

140 MHz
SG

High-performance 140 MHz signal generator series from Panasonic. Three models a AM•FM modulator, with FM stereo modulator and RDS+ARI generator / FM stereo modulator.

FEATURES

► This series provides a versatile choice of high performance, low cost, AM/FM signal generators ideal for use on car audio, portable audio and home audio production lines. In addition to a wide 100 kHz to 140 MHz bandwidth, the new series boasts functions and performance easily comparable to high-end conventional signal generators, featuring a high-purity signal source with S/N of 76 dB or more (FM), a new 0.1 dB resolution electronic attenuator giving up to 126 dB μ V [emf] output, and a comprehensive range of standard interfaces including GP-IB and RS-232-C. With its high speed frequency switching and long-life attenuator, and the capability in the VP-8194A model to include an RDS + ARI signal source and FM stereo modulation in a single unit, the compact size of this powerful, yet simple to operate, instrument can save valuable production line space.

- ◆ High output and equipped, with an electronic attenuator .
-20 dB μ V to 126 dB μ V [emf] with 0.1 dB step control.
- ◆ 100 kHz to 140 MHz broadband coverage.
- ◆ Simultaneous AM/FM modulation.
- ◆ FM stereo modulation function. (VP-8193A / VP-8194A)
- ◆ RDS+ARI Signal Generator built in.(VP-8194A)
- ◆ 20 Hz to 20 kHz DDS audio signal source.
(option for VP-8193A / VP-8194A)
- ◆ GP-IB. RS-232-C. EXT I/O interfaces as standard.

Option

DDS Audio Signal Generator (Option for VP-8193A/8194A)

In addition to 400 Hz/1 kHz fixed frequencies, a 20 Hz to 20 kHz/1 Hz resolution DDS signal source option can be installed to provide a variable frequency modulation signal source.

▼ VP-8194A

Model with AM/FM monaural/FM stereo + RDS-ARI signal source: CE

The model VP-8194A signal generator with FM stereo modulator and RDS + ARI generator. Built-in CENELEC compliant RDS/ARI signal source and RDS 16-pattern memory. Included editor software (Windows) allows RDS data to be easily downloaded through RS-232-C interface and edited on a PC.



FEATURES

Selection Guide

	Electronic ATT	FM	FM Stereo	AM	RDS + ARI	DDS(Opt.)	Weather band(Opt.)
VP-8194A	○	○	○	○	○	○	○
VP-8193A	○	○	○	○		○	○
VP-8192A	○	○		○			○

▼ VP-8193A

Standard model with AM/FM monaural + FM stereo modulator functions:



The standard model, featuring a high-purity signal source, plus an internal high performance FM stereo modulation function with a high stereo separation ratio better than 55 dB.

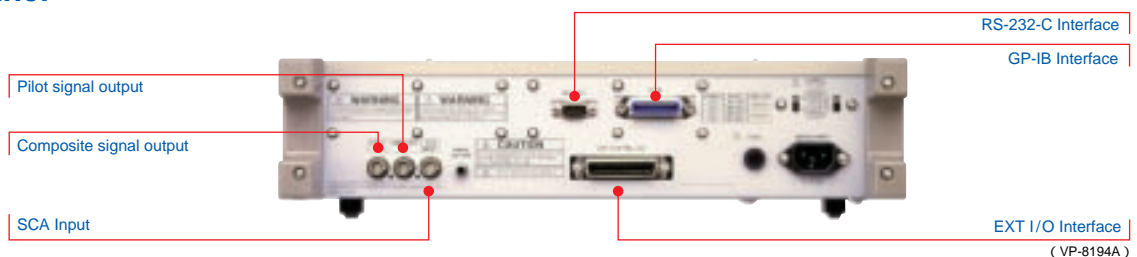
▼ VP-8192A

Basic model with AM/FM monaural modulator functions:



A high purity signal source with output level of 126 dB μ V [emf], it's covers the broadcast bands with its wide 100 kHz to 140 MHz range.

Rear Panel



FUNCTION

Modulation

FM : 0.0 kHz to 100 kHz, AM: 0 % to 80 %.
Distortion : FM 0.05 % or less, AM 0.5 % or less.

- ◆ Three digit setting of modulation level, FM: 0 kHz to 100 kHz / 0.5 kHz step and AM: 0 % to 80 % / 0.5 % step.
- ◆ Equipped HIGH/LOW indicator to 1 V [peak] for external modulation signal input. Modulation level setting correspond to internal modulation.
- ◆ Internal/External combination modulation of four kinds of simultaneous AM/FM modulation function.(VP-8193A / 8194A)

Output

High output level (-20 dB μ V to 126 dB μ V [emf])
microprocessor compensated high accuracy of 0.1 dB step.

- ◆ Electronic attenuator for long-term durability.
- ◆ Continuous attenuation control for correct AGC range measurement.
- ◆ Δ dB function allows direct AGC level and limiting sensitivity measurements.
- ◆ Easy operation of frequency modify knob.

Frequency

Wide frequency range of 100 kHz to 140 MHz.
Synthesized system of 100 Hz resolution and 5 x10⁻⁶ accuracy.

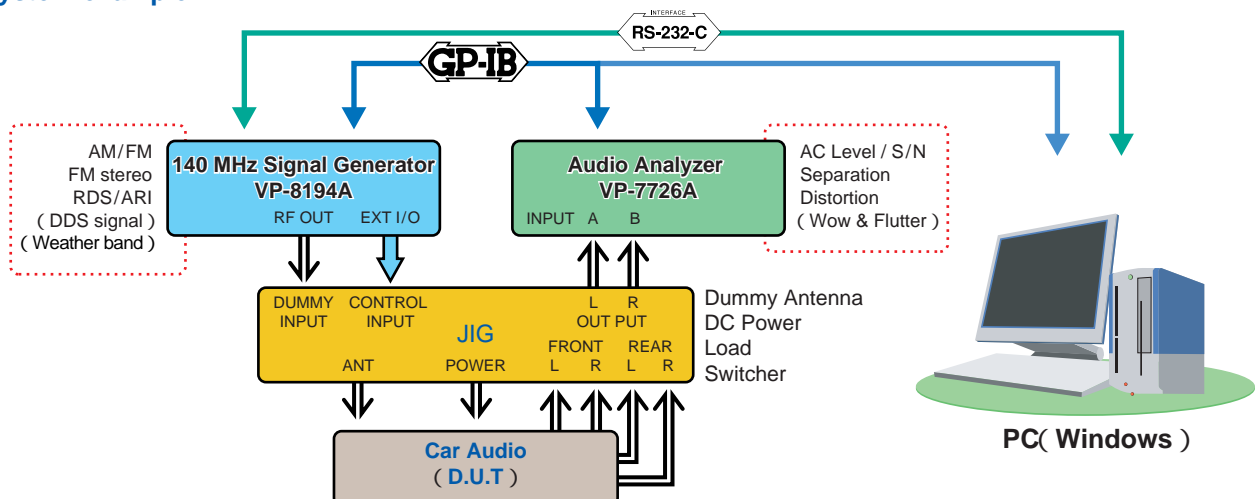
- ◆ 100 Hz resolution 7-digit display.
- ◆ Support for highest FM band image frequencies measurement.
- ◆ Excellent high purity of S/N 76 dB or higher.
- ◆ 700 ms (Typical) of high setting speed.
- ◆ Convenient Δ F display function for interference and selectivity measurements

Memory & Interface

GP-IB and RS-232-C interfaces as standard.
Auto sequence and EXT I/O for simple system.

- ◆ Auto sequence function: Use in combination with a Panasonic Audio Analyzer to create a simple automatic measurement system.
- ◆ No external PC or controller is required.
- ◆ EXT Control I/O: Two 8-bit ports for external control of system instruments and peripherals.
- ◆ GP-IB: Fitted as standard for use in automatic measurement systems.
- ◆ RS-232-C: Allows direct PC control and RDS data modification.

System example



* Windows is the trade mark of Microsoft Corporation.

VP-8192A / VP-8193A / VP-8194A / Common Specification

Frequency	
Frequency range	100 kHz to 140 MHz
Max. display/Resolution	7-digit/100 Hz
Frequency band	Band1: 0.100 0 MHz to 35.000 0 MHz Band2: 35.000 1 MHz to 70.000 0 MHz Band3: 70.000 1 MHz to 140.000 0 MHz
Accuracy	5 x 10 ⁻⁶
Aging rate	±2 x 10 ⁻⁷ /week
Temperature coefficient	±5 x 10 ⁻⁶ 10 °C to 35 °C
Weather band	
Frequency range	162 MHz to 163 MHz
Resolution	100 Hz
Freq. accuracy	±5 x 10 ⁻⁶
Weather band Mod. mode	FM monoral only

Output	
Output range	- 20 dBμV to 126 dBμV [emf]
Display range/Resolution	4 - digit/0.1dB
Accuracy	±1.5 dB (RF ≥ 0 dBμV [emf]) ±2.0 dB (RF < 0 dBμV [emf])
Output impedance	50 Ω
VSWR	≤ 1.3 (RF ≤ +101 dBμV [emf])
Unit	dBμV [emf]
Attenuator construction	Semiconductor (Except 106 dB and 106.1 dB points)
Signal purity (Frequency offset: 10 kHz or more)	
Harmonic spurious (2nd/3rd)	≤ - 30 dBc
Non harmonics spurious	≤ - 50 dBc (Band 2 to 3) ≤ - 40 dBc (Band 1: 0.1 MHz ≤ fs ≤ 35 MHz) ≤ - 30 dBc (Band 1: fs ≥ 35.000 1 MHz) (At a point of 10 kHz or more from the carrier) (fs: Spurious output frequency)

Residual Modulation	
FM components	(AF 1 kHz, FM 75 kHz) ≥ 76 dB (10.7 MHz ± 1 MHz/ 76 MHz to 108 MHz) ≥ 73 dB (0.3 MHz to 140 MHz) (BW 50 Hz to 15 kHz, De-emphasis 50 μs)
AM components	(AF 1 kHz, AM 30 %) ≥ 55 dB (0.4 MHz to 1.7 MHz) ≥ 50 dB (0.15 MHz to 140 MHz) (BW 50 Hz to 15 kHz) (Except beat element)

Modulation	
Internal signal source	RC oscillator 400 Hz/ 1 kHz ± 3 %
Ext. input impedance	Approx. 10 kΩ
Ext. input voltage	Approx. 1 V[peak]

Option	
DDS Oscillator [VQ-081G] (for VP-8193A/VP-8194A)	
Oscillator type	Direct Digital Synthesizer 12 bit
Frequency/Resolution	20 Hz to 20 kHz/1 Hz
Freq. accuracy	± 0.1 %

Amplitude modulation (AM) (RF: ≥ 150 kHz)	
Modulation range	0 % to 80 %
Modulation setting range	0 % to 100 %
Resolution	0.5 %
Accuracy	
(0.4 MHz to 1.7 MHz)	± (setting x 0.1 + 1) % (≤ 80 %)
(0.15 MHz to 140 MHz)	± (setting x 0.1 + 2) % (≤ 80 %)
	(BW 50 Hz to 15 kHz, AF 1 kHz)
Freq./Modulation	30 % 60 % 80 %
(0.4 MHz to 1.7 MHz)	≤ 0.5 % ≤ 1.5 % ≤ 3 %
(0.15 MHz to 140 MHz)	≤ 1.5 % ≤ 3 % ≤ 5 %
	(Except beat element)

Incidental FM	(AF 1 kHz, AM 30 %)
(0.4 MHz to 1.7 MHz)	≤ 150 Hz
(0.15 MHz to 140 MHz)	≤ 300 Hz
External modulation	≤ ± 1 dB: 20 Hz to 10 kHz (1 kHz reference)
Frequency characteristics	Max. Modulation frequency should be lower that 2 % of carrier frequency at 30 % modulation condition

Frequency modulation (FM)	
Deviation range	0.0 kHz to 100 kHz
MAX. FM deviation	RF ≤ 35 MHz Up to 25 % of carrier frequency
Resolution	0.5 kHz
Accuracy	
(10.7 MHz = 1 MHz / 76 MHz to 108 MHz)	± (setting x 0.1 + 0.5) kHz
(0.3 MHz to 140 MHz)	± (setting x 0.1 + 1) kHz
Distortion	
(10.7 MHz = 1 MHz / 76 MHz to 108 MHz)	≤ 0.05 %
(0.3 MHz to 140 MHz)	≤ 0.1 %
	(AF 1 kHz, FM 75 kHz, BW 50 Hz to 15 kHz, De-emphasis 50 μs)

Stereo separation	≥ 55 dB (AF 1 kHz, 100 % Mod., 76 MHz to 108 MHz)
Incidental AM	≤ 0.5 %: 10.7 MHz ± 1 MHz / 76 MHz to 108 MHz (AF 1 kHz, FM 75 kHz)
Ext. modulation Frequency response	
MONO	≤ ± 1 dB (20 Hz to 100 kHz, 1 kHz ref.)
STEREO	≤ ± 1 dB (20 Hz to 15 kHz, 1 kHz ref.)
Pre-emphasis	25 μs/50 μs/75 μs/OFF

FM - AM simultaneous modulation(4 kinds)	
(VP-8193A/8194A)	AM/FM mono modulation
(VP-8193A/8194A)	AM/FM stereo modulation

FM stereo modulation (VP-8193A/8194A)			
Frequency range	RF ≥ 0.3 MHz		
Main & Sub channel modulation mode	Mode	Signal source	Contents
	L = R	INT/EXT	Single frequency Stereo modulation
	L		
	R		
	L = -R	INT/EXT	Monophonic modulation
	MONO		

*Mono modulation condition specification is common for VP-8192A,VP-8193A and VP-8194A.

Modulation range	0 % to 127 % (at 75 kHz/100 %)
Modulation resolution	1 %
Accuracy	
(10.7 MHz = 1 MHz / 76 MHz to 108 MHz)	± (setting x 0.1 + 1) %
(0.3 MHz to 140 MHz)	± (setting x 0.1 + 1.5) %

Pilot signal (VP-8193A/8194A)	
Frequency/Accuracy	19 kHz/ ± 1 Hz
Level range/Resolution	0.0 % to 15.0 %/0.1 %
Accuracy	± (setting x 0.1 + 1) % (10.7 MHz ± 1 MHz/76 MHz to 108 MHz)

Composite output (VP-8193A/8194A)	
Level	5 V [p-p] ± 10 % (FM-MONO, 100 % Mod.)
Output impedance	Approx. 600 Ω
Stereo separation	≥ 55 dB (AF: 400 Hz, 1 kHz) (10.7 MHz ± 1 MHz / 76 MHz to 108 MHz)
Distortion	≤ 0.05 %
38 kHz sub-carrier leakage	≤ - 50 dB

19 kHz output signal (VP-8193A/8194A)	
Level	Approx. 1 V[rms]
Output impedance	Approx. 1 kΩ

SCA input (VP-8193A/8194A)	
Input level	0.56 V [p-p] (0.2 V[rms]) (Equivalent to 10 % level ratio)
Frequency range	20 kHz to 99 kHz ± 1 dB (57 kHz ref.)
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, RL1, DC1

RS-232-C	
Baud rate	38 400 bps
Character length	8 bit
Parity	EVEN
Flow control	Software flow control x on/ x off
Stop bit	1 bit
External control interface	(1) Sequential recall (2) Modify. (3) Direct recall (4) TTL control (5) Print out memory contents (6) Data read (7) Relay drive

Others	
Power requirement	AC100 V/120 V/220 V/230 V
Frequency	50 Hz/60 Hz
Power consumption	Approx. 60 VA
Dimension/Mass	W 426 mm x H 99 mm x D 300 mm Approx. 9 kg
Accessories	Power cable x 1, GND.adaptor x 1 (for 100 V spec only) Spare fuse x 1, Operation manual x 1 RDS editor software (VP-8194A only) x 1

VP-8194A

ARI/RDS

ARI Modulation

SK signal

Frequency	57 kHz \pm 6 Hz
Level	0.0 % to 10 % (100 % = 75 kHz)
Resolution	0.1 %
Accuracy	\pm (setting \times 0.1 + 0.5) %
Phase	0 deg \pm 10 deg (to the pilot signal)

DK signal

Frequency accuracy	125 Hz \pm 1 %
AM modulation range	0 % to 40 %
AM resolution	1 %
AM accuracy	\pm 5 %
AM distortion	\leq 1 % (SK = 5.3 %, AM = 30 %)

BK signal

Frequency accuracy	Code A: 23.75 Hz \pm 1 %
	Code B: 28.27 Hz \pm 1 %
	Code C: 34.93 Hz \pm 1 %
	Code D: 39.58 Hz \pm 1 %
	Code E: 45.67 Hz \pm 1 %
	Code F: 53.98 Hz \pm 1 %

AM modulation range	0 % to 80 %
AM resolution	1 %
AM accuracy	\pm 5 %
AM distortion	\leq 2 % (SK = 5.3 %, AM = 60 %)

RDS modulation

Level range	0.0 % to 10 % (100 % = 75 kHz)
Resolution	0.10 %
Accuracy	\pm (setting \times 0.1 + 0.5) %
Spurious	\leq - 50 dB (\leq 53 kHz, 10 % output)
	\leq - 40 dB (\geq 61 kHz, 10 % output)

Sub-carrier

frequency	57 kHz \pm \pm 6 Hz
Phase	0 deg or 90 deg \pm 10 deg (to the pilot)
Leakage	\leq - 50 dB

Internal data

Mode	Sub-carrier/Null/Internal
Pattern number	Max. 16
Pattern length	Max. 2 048 groups

Service Manual

VP-8192A - SEP8192A-0
VP-8193A - SEP8193A-0
VP-8194A - SEP8194A-0