

Test Equipment Solutions Datasheet

Test Equipment Solutions Ltd specialise in the second user sale, rental and distribution of quality test & measurement (T&M) equipment. We stock all major equipment types such as spectrum analyzers, signal generators, oscilloscopes, power meters, logic analysers etc from all the major suppliers such as Agilent, Tektronix, Anritsu and Rohde & Schwarz.

We are focused at the professional end of the marketplace, primarily working with customers for whom high performance, quality and service are key, whilst realising the cost savings that second user equipment offers. As such, we fully test & refurbish equipment in our in-house, traceable Lab. Items are supplied with manuals, accessories and typically a full no-quibble 2 year warranty. Our staff have extensive backgrounds in T&M, totalling over 150 years of combined experience, which enables us to deliver industry-leading service and support. We endeavour to be customer focused in every way right down to the detail, such as offering free delivery on sales, covering the cost of warranty returns BOTH ways (plus supplying a loan unit, if available) and supplying a free business tool with every order.

As well as the headline benefit of cost saving, second user offers shorter lead times, higher reliability and multivendor solutions. Rental, of course, is ideal for shorter term needs and offers fast delivery, flexibility, try-before-you-buy, zero capital expenditure, lower risk and off balance sheet accounting. Both second user and rental improve the key business measure of Return On Capital Employed.

We are based near Heathrow Airport in the UK from where we supply test equipment worldwide. Our facility incorporates Sales, Support, Admin, Logistics and our own in-house Lab.

All products supplied by Test Equipment Solutions include:

- No-quibble parts & labour warranty (we provide transport for UK mainland addresses).
- Free loan equipment during warranty repair, if available.
- Full electrical, mechanical and safety refurbishment in our in-house Lab.
- Certificate of Conformance (calibration available on request).
- Manuals and accessories required for normal operation.
- Free insured delivery to your UK mainland address (sales).
- Support from our team of seasoned Test & Measurement engineers.
- ISO9001 quality assurance.

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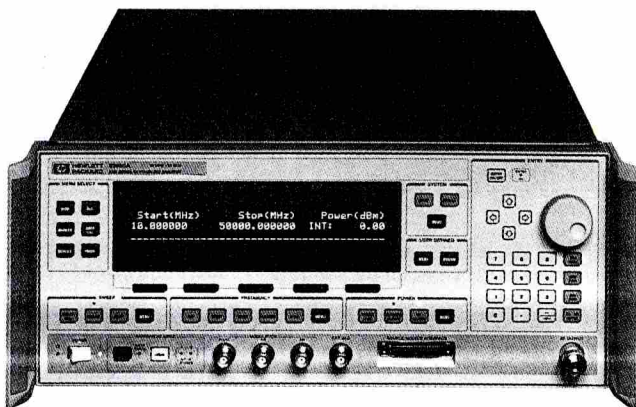


SIGNAL SOURCES

Synthesized Sweepers, 10 MHz to 50 GHz (or 110 GHz)

HP 8360 Series

- 1 Hz frequency resolution (Option 008)
- Low spurious and phase noise
- +20 dBm to -110 dBm calibrated output



HP 8360 Series Synthesized Sweepers

The HP 8360 Series synthesized sweepers are the standard of excellence for applications requiring the high performance and accuracy of a synthesized source and the speed and versatility of a sweep oscillator.

Synthesized broadband frequency coverage and precise 1 Hz frequency resolution (Option 008) are generated by indirect synthesis, enabling the HP 8360 to achieve low single-sideband phase noise performance.

The HP 8360 delivers excellent harmonic performance with harmonics at least 50 dB below the carrier from 2.2 to 20 GHz, and at least 35 dB below the carrier above 20 GHz.

Pulse, Scan, Amplitude, and Frequency Modulation

High-performance pulse modulators with > 80 dB on/off ratio, and rise/fall times < 10 ns (Option 006), make the HP 8360 suitable for the most demanding pulse modulation applications.

In addition to its linear AM mode (100%/V), the HP 8360 offers a scan modulation mode (10 dB/V). Both modes have dc-coupled amplitude modulation capability with a 3 dB bandwidth of 100 kHz, and 99.7% (50 dB) of modulation depth. Pulse and amplitude modulation capabilities can be used independently and simultaneously.

The HP 8360 also offers dc-coupled frequency modulation capabilities with rates up to 8 MHz.

Millimeter Signals

When the HP 8360 Series is used to drive the HP 83550 Series millimeter-wave modules, they provide millimeter test signals from 26.5 to 110 GHz. The source modules offer leveled high output power, full waveguide band coverage, and frequency accuracy and resolution proportional to the HP 8360 used.

The HP 83550 source modules can be driven directly by the HP 83623 and 83626 synthesized sweepers. Other HP 8360 models can drive the source modules through the HP 8349B amplifier.

Specification Summary

Frequency

Range (by model): **HP 83620A** 10 MHz to 20 GHz
HP 83622A 2 to 20 GHz
HP 83623A 10 MHz to 20 GHz (high power)
HP 83624A 2 to 20 GHz (high power)
HP 83630A 10 MHz to 26.5 GHz
HP 83640A 10 MHz to 40 GHz
HP 83650A 10 MHz to 50 GHz

Resolution: 1 kHz standard, 1 Hz optional

Time base: Internal 10 MHz time base. Aging rate: less than 5×10^{-10} /day, 1×10^{-7} /year after 30-day warm-up.

RF Output

Range: +20 to -110 dBm **Resolution:** 0.02 dB

Maximum Leveled Power (by model):

HP 83620A	+13 dBm	HP 83630A	+10 dBm
HP 83622A	+13 dBm	HP 83640A	+6 dBm
HP 83623A	+17 dBm	HP 83650A	+2.5 dBm
HP 83624A	+20 dBm		

RF Output Connector: 3.5 mm on 20 GHz models, 2.4 mm on 40 and 50 GHz models; nominal 50 Ω output impedance

- Pulse, amplitude, and frequency modulation
- Complete analog sweeper
- < -50 dBc harmonics 2.2 to 20 GHz

Spectral Purity

Harmonics and subharmonics:

- < -50 dBc at output frequencies < 20 GHz
- < -40 dBc at output frequencies < 40 GHz
- < -35 dBc at output frequencies > 40 GHz

Non-harmonically related spurious:

- < -60 dBc at output frequencies < 20 GHz
- < -52 dBc at output frequencies > 20 GHz

Single-sideband phase noise (dBc/1 Hz BW, CW mode):

Frequency range (GHz)	100 Hz	1 kHz	10 kHz	100 kHz
0.01 to 7.0	-70	-78	-86	-107
7.0 to 13.5	-64	-72	-80	-101
13.5 to 20.0	-60	-68	-76	-97
20.0 to 26.5	-58	-66	-74	-95
26.5 to 38.0	-54	-62	-70	-91
38.0 to 40.0	-54	-62	-70	-91
40.0 to 50.0	-52	-60	-68	-89

Modulation

Pulse modulation

On/off ratio: > 80 dB

Rise and fall times: < 25 ns (< 10 ns optional)

Minimum internally leveled RF pulse width: < 1 μ s

Minimum RF pulse width: < 50 ns (15 ns with Opt 006)

Scan and amplitude modulation

Rates (3dB BW): dc to 100 kHz

Depth: 0 to 90% (20 dB) and 0 to 99.7% (50 dB) above 10 Hz

Sensitivity: 100%/V and 10 dB/V

Frequency modulation

Locked mode

Modulation rate (3 dB BW, 500 kHz deviation): 100 kHz to 8 MHz

Maximum deviations: 8 MHz

Unlocked mode

Modulation rate (3 dB BW, 500 kHz deviation): dc to 8 MHz

Maximum deviations: At rates $\leq$ 100 Hz: $\pm$ 75 MHz

At rates > 100 Hz: $\pm$ 8 MHz

Sensitivity: 1 MHz/V or 10 MHz/V, user-selectable

Internal Modulation Generator (Opt 002)

AM, FM

Waveforms: Sine, square, triangle, ramp, noise

Rate range: Sine: 1 Hz to 1 MHz

Square, triangle, ramp: 1 Hz to 100 kHz

Rate resolution: 1 Hz

Depth, deviation

Range and accuracy: Same as base instrument

Resolution: 0.1%

Pulse

Modes: Free-run, gated, triggered, delayed

Period range: 300 ns to 400 ms

Resolution: 25 ns

Width range: 25 ns to 400 ms

Accuracy: 5 ns

Video delay

Internal sync pulse: 0 to 400 ms

Externally supplied sync pulse: 225 ns to 400 ms

Ordering Information

HP 83620A Synthesized Sweeper

HP 83622A Synthesized Sweeper

HP 83623A Synthesized Sweeper

HP 83624A Synthesized Sweeper

HP 83630A Synthesized Sweeper

HP 83640A Synthesized Sweeper

HP 83650A Synthesized Sweeper

Opt 001 Add Step Attenuator

Opt 002 Internal Modulation Generator

Opt 003 Delete Front Panel Keyboard/Display

Opt 004 Rear Panel RF Output

Opt 006 Fast Pulse Modulation

Opt 008 1 Hz Frequency Resolution

Opt 700 Mate System Compatibility

Opt W30 Extended Repair Service (see page 624)

Dedicated HP 8510 Synthesized Sweepers

HP 83621A Synthesized Source

HP 83631A Synthesized Source

HP 83651A Synthesized Source

Opt W30 Extended Repair Service (see page 624)