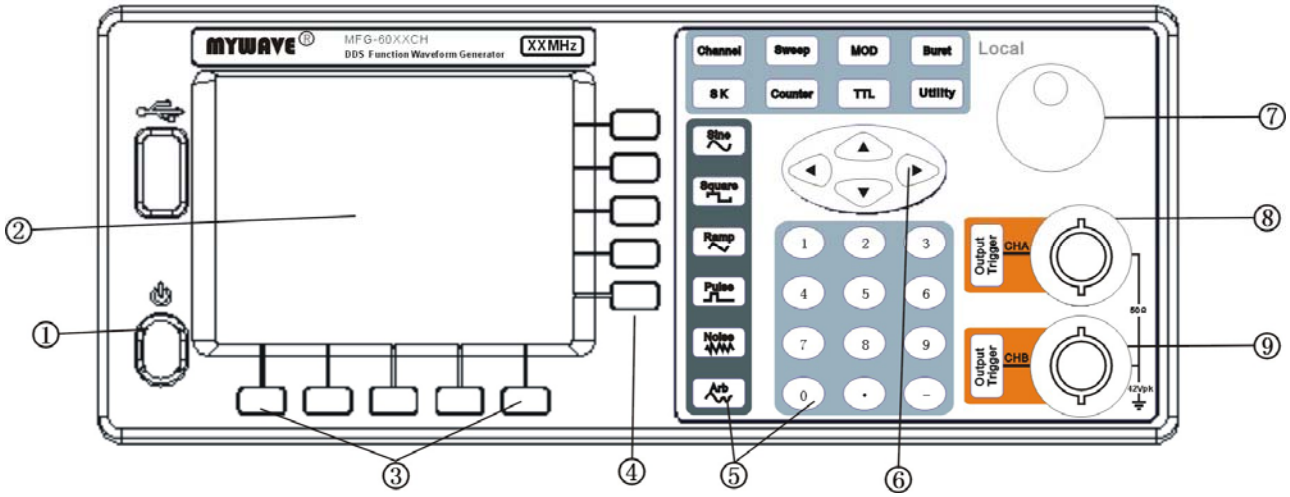
MFG-6000CH Series
Function/Arbitrary Waveform Generator

Main Features

- Direct Digital Synthesis (DDS) technology, 2 independent output channels
- 3.5-inch TFT display, English/Chinese menu
- 100MSa/s sample rate, 8bits vertical resolution, 1kpts waveform length
- 32 built-in pre-stored waveforms, 8 user defined arbitrary waveforms
- Minimum stable output waveform: 1mV(50Ω)
- Multiple modulation functions: FM, FSK, ASK, PSK
- Frequency sweep, amplitude sweep and burst functions
- Over voltage, over current, output short-circuit and reverse voltage protections
- Standard parts: RS232 interface
- Optional parts: 200 MHz frequency counter, 7W(8Ω) power amplifier

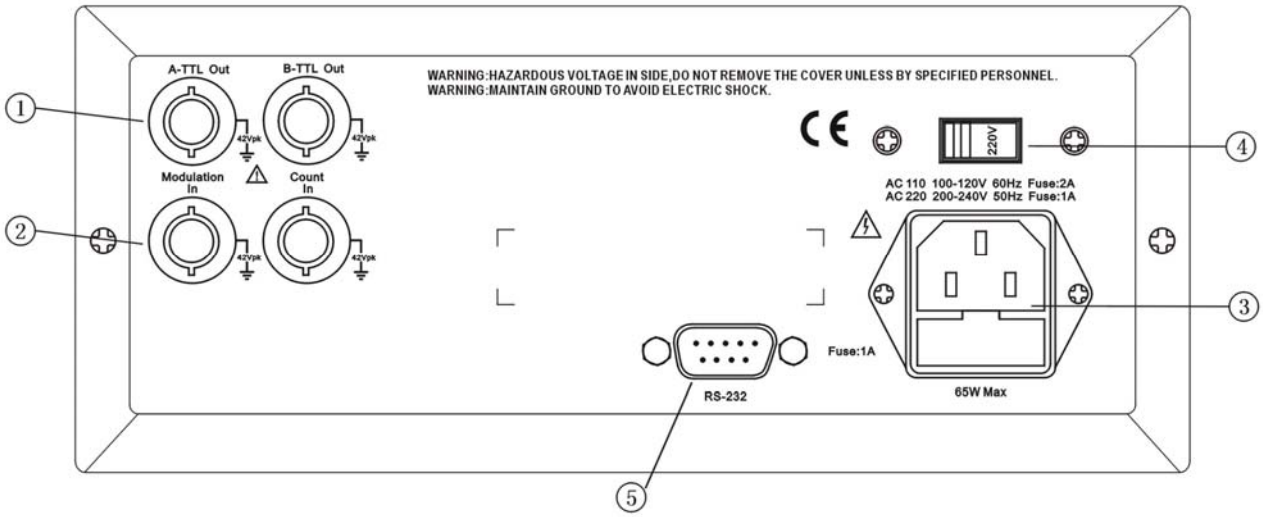
Front Panel and Real Panel

Front Panel



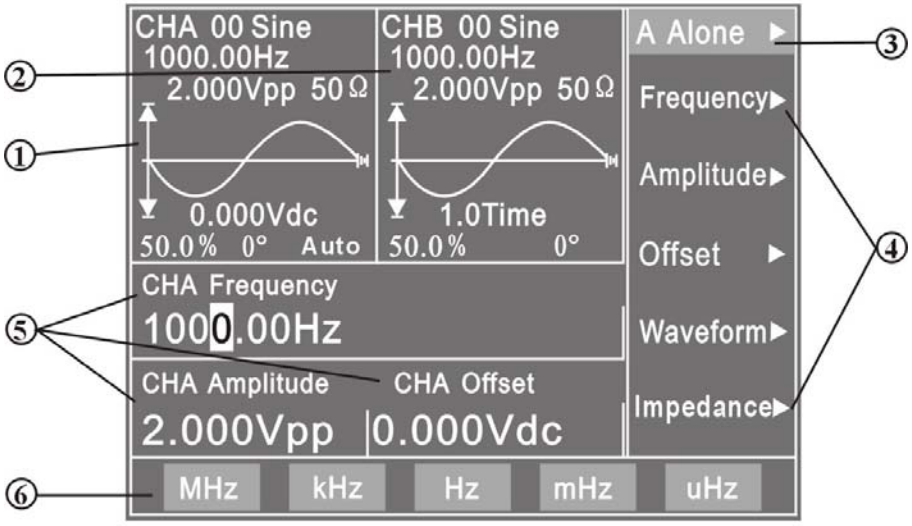
1. Power switch 2. TFT display 3. Unit soft key 4. Software option
5. Function key and Numeric keypad 6. Direction key 7. Rotary knob
8. Channel A output/trigger 9. Channel B output/trigger

Real Panel



1. A-TTL/B-TTL output (BNC) 2. Modulation/External signal input (BNC)
3. Power connector with fuse 4. AC110V/220V power selection switch
5. RS232 connector

Description of TFT Display



1. **Channel A waveform display**: the waveform of channel A and preset parameters are displayed at the upper-left portion.
2. **Channel B waveform display**: the waveform of channel B and preset parameters are displayed at the upper-middle portion.
3. **Function menu**: The first line on the right of the TFT displays the function menu.
4. **Option menu**: The second to the sixth lines display the option menu.
5. **Parameter menu**: Three of the waveform parameters of channel A are displayed at the middle of the lower-left portion.
6. **Unit menu**: The bottom line displays the unit menu.

Technical Specifications

Model	MFG-6005CH	MFG-6010CH	MFG-6015CH	MFG-6020CH
Frequency range(sine)	1μHz~5MHz	1μHz~10MHz	1μHz~15MHz	1μHz~20MHz
Output Characteristics of Channel A				
Waveform Characteristics				
Waveform type	32 built-in pre-stored waveforms including: Sine, Square, Triangle, Ramp, Pulse etc. and 8 user defined arbitrary waveforms			
Waveform length	1024 points			
Sample rate	100MSa/s			
Waveform amplitude resolution	8bits			
Sinusoidal harmonic rejection	≥40dBc (<1MHz), ≥35dBc (1MHz~20MHz)			
Sine wave total distortion	≤1% (20Hz~200kHz)			
Square rise/fall edge time	≤35ns			
Square overshoot	≤10%			
Square wave duty cycle	1%~99%			
Frequency Characteristics				
Frequency range	sine: 1μHz~Max.frequency (MHz)			

	square: 1μHz~5MHz other waveforms: 1μHz~1MHz
Frequency resolution	1μHz
Frequency accuracy	$\pm(5\times10^{-5})$
Frequency stability	$\pm5\times10^{-6}$/3 hours
Amplitude Characteristics	
Amplitude range	2mVpp~20Vpp 40mHz~10MHz (high impedance) 2mVpp~15Vpp 10MHz~15MHz (high impedance) 2mVpp~8Vpp 15MHz~20MHz (high impedance)
Amplitude resolution	20mVpp (amplitude>2Vpp), 2mVpp (amplitude<2Vpp)
Amplitude accuracy	±(1%+2mVrms) (high impedance, true RMS, frequency at 1kHz)
Amplitude stability	±0.5%/3 hours
Amplitude flatness	±5% (frequency<10MHz), ±10% (frequency >10MHz)
Output impedance	50Ω
DC Offset Characteristics	
Offset range	±10V (high impedance, attenuation 0dB)
Resolution	20mVdc
Offset accuracy	±(1%+20mVdc)
Sweep Characteristics	
Sweep type	frequency sweep, amplitude sweep
Sweep range	free to set the start and stop points
Sweep time	100ms~900s
Sweep direction	Up, Down, Up-Down
Sweep mode	linear, logarithmic
Control mode	auto sweep or manual sweep
Frequency Modulation Characteristics	
Carrier signal	channel A signal
Modulation signal	internal signal of channel B or external signal
FM deviation	0%~20%
Shift Keying Characteristics	
FSK	free to set carrier frequency and hop frequency
ASK	free to set carrier amplitude and hop amplitude
PSK	hop phase 0~360°, max. resolution 1°
Alternative rate	10ms~60s
Burst Characteristics	
Carrier signal	channel A signal
Trigger signal	TTL_A signal
Burst count	1~65000 cycles
Burst mode	Internal TTL, External, Single
Output Characteristics of Channel B	
Waveform Characteristics	
Waveform type	32 built-in pre-stored waveforms including: Sine, Square, Triangle, Ramp, Pulse etc. and 8 user defined arbitrary waveforms
Waveform length	1024 points
Sample rate	12.5MSa/s

Waveform amplitude resolution	8bits
Square duty cycle:	1%~99%
Frequency Characteristics	
Frequency range	Sine: 1μHz~1MHz Other waveforms: 1μHz~100kHz
Frequency resolution	1μHz
Frequency accuracy	$\pm(1\times10^{-5})$
Amplitude Characteristics	
Amplitude range	50mVpp~20Vpp (high impedance)
Amplitude resolution	20mVpp
Output impedance	50Ω
Burst Characteristics	
Carrier single	channel B signal
Trigger signal	TTL_B signal
Burst count	1~65000 cycles
Burst mode	Internal TTL, External, Single
TTL Output Characteristics	
Waveform characteristics	Square, rise/fall time≤20ns
Frequency characteristics	10mHz~1MHz
Amplitude characteristics	TTL, CMOS compatible, low level<0.3V, high level>4V
Remote control	
Remote interface	Standard RS232 serial interface
Common Characteristics	
Power source	Voltage: AC220V±10%, AC110V±10% (Pay attention to the position of voltage selection switch) Frequency: 50Hz ±5% Power: <45VA
Environment	Temperature: 0~40℃ Humidity: <80%
Operation characteristics	Keypad operation and rotary knob operation
Display	TFT display, 320*240, English, Chinese (simplified), Chinese (traditional)
Manufacturing technology	Surface Mount Technology, Integrated Circuit. High reliability and stability.
Accessories	Power cord, Q9 test lead, Q9 BNC-clip test lead, Operation manual, RS232 cable, RS232 interface software CD
Dimension	Machine dimension: 385(D)×260(W)×110(H)mm Chassis dimension: 415(D)×295(W)×195(H)mm
Weight	3.5kg
Optional Parts Characteristics	
Frequency counter	Testing frequency range: 1Hz~200MHz Input signal amplitude: 100mVpp~20Vpp
Power amplifier	Max. output power: 7W (8Ω), 1W (50Ω) Max. output voltage: 22Vpp Frequency bandwidth: 1Hz~200kHz

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