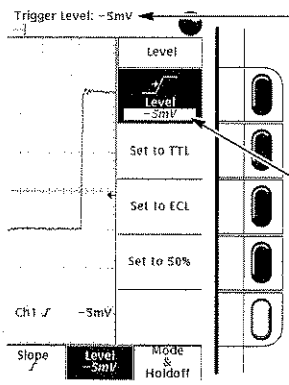


Use **SHIFT** Button for Alternate (Blue) Menus

2 Select an item from the main (bottom) menu.



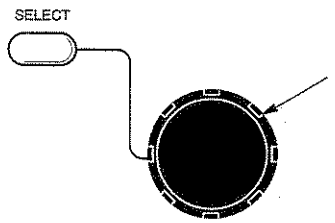
3 Select any displayed item from the side menu.



Readout Indicates Value That You Can Adjust With the General Purpose Knob

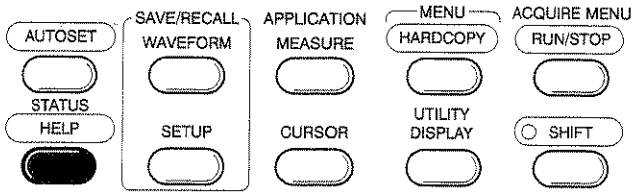
Adjustable Menu Item Value

4 Adjust menu item values using the general purpose knob.

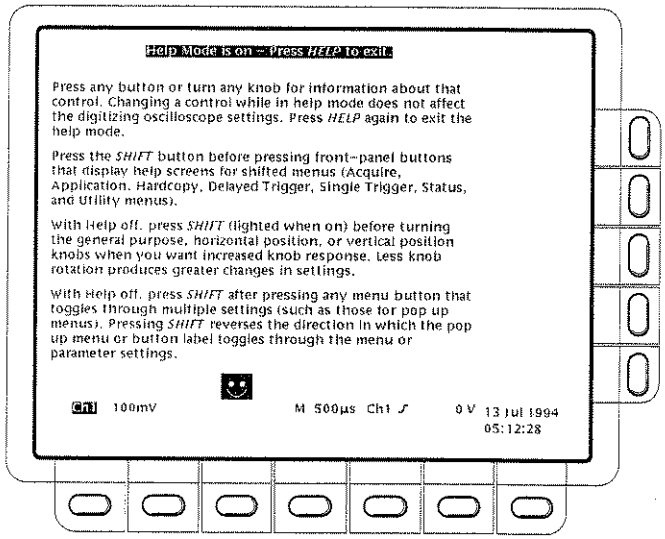


General Purpose Knob

To Display Help On Screen:

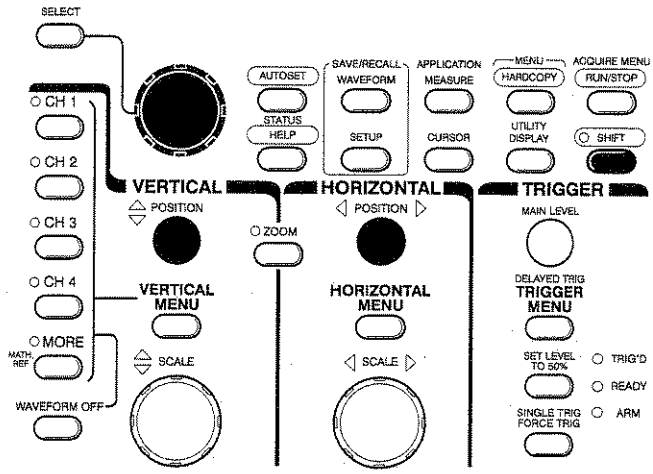


1 Press the **HELP** button.



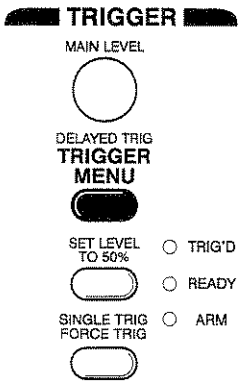
2 Now turn any knob or press any button and read a description of it on the display. Press the **HELP** button again to exit help.

To Speed Up Knob Adjustments:

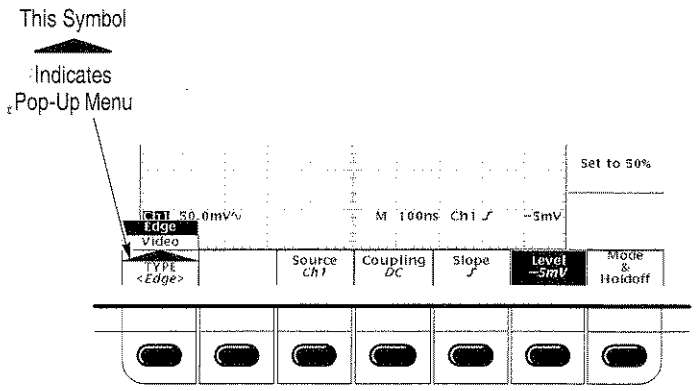


Press the **SHIFT** button to change the rate of the **VERTICAL** and **HORIZONTAL POSITION** knobs and the general purpose knob.

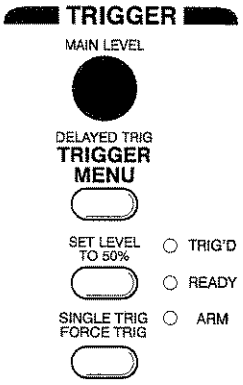
To Select a Trigger:



1 Press the **TRIGGER MENU** button.

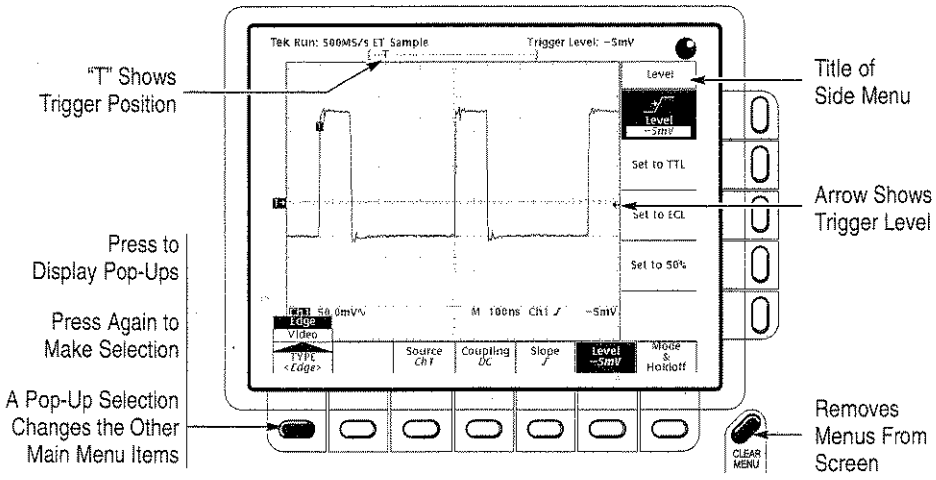


2 Select trigger type or parameter from main menu.

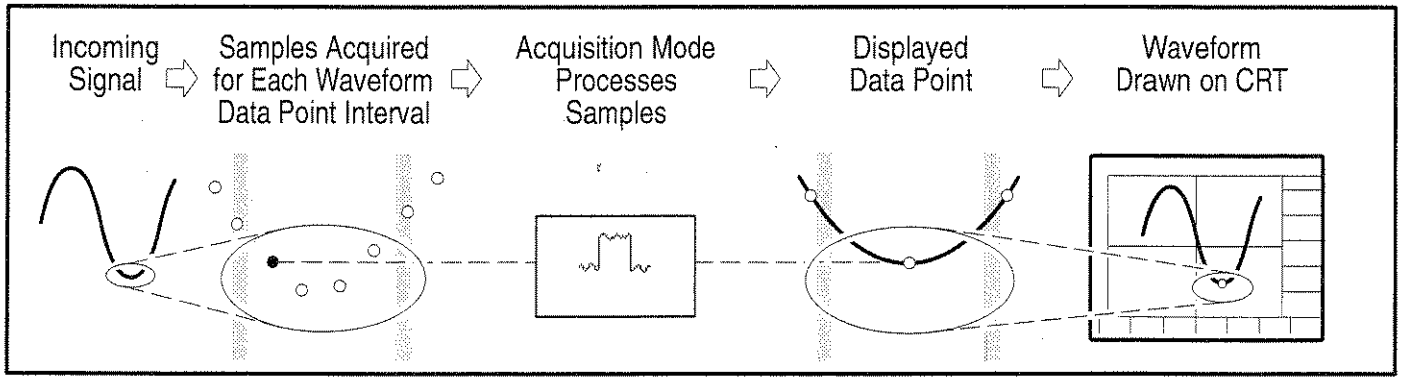


3 Set **TRIGGER LEVEL** (Edge Trigger Only).

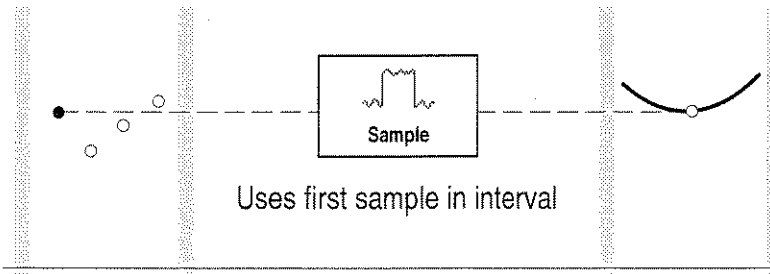
TYPE <Edge>		TYPE <Video>	
Coupling	**Slope**	**Video Class**	**Sync Polarity**
DC DC	Positive	NTSC	Negative
AC AC	Negative	PAL	Positive
HF Reject		SECAM	
LF Reject		Custom	
Noise Rej (DC Low Sensitivity)			



How the Acquisition Modes Work:



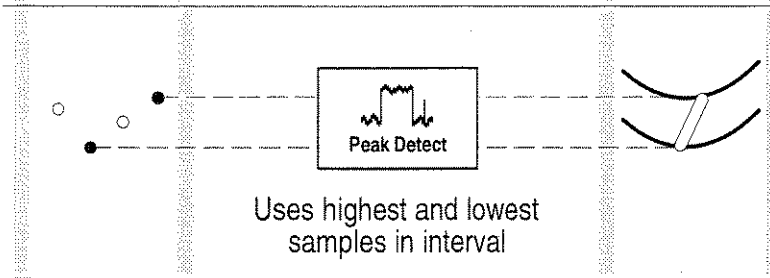
Single Waveform Acquisition



Uses first sample in interval

Use for fastest acquisition rate.

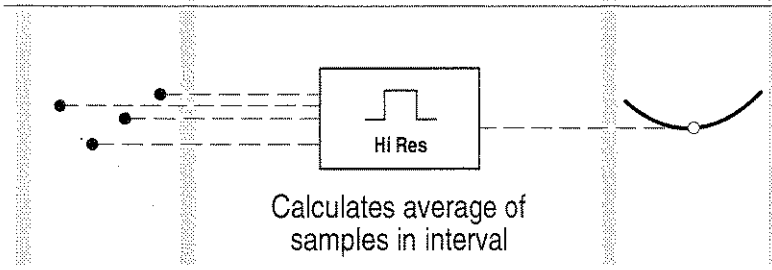
Sample is the default mode.



Uses highest and lowest samples in interval

Use to reveal aliasing and for glitch detection.

Peak Detect provides the benefits of enveloping with speed of single acquisition.

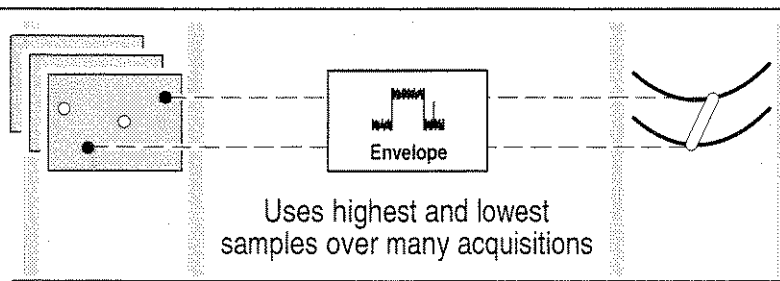


Calculates average of samples in interval

Use to reduce apparent noise.

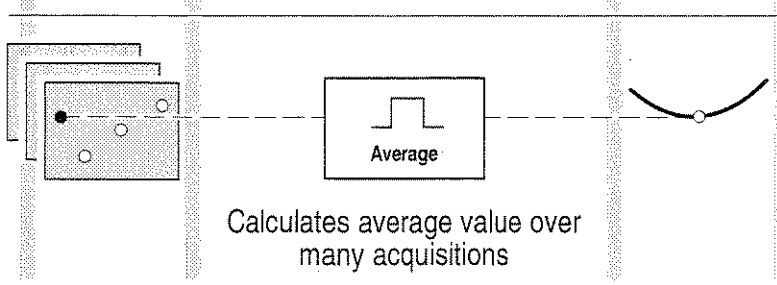
Hi Res provides the benefits of averaging with the speed of single acquisition.

Multiple Waveform Acquisitions



Uses highest and lowest samples over many acquisitions

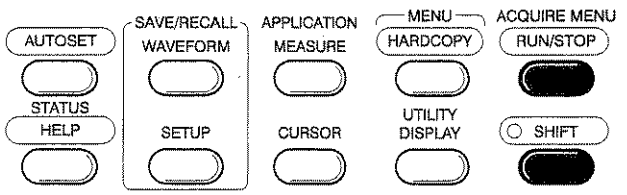
Use to reveal the noise band around the signal.



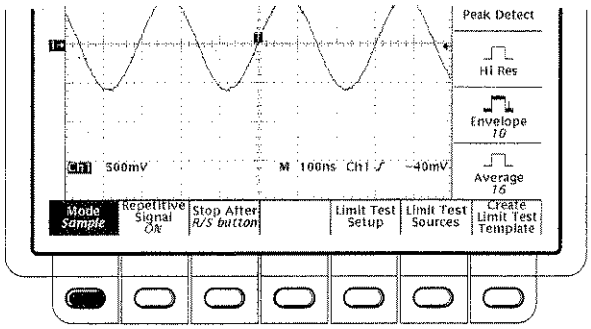
Calculates average value over many acquisitions

Use to reduce apparent noise in a repetitive signal.

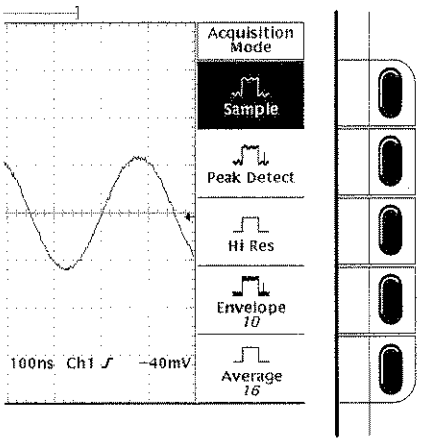
To Choose an Acquisition Mode:



1 Press **SHIFT**, and then press **ACQUIRE MENU**.

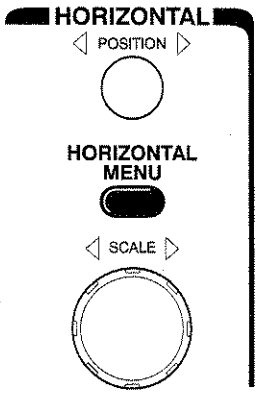


2 Press **Mode** in main menu.

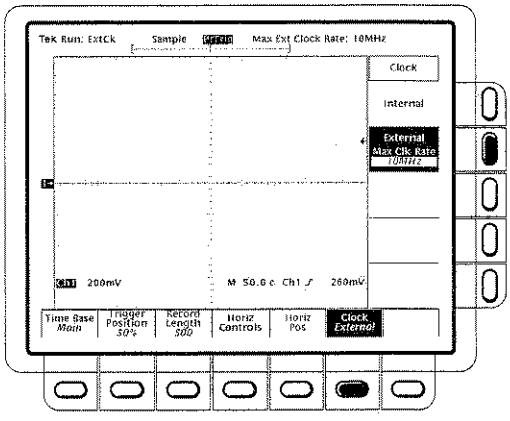


3 From side menu, select an acquisition mode that will serve your application.

To Use External Clock:

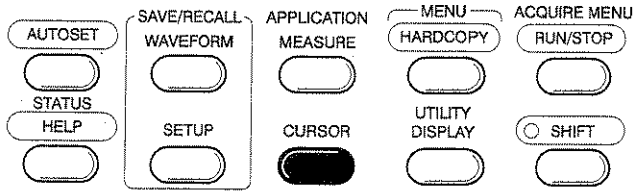


1 Press **HORIZONTAL MENU**.

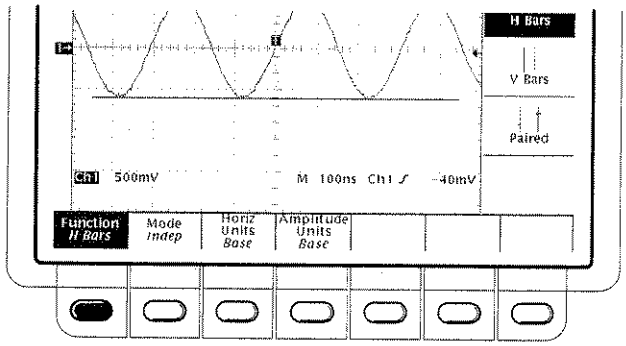


2 Press **Clock** in main menu, and then press **External** in side menu.

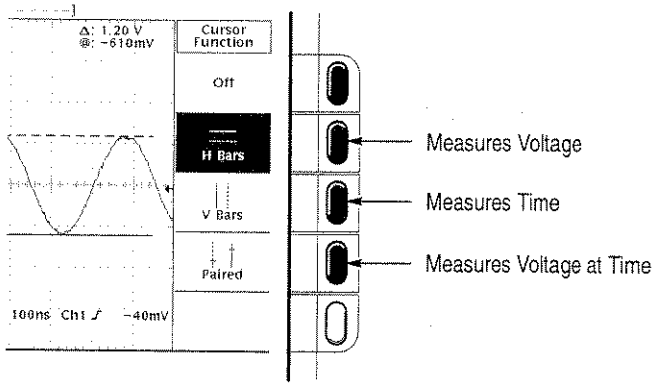
To Take Measurements With Cursors:



1 Press **CURSOR** button.



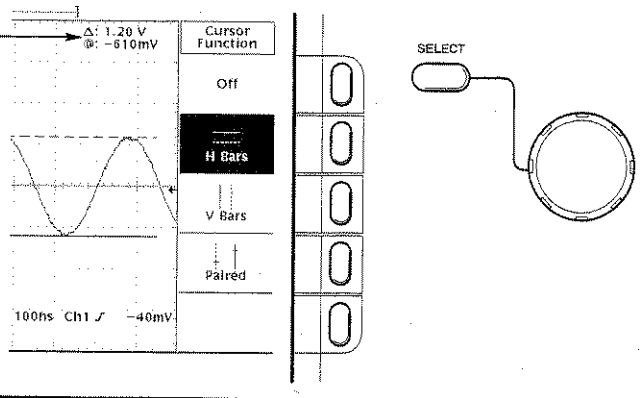
2 Press **Function** in the main menu.



3 Select from the side menu.

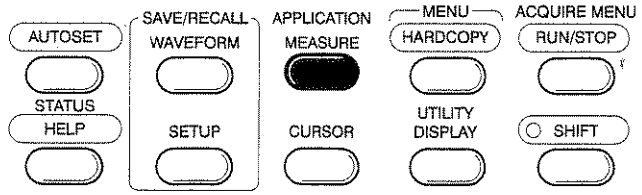
Δ Difference Between Cursors in Volts (Horizontal Bars) or Time (Vertical Bars)

@ Position of Active Cursor Relative to Ground (Horizontal Bars) or Trigger (Vertical Bars)

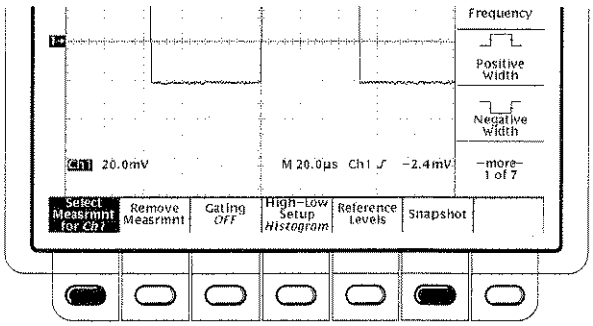


4 Move cursor with the general purpose knob.
Press **SELECT** to switch between cursors.
Press **SHIFT** to speed up/slow down cursor movement.

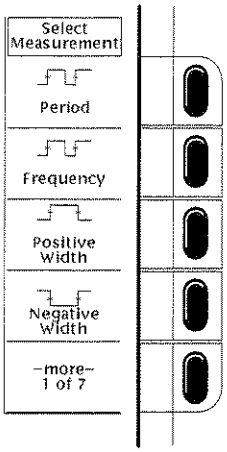
To Take Measurements Automatically:



1 Press the **MEASURE** button.



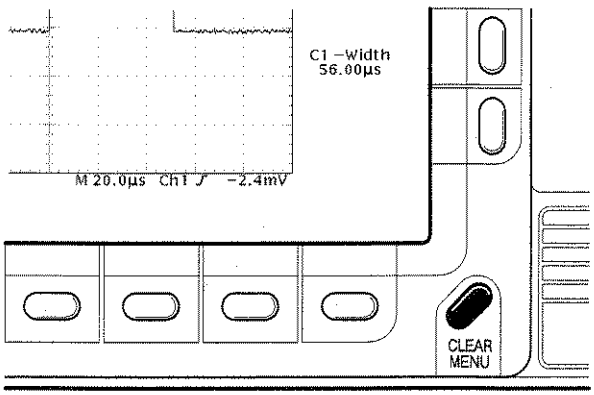
2 Press **Select Measrmnt** or **Snapshot** in main menu.



3 Select up to four measurements.

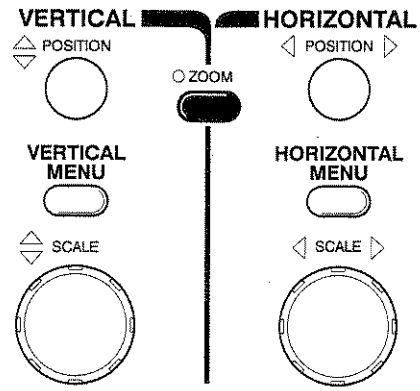
Automated Measurement Selections

Select Measurement						
Period	Rise Time	Delay	High	Pk–Pk	Mean	Area
Frequency	Fall Time	Phase	Low	Amplitude	Cycle Mean	Cycle Area
Positive Width	Positive Duty Cycle	Burst Width	Max	Positive Overshoot	RMS	–more– 7 of 7
Negative Width	Negative Duty Cycle		Min	Negative Overshoot	Cycle RMS	To 1 of 7
–more– 1 of 7	–more– 2 of 7	–more– 3 of 7	–more– 4 of 7	–more– 5 of 7	–more– 6 of 7	

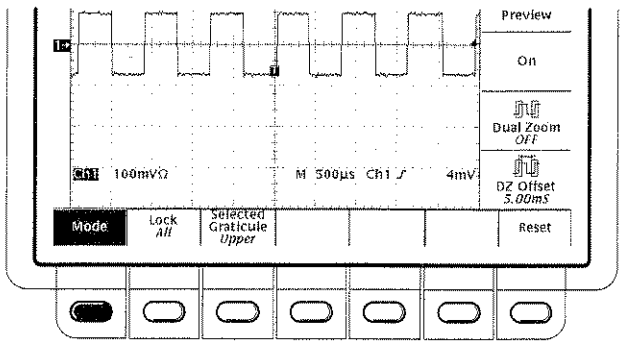


4 Press the **CLEAR MENU** button to move measurement readouts away from graticule.

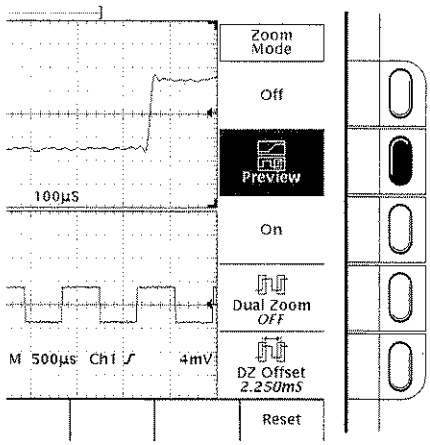
To Zoom a Waveform:



1 Press the **ZOOM** button.



2 Press **Mode** in the the main menu.

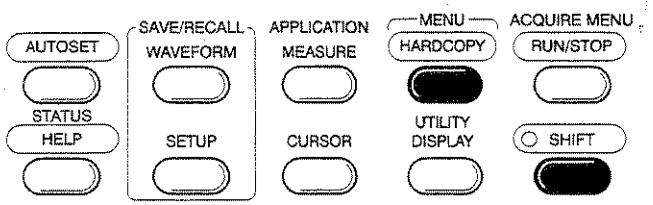


3 Select any displayed item from the side menu.

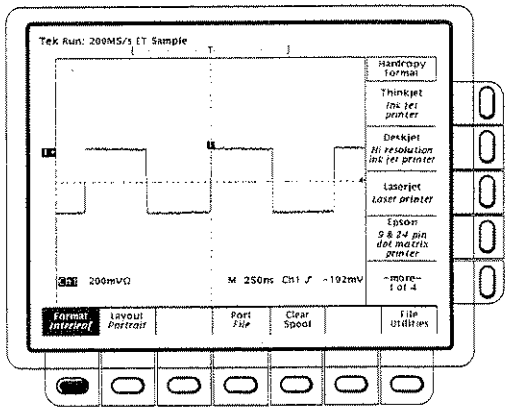
To Perform Other Zoom Operations:

- Turn the Vertical and Horizontal **SCALE** and **POSITION** knobs to adjust the scale and position factors of the acquisition or the zoomed waveforms.
- Press **Lock**, and then use the menu buttons to choose which waveform group to zoom horizontally.
- Press **Selected Graticule**, and use the menu buttons to direct the scale and position knobs to the upper (zoomed waveforms) or lower (acquisition waveforms) graticule in **Dual Zoom** or **Zoom Preview** modes.
- Press **Reset**, and press the **Reset All Factors** or **Reset Live Factors** menu buttons to reset the zoom factors.

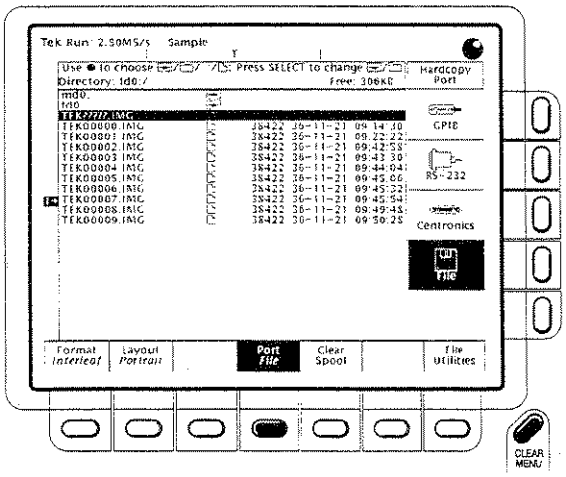
To Save a Hardcopy to the File System:



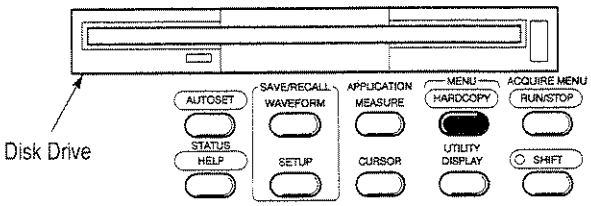
1 Press **SHIFT**, and then press **HARDCOPY**.



2 Press **Format** in the main menu, and select a hardcopy format from the side menu.



3 Press **Port** in the main menu, press **File** in the side menu, and then press **CLEAR MENU**.



4 Press **HARDCOPY** anytime to save a copy of the current screen to a unique file in the oscilloscope file system.

To Perform Other File System Operations:

- Press **SAVE/RECALL WAVEFORM**, and use the menu buttons to save a waveform to a file or recall it from a file.
- Press **SAVE/RECALL SETUP**, and use the menu buttons to save a setup to a file or recall it from a file.
- Press **File Utilities** in the Save/Recall Waveform, Save/Recall Setup, or Hardcopy menus to access utilities that create directories, copy files, and do other operations in the oscilloscope file system.