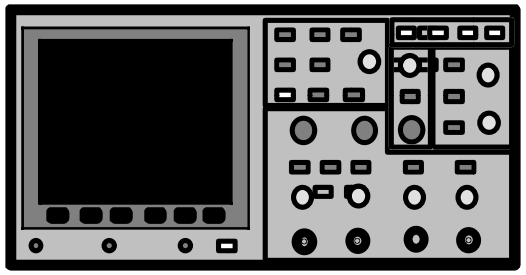
The Digitizing Oscilloscope



Hints:

*** The BNC shield is at earth ground. Use only the probe TIP for measuring high voltages. "Floating" the BNC shield or connecting it to a high voltage could cause a safety hazard.**

*** Make sure probes are compensated and set to proper scale (X1,X10,X100).**

*** If you can't get the signal on screen:**

- Check Probe connection

- Touch: SETUP, Default Setup

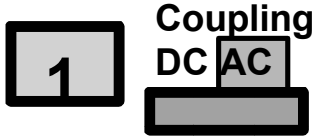
- Touch: AUTOSCALE

- Check for offset (ground symbol). If offscale, adjust vertical sensitivity.

If still offscale, Touch:

- Check Trigger Source

- Set Mode Auto

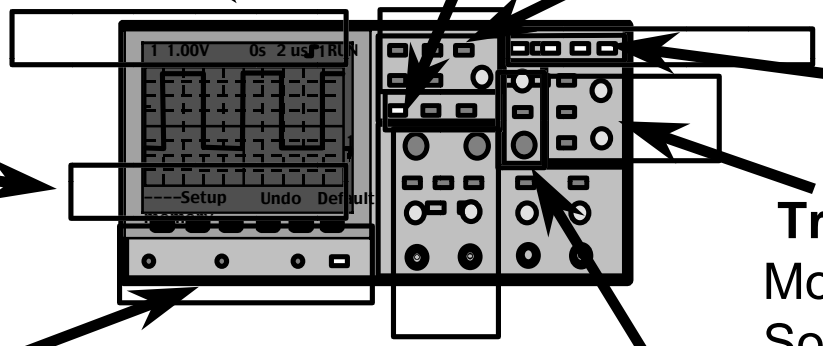


The Digitizing Oscilloscope

Status bar:
Vertical sensitivity
Sweep speed
Trigger time reference
Channel(s) on
Run/stop

Autoscale
Print
Calibrate

Measure: Vrms, tr, ϕ,f
Trace /Setup Memory
Display: grid, vectors, averaging



Storage: Auto-store, Erase, RUN/STOP

Softkey labels

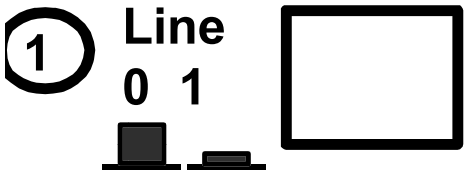
Triggering:
Modes: Auto, Normal,TV
Sources: Ch1, Ch2, Ext, Line

Calibration source
Power ON/OFF
Screen brightness

Vertical position, sensitivity
Math on/off

Horizontal:
Main Sweep Speed,
Sweep Modes:
Delayed, XY, Roll
t = 0 Reference

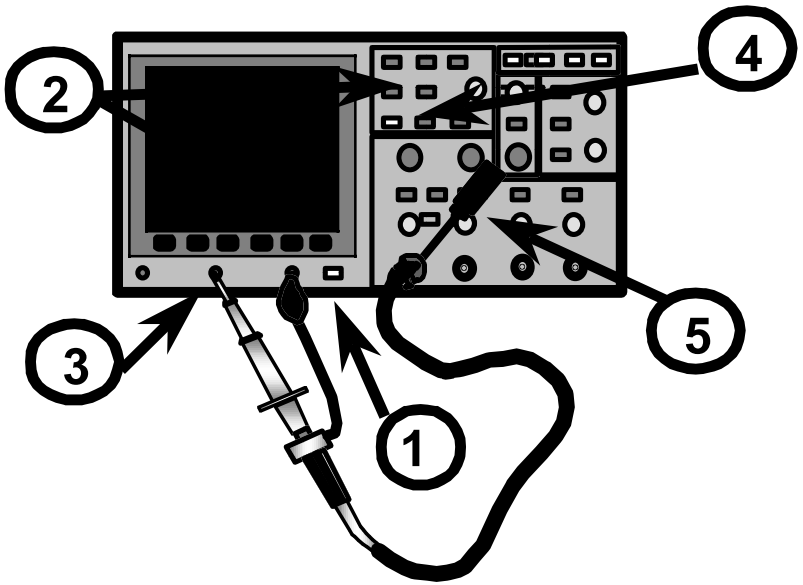
Getting Started:



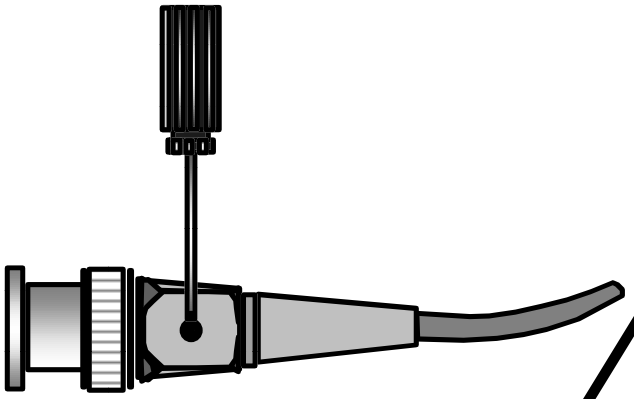
(Power ON)

(All settings to default)

3 Connect probe to calibrator



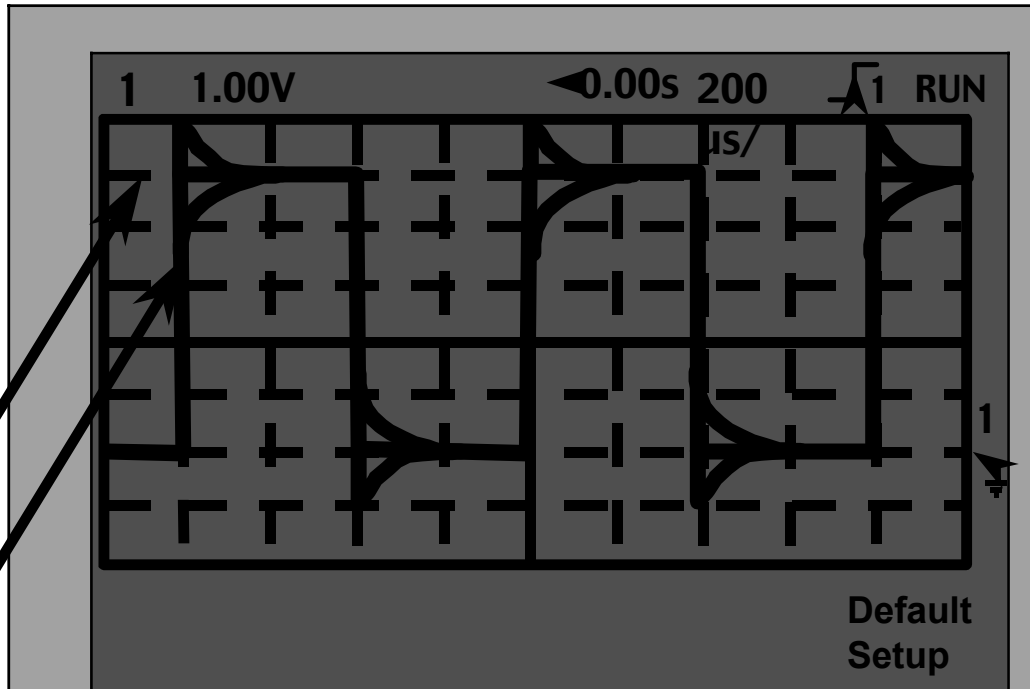
5 Compensate probes:

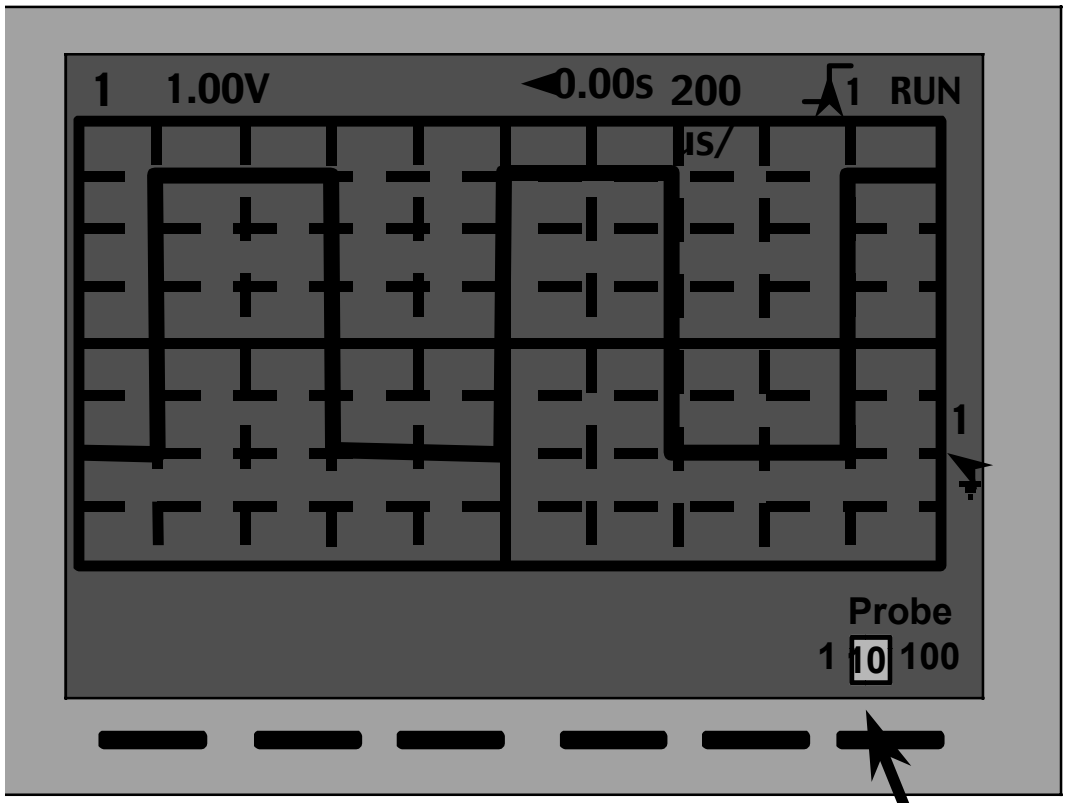


Adjust screw to eliminate:

Overshoot

Undershoot





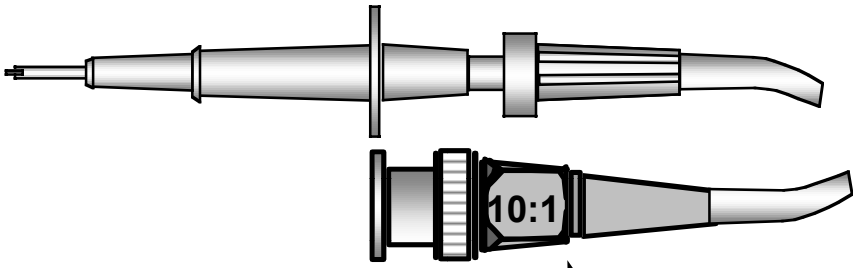
Set probe attenuation factor:

1

Press Channel key for selected probe.

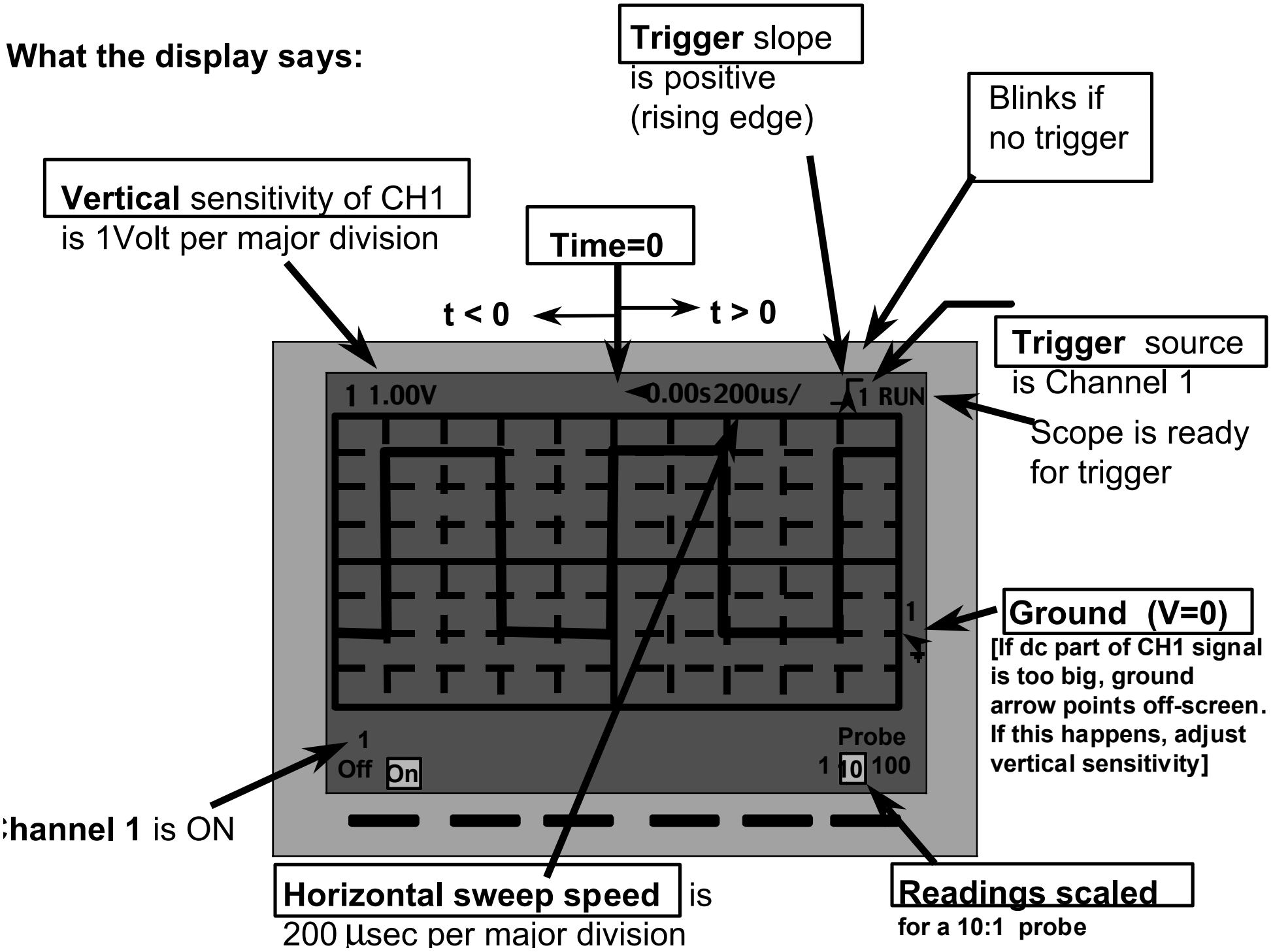
Probe
1 10 100

Toggle softkey for setting that matches probe

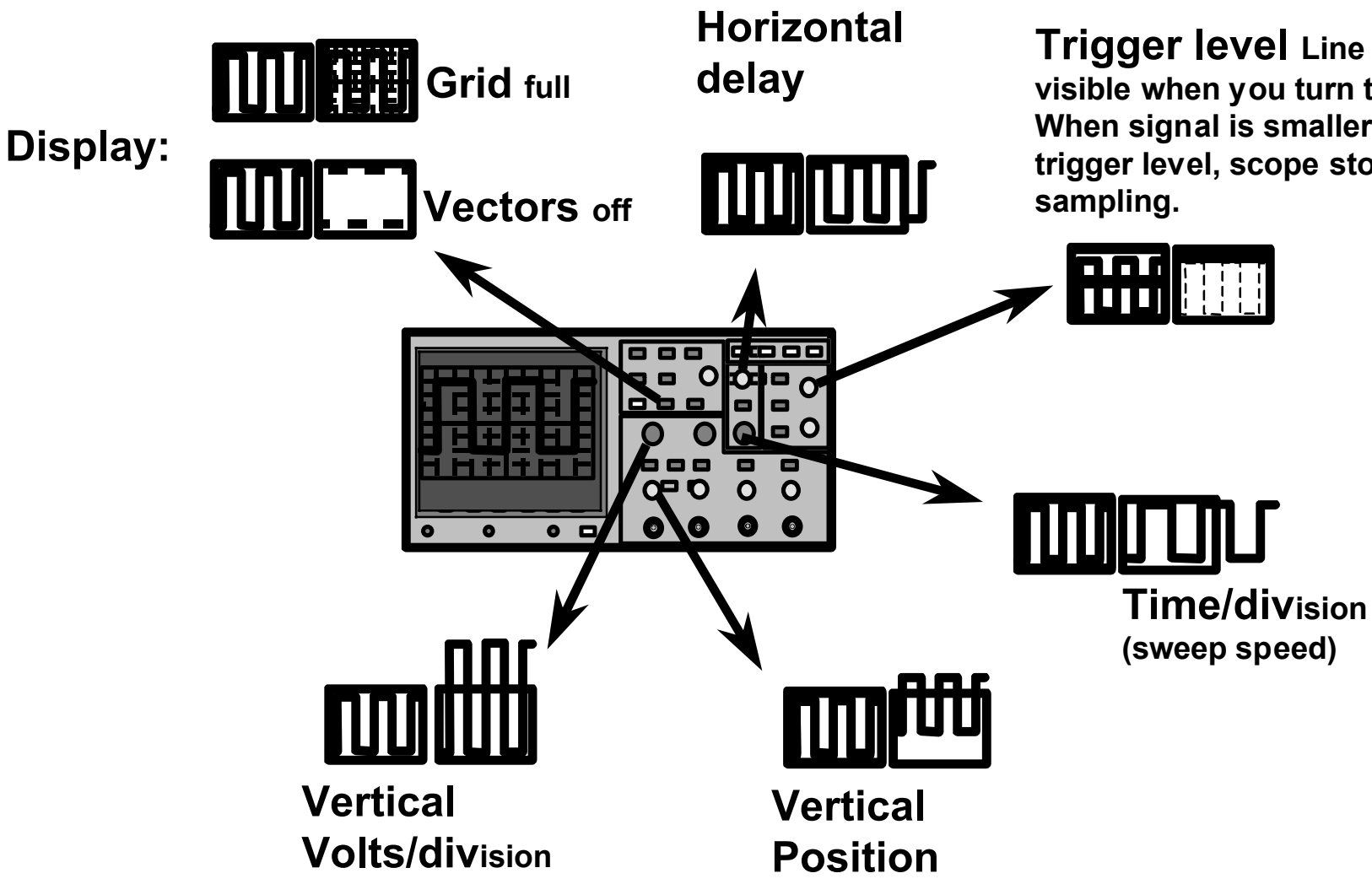


Match

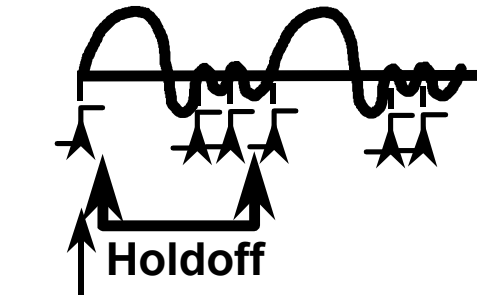
What the display says:



What the main controls do:

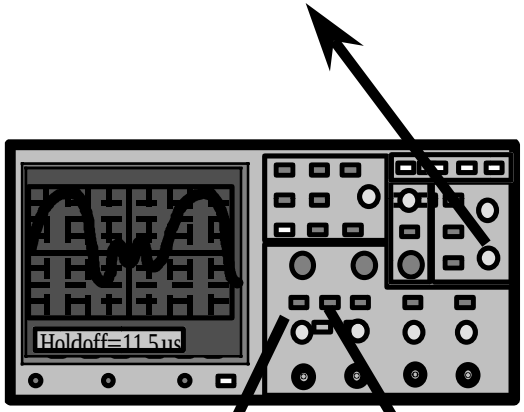


Other main controls:



Trigger holdoff

Signals with multiple zero crossings per cycle cause unstable displays.
Holdoff ignores the false triggers for a given length of time.



1

- Enable channel
- Set up probe

+ −

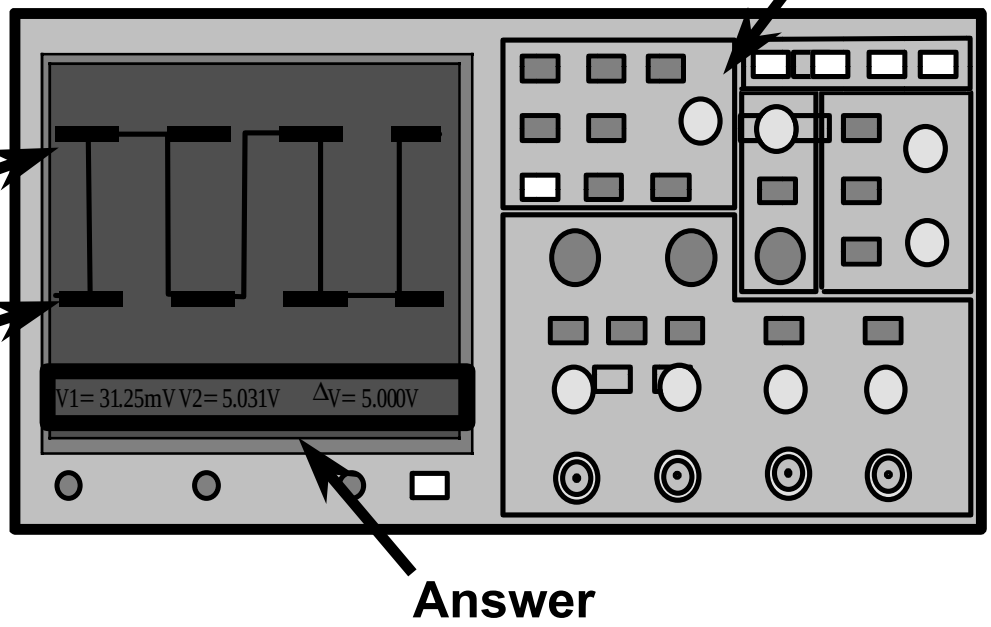
Math Functions

-Add waveforms
-FFT (if equipped with module)

Making Measurements: Vp-p

Measure Vp-p, using cursors:

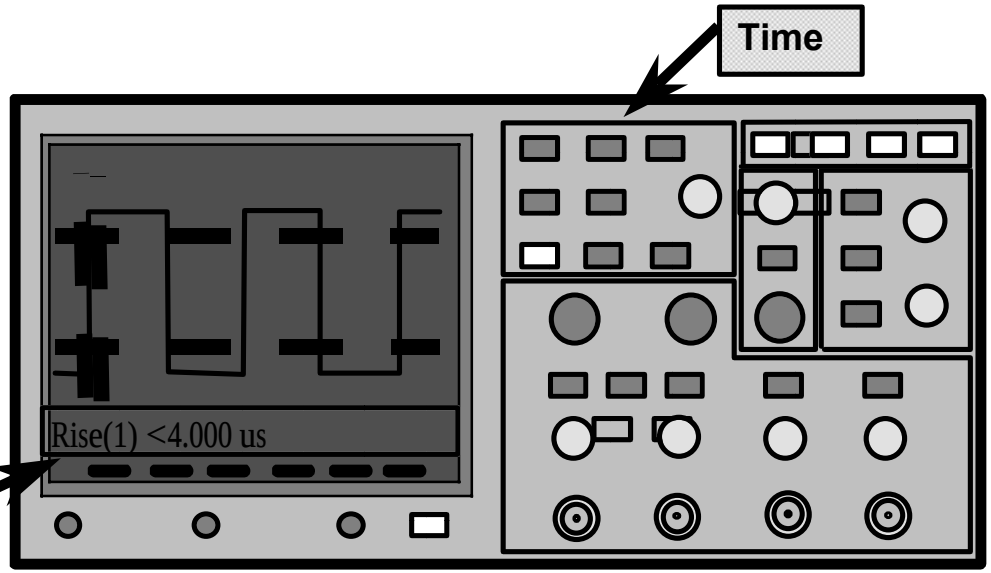
1. Hook Calibrator signal to CH1
2. Display → Grid → None
3. Cursors → Clear Cursors — Clears any cursors already on the screen
4. Source → 1 — Set for the correct channel
5. |- Active Cursor -| V1 V2 T1 T2 — Toggle to highlight the V1 cursor; Rotate knob for waveform minimum
5. |- Active Cursor -| V1 V2 T1 T2 — Change to V2 cursor; Use knob to set to waveform minimum



OR: Measure Vp-p, the easy way:

1. Voltage → |- Voltage Measurements -| Vp-p Vavg Vrms — Simply select Vp-p from the Voltage menu.

Making Measurements:
RISETIME



1. Time — Next Menu

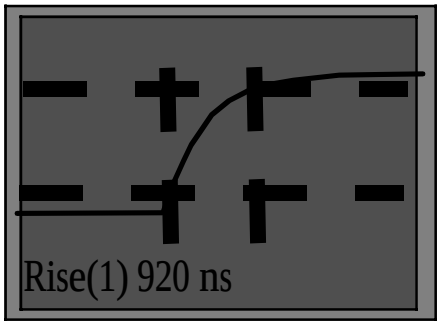
2. |---------- Time Measurements ----------|
   +Width -Width RiseTime FallTime

Risetime Answer

f answer needs more resolution:

3. Time/Div

Rotate for best display:



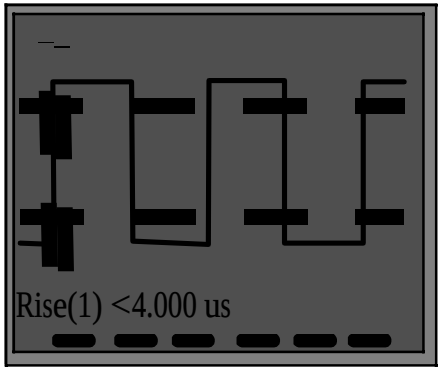
90% line

10% line

Making Measurements:
RISETIME, Using DELAYED SWEEP:

1. **Time/Div**

   Rotate to show multiple cycles on screen

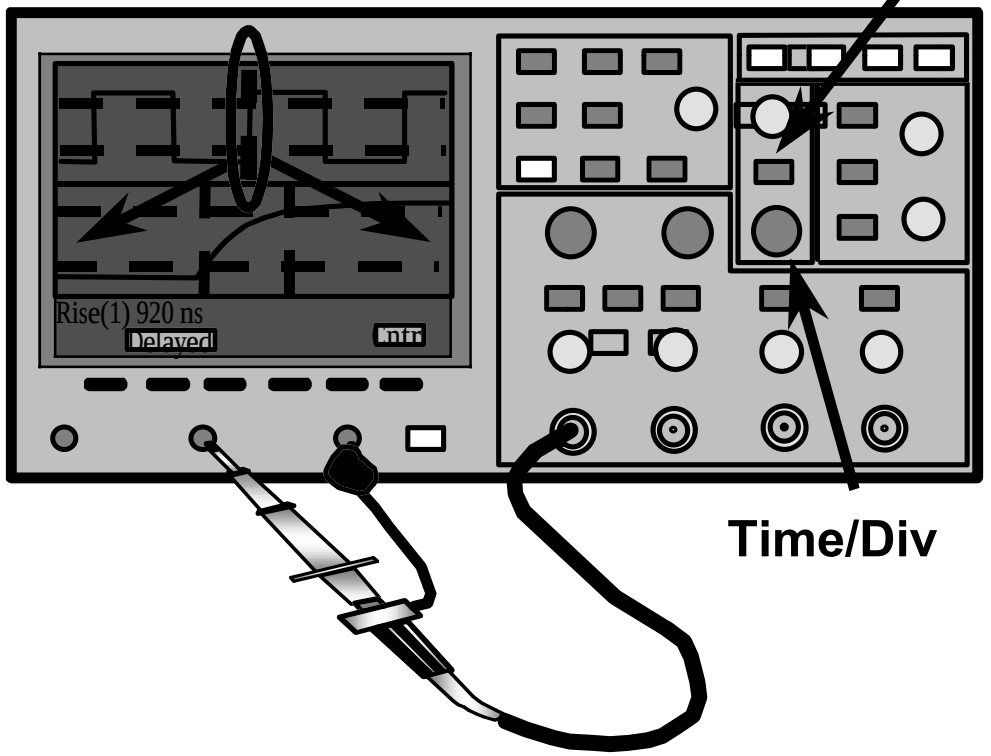


2. **Main / Delayed**

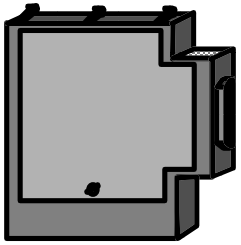
   |-------Horizontal Mode --------|
   Main Delayed XY Roll

3. **Time/Div**

   Rotate. See how upper bracketed part is exploded into lower window

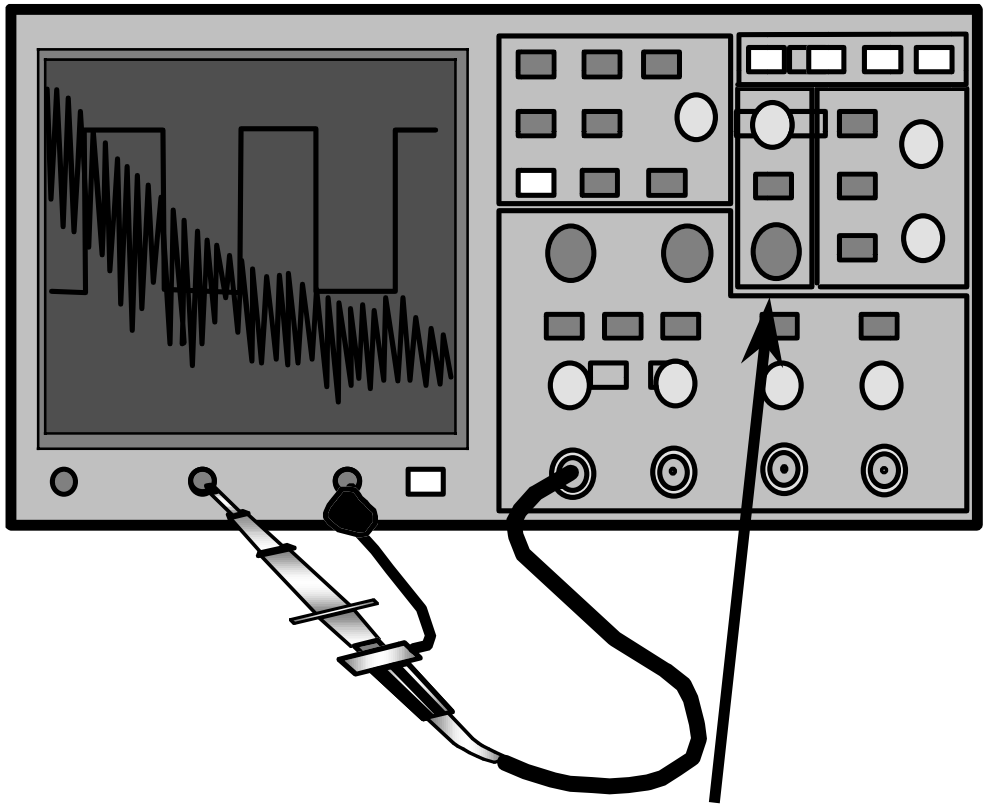


Making Measurements: FFT (Frequency Domain)



To do FFT, a Measurement/Storage Module must be installed on back of scope.

1. Setup: Default
2. Auto-scale
3. ± |-- Function 2 --| Off **On** Menu
4. |-- Function 2 --| Off **On** Menu (Hit Menu key)
5. Operation **FFT**



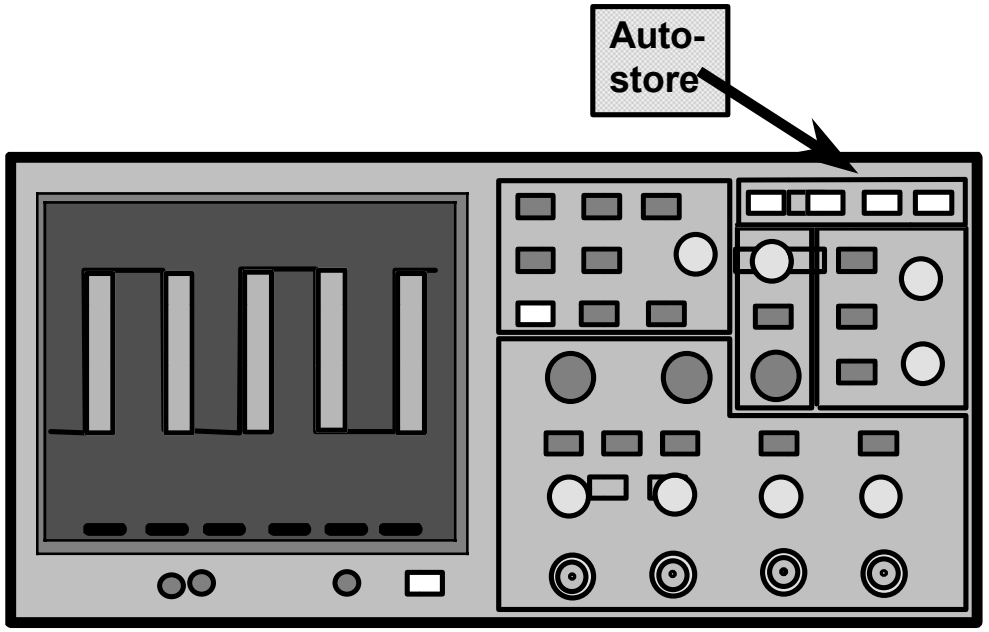
Use Time/Div to set FFT resolution

Hint: To look ONLY at FFT signal without time domain signal, turn channel off:

1 → 1 **Off** On

Hint: To return to FFT menu at any time, use Math key ±

Storing Waveforms: AUTOSTORE



1. Auto-store — Displays all waveforms (Good for looking at jitter, noise, glitches)
2.
3. Example: Calibrator signal in CH 1. Setup Default. AUTOSCALE. Touch AUTOSTORE.
4. Now move horizontal delay knob and watch all waveforms stay on screen, making an overlapping pattern.
5. Auto-store — Touching Autostore again returns display to normal mode.

Storing Waveforms:
TRACE MEMORY

1. Example: Calibrator signal in CH 1. Setup Default. AUTOSCALE.

2. Trace — Save to Trace 1

3. Trace 1: Off | On

4. Now move waveform with horizontal delay and vertical position knobs. Note that Trace 1 still stays on screen, allowing comparison with stored waveform.