



11A33 Differential Comparator

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- Differential Comparator
- DC to 150-MHz Bandwidth
- 1-mV to 10-V/Div Calibrated Deflection Factors in 1% Increments
- Very-High-Resolution Calibrated DC Offset
- 16000-Division Effective Screen Height
- High Common-Mode Rejection
- Fast Overdrive Recovery From Large Input Signals
- Selectable 50-Ω, 1-MΩ, or 1-GΩ Input Impedance

The 11A33 Differential Comparator plug-in is a single-channel differential amplifier with high common-mode-rejection ratio and fast overdrive recovery from very large signals. As a differential amplifier, common-mode input-voltage

range is ± 8 V at 1 mV/div. As a comparator, the built-in comparison voltage (V_c) is used to measure the fine structure of very large signals, such as the settling time of a digital-to-analog converter, with unprecedented accuracy and resolution. Maximum bandwidth in the 11301, 11302, 11401, and 11402 mainframes is 150 MHz. Two built-in four-pole bandwidth-limit filters (100 and 20 MHz) may be activated to reduce unwanted high-frequency noise at 24 dB/octave for each channel.

Both coarse and fine deflection factors are fully calibrated. At 1 mV/div, the high-resolution comparison voltage has a stability of 25 μ V throughout its ± 8 V range (equivalent to 19 bits), giving an effective screen height of 16,000 div and permitting absolute dc measurement accuracies of $\pm 0.2\%$.

CHARACTERISTICS

Number of Channels—One.

Bandwidth—DC to 150 MHz in 11301, 11302, 11401, and 11402 mainframes. (DC to 120 MHz at 1 mV/div.)

Calibrated Deflection Factors—Coarse steps: 1 mV to 10 V/div in 1-2-5 sequence. Fine steps: Between coarse steps in 1% increments of next more-sensitive coarse step.

Accuracy— Δ Volts dc accuracy: With 11301/11302: $\pm(1.0\% + 0.04$ div). With 11401/11402: $\pm(0.9\% + 0.01$ div).

DC Balance, 1 to 99.5 mV/div: With 11301 and 11302: $\pm(0.5$ mV + 0.13 div). With 11401 and 11402: $\pm(0.5$ mV + 0.10 div).

V_c Accuracy, 1 to 99.5 mV/div (8 V range): $\pm(0.15\% + 0.6$ mV).

For absolute dc accuracy of single point measurements using V_c , add the V_c Accuracy and dc balance terms.

V_c Range—

1 to 99.5 mV/div: ± 8 V; Resolution: 25 μ V.
 100 mV to 0.995 V/div: ± 80 V; Resolution: 250 μ V.
 1 to 10 V/div: ± 500 V; Resolution: 2.5 mV.

Overdrive Recovery—1 to 99.5 mV/div: To within $\pm 0.25\%$ within 40 ns from ± 8 V step, slew rate less than 1 V/ns.

Typical Noise (RMS)—

1 to 1.99 mV: 0.24 div.
 2 to 4.98 mV: 0.12 div.
 5 to 9.95 mV/div: 0.05 div.
 10 mV to 10 V/div: 0.03 div.

Common-Mode-Rejection Ratio—1 to 99.5 mV/div: 10,000:1 dc to 1 MHz; 2000:1 at 5 MHz (8 V p-p signal).

100 mV to 0.995 V/div: 1000:1 dc to 1 MHz; 100:1 at 10 to 20 MHz (30 V p-p signal).

1 to 10 V/div: 500:1 dc to 250 kHz (100 V p-p signal).

Input Impedance—50 Ω , 1 M Ω in parallel with 15 pF, or 1 G Ω in parallel with 15 pF from 1 to 99.5 mV/div.

Input Coupling Modes—AC, DC, and off (each input).

Max Input Voltage—1-M Ω mode: 1 to 99.5 mV/div: 40 V (dc + peak ac); 100 mV to 0.995 V/div: 400 V (dc + peak ac); 1 to 10 V/div: 500 V (dc + peak ac). (At 1 to 99.5 mV/div, derate max input voltage at 20 dB/decade above 3 MHz; at 100 mV to 10 V/div, derate max input voltage at 20 dB/decade above 1 MHz.)

50 Ω : Input automatically disconnects when the input signal exceeds safe limits. Manual reset.

ORDERING INFORMATION

11A33 Differential Comparator \$3,000
 Includes: Operator manual supplement.

OPTION

Option 24—Includes a P6135 probe pair. + \$395

OPTIONAL ACCESSORY

Service Manual—Order 070-6784-00*1

*1 To order, contact your local Tektronix Sales Office.