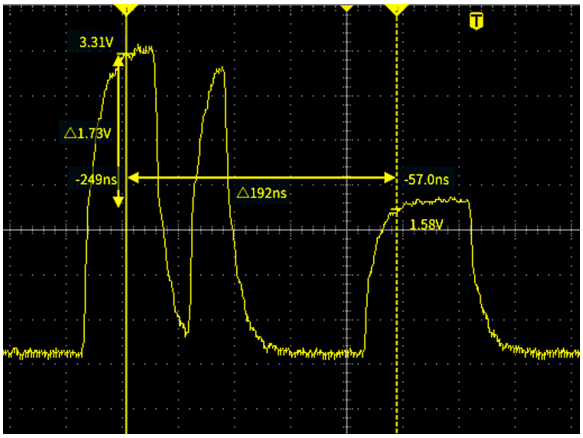
Using cursors to take manual measurements

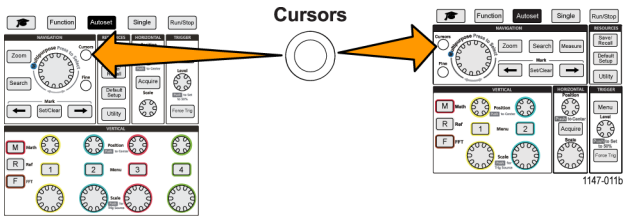
Cursors are on-screen vertical and horizontal lines that you position on a waveform to take measurements. The cursors have readouts that show the value at their position or where they cross a waveform. Cursors also show the absolute difference measurement value (or delta) between two cursor positions.



Cursor readouts appear next to the cursors. The readouts show the signal values at the current cursor positions. The readouts also show the difference (delta, marked with a Δ symbol) between the cursor measurements. The oscilloscope always shows the readouts when the cursors are turned on.

NOTE. *Cursors are not available in XY display mode.*

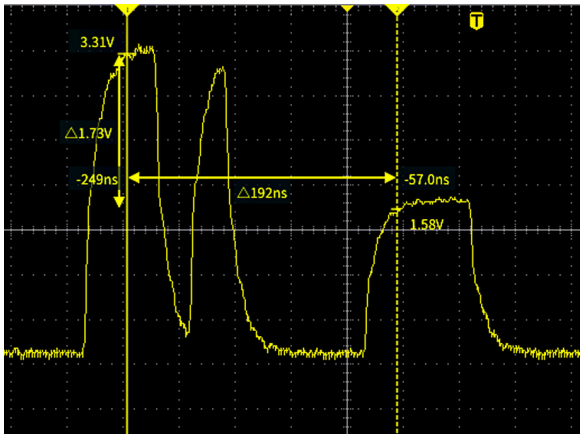
1. Push **Cursors** to display two vertical **Time** cursors by default.



   The color of the cursors indicates the channel on which they are taking measurements.

   The solid line cursor is the active (selected) cursor, and is controlled by the **Multipurpose** knob.

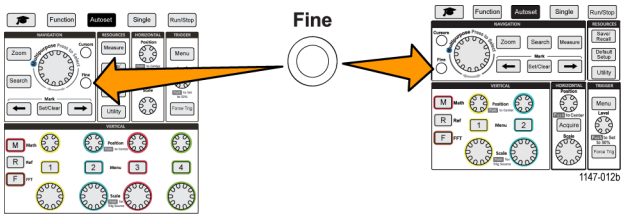
2. Use the **Multipurpose** knob to move the solid line (selected) cursor. The readouts associated with that cursor change as you move the cursor.



3. Push the **Multipurpose** knob to select the other cursor (which becomes a solid line), then turn the knob to move that cursor. The first cursor is now drawn with a dotted line.

4. To make smaller cursor position adjustments, push the **Fine** button to toggle between making coarse and fine cursor position adjustments.

   The **Fine** button also enables smaller adjustments on the **Vertical** and **Horizontal Position** knobs, the **Trigger Level** knob, and many adjustment operations of the **Multipurpose** knob.



5. Push the **Amplitude** or **Screen** side-menu button to select a different cursor for taking measurements. (See page 57, *Cursor types*.)

6. Push the **Link** side-menu button to turn cursor linking **On** or **Off**. If linking is **On**, turning the **Multipurpose** knob moves both cursors at the same time.

7. If one or both of the cursors are off of the screen, push the **Bring Cursor On Screen** side-menu button to bring off-screen cursors back to the screen.

8. Push the **Cursors** front panel button to turn the cursors off.

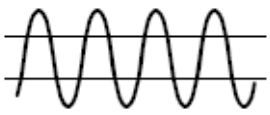
Cursor types

The cursor types are:

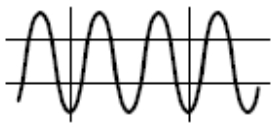
Time or Frequency cursors. These vertical cursors measure time or frequency, the signal amplitude where the cursors cross the waveform, and the absolute difference (delta) between the two cursors cross points (both time and amplitude delta).

Time readouts are relative to the trigger point (which is 0 s). For example, cursors to the left of the trigger are minus time values.

Amplitude cursors. These horizontal cursors measure vertical amplitude parameters, typically voltage.



Screen cursors: A combination of both the vertical and horizontal cursors. Click the **Multipurpose** knob to cycle through selecting the cursors.

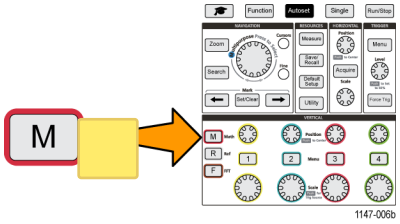


NOTE. The vertical cursors in screen mode are not tied to where the cursor crosses the waveform, and so do not show the amplitude value where they cross the signal. Amplitude values are read from the horizontal cursors.

Creating math waveforms

Math waveforms let you add, subtract, and multiply any two channel waveforms to create a new math waveform. You can then take measurements on the math waveform, or save it to a reference memory or an external waveform data file.

1. Push **M (Math)**. The oscilloscope displays a red math waveform using the current side menu settings.



2. Push the **Source 1** side-menu button.
3. Use the **Multipurpose** knob to select and click the first channel to use for the math waveform.
4. Push the **Operator** side-menu button.
5. Use the **Multipurpose** knob to select and click the math operation to apply to the two waveforms (add, subtract, or multiply).
6. Push the **Source 2** side-menu button.
7. Use the **Multipurpose** knob to select and click the second channel to use for the math waveform. The oscilloscope immediately displays the math waveform.
8. To move the math waveform vertical position, push the **Position** side-menu button and use the **Multipurpose** knob to move the waveform.
9. To change the size (vertical scale) of the math waveform, push the **Vertical Scale** side-menu button and use the **Multipurpose** knob to change the waveform scale.

   Note that the math vertical scale setting only applies to the math waveform.