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

New With DDS (Direct Digital Synthesizer) Signal Source

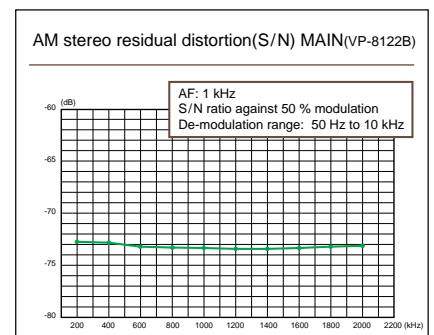
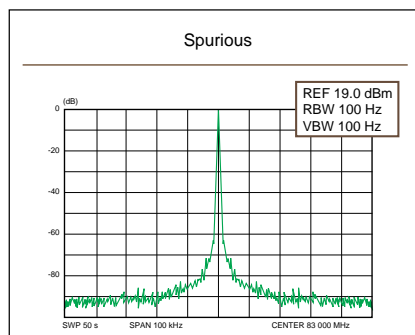
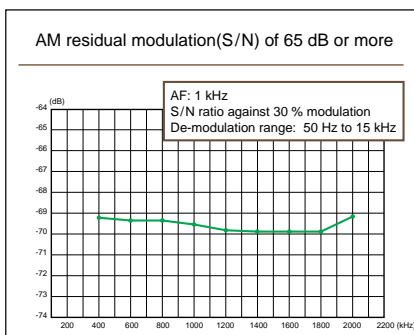
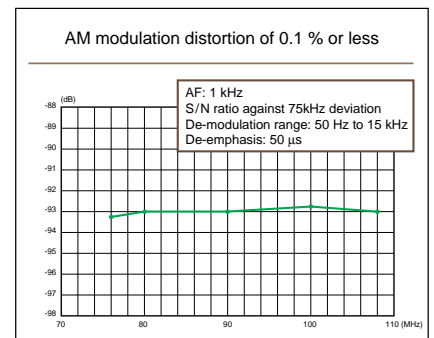
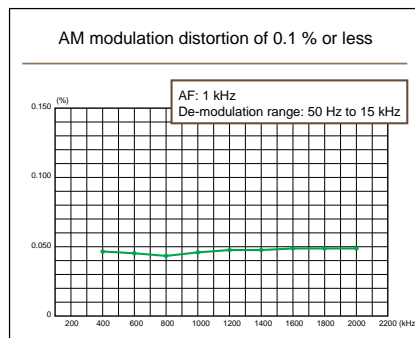
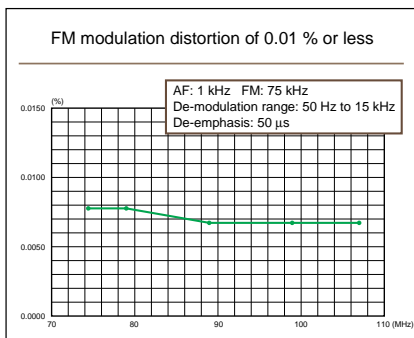


Direct digital synthesizer for enhanced frequency response measurements.

VP-8133A



Typical data of performance



280 MHz Synthesized Signal Generator

Multi-purpose standard model

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



VP-8130A



VP-8120B

With FM stereo modulator

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



VP-8131A



VP-8121B

With FM/AM stereo modulator

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



VP-8132A



VP-8122B

New

| | Electronic ATT | F M | A M | FM stereo | AM stereo | DDS |
|----------|----------------|-----|-----|-----------|-----------|-----|
| VP-8130A | ● | ● | ● | | | |
| VP-8131A | ● | ● | ● | ● | | |
| VP-8132A | ● | ● | ● | ● | ● | |
| VP-8133A | ● | ● | ● | ● | | ● |
| VP-8120B | | ● | ● | | | |
| VP-8121B | | ● | ● | ● | | |
| VP-8122B | | ● | ● | ● | ● | |

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.

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 (140.00002 to 280.00000 MHz) and 10 Hz (below 140 MHz).
- Frequency sweep function provided as standard.

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.

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.

3

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.

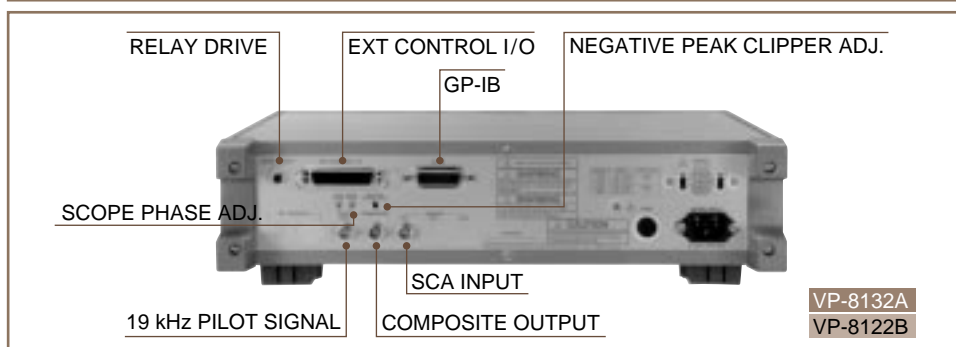
High-speed frequency settling, GP-IB interface

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

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



Common Specification

Frequency

Frequency range: 0.01 to 280 MHz
 Display/Resolution: 0.01000 to 280.00000 MHz

| Band | RF frequency | Resolution |
|----------------------|------------------------|------------|
| 4 | 140.00002 to 280.00000 | 20 |
| 3 | 70.00001 to 140.00000 | 10 |
| 2 | 35.00001 to 70.00000 | 10 |
| 1 | 0.01000 to 35.00000 | 10 |
| VP-8132A/8122B AM ST | 0.010000 to 2.000000 | 1 |

Switching speed: To be within 100 Hz to final frequency
 Processing time: ≤ 15 ms
 Settling time: ≤ 55 ms

Accuracy: ± 2 x 10⁻⁶ ± 1 digit
 Aging rate: ± 2 x 10⁻⁷/week
 Temperature coefficient: ± 2 x 10⁻⁶ / (10 to 35 °C)

Output Level

Output level range: - 133 to + 19 dBm (50 Ω)
 - 134.8 to + 17.2 dBm (75 Ω)

Resolution: 0.1 dB
 Accuracy: ± 1 dB (≥ - 113 dBm: 50 Ω)
 ± 1.5 dB (< - 113 dBm: 50 Ω)

Flatness: ± 1 dB or less (Output level: + 8 dBm, 50 Ω)
 Output impedance: 50 Ω/75 Ω
 VSWR: ≤ 1.2 (Output level ≤ + 3 dBm: 50 Ω)
 Radiation interference: ≤ 1 μV (25 mm apart from the main body)
 Unit: dBm, dBμV, dBμV [emf], V, mV, μV, V [emf], mV [emf], μV [emf]

Attenuator contact:
 VP-8120B series Mechanical contact
 VP-8130A series Semiconductor contact

Signal purity

Spurious:

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:
 RC 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) ± (Reading x 0.04 + 2) % (≤ 80 %)
 (0.15 to 280 MHz) ± (Reading x 0.06 + 2) % (≤ 80 %)
 Distortion: (BW 50 Hz to 15 kHz, AF 1 kHz: RC)

| Modulation: | 0 to 30 % | 30 to 60 % | 60 to 80 % |
|---------------------------|-----------|------------|------------|
| Band 1: 0.4 to 1.7 MHz | ≤ 0.1 % | ≤ 0.5 % | ≤ 1 % |
| All band: 0.15 to 280 MHz | ≤ 1 % | ≤ 2 % | ≤ 3 % |

(Except beat element)

(VP-8120 series: + 13 dBm, VP-8130 series: + 8 dBm)

Incidental FM: (AF 1kHz AM 30 %)
 (0.4 to 1.7 MHz) ≤ 75 Hz
 (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 to 9.99 kHz | 10 to 99.9 kHz | 100 to 999 kHz |
|----------------------------|---------------|----------------|----------------|
| Resolution: | 10 Hz | 100 Hz | 1 kHz |

(Max. FM deviation is up to 25 % of carrier frequency)
 Accuracy: ± (Reading x 0.08+1digit)

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)

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

Incidental AM: (AF 1 kHz FM 75 kHz)
 ≤ 0.5 % (10.7 ± 1/76 to 108 MHz)

Ext. modulation frequency response: MONO mode (20 Hz to 100 kHz, 1 kHz ref.)
 ≤ ± 0.3dB (76 to 108 MHz)
 ≤ ± 1dB (0.3 to 280 MHz)
 Other than MONO mode (20 Hz to 15 kHz, 1 kHz ref.)
 ≤ ± 1dB (2.000 01 to 280 MHz)

FM • AM simultaneous modulation: 4 kinds

VP-8132A/VP-8122B (VP-8132A: +8 dBm, VP-8122B: +13 dBm)

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

Residual modulation

AM component: (AF 1 kHz, Main ch. 50 % modulation)
 ≥ 65 dB (BW 50 Hz to 10 kHz)
 (AF 1 kHz, Sub ch. 50 % modulation)
 ≥ 54 dB (BW 50 Hz to 10 kHz)

PM component: ≥ 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 | Stereo modulation by single signal |
| L | | |
| R | | |
| L= - R | | |
| MONO | INT/EXT R | Monophonic modulation |
| EXT L,R | Lch: EXT L Rch: 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 Hz
 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 %)

VP-8133A/VP-8132A/VP-8131A/VP-8122B/VP-8121B

FM stereo
 Frequency range: 2.00001 to 280 MHz

Modulation mode:

| Mode | Modulation signal | Contents |
|---------|--------------------------|---------------------------------------|
| OFF | - | Pilot signal only |
| L=R | INT L, EXT L | Stereo modulation by single signal |
| L | | |
| R | | |
| L= - R | | |
| MONO | INT/EXT L | Monophonic modulation |
| INT L | Lch: INT L | Stereo modulation by Int. & Ext. |
| EXT R | Rch: EXT R | |
| EXT L,R | Lch: EXT L Rch: EXT R | Stereo modulation by Ext. two signals |

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

Signal level ratio (M + S variable)

| | |
|---------------|---|
| Range: | 0 to 114 % (Other than Monophonic) 0 to 127 % (MONO) |
| Resolution: | 1 % |
| Accuracy: | ± 5 % |
| Pre-emphasis: | 25 µs/50 µs/75 µs/OFF |

Pilot Signal

| | |
|---------------------------|------------------|
| Frequency/Accuracy: | 19 kHz/± 1 Hz |
| Level setting/Resolution: | 0 to 19.9%/0.1 % |
| Accuracy: | ± 1 % |

Composite output (Against the internal modulation)

| | |
|-----------------------------|---------------------------------------|
| Level: | 0 to 9.99 V [p-p] Open end ± 5 % |
| Output impedance: | Approx. 75 Ω |
| Stereo separation: | ≥ 60 dB, 90 % level ratio (AF: 1 kHz) |
| Distortion: | 0.01 % (RC oscillator) |
| S/N: | ≥ 90 dB, 100 % level ratio |
| 38 kHz sub carrier leakage: | ≥ -50 dB |

19 kHz output signal

| | |
|------------|-------------------|
| Level: | Approx. 1 V [rms] |
| Impedance: | Approx. 1 kΩ |

SCA signal

| | |
|-------------------|--|
| Frequency range: | 20 to 99 kHz ±1 dB (57 kHz ref.) |
| Input level: | 0.56 V [p-p] (0.2 V [rms]) Equivalent to 10 % level ratio |
| Input impedance : | Approx. 10 kΩ |

Preset function

| | |
|------------------|---|
| Assorted preset: | 100 data (Panel condition, I/O condition, Output level) |
|------------------|---|

Interface

| | |
|--------|--|
| GP-IB: | Listener/talker, Listen only, Talk only, Remote/local, Device clear SH1, AH1, T7, L3, SR0, RL1, PP0, DC1, DT0, C0 |
|--------|--|

| | |
|-----------------------------|---|
| External control interface: | (1) Sequential recall (Up/Down/Clear) (2) Modify (Freq./Level) (3) Direct recall (4) 8 bits TTL control (5) Print out of memory contents (6) 8 bits data read (7) Relay drive (Dummy antenna switching) |
|-----------------------------|---|

Others

| | |
|--------------------|--|
| Power requirement: | AC100/120/220/230 V |
| Frequency: | 50 Hz/60 Hz |
| Power consumption: | Approx. 90 VA |
| Mass • Dimension: | W 426 x H 99 x D 400 mm Approx. 15 kg |
| Accessories: | Output cable, GP-IB connector shield cap, Power cable, Spare fuse, Operation manual |



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