

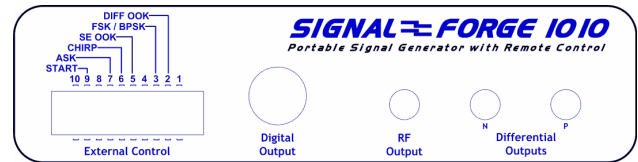
## PORTABLE SIGNAL GENERATOR WITH REMOTE CONTROL

### SCPI PROGRAMMING INTERFACE FOR EASY INTEGRATION WITH AUTOMATED TEST EQUIPMENT

The Signal Forge 1010 Portable Signal Generator with Remote Control is a small, high performance signal source incorporating the SCPI (Standard Commands for Programmable Instruments) interface. The SF1010 features a frequency range of up to 1 GHz. RF, digital and differential outputs, and support for numerous waveform modulation functions.



SCPI support makes the SF1010 ideal for applications in which the signal generator needs to be controlled by a user-developed program or integrated with an automated test environment (ATE) such as LabView®, LabWindows/CVI or HP VEE.

The SF1010 ships with EZ Wave a Windows-based control application that makes it ready to use out of the box.



Size: 8.5in x 5.4in x 1.5in

### KEY FEATURES

- SCPI programming interface for integration with LabView and other test environments
- EZ Wave control software get you up and running without custom programming
- 1 Hz to 1 GHz frequency range
- RF, Digital and Differential outputs
- Sine wave , square wave 
- Waveform modulation models: ASK, BPSK, CHIRP, FSK, OOK, SWEEP
- Arbitrary (user-specified) modulation combines ASK, BPSK, FSK, and OOK.
- Trigger input for chirp, sweep and arbitrary modulation control
- SYNC output for triggering on frequency steps (chirp, sweep, arbitrary)
- Alert message signals end of chirp, sweep, or arbitrary point step
- Auto Start – a power-up macro feature ideal for PC-free test operation
- Small, portable package (8.5in x 5.4in x 2.5in)



## APPLICATIONS

Applications for the Signal Forge 1010 include:

- Installing and maintaining in-building wireless networks and cellular phone systems
- Digital output in sweep mode can be used to test setup and hold of digital systems—ICs and circuit boards—up to 110 MHz
- Differential output can be used to test digital systems—ICs and circuit boards—up to 1 GHz
- Programmable clock generator
- Testing IF and RF sections of receivers and mobile bands up to 1 GHz and some telemetry bands
- Test amplifiers for gain and for the 1 dB compression point
- Portable, bench top and ATE system applications
- Local Oscillator (L.O.) source
- Receiver calibration
- RF exciter
- Test low frequency filters (down to 1 Hz)
- BPSK may be used to test low data-rate applications such as IEEE 802.11g wireless LAN standard, RFID and Zigbee devices

## PROGRAMMING INTERFACE

The SF1010's instrument programming interface complies with the IEEE488.2 and SCPI-1999.0 standards.

The IEEE488.2-2004 (Standard Digital Interface for Programmable Instrumentation) describes how test instruments and controllers communicate. The SCPI 1999.0 Standard Commands for Programmable Instruments (SCPI) goes beyond IEEE 488.2 to address a wide variety of instrument functions in a standard manner.

## EZ WAVE SOFTWARE

EZ Wave software is a simple control application that ships with the SF1010. EZ Wave makes the SF1010 ready to use out of the box without additional programming or integration. The software runs on any Windows-based PC with the Vista, XP and 2000 operating systems.

## CONNECTIONS AND OUTPUTS

### Front Panel

- Differential: an LVPECL output with a frequency range of 50 MHz to 1 GHz
- RF Output: a sine wave output with a frequency range of 100 KHz to 1 GHz
- Digital Output: a TTL output supporting 3.3V, 2.5V and 1.8V voltage levels with a frequency range of 1 Hz to 110 MHz
- External Control connector provides:
  - Trigger input
  - Sync output
  - ASK control
  - FSK control
  - OOK control
  - Connection for option modules

### Rear Panel

- RS-232 connector for the console (a USB to Serial adapter may be used with consoles that do not have a serial port)
- 10 MHz reference clock
- Power connector for AC adapter
- On/Off button

# SPECIFICATIONS

## General

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Frequency Range	1 Hz to 1 GHz
Frequency Resolution	1 Hz
Power Range (AC Output)	-9 to +7 dBm
Amplitude Range	500 mV to 79 mV
Amplitude Resolution	1 dB
Power Output Accuracy	±2 dB from 100 KHz to 300 MHz ±3 dB from 300MHz to 1 GHz

## Operating Limits

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RF (AC Coupled) Output	1 KHz to 1 GHz
Differential Output	50 MHz to 1 GHz
Digital (TTL) Output	1 Hz to 110 MHz

## RF Operating Range

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Amplitude Range	143 mVp-p to 1414 mVp-p
Amplitude Resolution	1 dB
Power Range	-12 dBm to +12 dBm
Power Output Accuracy	±2 dB from 100 KHz to 300 MHz ±3 dB from 300MHz to 1 GHz

## Operating Temperature

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0°C to 50 °C

## Frequency Standard

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Output	10 MHz into 50 Ω
Frequency Stability	0.001 %
Frequency Drift per Hour	0.0002% (After warm-up)

## VWSR

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Output Match (VSWR)	
1 MHz to 7 MHz	<1.5:1 @ +7 dBm
7 MHz to 1 GHz	<1.3:1 @ +7dBm

## Spectral Purity

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Phase Noise ≤100 MHz	
	-50 dBc/Hz @ 10 KHz Offset
	-73 dBc/Hz @ 100 KHz
	-90 dBc/Hz @ 1000 KHz
Phase Noise >100 MHz	
	-20 dBc/Hz @ 10 KHz Offset
	-60 dBc/Hz @ 100 KHz
	-90 dBc/Hz @ 1000 KHz
Harmonics	
	2 MHz to 50 MHz < -40 dBc
	50 MHz to 100 MHz < -40 dBc
	100 MHz to 3500 MHz < -20 dBc
	300 MHz to 500 MHz < -20dBc
	500 MHz to 1GHz < -20 dBc
Non-Harmonics	
	100 KHz to 100 MHz < -50 dBc
	100 MHz to 500 MHz < -30 dBc
	500 MHz to 1GHz < -30 dBc
Clock feed-through	< -85 dBm

## Power

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Operating Voltage	10V min to 15V max
Operating Current	600mA min to 700mA max
AC Supply (provided)	Input 100/240 VAC Output 15VDC, 1.0A

## PRODUCT LINE

### Signal Generators

SF1020	Battery Powered Signal Generator
SF1020E	Battery Powered Signal Generator <i>External clock source required.</i>
SF1010	Portable Signal Generator with Remote Control (SCPI API)
SF1000	Portable Signal Generator
SF1000E	Portable Signal Generator (For use with <i>external clock source</i> )

### RF Frequency Expansion Modules

2500M	Frequency Expansion Module. RF frequency output 1.5 GHz to 2.6 GHz Add-on to Attaches to SF1000 and SF1020
1800M	Frequency Expansion Module. RF frequency output 950 MHz to 1.8 GHz Add-on to Attaches to SF1000 and SF1020

### Software and Accessories

EZ Wave	Windows-based control application for SF1010 (free download from <a href="http://www.signalforge.com">www.signalforge.com</a> )
EZ Terminal	Serial Terminal software for SF1000 and SF1020 (free download from <a href="http://www.signalforge.com">www.signalforge.com</a> )
SF-BRK1 U Rack Mount Bracket.	Holds 3 SF1000 or SF1010 units and mounts in a standard 19 in. rack

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