

Fast Switching Indirect Synthesizers



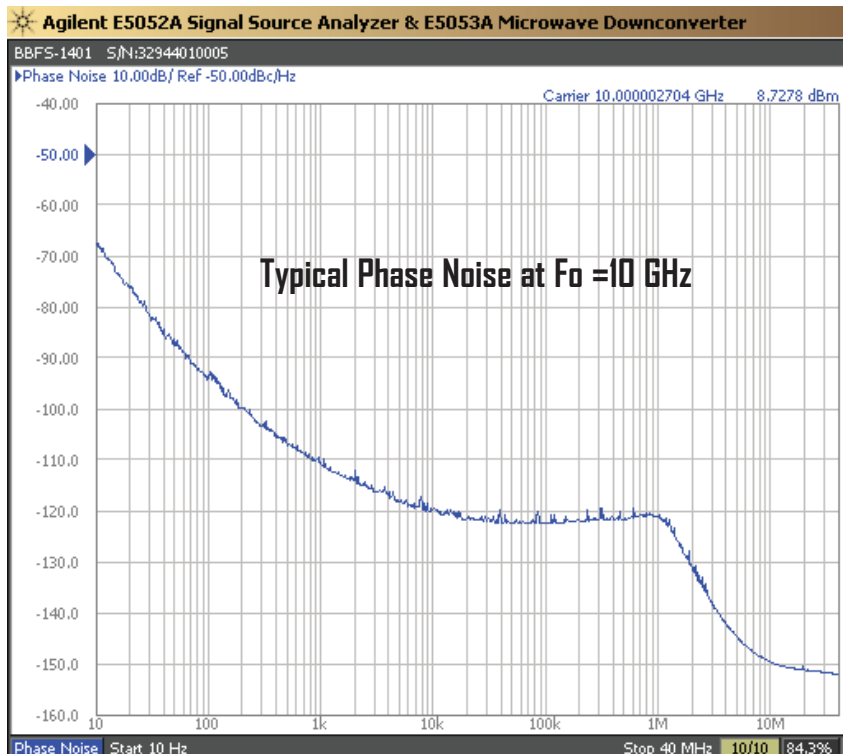
Indirect Synthesizers

Features

- ◆ State-of-the-art Phase Noise: -120 dBc/Hz @ 10 kHz offset at 10 GHz typical
- ◆ Wide Bandwidth 0.5 to 20.48 GHz standard
- ◆ Switching speed 25 microseconds typical
- ◆ Step sizes from 1 Hz
- ◆ Low spurious
- ◆ Parallel BCD or 3-wire serial programming
- ◆ Low profile 1U chassis, modular or bench top configuration
- ◆ Custom bands and step sizes
- ◆ Lock alarm
- ◆ 10 MHz sample reference output
- ◆ Locks to 10 MHz external reference

Options

- ◆ Low band extension down to 0.1 or 0.01 GHz
- ◆ Harmonic filters
- ◆ Remote control: SPI, RS-232, GPIB, 10/100 Base T ethernet, custom interfaces
- ◆ List mode operation with lock/level output and external trigger (see page 3)
- ◆ Pulse modulation/RF Mute 80 dB on/off; PRI 1 microsecond to CW
- ◆ Scan modulation rate DC to 1 MHz, step response 0 to 60 dB less than 1 microsecond
- ◆ Attenuator range 80 dB
- ◆ FM modulation DC to 10 MHz modulation bandwidth
- ◆ Other reference frequencies available
- ◆ Versatile front panel control



Description

Herley-CTI (HCTI) series BBFS synthesizers are ideal for Antenna Measurement Systems, with optional configurations available to support EW Simulators, and Broad Band ATE.

This technology permits multi-octave bandwidths, small steps, low phase noise, low spurious, and fast switching. The flexible architecture allows for options that are desired by some, but not all, thus you only pay for what you need.

The break-through in phase noise performance of the BBFS sets a new standard for this class of indirect synthesizers.

The exceptionally fast switching speed enables higher throughput in systems when a large number of measurements is required.

The BBFS utilizes cutting edge technology combining Direct Digital and Analog Indirect Synthesis to achieve excellent performance and exceptionally high reliability.

The use of HCTI's proven manufacturing techniques along with state-of-the-art technology makes the series BBFS synthesizer the best value on the market today.

Typical Performance Specifications

Standard Frequency Ranges	0.5 to 20.48 GHz 2 GHz to 18 GHz						
Custom Bandwidths	Any bandwidth within 0.01 GHz to 20.48 GHz						
Step Size	1 Hz standard, other step sizes available, consult factory						
Frequency Accuracy	$\leq \pm 5 \times 10^{-11}$ with respect to the reference						
Typical Phase Noise (dBc/Hz) @ 10 GHz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz	40 MHz
	-90	-109	-120	-120	-120	-148	-152
Power	+12 dBm +/- 2 dBm nominal						
Spurious	-65 dBc typical						
Harmonics	-12 dBc, -50 dBc Optional. Consult factory						
External Reference	Unit will lock to external 10 MHz or 100 MHz reference with +/-1 PPM or better frequency stability						
Remote Control Interface	Parallel and direct serial with strobe, SPI, RS-232, GPIB, 10/100 Base T Ethernet						
Lock/Level Indicator	TTL High= Normal, TTL Low when unlocked or low power detected						

Note: All specifications subject to change without notice.

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Typical Performance Specifications [cont'd]

Reference Out	10 MHz
Switching Speed from strobe	25 microseconds typical for Parallel and direct serial 45 microseconds typical for SPI
AC Supply Voltage	47-400 Hz, 110/240 VAC auto switching / 38 watts typical
DC Supply Voltage for modular version only	+12 Vdc @ 300 mA, +5.6 Vdc @ 5 A typical Ripple <100 mV p-p
Operating Temperature	0°C to +50°C case standard; consult factory for extended ranges
RF Connectors	SMA-F
Control Connectors	50 pin 3M 3565-2002 for parallel, 9 pin Dsub for direct serial, SPI and RS-232
Dimensions	1U x 13 inches deep Rack mount, Bench top or modular configuration; consult factory for details

List Mode Option

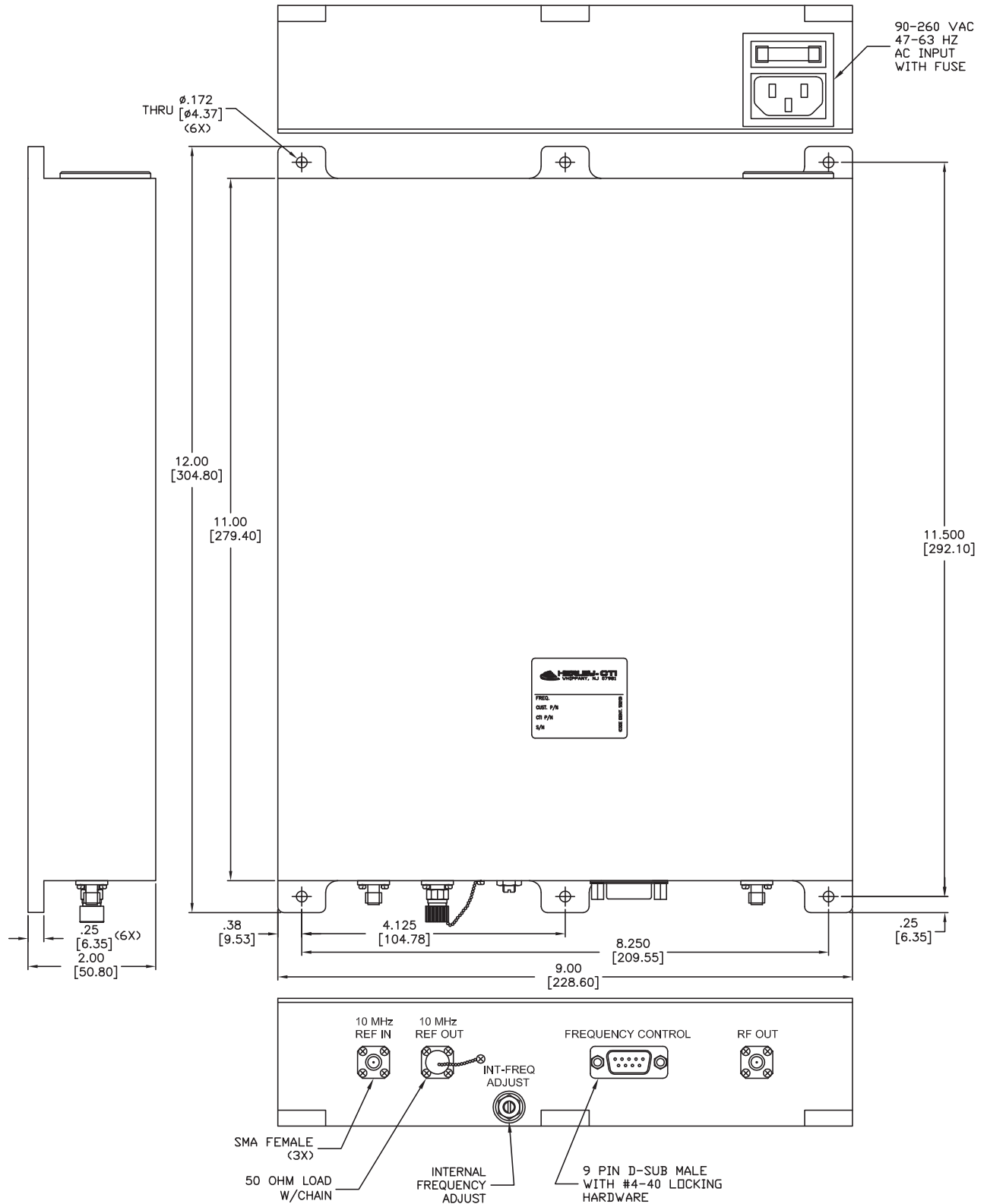
List:	The operator may program a list of from 1 to 48000 random frequencies via an Ethernet, GPIB or HCTI custom interface. The frequencies in the list starting at address A and ending at address B can be swept from A to B, B to A or A to B and back to A.
Continuous Mode 1:	The unit will perform any of the sweep modes as discussed above, that was previously communicated over Ethernet, GPIB or HCTI custom interface. This mode is triggered by an external single start pulse. The unit will perform one sweep and stop. For this mode a previously loaded Dwell Time is required.
Continuous Mode 2:	The unit will perform any of the sweep modes as discussed above, that was previously communicated over Ethernet, GPIB or HCTI custom interface. This mode is triggered by an external single start pulse. The unit will perform continuous sweeps until stopped by an Ethernet, GPIB or HCTI custom command. For this mode a previously loaded Dwell Time is required.
External Trigger:	Same as above but each step through the address list requires an external trigger pulse. No Dwell Time required as external pulses control Dwell Time. Lock Signal provided with each step.
Start, Stop, Step:	Via the Ethernet, GPIB or HCTI custom interface a Start Frequency, Stop Frequency, and Step Size is communicated. The unit starts operation at the start frequency and with each "Trigger In" pulse it will step with an increment of "Step Size".

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Series BBFS

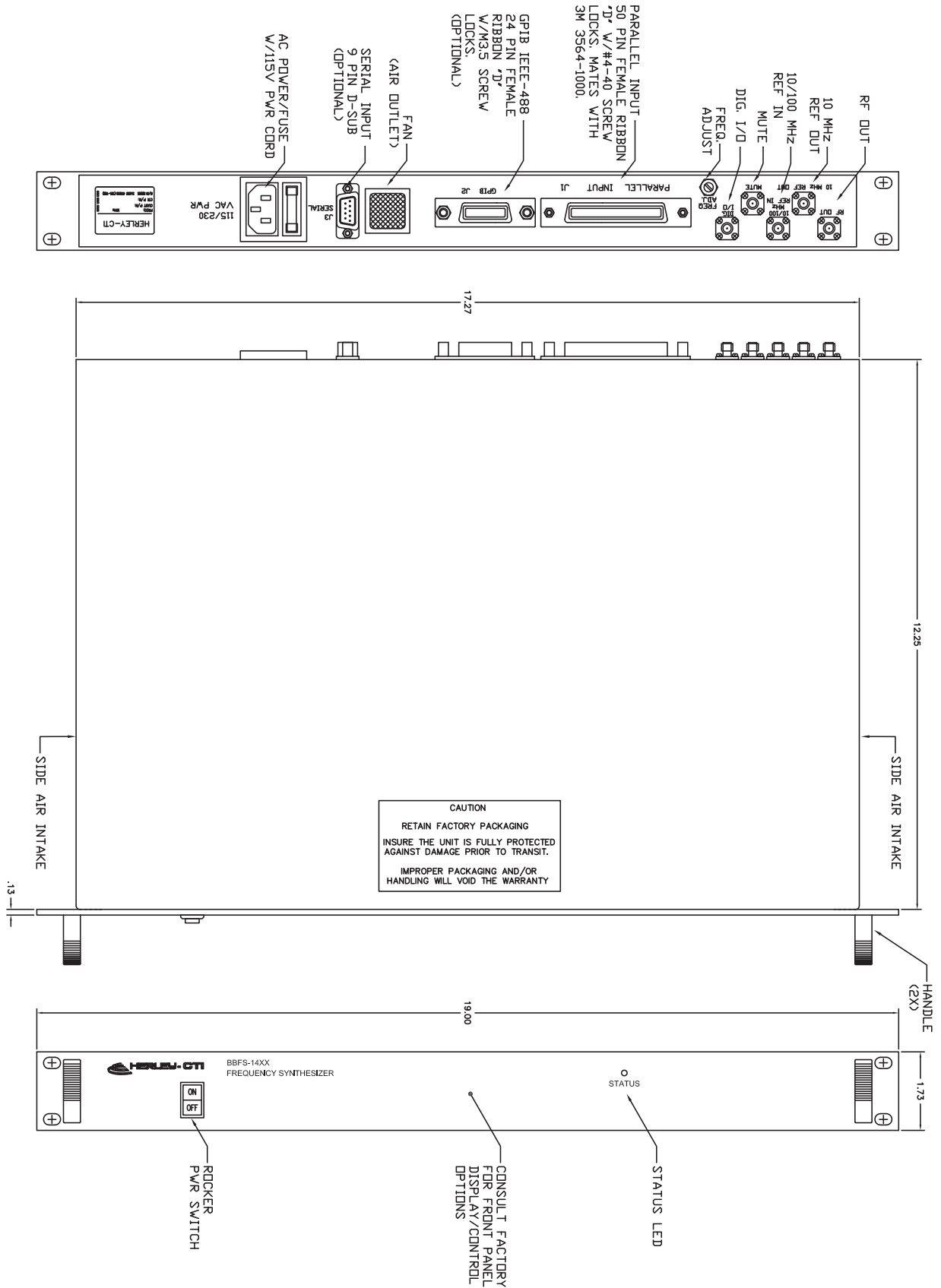
Typical Modular Outline Drawing



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Typical Rack Mount Outline Drawing



Indirect Synthesizers



Company Description

Herley-CTI, Inc. is proud of its reputation as a leading supplier of RF, microwave, millimeter wave, and signal generation components and integrated assemblies to the RF, Microwave and Millimeter Wave industries.

The Company's broad product line covers microwave and millimeter wave sources, synthesizers and integrated assemblies for military and commercial radar, communications, electronic warfare, surveillance, digital radio, telecom and satcom applications.

Products include ultra low phase noise fast switching direct synthesizers, indirect frequency synthesizers, phase locked sources, free running oscillators, millimeter wave up and down converters, Ka band block converters and custom integrated assemblies.

Herley-CTI, Inc. is organized in a customer oriented structure supported by strong research and development efforts designed to further the Company's position as a market and state-of-the-art technology leader.

Herley-CTI is part of Herley Industries which has been supplying solid, innovative, and sophisticated RF, microwave and millimeter wave components and subsystems to the defense and aerospace industries for more than 36 years. We conduct our business with pride and integrity and adopt an ethical code of conduct that all of our employees embrace. We maintain a strong and active commitment to quality, are ISO 9000-2000 certified and strive to make continuous improvements in all areas and at all levels within the company.

Facilities

Located in Whippany, New Jersey, Herley-CTI's modern 23,000 square-foot facility incorporates state-of-the-art computer aided design, drafting, design simulation capabilities, fully equipped vibration laboratory, computer controlled automated test

equipment, phase noise measurement equipment and a research and development test laboratory.

This simulation and test capability, together with the knowledge and expertise of over 30 years of leadership in the RF, Microwave and Millimeter Wave industry is applied to every product. The dedication of our highly experienced design team and applications engineering assistance provides our customers with unparalleled support and an exceptional level of personal service.

Major Products

Frequency Synthesizers

- Fast Switching, Broadband Direct Synthesizers for EW, Radar and Simulation
- Indirect Synthesizers for Military and



Commercial applications

- Wide bandwidth single and multiple loop Indirect Synthesizers
- Low Cost High Performance SatCom Synthesizers

Phase Locked Oscillators

- Dielectric Resonator Oscillators (PDRO)
- Dual Loop Dielectric Resonator Oscillators (XPDR)
- Coaxial Resonator Oscillators (PCRO)
- Dual Loop Coaxial Resonator Oscillators (XPCRO)

Free Running Oscillators

- Dielectric Resonator Oscillators (DRO)
- Coaxial Resonator Oscillators (CRO)
- Voltage Controlled Oscillators (VCO)

Integrated & Custom Assemblies

- Millimeter Wave Up & Down Converters
- Radar LO Generators
- Ka Band Block Converters
- Microwave and mmWave Transceivers
- 802.11g Frequency Converters and Amplifiers
- Broadband Filtered Multiplier Assemblies
- LAN LXI, VME, VXI, GPIB Synthesizers