



Model 23-8 FM TELEVISION MODULATOR



The KH6HTV-VIDEO, Model 23-8, is an FM Television Modulator. It is the modulator board from the Model 21-1 transmitter, less the 3 Watt, RF power amplifier. It produces an FM-TV signal with standard definition (480i), NTSC video complete with stereo audio. The video and audio quality are exceptional with performance far superior to that offered by low cost, low power, import, consumer grade, modules, typically called "video senders" or "wireless video links". It is fully synthesized and operates on three programmable channels. It comes factory programmed with the customer specified frequencies. The user can easily reprogram the frequencies later as desired. It is available in two frequency ranges (700-1000 MHz -or- 950-1400 MHz). The max. output power is +17dBm (50mW). An optional attenuator can be installed for lower output power. Specify desired frequency range, (3) rf channel frequencies, output power, and SSC frequencies when ordering.

The model 23-8 is extremely simple to use. There are only three front panel controls: Power On/Off, Sound Sub-Carrier On/Off and Channel Selection (A, B or C). The model 23-8 can be readily configured to meet local operating protocols. Internal settings and adjustments that can be set for the user's particular requirements are: Ch A, Ch B & Ch C frequencies, Video Deviation, Video Polarity, Video Pre-Emphasis On/Off, Left & Right Sound Sub-carrier (SSC) frequencies, deviation, and SSC injection level.

The model 23-8 modulator is ideal for assembling microwave FM-TV transmitters. It can be used directly on either the 33cm or 23cm bands with a high powered amplifier. For higher microwave bands, it can be used as the IF input to an upconverting mixer and then feeding a high powered amplifier. It is particularly suitable for point-to-point, microwave, FM-TV, link applications.

PARAMETER	Typical Performance	Notes
Frequency Range	700 - 1000 MHz - or - 950 - 1400 MHz	33 cm Amateur Radio Band 23 cm - specify when ordering
Number of Channels	3	selectable with front panel, 3 position toggle switch
Synthesizer Resolution	250 kHz	crystal controlled
Output Power	+17dBm (50mW) max.	optional internal attenuator. Specify if lower power required
RF Output Connector	SMA	
Video Modulation	FM	
FM Video Deviation	4 MHz	internally adjustable
FM Video Polarity	Normal or Inverted	black to white = low to high freq internally selectable
Video Pre-Emphasis	CCIR 405-1 or None	internally selectable
Video Frequency Response (-3dB BW)	< 15 Hz to > 8 MHz <15 Hz to > 7.2MHz (*) < 15 Hz to 4.5 MHz (*)	"Flat" without pre-emphasis With Pre-Emphasis & De- Emphasis + LPF in receiver
Video Input	1.0 V _{ptp} into 75 Ω	
Stereo Audio Modulation	FM	
Sound Sub-Carriers (SSC)	one (mono) or stereo (L & R)	internally selectable SSC may also be disabled by front panel switch
SSC Frequency Range	4 to 7.5 MHz	internally adjustable
Standard Sub-Carriers	Left (or mono) = 5.8 MHz Right = 6.2 MHz	Specify desired SSC frequencies when ordering
Sub-Carrier Deviation	75 kHz	internally adjustable
Sub-Carrier Level	-20 dBc	internally adjustable
Audio Pre-Emphasis	75 μ s	can be defeated by removing caps
Audio Frequency Response	< 5 Hz to >50 kHz < 10 Hz to 20 kHz (*)	
Audio Input into >10 k Ω	Std. Line Level = 0 VU APL	level internally adjustable
A/V Input Connectors	RCA	red / white / yellow
Input DC Power	+12 Vdc, 200 mA	+9 V to +15 Vdc
Front Panel Controls	DC Power -- On / Off SSC -- On/Off Channel -- A, B or C	Front panel LED indicates PLL state. Red = unlock, Green = Lock
Dimensions	4.2" x 1.8" x 7.4" (w x h x d)	
Accessories Included	Instruction Manual	

(*) When measured in complete FM-TV system of 23-8 modulator, 23-5 down-converter
(70MHz IF out), and 23-5 70MHz IF amplifier and FM demodulators

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