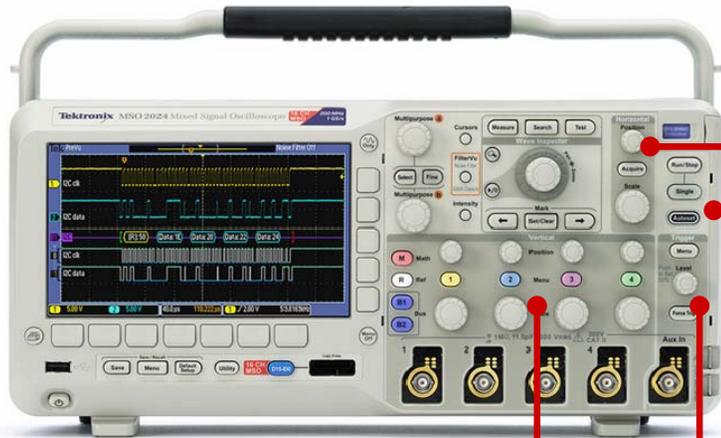


# The Oscilloscope: Basic Features & Functions



**Tip:** To reset the oscilloscope to a known state, press the Default Setup button.

## Vertical Controls

- Position
  - Moves the waveform up and down on the display.
- Scale (Volts-Per-Division)
  - Varies the size of the waveform on the screen.
- Bandwidth Limit
  - Limits the bandwidth of the oscilloscope to the frequency selected to reduce displayed noise. Restricts frequencies above the limit from being displayed and also from affecting the trigger.
- Input coupling
  - Determines which part of the signal is displayed.
  - **DC Coupling:** Shows all of the input signal.
  - **AC Coupling:** Blocks the DC component of the signal, centering the waveform at 0 volts.
  - **Ground Coupling:** Disconnects the input signal to show where 0 volts is on the screen.

## Horizontal Controls

- Position
  - Moves the waveform left and right on the display.
- Scale (Seconds-Per-Division)
  - Determines the amount of time displayed.

## Autoset

- Automatically identifies the type of waveform and adjusts controls to produce a usable display of the input signal.

## Trigger Controls

The trigger stabilizes the display. When the signal matches the trigger setting, the oscilloscope captures the signal and displays it around the trigger point. Edge triggering is used most often; it captures the signal on a rising or falling edge.

- Source
  - Determines which signal is compared to the trigger settings.
- Level
  - Determines where on the edge the trigger point occurs.
- Slope
  - Determines whether the trigger point is on the rising edge (positive slope) or the falling edge (negative slope) of a signal.

### Capturing Your Signal: Easy as 1, 2, 3

1. Set the vertical scale (volts/div).
2. Set the horizontal scale (sec/div).
3. Set the trigger type, source and levels.

# The Oscilloscope: Basic Features & Functions

## Acquisition Modes

Determine how the oscilloscope digitizes the signal before displaying it. Typically chosen in the "Acquire" menu.

- **Sample:** Samples are taken in evenly spaced intervals to construct the waveform. This mode accurately represents signals most of the time.
- **Peak Detect:** The highest and lowest values of the input signal are captured and used to construct the waveform. This mode will capture narrow pulses that may be missed in Sample Mode.
- **Average:** Several waveforms are acquired and averaged point-by-point to obtain the average voltage at each time sample in the acquisition. This mode is used to reduce random noise.

## Advanced Triggering

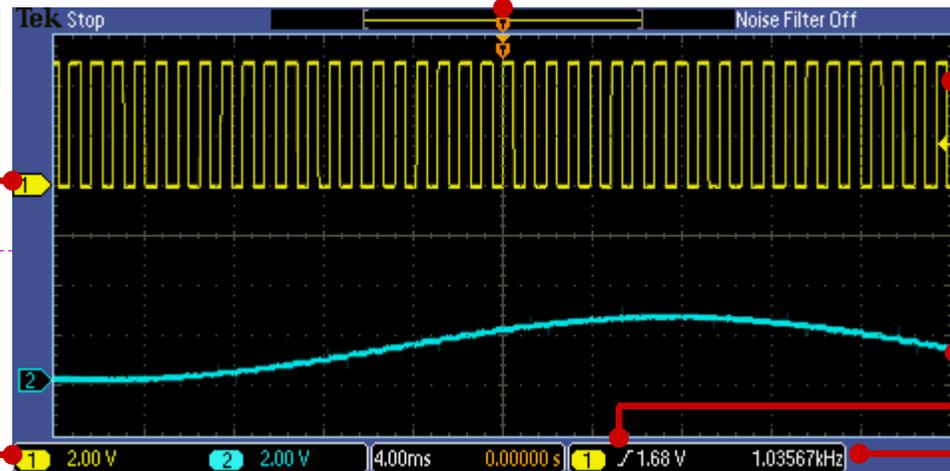
- **Auto Mode:** The oscilloscope sweeps, even without a trigger.
- **Normal Mode:** The oscilloscope only sweeps if the input signal reaches the set trigger point; otherwise the last acquired waveform remains on the display.
- **Single Sequence Mode:** After a trigger is detected, the oscilloscope acquires and displays one waveform.

## Oscilloscope Display Features

**Tip:** Indicators for each channel are color-coded

Ground level indicator (color-coded)

Vertical scale readout (color-coded)



Trigger point

Channel 1 waveform (yellow)

Trigger level indicator (Channel 1 is the trigger source since indicator is yellow)

Channel 2 waveform (blue)

Trigger source & level

Trigger frequency readout

Horizontal scale readout

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