TEKTRONIX

AFG310

The Tektronix AFG310 is a 16 MHz Arbitrary Function Generator featuring standard waveforms, built-in custom arbitrary waveform editing, and the ability to download waveforms directly from Tektronix digital oscilloscopes. With its 12-bit vertical resolution, 16 MS/s sample rate, and built-in modulation and sweep capabilities, it serves as a highly versatile signal source for engineering laboratories and system applications.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488.2)
Display	Backlit LCD
Warm-up Time	20 minutes

Physical

Power Supply	90 to 250 V AC, 48 to 63 Hz, 50 W max
Operating Temperature	0 °C to +50 °C °C
Dimensions (W×H×D)	310 mm × 99 mm × 373 mm mm
Weight	4.4 kg

Channel Characteristics

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

Waveform Generation

Standard Waveforms	Sine, Square, Triangle, Ramp, Pulse, DC, Noise
Arbitrary Waveform Memory	4 user waveforms of 16,384 points each
Vertical Resolution	12 bits
Sampling Rate	16 MS/s
User Waveform Presets	USR1: Sin (X)/X, USR2: Double Exponential Pulse, USR3: Damped Sine Wave, USR4: NRZ Random Signal

Frequency Specifications

Sine Frequency Range	10 mHz to 16 MHz
Square Frequency Range	10 mHz to 16 MHz
Pulse Frequency Range	1 mHz to 16 MHz
Triangle/Ramp Frequency Range	10 mHz to 100 kHz
Noise Bandwidth	8 MHz
Arbitrary Waveform Frequency Range	10 mHz to 1.6 MHz
Frequency Resolution	10 mHz or 7 digits
Frequency Accuracy	±50 ppm

Pulse & Square Wave Characteristics

Rise/Fall Time	≤ 20 ns
Pulse Width Range	30 ns to 999 s

Amplitude and Output Characteristics

Amplitude Range (into 50 Ω)	50 mVp-p to 10 Vp-p
Amplitude Range (into Open Circuit)	100 mVp-p to 20 Vp-p
Amplitude Resolution	3 digits
DC Offset Range (into 50 Ω)	±5 V
DC Offset Range (into Open Circuit)	±10 V
Output Impedance	50 Ω

Modulation, Sweep, and Burst

Modulation Types	AM, FM, FSK
AM Modulation Depth	0% to 100%
FM Deviation Range	10 mHz to 8 MHz (Sine, Square, Pulse); 10 mHz to 50 kHz (Triangle, Ramp)
FSK Rate (Internal)	1 mHz to 50 kHz
Sweep Type	Linear, Logarithmic
Sweep Time Range	1 ms to 500 s
Burst Count Range	1 to 60,000 cycles
Burst Type	Triggered, Gated

Clock, Trigger, and Synchronization

External Reference Input Frequency	10 MHz
Trigger Sources	Internal, External, Manual

Software & Connectivity

Direct Waveform Loading	Load waveforms directly from selected Tektronix digital oscilloscopes via GPIB

Performance

Sine Flatness	±0.15 dB (up to 100 kHz), ±0.2 dB (100 kHz to 1 MHz), ±0.5 dB (1 MHz to 16 MHz)
Harmonic Distortion	<-65 dBc (DC to 20 kHz), <-60 dBc (20 kHz to 100 kHz), <-45 dBc (100 kHz to 1 MHz), <-35 dBc (1 MHz to 16 MHz)
Total Harmonic Distortion	<0.05% (20 Hz to 20 kHz, 1 Vp-p)
Spurious Distortion	<-65 dBc (DC to 1 MHz), <-55 dBc (1 MHz to 16 MHz)
Phase Noise	<-110 dBc/Hz at 10 kHz offset (10 MHz output)

Inputs & Outputs

Sync Output Level	TTL compatible into >50 Ω
External Trigger Input Impedance	10 kΩ
External Trigger Maximum Input Voltage	±10 V
External Trigger Minimum Pulse Width	100 ns
External AM Modulation Input Impedance	10 kΩ
External AM Modulation Input Level	±5 V for 100% modulation
Reference Clock Input Impedance	1 kΩ
Reference Clock Input Level Range	1 Vp-p to 10 Vp-p
Reference Clock Output Level	1 Vp-p into 50 Ω
Reference Clock Output Impedance	50 Ω

Environmental

Storage Temperature Range	-20 °C to +60 °C
Operating Altitude	Up to 3,000 m
Non-Operating Altitude	Up to 15,000 m

Compliance

Safety Standards	UL3111-1, CAN/CSA-C22.2 No. 1010.1, EN 61010-1

TECHNOLOGY

Direct Digital Synthesis (DDS)

APPLICATIONS

Electronic Test and Measurement

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