



SWEEP OSCILLATORS

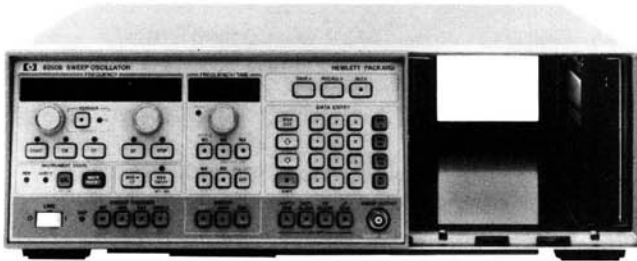
Model 8350 Series: Mainframe

Model 8350B

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- Accurate, high resolution, digital displays
- Five markers with marker Δ and marker sweep
- Save/recall 9 complete front panel states

- Accepts all HP 83500 series plug-ins
- Total HP-IB programmability



HP 8350B



HP 8350B

Sweep Oscillator applications are greatly enhanced by the features of the HP 8350B. Along with the traditional swept and CW frequency functions, the HP 8350B adds extensive marker capabilities, versatile data entry and complete HP-IB programmability. Besides the popular HP 83500-series RF plug-ins, the HP 8350B also accepts the HP 86200-series plug-ins via the HP 11869A adapter. And the HP 8350B is directly compatible with such measurement systems as the HP 8510A/8410C vector network analyzers and the HP 8756A/8757A scalar network analyzers. Frequency accuracy is easily enhanced by using the HP 5343A counter to count the START, STOP, or ACTIVE MARKER frequencies. For even more frequency accuracy and stability the HP 5344S source synchronizer may be used to phase-lock the RF output.

The HP 8350B has three methods of changing function values: control knobs, keyboard entry, or step key entry.

Five markers are available with the HP 8350B. These markers, combined with the high resolution digital readout, make the accurate location of important frequency responses easy. A key marker feature, marker Δ , computes the difference between any two markers. The markers can modify the center frequency (marker \rightarrow CF) or the START/STOP frequency (Marker Sweep). These expanded marker capabilities simplify sophisticated measurements.

A necessity in making repetitive measurements or automatic tests is the Save/Recall feature. Once the HP 8350B controls have been set for a particular measurement, all of the front panel controls can be "Saved" in a memory location and later "Recalled" when the measurement is repeated. This feature supplies nine memory locations, each storing a complete front panel set-up. Nonvolatile memory is included so that all memories are retained even when line power is removed.

The HP 8350B makes "simultaneous" comparison of two separate frequency ranges or power levels easy via the alternate sweep mode. When the alternate sweep mode is activated, the HP 8350B alternates between the current front panel setting and any stored memory setting on successive sweeps. The output from this function may be processed through a network analyzer such as the HP 8756A or the HP 8757A and viewed on a two channel display.

All front panel controls (except the ac line switch) may be programmed or controlled via the HP-IB. The HP 8350B may interact as a listener or as a talker on the HP-IB. As a talker the HP 8350B is capable of outputting the manually entered front panel information to a controller.

A self test is performed at turn on or whenever the instrument preset function is activated. This function verifies that the HP 8350B is functioning properly. If there is a problem, error codes are displayed on the front panel to help locate the problem quickly to the board and component level.

HP 8350B Specifications

Instrument Control

Control knobs, step keys and data entry keyboard: all instrument parameters whether time, frequency or power may be set three ways: control knobs, keyboard entry, or step keys.

Frequency Control Functions

Range: determined by RF plug-in unit used.

Linearity: refer to RF unit specifications.

START/STOP sweep: sweeps up from the START frequency to the STOP frequency.

CF/ Δ F Sweep: sweeps symmetrically upward, centered on CF.

Δ F: frequency width of sweep continuously adjustable from zero to 100% of frequency range.

Δ F Accuracy: refer to RF unit specifications.

CF Accuracy: refer to RF unit specifications.

CF Resolution: 0.00038% (262,144 points across band).

Δ F Resolution: 0.1% of full band (1024 points across band)

0.012% of band for $1/8$ of band or less

0.0015% of band for $1/64$ of band or less.

Display resolution: 5 digits.

CW operation: single frequency RF output.

CW accuracy: refer to RF unit specifications.

CW resolution: same as CF.

Vernier: adjusts CW frequency or swept center frequency up to 0.05% of RF plug-in band being swept.

Vernier resolution: 4 ppm (64 points between each CW point; 262, 144 points across band).

Offset: allows the CW frequency or center frequency to be offset by any amount up to the full range of the plug-in.

Resolution: same as CF.

Accuracy: refer to RF unit specifications.

Frequency markers: five frequency markers are independently adjustable and fully calibrated over the entire sweep range. Amplitude or intensity markers available.

Resolution: 0.4% of selected sweep width (256 points/sweep).

Accuracy: refer to frequency accuracy.

Marker output: rectangular pulse, typically -5 volts peak available from the POS Z BLANK connector on rear panel.

Marker sweep: RF output is swept between Marker 1 and Marker 2.

Marker \rightarrow CF: causes the CW or the swept center frequency to equal the frequency of the active marker.

Sweep and Trigger Modes

Internal: sweep recurs automatically.

Line: sweep triggered by ac power line frequency.

External trigger: sweep is actuated by external trigger signal.

Single: selects mode and triggers a single sweep.

Sweep time: continuously adjustable from 10 ms to 100 seconds.

Manual sweep: front panel controls provide continuous manual adjustment of frequency between end frequencies.

External sweep: sweep is controlled by external signal applied to front or rear panel SWP OUTPUT/SWP INPUT connector.

Sweep output: direct-coupled sawtooth, zero to approximately ± 10 volts, at front or rear panel concurrent with swept RF output.

Instrument State Storage

Save n/recall n: up to 9 different front panel settings can be stored in the HP 8350B via the Save n (n = 1 through 9) function. Settings can be recalled randomly or in sequence.

Alt n: causes the RF output to alternate on successive sweeps between the current front panel setting and a setting stored in memory.

Instrument State

Instrument preset: sets the front panel of the HP 8350B into a pre-determined state. It also causes an internal analog and digital self-test to occur. If internal errors or failures are detected they are indicated via error codes.

Modulation

External AM: refer to RF unit specifications.

Internal AM: square wave modulation available at all sweep speeds. Factory preset to 27.8 kHz although selectable to 1000 Hz or 27.8 kHz. On/off ratio, refer to RF unit specifications.

External FM: refer to RF unit specifications.

Phase-lock: refer to RF unit specifications.

Remote Programming (HP-IB)

The HP 8350B has both input and output capability. The HP-IB address can be displayed on the front panel and is selectable (any number from 0 to 31). All front panel controls except the ac line power switch are programmable.

Frequency resolution: same as CF/ Δ F plus vernier.

Power resolution: see HP 83500 Series Plug-ins.

Output mode functions: the HP 8350B can output to a controller an instrument state message that describes the present instrument status.

HP-IB interface functions: SH1, AH1, T6, L4, SR1, RL1, PPO, DC1, DT1, CO, E1.

General Specifications

Nonvolatile memory: continuous memory that retains the contents of all instrument state storage registers, the HP-IB address, and current instrument state when ac line power is off.

Blanking

RF: when enabled, RF turns off during retrace and remains off until next sweep.

Display: POS Z BLANK; direct-coupled rectangular pulse approximately +5.0 volts during retrace and bandswitch points of sweep. NEG Z BLANK; direct-coupled rectangular pulse approximately -5.0 volts coincident in time with RF blanking.

Pen Lift: output to control the pen lift function of XY recorder at end point of sweep.

Counter trigger (CNTR TRIG): output for controlling the external trigger input of the HP 5343A Frequency Counter.

Stop sweep: input for stopping the progress of a forward sweep, used with HP 5343A Frequency Counter.

Program connector: additional control of and information on the HP 8350B instrument state is provided via a 25 pin rear panel connector.

HP 8410C interface cable: permits multi-octave operation of HP HP 8410C Network Analyzer with HP 8350B.

Operating temperature range: 0°C to +55°C.

Power: 100, 120, 220 or 240 volts \pm 10%, 50 to 60 Hz (Option 400, 60 to 400 Hz). Approximately 270 volt-amperes including RF unit.

Weight (not including RF unit): Net 16.5 kg (36.4 lb). Shipping 22.7 kg (50 lb).

Dimensions: 425 mm wide, 133.3 mm high, 422 mm deep (16.75" x 5.25" x 16.6").

Ordering Information

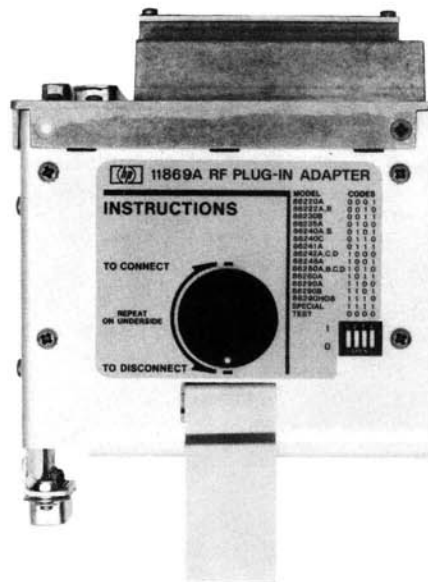
HP 8350B Sweep Oscillator Mainframe²

Options

400: 400 Hz Power Line Frequency Operation	add \$200
803: HP 5343A Interface Cables	add \$60
850: HP 8410C Source Control Cables	add \$100
908: Rack Mount Kit	add \$32.50
910: Extra Manual	add \$80
913: Rack Flange Kit for Instruments with Front Handles	add \$35

Price

\$4,565



HP11869A

HP 11869A Adapter

The HP 11869A adapter provides the electrical and mechanical interface between the HP 8350 and 86200 series plug-ins. All of the HP 8350's standard operating features, including HP-IB remote programming, are available. However, specific plug-in functions (output power level, RF on/off, etc.) cannot be controlled or remotely programmed by the HP 8350 mainframe.

Plug-ins With Rear Panel RF Output

Option 004 allows the adapter to be used with HP 86200-series plug-ins that are equipped with rear panel RF output.

Plug-ins Compatible With The HP 11869A Adapter

The HP 11869A adapter attaches to the back of the HP 86200 series plug-in and is equipped with a switch for setting the specific interface code for the plug-in being used.

The following plug-ins will operate in the HP 8350 by using the HP 11869A.

HP 86220A (0.01-1.3 GHz)	HP 86245A (5.9-12.4 GHz)
HP 86222A/B (0.01-2.4 GHz)	HP 86250A/B/C/D ¹ (8.0-12.4 GHz)
HP 86230B ¹ (1.8-4.2 GHz)	HP 86251A ³ (7.5-18.6 GHz)
HP 86235A (1.7-4.3 GHz)	HP 86260A (12.4-18.0 GHz)
HP 86240A/B (2.0-8.4 GHz)	HP 86260B (10.0-15.5 GHz)
HP 86240C (3.6-8.6 GHz)	HP 86260C (17.0-22.0 GHz)
HP 86241A (3.2-6.5 GHz)	HP 86290A ¹ (2.0-18.0 GHz)
HP 86242A/C/D ¹ (5.9-9.0 GHz)	HP 86290B/C (2.0-18.6 GHz)

HP 11869A Adapter

\$405

Options

004: Extension Cables for Plug-ins with Rear Panel RF Output	add \$200
006: Type N Aux Out Interface Connector for HP 86251A and 86290A ¹ /B/C	add \$200

¹Models 86230B, 86290A, 86250A/B/C, and 86242A/C are obsolete. However, existing models can interface to HP 8350B mainframe via the HP 11869A adapter.

²For transit cases see page 742

³Requires a special PROM for the HP 11869A, which is shipped with every HP 86251A.