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

280 MHz Synthesized Signal Generator

New With DDS (Direct Digital Synthsizer) Signal Source

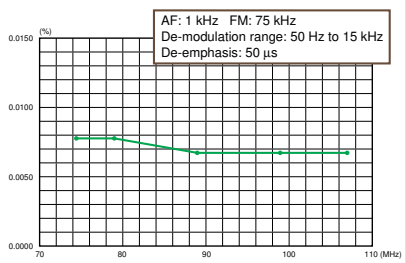
Electronic ATT DDS

Direct digital synthesizer for enhanced frequency response measurements.

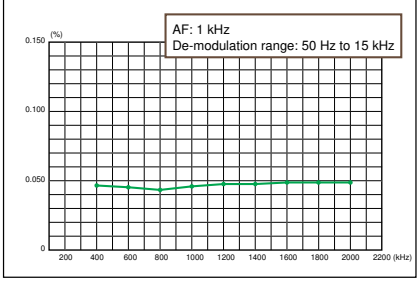
VP-8133A

Typical data of performance

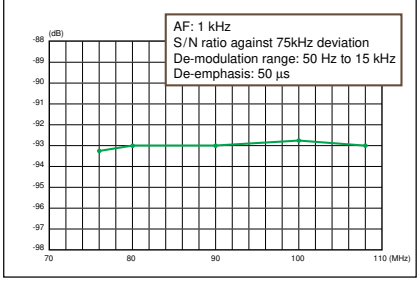
FM modulation distortion of 0.01 % or less



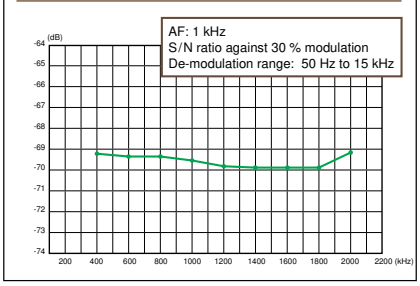
AM modulation distortion of 0.1 % or less



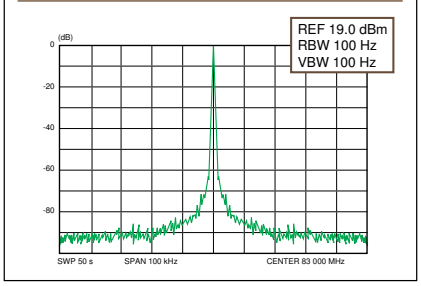
AM modulation distortion of 0.1 % or less



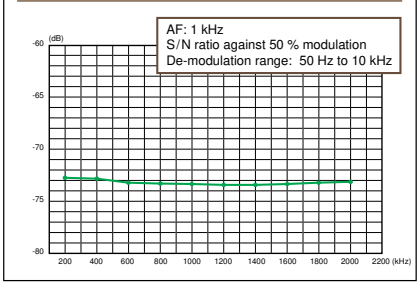
AM residual modulation(S/N) of 65 dB or more



Spurious



AM stereo residual distortion(S/N) MAIN(VP-8122B)



Multi-purpose standard model

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

Electronic ATT

With FM stereo modulator

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

Electronic ATT

With FM/AM stereo modulator

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

Electronic ATT

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 celected 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 zreliable 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.

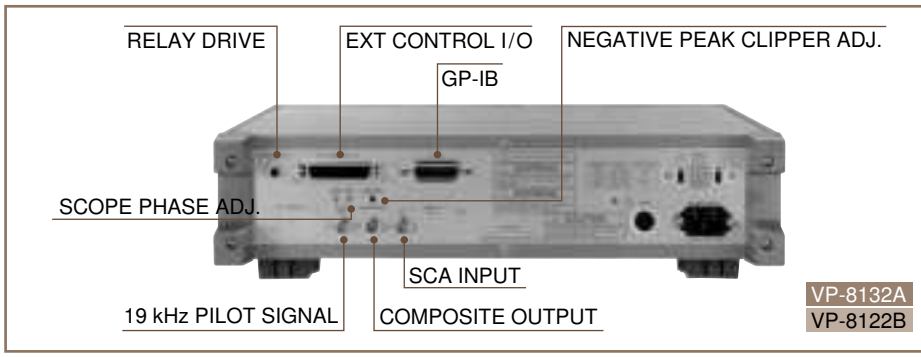
High-speed frequency settling, GP-IB interface

- 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 inpedance:	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:	(AF1 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)
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 L R L= – R	INT/EXT R	Setero modulation by single signal
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:	2.000 01 to 280 MHz
Modulation mode:	

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