Time Electronics

8026 and 8027 Function Generators with Frequency Counters

Description

The 8026 and 8027 arbitrary function generators are DDS (Direct Digital Synthesized) based signal generators designed for both industrial and educational applications. Each module is an ideal signal source covering the output of sine, square (pulse), ramp (triangle), noise and arbitrary waveforms. Additionally both modules feature AM/FM/FSK modulation, sweep, and frequency counter functions, making them a comprehensive solution for repair and maintenance work. The 20 M Sa/s sampling rate, 10 bit vertical resolution and 4k point memory provide users with a flexible environment for creating the specific waveform output as needed. The 0.1 Hz resolution of sine, square and triangle waveforms and 1 % ~ 99 % adjustable duty cycle of square (pulse) waveform make these modules suitable for a wide application range in various fields.

A user friendly interface allows user to set waveform parameters, including waveform type, frequency, amplitude, DC offset, modulation type, and duty cycle, through keypad entry and/or the knob selection, and display the set parameters on the 3.5 " LCD screen. The 8026/8027 have a USB interface for remote control and waveform editing through a PC. A waveform editing software is provided to facilitate the waveform creation on the PC. After the waveform editing is done, the user is able to download the waveform data from PC to the module for signal output.

Basic Specifications

Channels	1
Sine/Square	0.1 Hz ~ 12 MHz (8026) / 25 MHz (8027)
Triangle/Ramp	0.1 Hz to 1 MHz
Frequency Resolution	0.1 Hz
Amplitude Range	
≤ 20 MHz	1 mVpp to 10 Vpp (into 50 Ω)
	2 mVpp to 20 Vpp (open-circuit)
≤ 25 MHz	1 mVpp to 5 Vpp (into 50 Ω)
	2 mVpp to 10 Vpp (open-circuit)
Accuracy	± 2 %
Built-in ARB	Support
Sampling Rate	20 Msa/s
Memory Length	4 k points
Amplitude Resolution	10 Bits
Display	3.5 " 3 color LCD
Modulation	AM/FM/FSK
Sweep	Log/Linear
External Counter	150 MHz
Interface	USB (internal to control centre module upon request)
Module Width	Width 295 mm (primary console fitting only)

Features

- 0.1 Hz to 12 MHz (8026) / 25 MHz (8027)
- Frequency Resolution : 0.1 Hz in total range
- 20 M Sa/s sampling, 10 bit vertical resolution and 4 k point memory for Arbitrary Waveform
- 1 % ~ 99 % adjustable duty cycle for Square Waveform
- Waveform parameter setting through numeric keypad entry & knob selection
- Amplitude, DC Offset and other key setting information shown on the 3.5 " LCD screen simultaneously
- AM/FM/FSK Modulation, Sweep, and Frequency Counter functions
- USB interface for remote control and waveform editing

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Specifications

Module		8026	8027
Waveforms			
		Sine, Square, Ramp, Noise, Arbitrary Waveform	
Arbitrary Waveform			
	Sample Rate	20 MSa/s	
	Repetition Rate	10MHz	
	Waveform Length	4k points	
	Amplitude Resolution	10 bit	
	Non-Volatile Memory	4k points	
Frequency Characteristics			
Range	Sine, Square	0.1Hz to 12MHz	0.1Hz to 25MHz
	Ramp	0.1Hz ~ 1MHz	
Resolution	Sine, Square, Ramp	0.1Hz	
Accuracy	Stability	±20 ppm	
	Aging	±1 ppm, per 1 year	
	Tolerance	≦ 1 mHz	
Output Characteristics			
Amplitude	Range	1 mVpp to 10 Vpp(into 50Ω), 0.1Hz～20MHz 2 mVpp to 20 Vpp(open-circuit) , 0.1Hz～20MHz 1 mVpp to 5 Vpp(into 50Ω), 20MHz～25MHz 2 mVpp to 10 Vpp(open-circuit), 20MHz～25MHz	
	Accuracy	± 2% of setting ±1 mVpp (at 1 kHz,>10 mVpp)	
	Resolution	1 mV or 3 digits	
	Flatness	±1% (0.1dB) ≦100kHz ± 3% (0.3 dB) ≦5MHz ±4%(0.4dB) ≦12MHz ± 20% (2 dB) ≦20MHz ± 5%(0.4dB) ≦25MHz (sine wave relative to 1 kHz)	
	Units	Vpp, Vrms, dBm	
Offset	Range	±5 Vpk ac +dc (into 50Ω) ±10Vpk ac +dc (Open circuit) ±2.5 Vpk ac +dc (into 50Ω) for 20MHz-25MHz ±5Vpk ac +dc (Open circuit) for 20MHz-25MHz	
	Accuracy	2% of setting + 5 mV+ 0.5% of amplitude	
Output	Impedance	50Ω typical (fixed) > 300kΩ (output disabled)	
	Protection (main output)	Short-circuit protected by overload relay automatically disables output	
SYNC Output	Level	TTL-compatible into>1kΩ	
	Impedance	50Ω nominal	
	Rise or Fall Time	≦25ns	
Sine wave Characteristics	Harmonic Distortion	–55 dBc DC ~ 200kHz, Ampl > 0.1Vpp –50 dBc 200kHz ~ 1MHz, Ampl > 0.1Vpp –35 dBc 1MHz ~ 5MHz, Ampl > 0.1Vpp –30 dBc 5MHz ~ 25MHz, Ampl > 0.1Vpp	
Square wave Characteristics	Rise/Fall Time	≦25ns at maximum output (into 50Ωload)	
	Overshoot	< 5%	
	Asymmetry	1% of period+1 ns	
	Variable Duty Cycle	1.0% to 99.0% ≦ 100kHz 20.0% to 80.0% ≦ 5 MHz 40.0% to 60.0% ≦10MHz 50% ≦ 25MHz	
Ramp Characteristics	Linearity	< 0.1% of peak output	
	Variable Symmetry	0% to 100%(0.1% Resolution)	

Specifications (continued)

Module		8026	8027
AM Modulation			
	Carrier Waveforms	Sine, Square, Triangle	
	Modulating Waveforms	Sine, Square, Triangle	
	Modulating Frequency	2 mHz to 20 kHz (Int) DC to 20KHz (Ext)	
	Depth	0% to 120.0%	
	Source	Internal / External	
FM Modulation			
	Carrier Waveforms	Sine, Square, Triangle	
	Modulating Waveforms	Sine, Square, Triangle	
	Modulating Frequency	2 mHz to 20 kHz (Int) DC to 20KHz (Ext)	
	Deviation	DC to Max Frequency	
	Source	Internal / External	
SWEEP			
	Waveforms	Sine, Square, Triangle	
	Type	Linear or Logarithmic	
	Start F / Stop F	0.1Hz to Max Frequency	
	Sweep Time	1 ms to 500 s	
	Source	Internal / External	
FSK			
	Carrier Waveforms	Sine, Square, Triangle	
	Modulating Waveforms	50% duty cycle square	
	Modulation Rate	2mHz to 100kHz(INT) DC to 100kHz(Ext)	
	Frequency Range	0.1Hz to Max Frequency	
	Source	Internal / External	
Frequency Counter			
	Range	5Hz to 150MHz	
	Accuracy	Time Base accuracy±1count	
	Time base	±20ppm (23℃ ± 5℃) after 30 minutes warm up	
	Resolution	100nHz for 1Hz, 0.1Hz for 100MHz.	
	Input Impedance	1kΩ/1pf	
	Sensitivity	35mVrms ~ 30Vms (5Hz to 150MHz)	
System Characteristics			
	Store/Recall	10 Groups of Setting Memories	
	Interface	USB	
	Display	LCD	
General Specifications			
	Power Source	AC100～240V , 50～60Hz	
	Power Consumption	25 VA	
	Operating Environment	Temperature to satisfy the specification : 18 ~ 28◦C Operating temperature : 0 ~ 40◦C Relative Humidity: ≤ 80%, 0 ~ 40°C ≤ 70%, 35 ~ 40°C Installation category : CAT Ⅱ	
	Operating Altitude	2000 meters	
	Storage Temperature	-10 ~ 70◦C, Humidity: ≤70%	
	Module Width	295 mm (primary console fitting only)	