PRODUCT CATALOG

Key Features

1. 2.4-inch 320x240 TFT LCD with clear graphic interface
2. Chinese / English menu available
3. The two channels are independent of each other, with phase synchronization function
4. Sampling rate: 200MSa/S, vertical resolution: 13 bit and storage depth: 8k
5. 5 basic waveform and 32 arbitrary waveform in-built
6. Waveform storage; Supports internal storage of 50 groups of user-defined edited waveform
7. Pulse wave output set in edge time
8. Internal AM, FM, PM modulation function (External AM, FM, PM modulation matching)
9. Internal/external ASK, FSK and PSK modulation function
10. Two-channel output, the highest output frequency is 60M
11. Output of linear/logarithmic frequency sweep and burst waveform
12. Frequency meter of high precision of 100MHz and 32-bit counter
13. With USB Device,external analog modulation interface
14. Multi-functional arbitrary waveform editing software equipped

DDS Signal Generator/Counter

Instrument introduction

- *These series two-channel function/arbitrary waveform generator is equipped with direct digital synthesis (DDS) technology which enables output signal to be stable, accurate and low distortion.*
- *This series of instruments are divided into three models, the main difference is the maximum frequency of sine wave output,they are 20MHz、40MHz and 60MHz.*

MTQ 1515

[redacted]·20MHz

Sampling rate: 200MSa/S
Vertical resolution: 13 bits
Storage depth: 8K
Output impedance: 50 Ω±10%

MTQ 4040

[redacted]·40MHz

Sampling rate: 200MSa/S
Vertical resolution: 13 bits
Storage depth: 8K
Output impedance: 50 Ω±10%

MTQ 6060

[redacted]·60MHz

Sampling rate: 200MSa/S
Vertical resolution: 13 bits
Storage depth: 8K
Output impedance: 50 Ω±10%

Product Technical Indicators

Model	MTQ 1515	MTQ 4040	MTQ 6060
Sine wave	1μHz~ 20MHz	1μHz ~ 40MHz	1μHz ~ 60MHz
Square wave	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz
Triangle wave	1μHz ~ 15MHz	1μHz ~ 15MHz	1μHz ~ 15MHz
Pulse wave	100μHz ~ 6MHz	100μHz ~ 6MHz	100μHz ~ 6MHz
Arbitrary	1μHz ~ 6MHz	1μHz ~ 6MHz	1μHz ~ 6MHz
Frequency resolution	1uHz		
Frequency accuracy	±20ppm		
Frequency stability	±1ppm/3hours		
Waveform characteristics			
Waveform type	Sine、Square、 triangular wave, pulse,noise, arbitrary wave (including DC).		
Wave length	8192 points		
Waveform sampling rate	200MSa/s		
Waveform vertical resolution	13-bits		
Sine wave characteristics			
Sine wave	Harmonic Suppression	≥45dBc(<1MHz); ≥40dBc(1MHz~20MHz)	
	Total harmonic distortion	<0.8%(20Hz~20kHz,0dBm)	
Square wave signal characteristics			
Square wave	Rise/Fall time	<20ns	
	Overshoot	<5%	
	Duty cycle range	Frequency < 100 KHZ: 1% ~ 99%;	
		100kHz≤ frequency <5MHz: 20% ~ 80%;	
		5MHz≤ frequency: 40% ~ 60%(0.1% resolution)	
Pulse wave characteristics			
Pulse wave	Pulse width	Minimum 20ns; 1 ns resolution.	
	Edge jumping time	Minimum 20ns	
	Overshoot	<5%..	
	Shaking	6ns+0.1% period cycle	
Sawtooth wave characteristics			
Sawtooth wave	Linearity	≥98%(0.01Hz~10kHz)	
	Symmetry	0.0 ~ 100.0%(resolution 0.1%)	

Trigger Input	
Signal Range	2Vpp~20Vpp
Coupling	AC or DC
Pulse Width	>100ns
Reaction Time	<500ns(Burst)
	<10μs(Sweep)
Modulation Input	
Impedance	1MΩ
Signal Range	±2.5V ac+dc

Standard accessories

Power cable with three cords	1pc
BNC coaxial cable	2pc
USB data line	1pc
Signal straight line	1pc
Manual	1pc

Output characteristics

Amplitude	MTQ 1515	MTQ 4040	MTQ 6060
Amplitude range	Frequency <10MHz	10MHz ≤ Frequency ≤ 30MHz	30MHz ≤ Frequency
	2mVpp~20Vpp	2mVpp~10Vpp	2mVpp~5Vpp
Amplitude resolution	1mV		
Amplitude accuracy	1% +2mVpp of set value (1kHz sine wave, 0 offset, >10mVpp)		
Amplitude flatness (Relative to 1k sine wave, 1Vpp)	±0.4dB <10MHz ; ±1.0dB ≥10MHz		
Output impedance	50Ω±10% (typical)		
Protection	All signal outputs can work within 60 when the load is short-circuited.		
Offset			
Output range	Output amplitude > 0.1V	2mV < Output amplitude ≤ 0.1V	
	±10Vpk，ac + dc	±0.250Vpk，ac + dc	
Offset resolution	1mV		
Phase characteristics			
Phase adjustment 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 adjustment	
Counter function	Counting range	0-4294967295	
	Counting method	Manually	
Input signal voltage range	2Vpp~20Vpp		
Coupling	DC or AC		
Pulse width measurement	1ns resolution, maximum measurable 20s		
Period measurement	1ns us resolution, maximum measurable 20s		

AM Modulation	
Output channel	CH1 or CH2
Signal Carrier	Sine, square,sawtooth, pulse and arbitrary waveforms (excluding DC)
Source	Internal/External VCO(external is optional)
Modulation Wave	Sine, square, triangle and ramp
Modulation Frequency	2mHz~20kHz
Modulation Depth	0%~120%

FM Modulation	
Output Channel	CH1 or CH2
Carrier Wave	Sine, square,sawtooth, pulse and arbitrary waveforms (excluding DC)
Source	Internal/External(external is optional)
Modulation Wave	Sine, square, triangle and ramp
Modulation Frequency	2mHz~20kHz
Frequency Offset	0~Maximum carrier frequency

PM Modulation	
Output Channel	CH1 or CH2
Carrier Wave	Sine, square,sawtooth, pulse and arbitrary waveforms (excluding DC)
Source	Internal/External(external is optional)
Modulation Wave	Sine, square, triangle and ramp
Modulation Frequency	2mHz~20kHz
Phase Offset	0°~ 360°

ASK Modulation	
Output Channel	CH1 or CH2
Carrier Wave	Sine, square,sawtooth, pulse and arbitrary waveforms (excluding DC)
Source	Internal/External
Modulation Wave	Square wave of 50% duty ratio
Keying Frequency	2mHz~1MHz
Modulation Amplitude	0~Carrier Amplitude

FSK Modulation	
Output Channel	CH1 or CH2
Carrier Wave	Sine, square,sawtooth, pulse and arbitrary waveforms (excluding DC)
Source	Internal/External
Modulation Wave	Square wave of 50% duty ratio
Keying Frequency	2mHz~1MHz
Hop Frequency	Carrier frequency range

PSK Modulation	
Output Channel	CH1 or CH2
Carrier Wave	Sine, square,sawtooth, pulse and arbitrary waveforms (excluding DC)
Source	Internal/External
Modulation Wave	Square wave of 50% duty ratio
Keying Frequency	2mHz~1MHz
Modulation Phase	0°~ 360°

Frequency Sweep	
Output Channel	CH1 or CH2
Types	Linearity/Logarithm
Sweep Frequency Time	1ms ~ 999.999s
Start/Stop Frequency	Arbitrary set
Sweep Direction	Forward,Reverse.Backward
Trigger Source	Manual operating, internal, external

Frequency Sweep	
Output Channel	CH1 or CH2
Carrier Wave	Sine, square,sawtooth, pulse, noise and arbitrary waveforms (excluding DC)
Pulse Count	1~1048575 or infinite, gated
Start/Stop Phase	0~360°
Internal Period	1μs~500s
Gating Source	External
Trigger Source	Internal, external, manual operating

General Technical Specifications

Power Supply	
Supply Voltage	AC 110~240V，50~60Hz
Power Consumption	<15W
Display	
Types	2.4-inch TFT LCD screen
Resolution	320×240
Color	16M color
Environment	
Temperature Range	Operation: 10℃~+40℃ Non-operation: -10℃~+60℃
Cooling Methods	Natural cooling
Humidity Range	Below +35℃: ≤90% relative humidity,+B14035℃ ~ +40℃: ≤60% relative humidity
Interface	USB Device