

## 20MHz Dual Trace Oscilloscope cum Trainer with Built-in DMM



### Features

- ★ Component Tester / Comparator for On Board Testing
- ★ Built-in 3 & ½ Digit Multimeter for Easy Testing
- ★ 1mV/div Sensitivity for Both the Channel
- ★ EHT Generation by DC-DC Converter
- ★ PCB Foils Printing on Component Side for Easy Traceability
- ★ Facility to Create Fault through Jumpers and Well Spaced Components for Changeability and Better Understanding of Circuit Functions
- ★ Separate Colors for Individual Sections and Circuits for Easy Identification
- ★ Ample Test Points for Verifying Circuits Conditions
- ★ Circuit Diagram and Circuit Layouts on Separate Sheets for Section wise Easy Understanding
- ★ Various Illustrated Experiments with Oscilloscope provided in the Exhaustive Training Literature
- ★ Full Fledged 20MHz Bandwidth on Both the Channels

### Specifications

#### VERTICAL AMPLIFIERS (CH1 & CH2 ARE IDENTICAL)

<b>Mode of Operation</b>	: CH1 & CH2.
<b>Dual Trace</b>	: ALT or CHOP (CHOP freq. 120KHz approx.).
<b>Addition</b>	: Algebraic addition of CH1 & CH2.
<b>Subtraction</b>	: Algebraic difference of CH1 & CH2 (inverted).
<b>X-Y Operation</b>	: Single channel mode, Y-signal via CH1 & X-single via CH2.
<b>Sensitivity</b>	: 1mV/div to 20V/div, 5mV/div in 12 calibrated steps in 1-2-5 sequence.
<b>Accuracy</b>	: ±3%.

<b>Bandwidth</b>	: DC ~ 20MHz (dc coupled), 10Hz ~ 20MHz (ac coupled).
<b>Rise Time</b>	: 17.5nsec.
<b>Input Coupling</b>	: dc / ac / gnd, switch selectable.
<b>Input Impedance</b>	: 1MΩ // 30pF.
<b>Maximum Input</b>	: 400V (DC + Peak AC).

#### TIME BASE

<b>Sweep Ranges</b>	: 0.5μsec/div to 0.2sec/div in 18 calibrated steps. Continuously variable control extends the fastest sweep speed to 200nsec/div approx.
<b>Sweep Magnifier</b>	: x5 magnification extends the fastest sweep to 40nsec/div approx. (with variable) (provided internally).

<b>Accuracy</b>	: ±3%.
<b>Sweep Output</b>	: Approx. 5V peak to peak.
<b>TRIGGERING</b>	
<b>Auto / Normal</b>	: Trigger level continuously adjustable on the positive or negative slope of the triggered waveform. Level adjustable over 8 divisions, both in AUTO/NORMAL mode.
<b>Source</b>	: INTERNAL from either channels, LINE or External.
<b>TV</b>	: Full TV trigger facility for TV-V & TV-H.
<b>Coupling Slope</b>	: ac / dc / HF Reject. : +ve or -ve.
<b>Sensitivity</b>	
Internal	: A) AUTO (ALT MODE) 1 div, 30Hz ~ 20MHz. AUTO (CHOP MODE) 1div, 30Hz ~ 10KHz. B) NORMAL 0.5div, 10Hz ~ 20MHz, ac/dc coupled. 0.5div, 3Hz~20MHz, dc coupled.
External	: A) AUTO 1V p-p, 30Hz ~ 20MHz, dc coupled. B) NORMAL 1V p-p, 3Hz ~ 20MHz, dc coupled (Typical 30MHz at 2 div).
<b>HORIZONTAL AMPLIFIER</b>	
<b>Input</b>	: Via CH2.
<b>Bandwidth</b>	: DC ~ 1MHz (-3dB).
<b>Sensitivity</b>	: Same as CH2.
<b>Input Impedance</b>	: 1MΩ // 30pF.
<b>Maximum Input</b>	: 400V (dc + peak AC).
<b>3½ DIGIT, DIGITAL MULTIMETER</b>	
<b>Display</b>	: 3½ digit LCD type display.

<b>DC Voltage Range</b>	: 200mV, 2V, 20V, 200V, 1000V.
<b>Accuracy</b>	: ±0.5%.
<b>Input Impedance</b>	: 10MΩ.
<b>AC Voltage Range</b>	: 200mV, 2V, 20V, 200V, 750V.
<b>AC &amp; DC Current</b>	: 200μA, 2mA, 20mA, 200mA.
<b>Resistance Range</b>	: 200Ω, 2KΩ, 20KΩ, 200KΩ, 2MΩ, 20MΩ.
<b>DUAL COMPONENT COMPARATOR / COMPONENT TESTER</b>	
<b>Test Voltage</b>	: 8.6V (rms).
<b>Test Current</b>	: 28mA (max.).
<b>Test Frequency</b>	: 50Hz / 60Hz (Mains).
<b>GENERAL</b>	
<b>Calibration Output</b>	: 200mV p-p ±2% square wave at 1KHz approx. can be used for 10:1 probe compensation.
<b>Cathode Ray Tube</b>	: 140mm Flat Faced Monoaccelerator.
<b>Accelerating Potential</b>	: 2KV with DC-DC converter.
<b>Screen Type</b>	: GH (P-31 phosphor).
<b>Graticule</b>	: Internal 10 x 8 cm with % calibration.
<b>Power Requirement</b>	: 230V AC ±10%, 47-65Hz, 40VA or 115V AC ±10% (on request).
<b>Trace Rotation</b>	: Front panel control, allows ±5% trace adjustment.
<b>Z-Modulation</b>	: 30V p-p signal upto 1MHz modulates at normal intensity.
<b>Dimensions</b>	: 520 (W) x 150 (L) x 450 (D) mm approx.
<b>Weight</b>	: 12 Kg. approx.
<b>Standard</b>	: Instruction Manual, 2 Input BNC
<b>Accessories</b>	: Leads, Component Tester Lead, Multimeter Leads.
<b>Environmental</b>	: Normal : 10°C to 40°C RH 85%.
<b>Specifications</b>	: Operational : 0°C to 50°C RH 85%.

WE PURSUE A POLICY OF CONTINUOUS DEVELOPMENT AND PRODUCT IMPROVEMENT. THUS THE SPECIFICATIONS IN THIS DOCUMENT AND THE LOCATION OF CONTROLS ON THE FRONT PANEL MAY BE CHANGED WITHOUT NOTICE.

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