

KEITHLEY

3390

The Keithley Model 3390 is a high-performance 50 MHz arbitrary waveform and function generator featuring a 14-bit vertical resolution, 256k-point waveform memory, and LXI Class C compliance. Designed to deliver superior signal integrity with fast 5 ns rise and fall times, it provides versatile standard and arbitrary waveform generation along with AM, FM, PM, FSK, and PWM modulation. Ideal for precision testing, it includes standard USB, LAN, and GPIB interfaces.

SPECIFICATIONS

General

Interfaces	USB (Type B), LAN (LXI Class C), GPIB
Display	256 × 64 Graphical LCD
Warm-up Time	1 hour

Physical

Power Supply	100 V to 240 V AC (±10%), 50/60 Hz; 100 V to 120 V AC (±10%), 400 Hz; 50 VA max
Operating Temperature	0 to 50 °C °C
Dimensions (W×H×D)	224 mm × 104 mm × 370 mm mm
Weight	3.18 kg kg
Rackmount Size	2U half-rack

Channel Characteristics

Number of Channels	1
Operating Modes	Continuous, Modulation, Sweep, Burst

Waveform Generation

Standard Waveforms	Sine, Square, Ramp, Triangle, Pulse, Noise, DC
Arbitrary Waveform Memory	256k points
Vertical Resolution	14 bits
Sampling Rate	125 MSa/s
Minimum Arbitrary Waveform Length	8 points
Maximum Arbitrary Waveform Length	256k points
Non-Volatile Memory Capacity	4 waveforms (up to 256k points each)

Frequency Specifications

Sine Frequency Range	1 μ Hz to 50 MHz
Square Frequency Range	1 μ Hz to 25 MHz
Pulse Frequency Range	500 μ Hz to 25 MHz
Ramp/Triangle Frequency Range	1 μ Hz to 200 kHz
Noise Bandwidth	20 MHz
Arbitrary Waveform Frequency Range	1 μ Hz to 10 MHz
Frequency Resolution	1 μ Hz
Frequency Accuracy	$\pm$ 10 ppm (90 days), $\pm$ 20 ppm (1 year)

Sine Wave Distortion and Purity

Total Harmonic Distortion (THD)	<0.2% (DC to 20 kHz, 1 Vp-p)
Spurious Noise (Non-Harmonic)	<-70 dBc (DC to 1 MHz)
Phase Noise	<-115 dBc/Hz (at 10 MHz, 10 kHz offset)

Pulse & Square Wave Characteristics

Rise/Fall Time	< 10 ns
Overshoot	<5%
Duty Cycle Range	20% to 80% (up to 25 MHz)
Pulse Width Range	20 ns to 2000 s
Pulse Width Resolution	10 ps or 5 digits
Pulse Jitter (RMS)	<100 ps

Amplitude and Output Characteristics

Amplitude Range (into 50 Ω)	10 mVp-p to 10 Vp-p
Amplitude Range (into Open Circuit)	20 mVp-p to 20 Vp-p
Amplitude Accuracy	$\pm$ (1% of setting + 1 mVp-p) at 1 kHz
Amplitude Units	Vp-p, Vrms, dBm
DC Offset Range (into 50 Ω)	$\pm$ 5 V
DC Offset Range (into Open Circuit)	$\pm$ 10 V
DC Offset Accuracy	$\pm$ (1% of setting + 5 mV + 0.5% of amplitude)
Output Impedance	50 Ω typical
Output Protection	Short-circuit protected
Main Output Connector Type	BNC (Front Panel)

Modulation, Sweep, and Burst

Modulation Types	AM, FM, PM, FSK, PWM
Internal Modulation Sources	Sine, Square, Ramp, Arbitrary
AM Modulation Depth	0.0% to 120.0%
FM Deviation Range	1 μ Hz to 25 MHz
PM Phase Deviation Range	0.0° to 360.0°
FSK Keying Rate	2 mHz to 1 MHz
PWM Duty Cycle Deviation	0% to 100% of pulse width
Sweep Type	Linear or Logarithmic
Sweep Time Range	1 ms to 500 s
Burst Type	Triggered (Counted), Gated
Burst Count Range	1 to 50,000 cycles, or Infinite

Clock, Trigger, and Synchronization

Internal Timebase Reference Accuracy	± 10 ppm
External Reference Input Frequency Range	10 MHz $\pm$ 512 Hz
External Reference Input Level	100 mVp-p to 5 Vp-p
External Reference Output Frequency	10 MHz
External Reference Output Level	632 mVp-p (0 dBm) into 50 Ω
Trigger Input Voltage Level	TTL-compatible
Trigger Input Impedance	10 k Ω typical
Trigger Output Voltage Level	TTL-compatible
Trigger Output Pulse Width	>400 ns
Sync Output Level	TTL-compatible
Sync Output Impedance	50 Ω nominal

Connectivity and Programming

USB Interface Type	USB 2.0 Device Port (Type B)
LAN Interface / LXI Compliance	LXI Class C (10/100 Base-T)
GPIB Interface	IEEE-488.2 GPIB Standard
Programming Command Language	SCPI-1992, IEEE-488.2
Software Drivers	IVI-COM, LabVIEW
External Modulation Input Connector	BNC (Rear Panel)
External Modulation Input Level	± 5 V full scale
External Modulation Input Impedance	10 k Ω
Waveform Creation Software	KiWAVE (included)

Physical and Environmental

Display Resolution	256 × 64 pixels
Power Supply Frequency	50/60 Hz, 400 Hz
Power Consumption	50 VA maximum
Storage Temperature Range	-30 °C to 70 °C
Operating Humidity Range	Max 80% R.H. up to 30 °C, non-condensing

Compliance and Standards

Safety Certificates	Conforms to European Union Low Voltage Directive, IEC 61010-1
EMC Compliance Standards	Conforms to European Union EMC Directive, EN 61326-1
RoHS Directive Compliance	Compliant
Calibration Interval	1 year

Performance

Amplitude Flatness (<10 MHz)	±0.1 dB (relative to 1 kHz, 1 Vpp)
Amplitude Flatness (10 MHz to 50 MHz)	±0.15 dB (relative to 1 kHz, 1 Vpp)
Ramp Linearity	< 0.1% of peak output (typical, at 1 kHz, 1 Vpp, 100% symmetry)
Ramp Symmetry Range	0.0% to 100.0%
Amplitude Resolution	0.1 mV or 4 digits
DC Offset Resolution	1 mV or 4 digits

Timebase & Reference

External Reference Input Impedance	1 kΩ (typical, AC coupled)
External Reference Output Impedance	50 Ω (typical, AC coupled)

Sweep & Burst

Sweep Direction	Up / Down
-----------------	-----------

Trigger

Trigger Input Slope	Rising or Falling (selectable)
Trigger Input Latency	< 100 ns (typical)

Outputs

Output Isolation	42 Vpk maximum to earth
------------------	-------------------------

Environmental

Operating Altitude	up to 3,000 m
Storage Altitude	up to 15,240 m

Spectral Purity

Harmonic Distortion (DC to 1 MHz)	<-70 dBc
Harmonic Distortion (1 MHz to 5 MHz)	<-65 dBc
Harmonic Distortion (5 MHz to 50 MHz)	<-40 dBc
Phase Noise (10 MHz carrier, 10 kHz offset)	<-115 dBc/Hz (typical)

Phase

Phase Offset Range	-360.00° to +360.00°
Phase Offset Resolution	0.001°

Modulation

Internal Modulation Frequency Range	2 mHz to 20 kHz
FSK Keying Rate Range (Internal)	2 mHz to 100 kHz

Burst

Burst Start Phase Range	-360.0° to +360.0°
Burst Start Phase Resolution	0.1°

Pattern Mode

Pattern Length	2 to 256,000 points
Pattern Output Rate	1 μHz to 50 MHz

Arbitrary Waveform

Non-Volatile Arbitrary Waveform Storage	4 waveforms
---	-------------

Trigger Input

Trigger Input Minimum Pulse Width	100 ns
-----------------------------------	--------

TECHNOLOGY

Direct Digital Synthesis (DDS)

APPLICATIONS

Signal generation, educational labs, electronic design, and sensor simulation

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.