

TEKTRONIX

2465

The Tektronix 2465 is a classic 300 MHz, four-channel analog oscilloscope known for its reliability, crisp CRT display, and comprehensive on-screen readout and cursor measurement system. Highly regarded in both engineering and service environments, it offers flexible triggering and precision sweep controls standard for the 2400 Series.

SPECIFICATIONS

General

Interfaces	Optional GPIB (IEEE-488) via Option 10
Display	8 x 10 cm CRT with internal graticule and digital readouts
Cooling System	Forced-air circulation via internal fan
Warm-up Time	20 minutes

Physical

Power Supply	90 - 250 V AC, 48 - 440 Hz, 120 W maximum
Operating Temperature	-15 °C to +55 °C °C
Dimensions (W×H×D)	329 mm × 136 mm × 440 mm mm

Vertical Deflection System

Number of Channels	4
Bandwidth (-3 dB)	300 MHz
Risetime	1.17 ns
Deflection Factor Range (CH1, CH2)	2 mV/div to 5 V/div in 1-2-5 sequence
Deflection Factor Range (CH3, CH4)	0.1 V/div and 0.5 V/div
Deflection Factor Accuracy	±2% (+15 °C to +35 °C)
Input Impedance (CH3, CH4)	1 MΩ ±1% in parallel with 15 pF ±2 pF
Maximum Input Voltage (1 MΩ)	400 V (DC + peak AC)
Maximum Input Voltage (50 Ω)	5 V RMS
Channel Isolation (Crosstalk)	100:1 at 100 MHz, 50:1 at 300 MHz
Vertical Operating Modes	CH 1, CH 2, ADD, ALT, CHOP, CH 3, CH 4
Chop Frequency	1 MHz
Invert Channel Capability	CH 2 only
Delay Line (Signal Delay)	Visible signal delay allows viewing of the triggering edge

Horizontal Deflection System (Time Base)

Time Base Modes	A, A INTEN, ALT, B DLY'D
A Sweep Time Range	500 ms/div to 5 ns/div (with x10 magnification to 500 ps/div)
B Sweep Time Range	50 ms/div to 5 ns/div (with x10 magnification to 500 ps/div)
Sweep Time Accuracy	±1% (A sweep, unmagnified, +15 °C to +35 °C)
Sweep Magnification	x10
Magnified Sweep Accuracy	±2% (A sweep, +15 °C to +35 °C)
Holdoff Control Range	Variable, increases sweep holdoff by at least a factor of 10

Triggering System

Trigger Sources	CH 1, CH 2, CH 3, CH 4, Line, Vertical Mode
Trigger Modes	AUTO LEVEL, AUTO, NORMAL, SINGLE SEQUENCE
Trigger Coupling	DC, AC, NOISE REJ, HF REJ, LF REJ
Trigger Sensitivity (Internal, DC Coupled)	0.3 div from DC to 50 MHz, 1.0 div at 300 MHz
External Trigger Input Impedance	1 MΩ ±1% in parallel with 15 pF (via CH 3 and CH 4 inputs)
External Trigger Maximum Input Voltage	400 V (DC + peak AC)

X-Y Operation

X-Y Mode Deflection Factor	Same as vertical deflection system (CH 1 for X-axis, CH 2 for Y-axis)
X-Axis Bandwidth	DC to at least 3 MHz

CRT Display & Z-Axis Modulation

CRT Type	Rectangular, internal graticule, meshless scan expansion
Display Area (Graticule Size)	8 x 10 cm
Accelerating Potential	16 kV
Phosphor Type	GH (P31) standard
Trace Rotation Control	Front-panel screwdriver adjustment
Z-Axis Input Sensitivity	Noticeable modulation at +1.8 V, positive voltage decreases intensity, +5 V blanks a trace of usable intensity
Z-Axis Input Bandwidth	DC to 20 MHz
Z-Axis Maximum Input Voltage	30 V (DC + peak AC)

On-Screen Readouts & Measurement Cursors

Cursor Measurement Types	ΔV, Δt, 1/Δt (frequency), phase, ratio
Digital Readout Parameter Display	Volts, time, frequency, phase, scale factors, channel selection, trigger parameters
Auto-Setup Functionality	The original 2465 does not feature an Auto-Setup function

Signal Outputs & Calibrators

Calibrator Output Voltage (Amplitude)	0.4 V $\pm$ 1.0% into 1 M Ω
Calibrator Output Frequency	1 kHz nominal
Calibrator Waveform Shape	Square wave
Channel 1 Vertical Output Voltage	Channel 2 Vertical Output Voltage = Approximately 20 mV/div into 50 Ω (rear panel)

Environmental & Safety Compliance

Storage Temperature Range	-55 °C to +75 °C
Operating Humidity Range	Up to 95% RH at +30 °C to +40 °C, non-condensing
Operating Altitude Limit	Up to 15,000 feet (4,500 m)
Safety Standards and Certifications	Conforms to UL 1244, CSA C22.2 No. 231

Vertical System

Input Coupling Modes (CH1, CH2)	AC, DC, GND, and 50 Ω DC
Input Coupling Modes (CH3, CH4)	DC only
Common Mode Rejection Ratio (CMRR)	At least 20:1 at 50 MHz (with CH2 inverted)
Bandwidth Limit	20 MHz ($\pm$ 4 MHz)
CH 1 to CH 2 Delay Match	$\leq$ 100 ps

Horizontal System

Delay Jitter	1 part or less in 20,000 (0.005%) of the maximum available delay
Sweep Separation Range	At least $\pm$ 4 divisions

Display

CRT Graticule Markings	Internal 8 $\times$ 10 cm graticule with 0%, 10%, 90%, and 100% risetime reference lines
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Z-Axis Modulation

Z-Axis Input Resistance	9.1 k Ω $\pm$ 10%
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Power Requirements

Line Voltage Range	90 V to 250 V AC (automatically selected)
Line Frequency Range	48 Hz to 440 Hz
Maximum Power Consumption	150 W (with options)

Environmental

Environmental Shock	MIL-T-28800C, Type III, Class 5 (50 g, half-sine, 11 ms)
Environmental Vibration	MIL-T-28800C, Type III, Class 5 (5 Hz to 55 Hz, 0.015 inch p-p)

TECHNOLOGY

Analog Oscilloscope

APPLICATIONS

Electronic Design, Signal Analysis, Troubleshooting, Education

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