

Traffic Information Signals

FM MULTIPLEX SIGNAL GENERATOR

VP-7635A

- USA and EBU Traffic Information Generator Functions
- High Stereo Separation Characteristics (66dB or More)
- Low Distortion Output (0.01% or Less)
- GP-IB Interface for Flexible System Configuration
- 7 Internal Test Tone Frequencies
- 19kHz Frequency Measurement Function

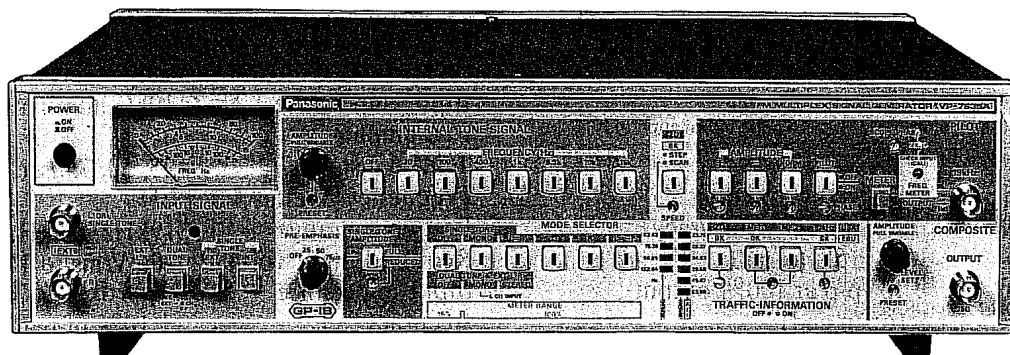
With compliments

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Description

The VP-7635A FM Multiplex Signal Generator provides stereo multiplex signals for use in the testing and measurement of the fidelity and separation of stereo receivers, in combination with an FM Signal Generator (VP-8179B10, VP-8177A, etc). Light-touch keys are used for easy selection of modulation level, output signal mode, input mode and internal tone frequencies. This signal generator, based on the FM broadcasting system approved by the FCC and the EBU serves as a modulator for a standard FM signal generator, and also functions as a generator of automotive radio information approved by the EBU. The VP-7635A is well suited to the testing and adjustment of stereo tuners or tuners capable of receiving traffic information signals.

The traffic information generator section provides transmitter identification codes which are amplitude-modulated by the announcement identification code and/or the area identification code. The transmitter identification coded signal can be transmitted monophonically or mixed with a multiplex stereo signal. The level of each signal can be monitored and is adjustable by front-panel controls. This instrument is suitable for use in a production line or an automatic test system. In addition, the built-in GP-IB interface provides a wide range of applications as an automatic measurement system component.

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Output Characteristics

Output mode by input signal

Selection	Input signal	Output mode
EXT L (R)	External L (R) signal	(1) Stereo
DUAL TONE	External and internal test tones	(2) Mono when the signal is input to L channel
SINGLE TONE EXT (INT)	External (internal) test tone	(1) Mono (2) Stereo L=R L only R only L=-R
SCA	External SCA signal	SCA signal added
PILOT	Internal pilot signal	Pilot signal only
TRAFFIC INFORMATION	Internal traffic information signal	Traffic information only

Output level indicator : Selectable to either 15% or 100% of f.s. accuracy of $\pm 5\%$ of f.s.

Maximum output : 15Vp-p at 100% output (open end)

Attenuator : Continuously variable over a range of about 20dB (can be preset)

Output impedance : 75 Ω

Frequency characteristics : Mono: DC to 80kHz ± 0.5 dB with reference to 1-kHz
 Stereo: DC to 15kHz ± 0.3 dB with reference to 1-kHz

Distortion : 0.01% or less over 30Hz to 10kHz
 0.05% or less over 10Hz to 15kHz

Stereo separation : 66dB or more over DC to 15kHz

Subcarrier leakage : -66dB maximum at 100% output

S/N ratio : 90dB or more

Pilot Signal

Frequency : 19kHz ± 1 Hz

Output range : Normal: continuously variable from 0 to 15%

Preset to +: to 40% over the Normal

Preset to -: to 30% below the Normal

Phase adjustment : $\pm 0.5^\circ$

19-kHz output : 1.5Vrms with an output impedance of 1k Ω approx.

Internal Test Tone

Frequencies : 30, 100, 400Hz, 1, 6.3, 10 and 15kHz (accurate within $\pm 3\%$)

External Input

External L and R

Frequency range : DC to 15kHz

Input voltage : 0.8Vrms approx. for 100% output level.

Input impedance : 10k Ω , unbalanced

External test tone

Frequency range : Mono: DC to 80kHz
 Stereo: DC to 15kHz

Input voltage : 2.5Vrms approx. for 100% output level.

Input impedance : 10k Ω nominal, unbalanced

SCA INPUT SIGNAL

Frequency range : 20 to 75kHz

Input voltage : 0.2Vrms approx. for 10% output level.

Input impedance : 10k Ω nominal, unbalanced

Pre-emphasis

Time constant : 25, 50, 75 μ sec. and OFF.

Frequency Meter

Frequency range : 19kHz ± 2 kHz

Required input voltage : 10mVrms to 1Vrms

Input impedance : Approx. 1M Ω

Accuracy : $\pm 10\%$ of reading

Traffic Information

Transfer Signal — EBU

SK (Transmitter identification code)

Subcarrier frequency : 57kHz

Frequency error : ± 6 Hz

Maximum output : 0.8Vp-p or more (open-ended)

DK (Announcement identification code)

Modulation type : Amplitude modulation (The SK signal is the carrier.)

Modulation frequency : 125Hz (1/456 of 57kHz)

Modulation : 30% $\pm 5\%$ (when 30% of the 0-to-100% scale is specified)

Distortion : 0.8% or less

BK (Area identification code)

Modulation type : Amplitude modulation (The SK signal is the carrier.)

Modulation frequency : 23.75, 28.27, 34.92, 39.58, 45.67 and 53.98Hz

Modulation : 60% $\pm 5\%$ (when 60% of the 0-to-100% scale is specified)

Distortion : 1.5% or less

Traffic Information

Transfer Signal — U.S.A.

57-kHz pilot signal

Subcarrier frequency : 57kHz

Frequency accuracy : ± 6 Hz

Maximum output : 0.8Vp-p or more (open-ended)

ME 1 (Message signal 1)

Modulation type : Amplitude modulation The 57-kHz pilot signal is the carrier.

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EBU and USA Signals

Modulation frequency : 142.5Hz (1/400 or 57kHz)
 Modulation : 60% ±5% (when 60% of the
 0-to-100% scale is specified)

Distortion : 0.8% or less

ME 2 (Message signal 2)

Modulation type : Amplitude modulation (The
 57-kHz signal is the carrier.)

Modulation frequency : 154.9Hz (1/368 of 57kHz)

Modulation : 60% ±5% (when 60% of the
 0-to-100% scale is specified)

ZO (Zone signal)

Modulation type : Amplitude modulation (The
 57-kHz signal is the carrier.)

Modulation frequency : 23.75, 28.27, 34.92, 39.58,
 45.67, 53.98, 63.98, 63.62,
 75.79, 98.95 and 122.84Hz

Modulation : 60% ±5%

Distortion : 1.5% or less

Frequency selection : Step selection

Description of GP-IB

Interface functions

Function	Classification	Description
Source handshake	SH0	No function
Acceptor handshake	AH1	All functions
Talker	T0	No function
Listener	L2	Basic listener function only
Service request	SR0	No function
Remote/local	RL0	No function
Parallel pole	PP0	No function
Device clear	DC0	No function
Device trigger	DT0	No function
Controller	C0	No function

Remote control : Engaged by pressing a lighted
 key on the panel

Others

Operating temperature
 and humidity : 0°C to 40°C, 85% RH or less

Performance guarantee
 temperature and hum

idity : 10°C to 40°C, 85% RH less

Storage temperature : -20°C to +70°C
 AC100, 120, 220 or 240V

Power supply : 50/60Hz, 13VA

Dimensions & Weight : 99(H) x 426(W) x 250(D)mm
 approx. 7kg

Standard Accessories : Coaxial cable, VQ-027D (2 pcs)
 Test cord, VQ-025J10 (1 pc)

Note: Removable power cable is attached.

Name	System	EBU	USA
Sub-carrier signal	Name	Transmitter Identification Code	57kHz pilot
	Designation	SK*1	57kHz
	Sub-carrier frequency	57kHz	57kHz
	Frequency	±4kHz AM	±4kHz AM
	Modulation system	AM	AM
Announcement signal	Name	Announcement Identification Code	Message signal
	Designation	DK*2	ME1*4 ME2
	Modulation frequency	125Hz (1/456)	ME1: 142.5Hz(1/400) ME2: 154.9Hz(1/268)
	Modulation degree	m=0.3	m=0.6
Area signal	Name	Area Identification Code	Zone signal
	Designation	BK*3	ZO
	Modulation frequency	A: 23.75Hz (1/2400)	1: 23.75Hz (1/2400)
		B: 28.27Hz (1/2016)	2: 28.27Hz (1/2016)
		C: 34.93Hz (1/1632)	3: 34.93Hz (1/1632)
		D: 39.58Hz (1/1440)	4: 39.58Hz (1/1440)
		E: 45.67Hz (1/1248)	5: 45.67Hz (1/1248)
		F: 53.98Hz (1/1056)	6: 53.98Hz (1/1056)
			7: 63.63Hz (1/896)
			8: 75.79Hz (1/752)
		9: 98.95Hz (1/576)	
		10: 122.84Hz (1/464)	
Modulation degree	m=6	m=6 However, m=0.3 for simultaneous modulation with the ME1 or ME2 signal	

*1 SK : Senderkennung, Transmitter Identification Code

*2 DK : Durchsagekennung, Announcement Identification Code

*3 BK : Bereichskennung, Area Identification Code

*4 ME1,2: Message signal 1, 2