

# DDS FUNCTION GENERATOR

## ATFxxD Series Function Generator(ATF20D, ATF40D)



ATF20D	40uHz~20MHz
ATF40D	40uHz~40MHz

### INTRODUCTION

ATFxxD series Function generator uses Direct Digital Synthesis (DDS) technology. Its outstanding performance and system features make it a perfect solution for your testing requirement. The simplified and optimized design of the front panel and dual-language (English/Chinese) TFT display interface make your testing much easier for operation and observation. Additionally, the extendable optional functions can also improve your system characteristics.

### FEATURES

- Direct Digital Synthesis(DDS) technology, 2 independent output channels
- 3.5-inch TFT LCD display
- 32 kinds of standard or build-in fixed waveforms
- Minimum stable output waveform: 1mV(50Ω)
- Multiple modulation functions: FM, FSK, ASK, PSK
- Frequency sweep, amplitude sweep, burst and A + B functions
- Count the frequency, period, amplitude RMS value or peak-to-peak value
- Over voltage, over current, short circuit protection, reverse voltage protection.
- Optional configurations: RS232 interface, USB interface, Frequency Counter, Power Amplifier

# SPECIFICATIONS

## Output A Characteristics

WAVEFORM	Waveform type	sine, square, pulse, DC
	Waveform length	4~16000 points
	WAVEFORM	WAVEFORM
	Sample rate	180 MSa/s
	Waveform Amplitude Resolution	10 bits
	Sinusoidal Harmonic Rejection	$\geq 50\text{dBc}$ ( $\leq 1\text{MHz}$ ), $\geq 40\text{dBc}$ (1MHz~20MHz), $\geq 30\text{dBc}$ (20MHz~40MHz)
	Sine Wave Total Distortion	$\leq 0.5\%$ (20Hz~200kHz)
	Pulse Wave and Square Wave	rise or fall time: $\leq 20\text{ns}$ , overshoot: 5%
	Square Wave Duty Cycle	50%
	FREQUENCY	Frequency range
Frequency Accuracy		$\pm(5 \times 10^{-5} + 40\text{mHz})$
AMPLITUDE	Amplitude range	2mVpp~20Vpp (high impedance) Resolution: 20mVpp (amplitude > 2V), 2mVpp (amplitude < 2V)
	Amplitude Resolution	20mVpp (amplitude > 2V), 2mVpp (amplitude < 2V)
	Amplitude Accuracy	$\pm(1\% + 2\text{mVrms})$ (high impedance, RMS, frequency 1 kHz)
	Amplitude Flatness	$\pm 5\%$ (frequency < 1MHz), $\pm 10\%$ (frequency between 1MHz~10MHz) $\pm 20\%$ (frequency between 10 MHz~60MHz)
	Amplitude stability	$\pm 0.5\%$ / 3 hours
	Output impedance	50 $\Omega$
	Sine Wave Amplitude Setting Range (50 $\Omega$ )	1mVpp~10Vpp, when output frequency $\leq 10\text{MHz}$ 1mVpp~5Vpp, when output frequency $\leq 40\text{MHz}$
	Amplitude Setting Range (high impedance)	2mVpp~20Vpp, when output frequency $\leq 10\text{MHz}$ 2mVpp~10Vpp, when output frequency $\leq 40\text{MHz}$
OFFSET	Offset Range	$\pm 10\text{V}$ (high impedance)
	Offset Resolution	20mV
	Offset accuracy	$\pm(1\% + 20\text{mV})$
SWEEP	Sweep Type	Frequency or amplitude Sweep
	Sweep Mode	Linear or log sweep
	Sweep Range	Free to set the start and stop points
	Sweep Time	100ms~900s
	Sweep Direction	Up, down, up-down
	Control mode	Automatic or manual sweep
FM	Modulation signal	Internal or external waveforms
	FM Deviation	0%~20%
AM	Modulation signal	Internal or external waveforms
	AM Depth	0%~120%
SHIFT KEYING	FSK	Free to set the hop frequency and the carrier frequency
	ASK	Free to set the hop amplitude and the carrier amplitude
	PSK	Hop Phase: 0 ~ 360°, Max. resolution: 11.25°
	Alternate rate	10ms ~ 60s

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### Output B Characteristics

WAVEFORM	Waveform type	32 kinds of waveforms, like sine, square, triangle, sawtooth, ladder etc
	Waveform length	1024 points
	Sample rate	12.5 MSa / s
	Amplitude resolution	8 bits
FREQUENCY	Frequency range	40mHz ~ 1MHz(sine) 10mHz ~ 100kHz (other waveforms)
	Frequency Resolution	10mHz
	Frequency Accuracy	$\pm (1 \times 10^{-5} + 10\text{mHz})$
AMPLITUDE	Amplitude range	50mVpp ~ 20Vpp (high impedance)
	Amplitude Resolution	20mVpp
	Output impedance	50 $\Omega$
HARMONIC	Channel B frequency is the harmonic wave of channel A.	
	Harmonic Time	0.1 ~ 250.0 times
	Harmonic Frequency	< 1MHz
	Phase Adjustment	coarse adjustment: 11.25 degree/step, fine adjustment: 2 degree/step
BURST	Channel B signal is used as burstsignal	
	Frequency of Channel B	40mHz ~ 1MHz
	Burst Frequency	30mHz ~ 50kHz
	Burst count	1 ~ 65000 cycles
	Burst mode	continuous burst and single burst

### TTL Output Characteristics

TTL	Waveform	rise/fall time 20ns (square)
	Frequency	40mHz ~ 1MHz
	Amplitude	TTL, CMOS compatible, low level < 0.3V, high level > 4V

### GENERAL CHARACTERISTICS

Power Supply	AC220V (1 $\pm$ 10%) AC110V (1 $\pm$ 10%) (Pay attention to the voltage selection on rear panel)
Frequency	50Hz (1 $\pm$ 5%)
Power Consumption	< 45VA
Operating Temperature	0 $^{\circ}$ C to +40 $^{\circ}$ C
Operating Humidity	80% R.H
Operation Characteristics	Keypad operation and rotary knob operation
Dimensions	415mm x 295mm x 195mm
Display	TFT display, 320*240
Weight	3.5kg

### ACCESSORIES INCLUDED

Standard		Optional Parts
ATFxxD Series DDS Function Generator	1 unit	RS232 interface
Power cord	1 pc	USB universal serial bus interface
Q9 testing cable	1 Pc	Power amplifier (Mode/No: ATF20D/PA/232)
Q9 BNC-clip test lead	1 pc	Frequency counter (Mode/No: ATF20D/FC/232)
User's Guide	1 pc	
RS232 cable (optional)	1 pc	