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.
To Set Up Using a Menu:

1. Press any of the front panel menu buttons.

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

3. Select any displayed item from the side menu.

4. Adjust menu item values using the general purpose knob.
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).

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**TRIGGER**

- **MAIN LEVEL**
  - **DELAYED TRIG**
    - **TRIGGER MENU**
      - **SET LEVEL TO 50%**
        - **TRIG'D**
        - **READY**
      - **SINGLE TRIG FORCE TRIG**

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**This Symbol Indicates Pop-Up Menu**

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**Type**

- **<Edge>**
  - **Coupling**
    - **DC**
    - **AC**
    - **HF**
  - **Slope**
    - **Positive**
    - **Negative**
  - **Video Class**
    - **NTSC**
    - **PAL**
    - **SECAM**
  - **Sync Polarity**
    - **Negative**
    - **Positive**

- **<Video>**
  - **Video Class**
    - **PAL**
    - **SECAM**
    - **Custom**

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**Notes:**

- **Title of Side Menu**
- **Arrow Shows Trigger Level**
- **Removes Menus From Screen**

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A Pop-Up Selection Changes the Other Main Menu Items
### How the Acquisition Modes Work:

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#### Single Waveform Acquisition

- **Sample**
  - Uses first sample in interval.
  - Sample is the default mode.

- **Peak Detect**
  - 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.

- **Hi Res**
  - 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

- **Envelope**
  - Uses highest and lowest samples over many acquisitions.
  - Use to reveal the noise band around the signal.

- **Average**
  - 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.

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.

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 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.