Tesca Technologies Pvt. Ltd.

Know Your Oscilloscope

Oscilloscope is an electronic measuring instrument that creates a live and visible two varying in amplitude with respective time.

Vertical corresponds amplitude and horizontal axis corresponds to time.

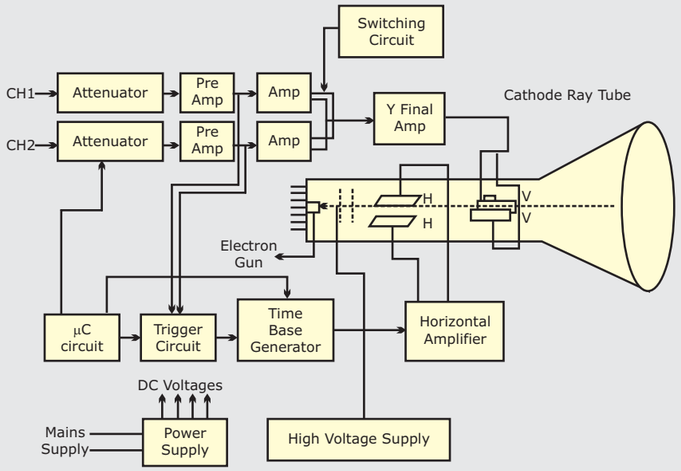
Oscilloscope can display signals from DC to very high frequencies, up to 200-500MHz.

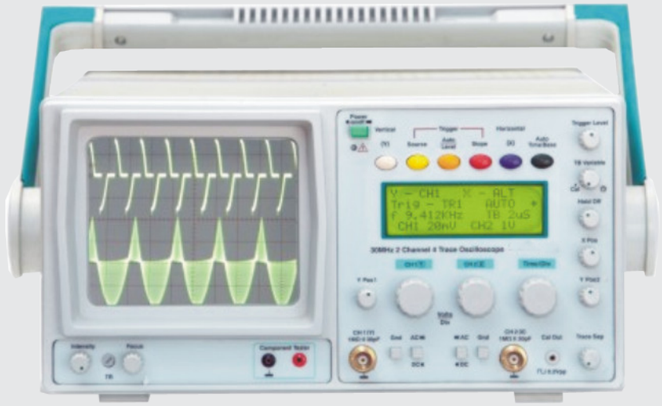
Oscilloscope can be single channel, 2 channels or 4 channels.

Now a days a number of mathematical calculations such as additions, multiplication, FFT analysis etc. Or possible on CRO.

Fine measurement by using curser can be done and signals can be stored and transfer and nay other location using digital storage technics.

Block Diagram of Oscilloscope

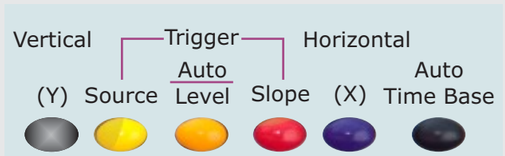




Features:

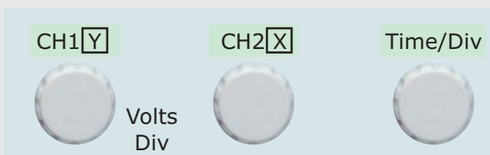
- ! Auto Time Base
- ! Signal Frequency Display Builtin
- ! Large LCD Display
- ! 4- Trace operation (view × 1 & × 10 together)
- ! 30 MHz Bandwidth
- ! × 10 Magnification
- ! 20 ns max Sweep Speed
- ! Stable Triggering up to 50MHz
- ! Alternate Triggering
- ! Variable Hold Off
- ! Component Continuity Tester
- ! Component and Continuity Tester
- ! USB

Function Keys



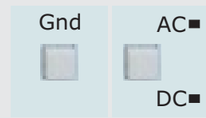
For selecting vertical, Horizontal, trigger and auto time base functions. Vertical key selects various vertical modes of operation such as CH1, CH2, dual etc. Horizontical key selects X1, X10, CT etc. Source key select triggering source like CH1, CH2, external etc. Slope key select +ve or Negative slope for triggering. Auto level key selects auto or level triggering mode. Auto time base key selects automatic working of time base.

Rotary Controls

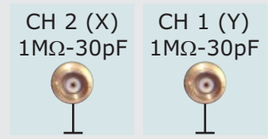


Volts/Div changes the vertical sensitivity of CH1 and CH2 Time/Div changes the time base speeds.

Y Position controls for moving the race vertically up or down



Input Coupling selection for AC or DC coupling

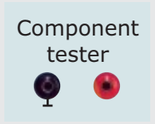


BNC connectors for connecting signal to Oscilloscope

LCD Display

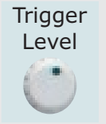
All the perameters adjected by verious key are displayed on LCD

Component Tester



For testing in-circuit components and continuity

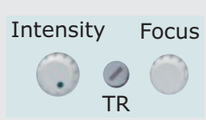
Trigger Controls



Level variation from +ve peak to -ve peak

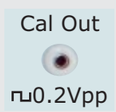
General Controls

On-Off Switch



Intensity controls the brightness of the trace.

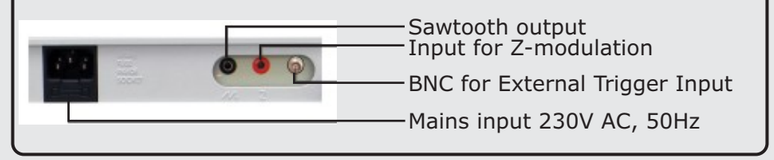
Focus controls the sharpness of the trace



Calibrated square wave output for sensitivity check and probe compensation

Trace Rotation adjust the horizontal alignment of the trace

Back Panel Controls



Measurements on Oscilloscope

Vertical Measurement (Input Sinewave)

Volts/Div = 50mV
Deflection Vpp = 4Div
Signal Strength
= 50mV × 4
= 200mVpp

Horizontal Measurement (Input Sinewave)

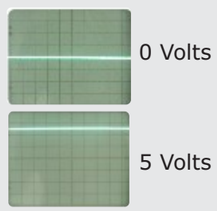
Time = TB speed × Horizontal Distance

Frequency $\frac{1}{\text{Time in sec}}$ Hz

Time/Div= 1mS
No. Of Div for one cycle = 4 Div
Period of Signal = 4mS
Freq. Of Signal= $\frac{1}{4ms}$ = 250Hz

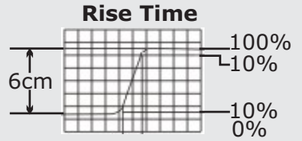
DC Measurement (input 5VDC)

Input coupling DC
Volts per div = 2V
Deflection = 2.5 Div
DC voltage 2.5×2=5V



Rise Time Measurement

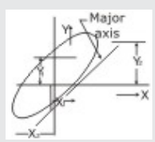
Input squarewave



Rise Time = Time at 90% mark -Time at 10% mark

Phase Measurement (X-Y Mode)
Input sinewaves

Phase (X-Y) Mode



$\sin \phi = \frac{Y1}{Y2}$ or $\frac{X1}{X2}$

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