UTG2000B Series Arbitrary Waveform Generators

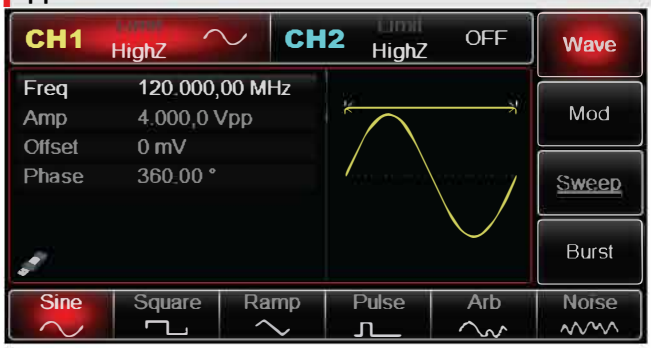
Introduction

UTG2000B series can produce high precision, stable, pure and low distortion signals; provide high frequency square wave with quick rise and fall edges. Users can improve their working efficiency by using the multifunctional instrument of easy operated interface, competitive specifications and humanized graphical display.

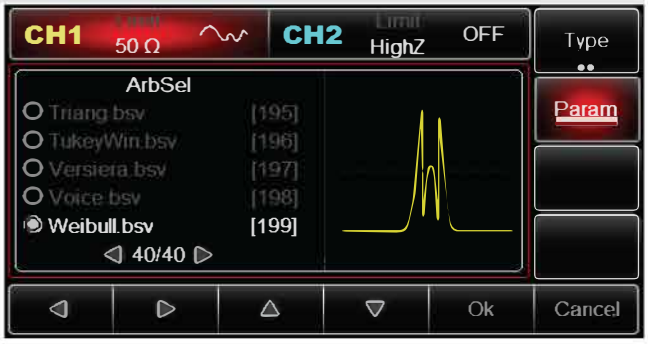
Features

►60/80/120MH sine waveform output, 1μHz full-band resolution;
►320MSa/s sample rate, 16 bits vertical resolution;
►Unique Expression Output Function
►Standard dual channels, supporting stand-alone or channel-coupling output mode;
►16Mpts arbitrary waveform length
►Versatile modulation choices: AM、FM、PM、PWM、ASK、FSK、PSK、BPSK、QPSK、OSK、DSB-AM、SUM、QAM
►4.3 Inches TFT LCD,WVGA (800×480);
►Standard Ports: USB Host，USB Device，LAN

Application features

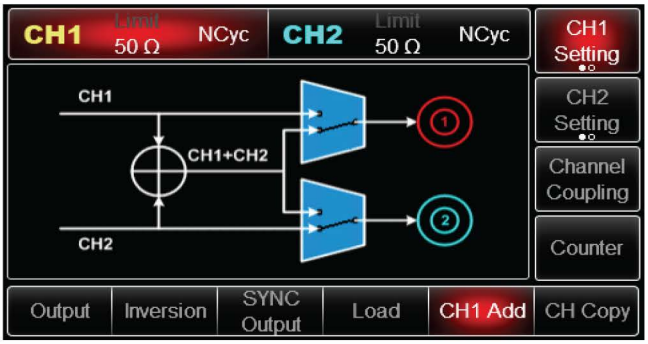


120MHz sine waveform output，Double Channel and Multiple Waveform Selection

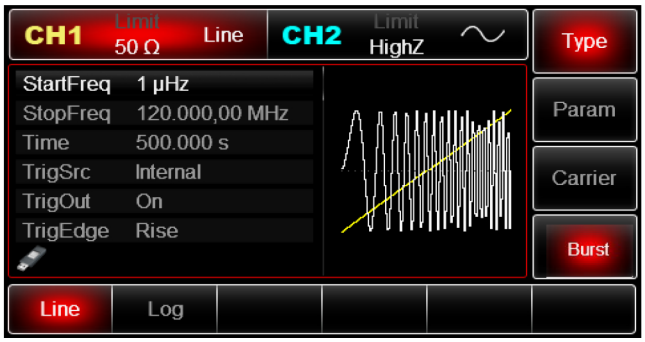


Built-in up to 200 arbitrary waveforms

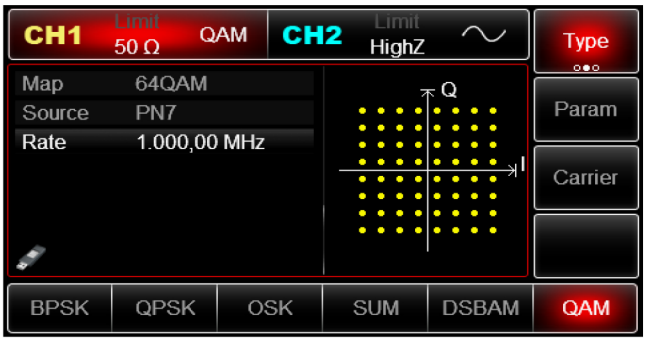
Built-in 16 harmonic generator



Channel merging and stacking



Sweep function and burst mode



Multiple Analog and Digital Modulation

Technical Specifications

Model	UTG2062B	UTG2082B	UTG2122B
Channel	Dual channel		
Max Frequency	60MHz	80MHz	120MHz
Sampling Rate	1.28GSa/s (320MSa/s ,4 times interpolation)		
Waveform	Sine, Square, Ramp, Burst, Noise, DC, Arbitrary, Harmonic, Expression		
Working Modes	Output gating, Continuous, Modulation, Frequency sweep, Burst		
Modulation Types	AM、FM、PM、ASK、FSK、PSK、BPSK、QPSK、OSK、SUM、DSB-AM、QAM、PWM		
Frequency Characteristic			
Sine Wave			
Frequency Range	1μHz~60MHz	1uHz~80MHz	1uHz~120MHz
Resolution	1μHz		
Accuracy	within 90 days ±50ppm,within 1 year±100ppm (18°C~28°C)		
Harmonic Distortion	Test Condition: output frequency 0dBm		
(Typical)	DC~1MHz	-60dBc	
	1MHz ~10MHz	-55dBc	
	10MHz ~40MHz	-50dBc	
	40MHz ~80MHz	-45dBc	
	80MHz ~120MHz	-40dBc	
THD (Typical)	<0.2%(DC~20kHz,1Vpp)		
Spurious Signal	Typical (0dBm)		
(Non-harmonic)	DC~10MHz,<-70dBc		
	> 10MHz: <-70dBc+6dB/ octave		
Phase Noise(Typical)	10 MHz: ≤-125 dBc/Hz(typical,0dBm,10kHz deviation)		
Square Wave			
Frequency Range	1μHz~25MHz	1μHz~25MHz	1μHz~30MHz
Resolution	1μHz		
Rise/Fall time	<4ns(Typical,1kHz,1Vpp)		
Overshoot	<2% (Typical)		
Duty Ratio	0.001%~99.999%		
Symmetry (Duty Ratio=50%)	1% of period + 4ns		
Jitter	Typical(1MHz,1Vpp,50Ω)		
	≤5MHz: 2ppm + 200ps		
	>5MHz: 200ps		
Ramp Wave			
Frequency	1μHz~3MHz	1μHz~4MHz	1μHz~5MHz
Resolution	1μHz		
Nonlinearity	< 1% of peak output(Typical,1kHz,1Vpp ,symmetry 100%)		
Symmetry	0.0% ~ 100.0%		
Pulse Wave			
Frequency	1μHz~20MHz	1μHz~25MHz	1μHz~30MHz
Resolution	1μHz		
Pulse Width	≥16ns		
Variable Edge	9ns~10s	8ns~10s	7ns~10s
Overshoot	<2% (Typical 1Vpp)		
Jitter	150ps		

Gauss noise			
Bandwidth	60MHz(-3dB)(Typical)	80MHz(-3dB)(Typical)	60MHz(-3dB)(Typical)
DC Offset			
Range(Peak AC+DC)	±5V(50Ω)		
	±10V (High Resistance)		
Offset Accuracy	±(1%+2mV)		
Arbitrary Wave			
Frequency	1μHz~15MHz	1μHz~20MHz	1μHz~25MHz
Resolution	1μHz		
Max. Wave Length	8pts~16Mpts		
Vertical Resolution	16bits(Symbol included)		
Sampling Rage	1.28GS/s(Interpolation),320MS/s (DDS mode)		
Rising/Falling Time (Typical)	< 7ns	< 6ns	< 5ns
Jitter	150ps (Play Mode)		
Nonvolatile Storage	160 waves		
Output			
Amplitude	≤20MHz: 1mVpp~10Vpp;(50Ω)		
	≤60MHz: 1mVpp~5Vpp;(50Ω)		
	≤120MHz: 1mVpp~2Vpp;(50Ω)		
Accuracy	±(1% of set value+1mVpp)		
(1kHz sine wave)			
Amplitude Flatness	Test Condition: Typical (Sine Wave,2.0Vpp)		
(Equal to 1kHz sine wave,	≤10MHz: ±0.1dB		
1Vpp/50Ω)	≤60MHz: ±0.2dB		
	≤80MHz: ±0.4dB		
	≤120MHz: ±0.8dB		
waveform Output			
Impedance	50Ω (Typical)		
Insulation	Maximum 42Vpk to ground wire		
Protection	Channel Protection		
Modulation Types			
AM			
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave		
Source	Internal/External		
Modulation Wave	Sine Wave, Square Wave, Ramp Wave, Noise, Arbitrary Wave		
Modulation Frequency	2mHz~1MHz		
Modulation Depth	0%~120%		
FM			
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave		
Source	Internal/External		
Modulation Wave	Sine Wave, Square Wave, Ramp Wave, Noise, Arbitrary Wave		
Modulation Frequency	2mHz~1MHz		
Frequency Deviation	DC ~30MHz	DC ~40MHz	DC ~60MHz
PM			
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave		
Source	Internal/External		
Modulation Wave	Sine Wave, Square Wave, Ramp Wave, Noise, Arbitrary Wave		
Modulation Frequency	2mHz~1MHz		
Phase Deviation	0°~360°		
ASK			
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave		
Source	Internal/External		
Modulation Wave	Square Wave (Duty ratio 50%)		
Modulation Frequency	2mHz~1MHz		
FSK			
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave		
Source	Internal/External		
Modulation Wave	Square Wave (Duty Ratio 50%)		
Modulation Frequency	2mHz~1MHz		
BPSK			
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave		

Source	Internal/External
Modulation Wave	Square Wave (Duty Ratio 50%)
Modulation Frequency	2mHz~1MHz
QPSK	
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave
Source	PN7,PN9,PN11,PN15,PN17,PN21,PN23,PN25
Modulation Wave	Square Wave (Duty Ratio 50%)
Modulation Frequency	2mHz ~ 1MHz
OSK	
Carrier Wave	Sine Wave
Source	Internal/External
Oscillation Time	8ns~200s
Keying Frequency	2mHz ~ 1MHz
SUM	
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Noise Wave, Arbitrary Wave
Source	Internal/External
Modulation Wave	Sine Wave, Square Wave, Ramp Wave, Noise Wave, Arbitrary Wave
Modulation Frequency	2mHz ~ 1MHz (Internal)； DC ~ 20kHz (External)
QAM	
QAM Mode	QAM4,QAM8,QAM16,QAM32,QAM64,QAM128,QAM256(Built-in constellation modulation)
Modulation Source	PN7,PN9,PN11,PN15,PN17,PN21,PN23,PN25
Chip Rate	2mHz~1MHz
Amplitude	10mVpp~10Vpp(50Ω)
PWM	
Carrier Wave	Pulse
Source	Internal/External
Modulation Wave	Sine Wave, Square Wave, Ramp Wave, Noise, Arbitrary Wave
Modulation Frequency	2mHz ~ 1MHz
Width Deviation	0%~49.99% of pulse width
Frequency Sweep	
Carrier Wave	Sine Wave, Square Wave, Ramp Wave, Arbitrary Wave
Type	Linear or Logarithmic
Frequency Sweep Time	1ms ~ 500s ± 0.1%
Trigger Source	Manual, External or Internal
Burst	
Waveform	Sine Wave, Square Wave, Ramp Wave, Noise, Arbitrary Wave
Type	Count(1~1,000,000 periods), infinite, gated
Start/Stop Phase	0°~ + 360°
Internal Cycle	1μs ~ 500 s ± 1%
Gated Source	External trigger
Trigger Source	Manual, External or Internal
Sync Signal	
Output Level	TTL
Output Frequency	1μHz~10MHz
Output Frequency	50Ω (Typical)
Coupled Mode	DC
Rear Panel Connector	
External Analog Modulation Input	±5Vpk of full range
	>5kΩ input impedance
10MHz Input/Output Frequency	10MHz±50Hz
10MHz Input/Output Level	TTL
10MHz Input/Output Impedance	10kΩ(Input)、50Ω(Output) (Typical)
Locking Time	<1s(Typical)
External trigger	TTL
Trigger Input	
Input Level	TTL compatible
Slope	Rising or Falling, Optional
Pulse Width	> 100 ns
Input Impedance	> 10kΩ,DC coupling
Response Time	Frequency Sweep： < 500μs(Typical)
	Pulse Train： < 500ns(Typical)

Trigger output		
Level	TTL Compatible	
Pulse Width	> 400ns(Typical)	
Output Impedance	50Ω(Typical)	
Maximum Frequency	1MHz	
Frequency Meter		
Input Level	TTL Compatible	
Range of Input Frequency	100mHz~200MHz	
Accuracy	±51ppm	
Frequency Resolution	6 digit/s	
Coupled Mode	DC	
General Technical Specifications		
Display		
LCD	4.3 inches TFT	
Resolution	480×272	
Power Supply		
Power Supply	100~240 VAC,45~440Hz,CAT II	
Power Consumption	Less than 50W	
Fuse	2A,Class T,250V	
Environment		
Temperature Range	Operating: 10°C~+40°C	
	Non-operating: -20°C~+60°C	
Cooling Method	Forced fan cooling	
Humidity Range	Below +35°C: ≤90% relative humidity	
	+35°C ~+40°C: ≤60%relative humidity	
Altitude	Operating below 2,000m°C	
	Non-operating below 15,000m	
Mechanical Specification		
Dimensions(W×H×D)	305mm×230mm×93mm	
Net Weight	3.10 kg	
Rough Weight	4.10 kg	
Ordering Information		
UTG2000B Series	UTG2122B(120MHz, 320MSa/s, 16Mpts, 2-Channel)	UTG2122B
	UTG2082B(80MHz, 320MSa/s, 16Mpts, 2-Channel)	UTG2082B
	UTG2062B(60MHz, 320MSa/s, 16Mpts, 2-Channel)	UTG2062B
Standard Accessories	Power cord conforming to the standard of the destination country	/
	USB interface cable	/
	2 BNC cables (1M)	/
Optional accessory	Power output module	/