

HP E6432A

NEW

- Broadband frequency coverage, 10 MHz to 20 GHz
- Amplitude range  $-90$  dBm to  $+17$  dBm (Opt 1E1)
- High power output of  $+20$  dBm 2 GHz to 20 GHz (Opt UNF)
- 1 Hz frequency resolution

- Less than 400  $\mu$ s frequency switching time
- Excellent harmonics, spurious, and phase noise
- AM, FM, and pulse modulators
- VXIplug&play driver included



HP E6432A

### Optimized for Automated Test Systems

The HP E6432A microwave synthesizer is designed especially for demanding performance in modern automated test systems. Rather than using slow and heavy magnetically tuned circuits, it uses small, lightweight, and fast VCO's and mixers to deliver fully synthesized microwave signals. It is register-based in order to deliver its promised switching speeds to the user in real-world applications. Communication with the HP E6432A is through its Plug&Play driver. This driver is an integral part of the HP E6432A and should be thought of as an extension of the instrument firmware.

### Fast frequency and amplitude switching

Tuning between any two arbitrary frequencies requires less than 400  $\mu$ s and is typically 220  $\mu$ s. Amplitude-only switching between any two power levels within the vernier range requires less than 50  $\mu$ s. If the optional step attenuator requires a change, switching time is slowed to 25 ms. This fast switching brings a direct benefit of decreased measurement time in scenarios where throughput is currently limited by the time it takes to retune the signal source. Examples of such scenarios are antenna testing and satellite payload testing, where large numbers of frequencies are measured. Another example is RFIC and MMIC manufacturing, where time budgets for testing each device are measured in milliseconds.

### Comprehensive list and triggering modes

A deep list mode of up to 128k entries provides sequence memory for very long test scenarios. Each entry may hold settings for frequency, amplitude, attenuator setting, settling and blanking modes, and a marker. The host computer constructs the list array and downloads the array into the HP E6432A hardware prior to execution.

Triggering modes are free-run, sync, and triggered. A repeat mode may be enabled and active in any trigger mode. All events available on the front panel are also available on the TTL trigger bus. Interrupts may also be enabled for specific events.

### Spectrally pure; free of harmonics and spurious

The PC assembly shielding technology is patented. Critical circuitry is contained within two hybrid thin- and thick-film microcircuits. DC to DC converters inside the module carefully filter and re-regulate the VXI mainframe power supplies. These features combine to give the HP E6432A performance superior to other VXI signal sources, rivaling the finest sources available.

## Specifications

### Frequency

**Range:** 10 MHz to 20 GHz

**Accuracy:** depends on external time base

**Resolution:** 1 Hz

**Switching time:** 220  $\mu$ s typical

### Amplitude

#### Output range:

Standard: -20 to +17 dBm

Option 1E1: -90 to +16 dBm

Option UNF: +20 dBm maximum, (2 to 20 GHz)

Option UNH: +13 dBm maximum, (10 MHz to 2 GHz)

#### Vernier accuracy:

-10 to +10 dBm:  $\pm$ 0.5 dB

-20 to +20 dBm:  $\pm$ 1.0 dB

**Resolution:** 0.02 dB

#### Switching time:

Vernier: 40  $\mu$ s typical

Attenuator: 20 ms typical

**External ALC range:** 40 dB

#### Flatness:

-10 to +10 dBm:  $\pm$ 2.5 dB

-90 to +20 dBm:  $\pm$ 4.1 dB

**VSWR @ 50:** 1.6:1 typical

#### Harmonics:

10 MHz to 2 GHz:  $<$ -25 dBc

Option UNH:  $<$ -55 dBc

2 to 20 GHz:  $<$ -55 dBc,  $<$ -65 dBc typical

#### Spurious responses:

$<$ -55 dBc

$<$ -70 dBc typical

#### SSB phase noise (any carrier freq.):

100 Hz offset:  $<$ -67 dBc/Hz

10 kHz offset:  $<$ -90 dBc/Hz

### Modulation

#### Amplitude:

Rate: DC to 100 kHz

Depth: 0 to 40 dB

Accuracy:  $<$  8% of depth

#### Frequency:

Rate: 100 kHz to 8 MHz

50 kHz to 10 MHz typical

Maximum deviation:  $>$  8 MHz

#### Pulse (2 GHz to 20 GHz):

On/Off ratio:  $>$  80 dB

Rise/Fall time:  $<$ 10 ns

PRF range: 10 Hz to 10 MHz

#### Pulse width:

leveled:  $>$ 2.5  $\mu$ s

unleveled:  $>$ 15 ns

#### Vernier accuracy:

leveled:  $\pm$ 0.5 dB

unleveled:  $\pm$ 0.5 dB typical

Video feedthrough:  $<$ 10 mV

## General Specifications

### VXI Characteristics

**VXI device type:** Register-based

**Data transfer bus:** A16, A24, D16/32 slave only

**Size:** C

**Slots:** 3

**Connectors:** P1/P2

**Shared memory:** none

**VXI busses:** TTL trigger bus

**C-size compatibility:** n/a

**VXI plug&play framework:** Microsoft WindowsNT service pack 3 or greater

### Cooling/Slot

**Watts/slot:** 34.3

**DP mm H2O:** 1.1

**Air flow liter/s:** 4.0

### Module Current

	I <sub>PM</sub> (A)	I <sub>DM</sub> (A)
+5 V:	10	2
+12 V:	2.4	0.8
-12 V:	1.0	0.05
+24 V:	0.4	0.5* (0.06)
-24 V:	0.15	0.03
-5.2 V:	2.35	0.1
-2 V:	0	0

\*step attenuator

## Key Literature

HP E6432A Brochure, p/n 5967-6313E

HP E6432A Technical Specifications, p/n 5968-1242E

HP E6432A Product Overview, p/n 5967-6178E

HP E6432A Configuration Guide, p/n 5967-6272E

Test System and VXI Products Catalog, p/n 5968-3698E

An Introduction to the HP E6432A VXI plug&play Driver, p/n 5968-3660E

## Ordering Information

**HP E6432A** VXI Microwave Synthesizer

**Opt 1E1** 70 dB step attenuator

**Opt UK6** Commercial calibration certificate with test data

**Opt UNF** High output power (+20 dBm) 2 GHz to 20 GHz

**Opt UNH** Improved spectral purity 10 MHz to 2 GHz

**Opt W30** 3 yrs Customer Return Repair Service

**Opt W50** 5 yrs Customer Return Repair Service

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