Dual Channel Dds Function Arbitrary Waveform Generator High Precision Signal Source

Item Number: CD08

Introduction

Engineered for advanced laboratory research and electronic testing this dual channel DDS arbitrary waveform generator delivers 200MSa/s sampling 13-bit vertical resolution versatile modulation capabilities integrated frequency counting and exceptional signal fidelity across demanding industrial and R&D applications worldwide

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Application	Description	Key Benefit
Battery & Electrochemical Impedance Testing	Generates ultra-stable low-frequency sinusoidal and arbitrary excitation signals to analyze electrochemical cell dynamics and interface kinetics.	Delivers clean sub-hertz signals down to 1 µHz with precise amplitude control down to 2 mVpp.
Semiconductor & Sensor Calibration	Provides precise pulse, ramp, and analog-modulated signals to evaluate sensor response curves, ADC linearity, and operational amplifier thresholds.	Exceptional amplitude flatness (±0.4 dB) and low harmonic distortion (<0.8%) prevent measurement artifacts.
Power Electronics & Gate Driver R&D	Simulates gate drive pulses, square waves with <20 ns transition times, and specialized burst sequences to stress power semiconductor switches.	High edge-transition speed and robust short-circuit output protection safeguard instrumentation.
Communication Systems Simulation	Generates ASK, FSK, and PSK digitally keyed signals along with AM/FM/PM modulated carriers for RF frontend and receiver testing.	Broad carrier frequency support up to 60 MHz with versatile internal or external modulation control.
Ultrasonic & Piezoelectric Device Driving	Delivers phase-synchronized dual-channel excitation across resonant transducers, piezoelectric actuators, and acoustic sensors.	High-resolution 0.1° phase adjustment facilitates precise multi-channel resonant alignment.
Academic Research & Automation Test Benches	Serves as a versatile signal stimulus and automated verification source in university laboratories and industrial automated test equipment (ATE).	Standard RS232/USB interfaces facilitate rapid SCPI command scripting and automated data logging.

Model Series / Item Number	CD08-15	CD08-25	CD08-40	CD08-60
Sine Wave Frequency Range	1 µHz to 15 MHz	1 µHz to 25 MHz	1 µHz to 40 MHz	1 µHz to 60 MHz
Square Wave Frequency Range	1 µHz to 15 MHz	1 µHz to 15 MHz	1 µHz to 15 MHz	1 µHz to 15 MHz
Triangle Wave Frequency Range	1 µHz to 15 MHz	1 µHz to 15 MHz	1 µHz to 15 MHz	1 µHz to 15 MHz
Pulse Wave Frequency Range	100 µHz to 6 MHz	100 µHz to 6 MHz	100 µHz to 6 MHz	100 µHz to 6 MHz
Arbitrary Waveform Range	1 µHz to 6 MHz	1 µHz to 6 MHz	1 µHz to 6 MHz	1 µHz to 6 MHz
Noise Bandwidth (-3dB)	7 MHz bandwidth	7 MHz bandwidth	7 MHz bandwidth	7 MHz bandwidth
Frequency Resolution	1 µHz	1 µHz	1 µHz	1 µHz
Frequency Accuracy	±5 ppm	±5 ppm	±5 ppm	±5 ppm
Frequency Stability	±1 ppm / 3 hours	±1 ppm / 3 hours	±1 ppm / 3 hours	±1 ppm / 3 hours

Specification Parameter	Technical Value / Characteristic
Waveform Types	Sine, Square, Triangle, Pulse, Noise, Arbitrary (including DC)

Specification Parameter	Technical Value / Characteristic
Arbitrary Waveforms	32 built-in profiles; 50 user-defined customizable storage locations
Waveform Length	8,192 points (8k depth)
Sampling Rate	200 MSa/s
Vertical Resolution	13-bit
Sine Harmonic Suppression	≥ 45 dBc (< 1 MHz); ≥ 40 dBc (1 MHz to 20 MHz)
Total Harmonic Distortion (THD)	< 0.8% (20 Hz to 20 kHz, 0 dBm)
Square Wave Rise / Fall Time	< 20 ns (Overshoot < 5%)
Square Duty Cycle Range	Freq < 100 kHz: 1%–99%; 100 kHz ≤ Freq < 5 MHz: 20%–80%; Freq ≥ 5 MHz: 40%–60% (0.1% resolution)
Pulse Width & Edge Transitions	Pulse width min. 20 ns (1 ns resolution); Edge transition time min. 20 ns; Jitter 6 ns + 0.1% of period
Sawtooth / Ramp Linearity & Symmetry	Linearity ≥ 98% (0.01 Hz to 10 kHz); Symmetry 0.0% to 100.0% (0.1% resolution)
Output Amplitude Range (50Ω load)	Freq < 10 MHz: 2 mVpp to 20 Vpp; 10 MHz ≤ Freq < 30 MHz: 2 mVpp to 10 Vpp; Freq ≥ 30 MHz: 2 mVpp to 5 Vpp
Amplitude Resolution & Accuracy	1 mV resolution; Accuracy: ±(1% of setting + 2 mVpp) (1 kHz sine, 0 offset, > 10 mVpp)
Amplitude Flatness (ref 1 kHz, 1Vpp)	±0.4 dB (< 10 MHz); ±1.0 dB (≥ 10 MHz)
DC Offset Range & Resolution	Amp > 0.1 V: ±10 Vpk (ac + dc); 2 mV < Amp ≤ 0.1 V: ±0.250 Vpk (ac + dc); Resolution: 1 mV
Phase Adjustment & Resolution	0° to 359.9° (0.1° resolution)
Output Protection & Impedance	50 Ω ± 10% (typical); Output protected against short-circuit conditions up to 60 seconds

Function Type	Supported Specifications
Modulation Channels & Carriers	CH1 or CH2 (Default CH1); Sine, Square, Ramp, Pulse, Arbitrary (except DC)
AM Modulation	Source: Internal/External; Mod Wave: Sine, Square, Triangle, Ramp; Mod Freq: 2 mHz–20 kHz; Depth: 0%–120%
FM Modulation	Source: Internal/External; Mod Wave: Sine, Square, Triangle, Ramp; Mod Freq: 2 mHz–20 kHz; Dev: 0 to max carrier freq
PM Modulation	Source: Internal/External; Mod Wave: Sine, Square, Triangle, Ramp; Mod Freq: 2 mHz–20 kHz; Phase Dev: 0°–360°
ASK / FSK Modulation	Source: Internal/External; Mod Wave: 50% square; Rate: 2 mHz–1 MHz; Depth: 0 to carrier amplitude / FSK keying
PSK Modulation	Source: Internal/External; Mod Wave: 50% square; Modulation Rate: 2 mHz–1 MHz; Phase Deviation: 0°–360°
Sweep Function	Channel: CH1/CH2; Type: Linear, Logarithmic; Sweep Time: 1 ms to 500.000 s; Direction: Forward, Reverse
Burst Function	Pulse Count: 1 to 65,535 cycles, Infinite, Gated; Start/Stop Phase: 0°–360°; Internal Period: 1 µs to 500 s
Trigger Source & Inputs	Trigger: Internal, External, Manual; Input Voltage: 2 Vpp–20 Vpp (AC/DC); Pulse Width: > 100 ns
Analog Modulation Input	Input Impedance: 1 MΩ; Voltage Signal Range: ±2.5 V (ac + dc)
SYNC Output	TTL-compatible, 50 Ω impedance, Rise/Fall < 25 ns, Maximum Frequency 25 MHz

Specification Parameter	Value / Operating Range
Frequency Counter Range	1 Hz to 100 MHz (Gate time: 0.01 s to 10 s continuously adjustable)
Counter Capacity & Coupling	0 to 4,294,967,295 (32-bit); Manual counting mode; AC or DC coupling (Input: 2 Vpp to 20 Vpp)
Period & Pulse Width Measurement	1 ns resolution; Maximum measurable duration: 20 s
Display Screen	3.5-inch TFT LCD, 480 × 320 resolution, 16-bit true color with bilingual (EN/ZH) menu support
Communication Interfaces	RS232 (Standard), USB Device (Standard), USB Host (Optional)
Power Supply Voltage & Consumption	220V AC ± 10% or 110V AC ± 10% (Optional); Power consumption < 15 W
Operating & Storage Temperature	Operating: +10°C to +40°C; Non-operating / Storage: -10°C to +60°C
Environmental Humidity Range	≤ 90% Relative Humidity (within 0°C to 40°C range)
Unit Dimensions & Weight	265 mm (W) × 105 mm (H) × 305 mm (D); Net Weight: 2.6 kg
Standard Included Accessories	Model 30A51 3-Core Power Cord (1 pc), Model 33A52 BNC Coaxial Cable (1 pc)