



LA314H LA314



MAIN FEATURES

- *470 & 400 MHz*
- *4 Channels, 10 Traces*
- *Up to 500 ps/div Time Resolution*
- *High-Speed Auto Setup*
- *Cursor Measurements*
- *Event and Burst Trigger Modes*
- *Full TV Trigger with Clamping*
- *Save and Recall Panel settings*
- *Frequency Counter*
- *High-Input Offset Range*
- *High-Intensity CRT*
- *Power for FET Probes*

With four channels and 470 MHz bandwidth, these leading-edge analog oscilloscopes offer the highest level of performance available today.

Analog oscilloscopes offer unique benefits in solving specific measurement problems. The analog display provides important clues on relative frequency content of signals mixed together and the occurrence of low rep-rate events on repetitive signals. The LA314's meshless CRT effectively displays these "grey scaling" and "persistence" effects, and its ultrafast display update rate lets you see how the waveforms behave in real time.

The standard multipurpose trigger, wide-input offset range, comprehensive cursors and counter make the LA314s truly universal oscilloscopes.

Typical Applications

- Video, especially VCRs and TVs
- Data recording, finding servo anomalies, glitches and intermittent phenomena in disk-drive head signals
- Eye patterns (for DVDs) in optical disk measurements
- Wide-bandwidth noise measurements on magneto optical disks
- Radar/Lidar burst measurements
- Eye pattern measurements on ATM 155 Mbps signals



FEATURES

DC - 470 MHz, 4-CH, 10 traces

Four channels up to 470 MHz are available, with CH1 and CH2 boasting the widest frequency range with highest sensitivity (2 mV/div). The fastest sweep speed is 500 ps/div.

Input offset function

Suitable for the observation of small signals superimposed on large signals. The DC input offset function features an offset equivalent to ± 500 div. max, which can be applied to CH1 or CH2.

Counter measurement function

Built-in 5-digit counter for frequencies up to 470 MHz.

Save/Recall up to 256 panel settings

Just turn the FUNCTION knob to recall panel setups. Stores up to 256 settings in memory.

Power for FET Probe

Dedicated power supplies for 2 FET probes. Controls DC offset voltage of each probe as well.

TV/HDTV Synchronization

TV triggering is available for NTSC, PAL (SECAM), and HDTV. Field (EVEN, ODD, BOTH) and line select functions are included.

TV Clamp Function

Easy observation of TV video signals with fluctuating average voltage. Back porch level of composite signals is fixed to ground level for display.

SPECIFICATIONS

DISPLAY

CRT: 6-inch rectangular, internal graticule (8 x 10 div) meshless CRT.

Accelerating voltage: Approximately 20 kV.

VERTICAL DEFLECTION SYSTEM

Mode: CH1, CH2, CH3, CH4, ADD (CH1 + CH2), ALT, CHOP

Channel 1, 2 Sensitivity:

2 mV/div - 5 V/div $\pm 2\%$, 11 step (1-2-5).

Fine Adjuster: 2 mV/div - 12.5 V/div continuously variable.

Bandwidth (-3dB):

Model LA314H

470 MHz (5 mV/div - 50 mV/div)
440 MHz (2 mV/div, 100 mV/div - 5 V/div)

Model LA314

400 MHz (2 mV/div - 5 V/div)

BW limiter: 20 MHz and 100 MHz selectable.

VSWR: Less than 1.35:1 over DC - 400 MHz (with 50 Ω input)

Risetime:

Model LA314H

Approx. 745 ps @ 20 mV/div.

Model LA314

Approx. 875 ps.

Input coupling: AC, DC, GND

Input RC: Hi-Z input: 1 M Ω $\pm 1.5\%$ //16 pF ± 2 pF; Lo-Z input: 50 Ω $\pm 1\%$.

Maximum input voltage: 1 M Ω input: ± 400 V max.; 50 Ω input: 5 V RMS

Polarity switching: CH2 only.

Probe sensors: 1:1, 1:10, 1:100 detection possible.

Offset voltage variable range:

Offset voltage / Vertical axis range
 ± 1 V / 2 mV/div - 50 mV/div
 ± 10 V / 0.1 V/div - 0.5 V/div
 ± 100 V / 1 V/div - 5 V/div

Channel 3, 4 Sensitivity:

100 mV, 500 mV/div

Accuracy: $\pm 3\%$ ($+10^\circ\text{C}$ - $+35^\circ\text{C}$)

Bandwidth (-3 dB): 400 MHz

Risetime: Approx. 875 ps (bandwidth x rise time = 0.35).

Input coupling: AC, DC

Input RC: Direct: 1 M Ω $\pm 1.5\%$ //16 pF + 3 pF.

Maximum input voltage: ± 400 V max

Probe sensors: 1:1, 1:10, 1:100 detection possible.

TRIGGERING

A Triggering

Sources: CH1, CH2, CH3, CH4

Coupling: AC, DC, HF-REJ, LF-REJ

Polarity: \pm

TV sync - Line selection:

NTSC: 1 - 525H

PAL (SECAM): 1 - 625H

HDTV: 1 - 1125H

B Triggering

Sources: CH1, CH2, CH3, CH4, LINE

Coupling: AC, DC, HF-REJ, LF-REJ

Polarity: \pm

Event Delay:

Count: Setting range: 1 - 65535
maximum count freq.: 50 MHz

Burst: Time setting range: 0.15 μs - 9.99 s

Auto setup: Input channels: CH1, CH2, Freq. range: 50 Hz - 100 MHz

HORIZONTAL DEFLECTION SYSTEM

Horizontal Display A, ALT, B, X-Y

A sweep

Mode: AUTO, NORM, SINGLE

Sweep time: 5 ns/div - 500

ms/div $\pm 2\%$, 25-step (1-2-5),

Fastest sweep time: 500 ps/div,

Fine adjuster: 5 ns/div - 1.5 s/div.

B sweep

Delay:

Triggered delay: CH1, CH2, CH3, CH4

Continuous delay: B delayed by A

Sweep time: 5 ns/div - 20 ms/div $\pm 2\%$, 21 step (1, 2, 5)

Delay time range: 0.2 div - 10.2 div;

Accuracy: + (setting value x 0.005) + (sweeptime x 0.1) -55 ns

Magnifier (MAG): 10 times

Accuracy: $\pm 5\%$ ($+10^\circ\text{C}$ - $+35^\circ\text{C}$)

X-Y Operation

X axis: CH1

Y axis: CH1, CH2, CH3, CH4, ADD
Accuracy: $\pm 2\%$ (+10°C - +35°C)

CH2 OUT

Output voltage: 20 mV/div $\pm 30\%$
Frequency output: DC - 200 MHz (50 Ω load)
Output resistance: 50 Ω $\pm 20\%$

UTILITIES

Save/Recall Function
Number of panel setups: 256 max

Comments: 12 characters max.

Modulation (Z-axis)

Minimum modulation voltage: 0.5 Vp-p
Polarity: Positive (dark)/negative (bright).
Frequency range: DC - 5 MHz
Max. input voltage: 40 V

Calibrator

Waveform: Square
Repetitive frequency: 1 kHz
Accuracy: $\pm 0.1\%$
Output voltage: 0.6 V
Accuracy: $\pm 1\%$

Power for FET probes

Voltage: 2 each +12 V outlets for 2 FET probes, offset control available.

COUNTER

Display digits: 5 digits shown at all times.
Accuracy: $\pm 0.01\%$
Frequency measurement range: 2 Hz - 400 MHz

CURSOR MEASUREMENT

Voltage axis: 2
Time axis: 2
Time difference: ΔT
Voltage difference: ΔV
 ΔT & ΔV can be simultaneously measured.

POWER

Voltage range: AC 90 V - 250 V
Frequency range: 48 Hz - 440 Hz
Power consumption: 120 VA max

DIMENSIONS AND WEIGHT

Approx. (WDH) 320mm x 160mm x 420mm
Weight: approx. 8.5 kg (19.8 lbs)
Warranty: Three years



LA314 SERIES ORDERING INFORMATION

ANALOG OSCILLOSCOPES:

470 MHz, 4-Channel Analog Oscilloscope
400 MHz, 4-Channel Analog Oscilloscope

PRODUCT CODE

LA314H
LA314

Included with Standard Configuration:

2 each 10:1 10 M Ω Passive Probes
Operators Manual
Panel Cover
Accessory Pouch
Power Cable
2 Fuses

PP005

ACCESSORIES

800 MHz FET Probe
1 GHz FET Probe
Calibrator for LA314/H Series
NIST Calibration for LA314 Series
MIL Standard Calibration for LA314 Series

SFP-4A
SFP-5A
IE-1066
LAXXX-CCNIST[™]
LAXXX-CCMIL