Introduction to MFG-1000 Series Dual Channel Function/Arbitrary Waveform Generator

The MFG-1000 series dual channel function/arbitrary waveform generator uses direct digital synthesis (DDS) technology to establish stable and accurate output signals.The instrument output channel is set with CH1 channel output and CH2 channel output.Both channels can output basic waveforms and arbitrary waves.You can choose one channel for various modulation waveform outputs, and the other channel for basic waveform output.

Main Features

- Adopting a 2.4 inch 320x240TFT LCD screen with a clear graphical interface;
- Support for Chinese and English menus;
- Dual channels are independent of each other and have phase synchronization function;
- 200MSa/S sampling rate, 13 bit vertical resolution, 8k storage depth;
- Built in 5 basic waveforms and 32 arbitrary waveforms;
- Waveform storage; Support internal storage of 50 sets of user-defined edited waveforms;
- Pulse wave output with adjustable edge time;
- Internal AM, FM, and PM modulation functions (optional for external AM, FM, and PM modulation);
- Internal/external ASK, FSK, PSK modulation functions;

- Dual channel output, with a maximum output frequency of 60M;
- Output of linear/logarithmic sweep and burst (pulse train) waveforms;
- Equipped with a 100MHz high-precision frequency meter and 32-bit counter;
- Standard USB Device interface; Optional external analog modulation interface;
- Equipped with multi-functional arbitrary waveform editing software.

O utline specification

POWER	
Input voltage	AC 110~240V，50~60Hz
Consumption	<15W
D ISPLAY	
Type	2.4inch TFT LCD
Resolution	320×240
Color	16M color
E nvironment	
Temperature range	Operation ： 10℃~+40℃ Non-operation ： -10℃~+60℃
Cooling method	**natural cooling**
Humidity range	**+ 35℃ below: 90%relative humidity** **+35℃ ~ +40℃：≤60%relative humidity**
Interface	USB Device

Standard accessories:

- Power cord 1pc ；
- BNC cable 1pc ；

Optional accessories ：

- BNC-alligator cable ；
- Cabinet installation kit ；
- USB cable.

Product technical indicators

Frequency features					
Model	MFG-1220	MFG-1230	MFG-1240	MFG-1250	MFG-1260
Sine wave	1μHz~ 20MHz	1μHz ~ 30MHz	1μHz ~ 40MHz	1μHz ~ 50MHz	1μHz ~ 60MHz

Square wave	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz
Triangular wave	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz
Pulse wave	100 μ Hz ~ 6MHz	100 μ Hz ~ 6MHz	100 μ Hz ~ 6MHz	100 μ Hz ~ 6MHz	100 μ Hz ~ 6MHz
Arbitrary wave	1μHz ~ 6MHz	1μHz ~ 6MHz	1μHz ~ 6MHz	1μHz ~ 6MHz	1μHz ~ 6MHz
Frequency resolution	1μHz				
Frequency accuracy	±20ppm				
Frequency stability	±1ppm/3hour				

Waveform characteristics	
Waveform type	Sine wave, square wave, triangular wave, pulse, noise, arbitrary wave (including DC). There are 32 arbitrary waveforms and 50 user-defined waveforms among them.
Waveform length	8192 points
Waveform sample rate	200MSa/s
Waveform vertical resolution	13digits

sine wave characteristics		
Sine wave	Harmonic suppression system	⩾45dBc(<1MHz); ⩾40dBc(1MHz~20MHz)
	Total harmonic distortion	<0.8%(20Hz ~ 20kHz, 0dBm)

Square wave signal characteristics		
Square wave	Up / down time	<20ns
	overshoot	<5%
	Duty cycle	Frequency <100 kHz: 1%~99%; 100 kHz frequency <5 MHz: 20% ~ 80%; 5 MHz frequency: 40% ~ 60% (0.1% resolution)

Pulse wave characteristics		
Impulse wave	Pulse length	Minimum of 20ns; 1ns resolution
	Bedge jump time	Minimum of 20ns;
	Overshoot	<5%
	Shake	Of 6ns + 0.1% of the cycle

Saw tooth wave characteristics			
Sawtooth wave	degree of linearity	⩾98%(0.01Hz~10kHz)	
	symmetry	0.0-100.0% (resolution 0.1%)	
Output characteristic			
Amplitude			
Range of amplitude	Frequency of <10 MHz	10 MHz frequency <30 MHz	And the 30 MHz frequency
	2mVpp ~ 20Vpp	2mVpp ~10Vpp	2mVpp ~5Vpp
Amplitude resolution	1mV		
Accuracy of amplitude	Set the value of 1% + 2 mVpp (1 kHz sine wave, 0 offset,> 10 mVpp)		
Flat amplitude (1 Vpp, relative to the 1k sine wave)	±0.4dB <10MHz ; ±1.0dB ⩾10MHz。		
Output impedence	50 Ω ± 10% (typical)		
Protect	All signal outputs can operate within 60s under load short circuit		
Shifting			
	Output amplitude> 0.1V	2 mV < Output amplitude ⩽0.1V	
Output range	±10Vpk, ac + dc	±0.250Vpk, ac + dc	
The bias resolution	1mV		
phase characteristic			
Phase regulation range	0~359.9°		
Phase resolution	0.1°		
External measurement function			
Frequency meter function	Frequency measurement range	1Hz ~ 100MHz	
	Gate time	0.01s ~ 10s continuous regulation	
Counter function	counter range	0 ~ 4294967295	
	Count the way	hand movement	
Input signal voltage range	2Vpp~20Vpp		
coupled modes	DC or AC		
Pulse width measurement	1ns resolution with a maximum measurement of 20s		
Cycle measurement	1ns resolution with a maximum measurement of 20s		
AM modulate			
Outgoing channel	And either CH 1 or CH2		
Signal carrier	Sine wave, square wave, zigzag wave, pulse wave, arbitrary wave (except DC)		
Source	Internal / external VCO (external is optional)		

Modulation wave	Sine wave, square wave, triangular wave, upper oblique wave and lower oblique wave
Modulating frequency	2mHz~20kHz
Depth of modulation	0%~120%
FM modulate	
Outgoing channel	And either CH 1 or CH2
Signal carrier	Sine wave, square wave, zigzag wave, pulse wave, arbitrary wave (except DC)
Source	Internal / external VCO (external is optional)
Modulation wave	Sine wave, square wave, triangular wave, upper oblique wave and lower oblique wave
Modulating frequency	2mHz~20kHz
frequency deviation	0~ Maximum carrier frequency
PM modulate	
Outgoing channel	And either CH 1 or CH2
Signal carrier	Sine wave, square wave, zigzag wave, pulse wave, arbitrary wave (except DC)
Source	Internal / external VCO (external is optional)
Modulation wave	Sine wave, square wave, triangular wave, upper oblique wave and lower oblique wave
Modulating frequency	2mHz~20kHz
Phase deviation	0°~360°
ASK modulate	
Outgoing channel	And either CH 1 or CH2
Signal carrier	Sine wave, square wave, zigzag wave, pulse wave, arbitrary wave (except DC)
Source	Internal / external
Modulation wave	Square wave of the 50% duty cycle
Modulation rate	2mHz~1MHz
Modulation amplitude	0~ The carrier amplitude
FSK modulate	
Outgoing channel	And either CH 1 or CH2
Signal carrier	Sine wave, square wave, zigzag wave, pulse wave, arbitrary wave (except DC)
Source	Internal / external
Modulation wave	Square wave of the 50% duty cycle
Modulation rate	2mHz~1MHz
Frequency hopping	Range of carrier frequency
PSK modulate	

Outgoing channel	And either CH 1 or CH2
Signal carrier	Sine wave, square wave, zigzag wave, pulse wave, arbitrary wave (except DC)
Source	Internal / external
Modulation wave	Square wave of the 50% duty cycle
Modulation rate	2mHz~1MHz
Modulation phase	0°~360°
Scan frequency function	
Scan frequency channel	And either CH 1 or CH2
Scan frequency type	Linear scan, and logarithmic scan
Scan frequency time	1ms ~ 999.999s
Set the scope	The start point and the end points are arbitrarily set
Scan the direction of the frequency	Forward, reverse, and round-trip
Trigger source	Internal, external, and manual work
Catchment characteristics	
Outgoing channel	And either CH 1 or CH2
Signal carrier	Sine wave, square wave, serrated wave, pulse wave, noise, arbitrary wave (except DC)
Pulse count	1~1048575 or unlimited, gated
Start / stop phase	0~360°
Intercycle	1μ s~500s
The gating source	outside
Trigger source	Internal, external, and manual work
Trigger input	
Input signal voltage range	2Vpp~20Vpp
Coupled modes	DC or AC
Pulse length	>100ns
Reaction time	<500ns (pulse string)
	<10 μ s (sweep)
Analulated modulation input (optional)	
Input impedence	1M Ω
Signals range	±2.5V ac+dc