Versatile seven model lineup includes a new DDS signal generator.
Four models feature electronic attenuation.

With DDS (Direct Digital Synthesizer) Signal Source

Direct digital synthesizer for enhanced frequency response measurements.

VP-8133A

Typical data of performance

- FM modulation distortion of 0.01 % or less
- AM modulation distortion of 0.1 % or less
- AM residual modulation(S/N) of 65 dB or more
- Spurious
Multi-purpose standard model

High purity signal and 19 dBm output covers 0.01 to 280 MHz range (broadcast band), Basic Model.

With FM stereo modulator

Additional FM stereo modulation with 60 dB or more stereo separation, based on VP-8130A/VP-8120B.

With FM/AM stereo modulator

Additional High performance signal generator with FM and AM stereo (C-QUAM) modulation, based on VP-8130A/VP-8120B.

<table>
<thead>
<tr>
<th></th>
<th>Electronic ATT</th>
<th>F M</th>
<th>A M</th>
<th>FM stereo</th>
<th>AM stereo</th>
<th>DDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP-8130A</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP-8131A</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>VP-8132A</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>VP-8133A</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>VP-8120B</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP-8121B</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP-8122B</td>
<td>☑</td>
<td>☑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VP-8120 Series • VP-8130 Series

FEATURES

1. Low FM modulation distortion, low spurious, high purity source for all basic performance tests
   - Covers wide range from LW to VHF.
   - Supports hi-fi receiver tests with low ~60 dBc spurious and 90 dB or more S/N ratio.

2. VP-8130 series features long-life electronic attenuator for all bands
   - RF section employs electronic attenuator to achieve the reliable long life required for high speed automated testing systems.

3. FM/AM high purity signals
   - Low FM (0.01% or less) and AM (0.1% or less) modulation distortion with ~60 dBc non-harmonic spurious for testing hi-fi receivers.
   - Residual distortion of better than 90 dB (FM) and 65 dB (AM).

   High 2 V output (19 dBm)
   - High output from ~133 to +19 dBm (50 Ω).
   - 0.1 dB attenuator setting resolution for all ranges.
   - Results can be selected in 7 units.
   - Built-in output level sweep function.

   High 10 Hz RF resolution (10 kHz to 140 MHz)
   - Frequency range of 0.01 to 280 MHz covers LW, AM, FM and VHF TV bands to allow testing of anything from hi-fi tuners, car audio and pagers to communications equipment.
   - 8-digit high resolution setting:
     - 20 Hz (140.000002 to 280.000000 MHz) and 10 Hz (below 140 MHz).
   - Frequency sweep function provided as standard.

4. Built-in direct digital synthesizer (VP-8133A)
   - The VP-8133A features a DDS in addition to 400 Hz / 1 kHz internal oscillators to allow 1 Hz step frequency response measurements from 20 Hz to 20 kHz.

5. Space saving design simplifies measurements
   - Built-in AM/FM stereo modulation (VP-8132B/VP8122A) makes it easy to configure measurement instruments and set up optimal measurement conditions. Switching signals and connecting instruments is greatly simplified.

   High-speed frequency settling, GP-IB interface
   - Standard GP-IB interface with fast 70 ms frequency settling time supports high-speed system automation.

6. Flexible memory and interfaces
   - An auto sequence function makes it simple to create an automatic measurement system by combining the SSG with a Panasonic audio analyzer, etc. No external PC or controller is required. Standard memory can hold up to 100 combinations of panel settings.
   - External control of other instruments and automated test system peripherals is supported by a 2-port, 8-bit TTL I/O external control interface.

Rear Panel

- RELAY DRIVE
- EXT CONTROL I/O
- NEGATIVE PEAK CLIPPER ADJ.
- SCOPE PHASE ADJ.
- 19 kHz PILOT SIGNAL
- COMPOSITE OUTPUT
- SCA INPUT
- GP-IB
- VP-8132A
- VP-8122B
Frequency: 0.01 to 280 MHz

Display/Resolution: 0.01000 to 280.000000 MHz

<table>
<thead>
<tr>
<th>Band</th>
<th>RF frequency</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>140.000000 to 280.000000</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>70.000000 to 140.000000</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>35.000000 to 70.000000</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>0.010000 to 35.000000</td>
<td>10</td>
</tr>
<tr>
<td>VP-8131A / VP-8132A / VP-8133A</td>
<td>0.010000 to 280.000000</td>
<td>5</td>
</tr>
</tbody>
</table>

Switching speed: To be within 100 Hz to final frequency
Processing time: ≤ 15 ms
Setting time: ≤ 55 ms
Accuracy: ± 2 x 10⁻³ ± 1 digit
Aging rate: ± 1 x 10⁻³/week
Temperature coefficient: ± 2 x 10⁻⁶ (10 to 35 °C)

Output Level:
Output level range: – 133 to 19 dBm (50 Ω)
Resolution: 0.1 dB
Accuracy: ± 1 dB (≥ 13 dBm: 50 Ω)
Range: ± 1.5 dB (≤ 13 dBm: 50 Ω)
Flatness: ± 1 dB or less (Output level: + 8 dBm, 50 Ω)
Output impedance: 50 ± 75 Ω
VSIM: ≤ 1.2 (Output level ± 3 dBm: 50 Ω)
Radiation interference: ≤ 1 μV (25 mm apart from the main body)
Unit: dBm, dBm, dBm, dBm (mV, mV (mV, mV (mV, mV (mV)
Attenuator contact: VP-8120B series: Mechanical contact
VP-8130A series: Semiconductor contact

Signal purity:
Harmonics: RF: 0.01 to 35 MHz
≤ 30 dBc (Output + 13dBm: 50 Ω)
RF: 0.01 to 35 MHz
≤ 40 dBc (Output + 13dBm: 50 Ω)
RF: 35.000 1 to 280 MHz
≤ 30 dBc (Output + 13dBm: 50 Ω)
Non-harmonics: ≤ 60 dBc (± 10 kHz offset from carrier)

Residual modulation
FM component: (AF 1 kHz, FM 75 kHz)
≥ 90 dB (10.7 ± 1/76 to 108 MHz)
≥ 80 dB (0.3 to 280 MHz)
(BW 50 Hz to 15 kHz, (De-emphasis 50 μs)
AM component: (AF 1 kHz, AM 30 %)
≥ 65 dB (0.4 to 1.7 MHz)
≥ 60 dB (0.15 to 280 MHz)
(BW 50 Hz to 15 kHz)
(Except beat element)

Modulation
Internal modulation signal:
RF oscillator: 400 Hz, 1 kHz ± 3 %
DDS: VP-8133A only
Frequency range/Accuracy: 20 Hz to 20 kHz/0.01 %
Resolution: 1 Hz
Flatness: Same as ext. modulation frequency response
Ext. modulation input impedance: Approx. 10 kΩ
Ext. modulation input voltage: Approx. 1V (peak)

Amplitude modulation
Modulation depth: 0 to 100 % (Output level ± 13 dBm, RF ± 0.15 MHz)
Resolution: 0.5 % (0 to 100 %)
Accuracy: (AF 1 kHz)
(0.4 to 1.7 MHz)
(0.15 to 280 MHz)
Distortion: (BW 50 Hz to 15 kHz, AF 1 kHz: RC)
Modulation: 0 to 30 %
30 to 60 %
60 to 80 %
Band 0.1 to 1.7 MHz
0.1 %
2.0 %
3 %
All band 0.1 to 280 MHz
0.1 %
2.0 %
3 %
(Except beat element)

<table>
<thead>
<tr>
<th>VP-8130 series: + 13 dBm</th>
<th>VP-8130 series: + 6 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental FM: (AF 1kHz AM 30 %)</td>
<td>≤ 75 Hz</td>
</tr>
</tbody>
</table>
(0.15 to 280 MHz) | ≤ 200 Hz |
Ext. modulation frequency response: ± 1 dB: 20 Hz to 10 kHz
(Ref.: 1 kHz, RF ± 0.3 MHz)
(Max. modulation frequency is up to 2 % of carrier frequency at 30 % AM)

Frequency modulation
Frequency deviation range: 0.099 kHz
10 to 99.9 kHz
100 to 999 kHz
Resolution: 100 Hz
1 kHz

Accuracy: ± (Reading x 0.08+/−6digit)

Distortion:
(BW 50 Hz to 15 kHz, AF 1 kHz: RC FM 75 kHz)
≤ 0.01 % (10.7 ± 1/76 to 108 MHz)
≤ 0.1 % (0.3 to 140 MHz)
≤ 0.5 % (140.000 02 to 280 MHz)

Stereos separation:
(AF 1 kHz, 67.5 kHz deviation 76 to 108 MHz)
≥ 60 dB

Incidental AM:
(AF 1 kHz, FM 75 kHz)
≤ 0.5 % (0.17 ± 1/76 to 108 MHz)

Ext. modulation frequency:
VP-8120B series: ≤ 30 dB (76 to 108 MHz)
≤ 1 dB (0.3 to 280 MHz)
Monophonic mode (20 Hz to 15 kHz, 1 kHz ref.)
≤ 1 dB (2.000 01 to 280 MHz)
FM - AM simultaneous modulation: 4 kinds

AM stereo
AM stereo: C-QUAM (Motorola system)
RF frequency: 0.200000 to 2.000000 kHz
Resolution: 1 Hz

Residual modulation
AM component:
(AF 1 kHz, Main ch. 50 % modulation)
≥ 65 dB (BW 50 Hz to 10 kHz)

PM component:
(AF 1 kHz, Sub ch. 50 % modulation)
≥ 54 dB (BW 50 Hz to 10 kHz)

Main - Sub ch. modulation
Mode Modulation signal Contents
OFF – Pilot signal only
L R INT/EXT R Setero modulation by single signal
L = R INT/EXT R Monophonic modulation
MONO INT/EXT R Stereo modulation by Ext. two signals

Specification of monophonic modulation mode is based on the common specification of this series.

Main channel modulation
Modulation: AM
Range: 0 to 100 %
Resolution: 1 %
Accuracy: ± (Reading x 0.05 + 2%) (0 to 99 %)
Distortion: (AF 1 kHz BW 50 Hz to 10 kHz)
≤ 0.2 % (50 % modulation)

Sub channel modulation
Modulation: PM
Range: 0 to 100 % (100 %: ± 45 °)
Resolution: 1 %
Accuracy: ± (Reading x 0.05 + 2%)
Distortion: (AF 1 kHz BW 50 Hz to 10 kHz)
≤ 1 % (50 % modulation)

L/R modulation
Range: 0 to 80 %
Resolution: 1 %
Accuracy: ± (Reading x 0.05 + 2%)
Distortion: (AF 1 kHz BW 50 Hz to 10 kHz)
≤ 1 % (50 % modulation)

Cross talk:
(AF 1kHz 50 % modulation)

Main to Sub ch:
≥ 40 dB
Sub to main ch:
≥ 46 dB
Separation:
≥ 36 dB (BW 400 Hz to 4 kHz)
≥ 26 dB (BW 100 Hz to 7.5 kHz)

Pilot signal
Frequency: 25 kHz
Frequency accuracy: ± 1 %
Range: 0 to 10 % (Display: 0 to 12.5 %)
Resolution: 0.1 %
Modulation accuracy: ± (Reading x 0.05 + 2%)

Negative peak clipper
ON/Off control
Variable range: (≥ 95 ± 5 %)

|-------------------------|-------------------------|

FM stereo
Frequency range:
2.00001 to 280 MHz
Modulation mode:
Mode Modulation signal Contents
OFF – Pilot signal only
L=R INT/EXT L Setero modulation by single signal
L = R INT/EXT L Monophonic modulation
MONO INT/EXT L Stereo modulation by Ext. two signals

Specification of monophonic modulation mode is based on the common specification of this series.
<table>
<thead>
<tr>
<th><strong>Signal level ratio (M + S variable)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range: 0 to 114 % (Other than Monophonic) 0 to 127 % (MONO)</td>
<td></td>
</tr>
<tr>
<td><strong>Resolution:</strong></td>
<td>± 5 %</td>
</tr>
<tr>
<td><strong>Pre-emphasis:</strong></td>
<td>25 µs/50 µs/75 µs/OFF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Pilot Signal</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency/Accuracy:</td>
<td>19 kHz/± 1 Hz</td>
</tr>
<tr>
<td>Level setting/Resolution:</td>
<td>0 to 19.9 %/0.1 %</td>
</tr>
<tr>
<td><strong>Accuracy:</strong></td>
<td>± 1 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Composite output (Against the internal modulation)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level:</strong></td>
<td>0 to 9.99 V [p-p] Open end ± 5 %</td>
</tr>
<tr>
<td><strong>Output impedance:</strong></td>
<td>Approx. 75 Ω</td>
</tr>
<tr>
<td><strong>Stereo separation:</strong></td>
<td>≥ 60 db, 90 % level ratio (AF: 1 kHz)</td>
</tr>
<tr>
<td><strong>Distortion:</strong></td>
<td>0.01 % (RC oscillator)</td>
</tr>
<tr>
<td><strong>S/N:</strong></td>
<td>≥ 90 dB, 100 % level ratio</td>
</tr>
<tr>
<td><strong>38 kHz sub carrier leakage:</strong></td>
<td>≥ ≤ 50 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>19 kHz output signal</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level:</strong></td>
<td>Approx. 1 V [rms]</td>
</tr>
<tr>
<td><strong>Impedance:</strong></td>
<td>Approx. 1 kΩ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SCA signal</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency range:</strong></td>
<td>20 to 99 kHz ±1 dB (57 kHz ref.)</td>
</tr>
<tr>
<td><strong>Input level:</strong></td>
<td>0.56 V [p-p] (0.2 V [rms]) Equivalent to 10 % level ratio</td>
</tr>
<tr>
<td><strong>Input impedance:</strong></td>
<td>Approx. 10 kΩ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Preset function</strong></th>
<th>100 data (Panel condition, I/O condition, Output level)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assorted preset:</strong></td>
<td>Listener/talker, Listen only, Talk only, Remote/local, Device clear SHI, AH1, T7, L3, SR0, RL1, PP0, DC1, DT0, C0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>External control interface:</strong></th>
<th>(1) Sequential recall (Up/Down/Clear)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GP-IB:</strong></td>
<td>(2) Modify (Freq./Level)</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>(3) Direct recall</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>(4) 8 bits TTL control</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>(5) Print out of memory contents</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>(6) 8 bits data read</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>(7) Relay drive (Dummy antenna switching)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Others</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power requirement:</strong></td>
<td>AC100/120/220/230 V</td>
</tr>
<tr>
<td><strong>Frequency:</strong></td>
<td>50 Hz/60 Hz</td>
</tr>
<tr>
<td><strong>Power consumption:</strong></td>
<td>Approx. 90 VA</td>
</tr>
<tr>
<td><strong>Mass • Dimension:</strong></td>
<td>Approx. 15 kg</td>
</tr>
<tr>
<td><strong>Accessories:</strong></td>
<td>Output cable, GP-IB connector shield cap, Power cable, Spare fuse, Operation manual</td>
</tr>
</tbody>
</table>