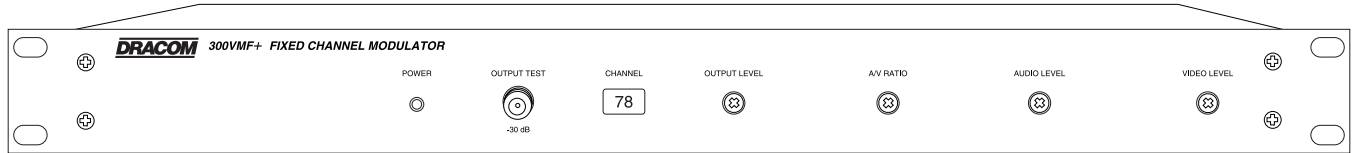


300VMF+ Video Modulator

DESCRIPTION



The DRACOM 300VMF+ Video Modulator is a vestigial sideband heterodyne audio/video modulator that provides a modulated visual and aural RF carrier output on any single EIA standard channel from channel 2 through channel 78 plus channels 95 to 99. This range covers 54 through 552 MHz. Consult factory for custom channels. All aeronautical channels are offset positive with a tolerance of ± 5 kHz as required by FCC rules. The 300VMF+ is designed to accept video and audio

baseband signals from a satellite receiver, TV camera, video tape recorder, TV demodulator or similar equipment. The heterodyne conversion system, in conjunction with the use of a SAW filter, insures optimum vestigial selectivity for adjacent channel headends.

The modulator accepts standard (sync negative) polarity video at a 0.7 -1.5 Vpp level. All level controls are located on the front panel for ease of operation.

SPECIFICATIONS

RF

Frequency Range: 54 - 552 MHz.

Channels Available: **Factory ordered for a single channel:**
EIA CATV channels 2 to 78 and 95 to 99.

FCC Frequency

Offsets: All aeronautical channels offset positive with a tolerance of ± 5 kHz.

Output Level: +55 dBmV, (typically adjustable from +43 to +55 dBmV).

Output Impedance: 75 OHMS, return loss of 14 dB, nominal.

Output Test: -30 dB, ± 3 dB (referenced to RF OUTPUT level).

A/V Ratio: Audio Carrier -20 to -12 dB referenced to video carrier, adjustable.

Frequency Stability,

Visual: Within ± 10 kHz of assigned channel frequency; ± 5 kHz on FCC offset channels.

Aural Inter-carrier

Frequency: 4.5 MHz, ± 5 kHz.

Spurious Outputs: -60 dBc minimum, measured at -15 dB A/V ratio and with modulator output level of +55 dBmV.

In-Channel C/N: Better than 60 dB.

Broadband Noise: -95 dBc @ ± 30 MHz or greater spacings. (Specified levels are referenced to the video carrier and measured in a 4 MHz bandwidth).

VIDEO

Input level for 87.5%

Modulation: 1 Vp- ± 3 dB, manual gain adjust with front panel control.

Input Impedance: 75 Ohms, return loss of 18 dB minimum.

Frequency Response: Flat ± 2 dB from 30 Hz to 4.2 MHz.

Video S/N: 60 dB, luminance weighted.

L/C Delay: Within 50 nSec of 0 nSec L/C delay (complies with FCC rules, 76.605).

Differential Gain: Less than $\pm 5\%$ (10 to 90% APL).

Differential Phase: Less than ± 5 degrees (10 to 90% APL).

AUDIO

Input Level for

25 kHz Peak Deviation: 175 mV rms minimum. Manual gain adjustment with front panel control.

Input Impedance: 10K Ohms, unbalanced.

Pre-emphasis: 75 μ Sec. (flat by moving internal jumper)

Frequency Response: 40 Hz to 15 kHz, ± 1.5 dB, referenced to 75 μ Sec pre-emphasis curve.

4.5 MHz Inter-carrier Stability: Within ± 5 kHz, 0° C to +50° C.

Total Harmonic Distortion: 1.5% maximum.

Hum and Noise: -60 dB minimum, referenced to 25 kHz peak deviation.

GENERAL

Modulator Power

Requirement: 115 VAC $\pm 10\%$, 60Hz, 10 Watts.

Auxiliary AC Outlet: Nominal 120 VAC, 600 Watts, maximum.

Total AC Power Input: Nominal 120 VAC 60 Hz, 610 Watts, maximum.

Operating Temperature

Range: 0° C to +50° C, ambient.

Size: 19" W x 1.75" H x 4.0" D.

Weight: 3.6 lbs.

Connectors: Video input, Audio input, RF output, and Monitor output are all type F.

Front Panel Description

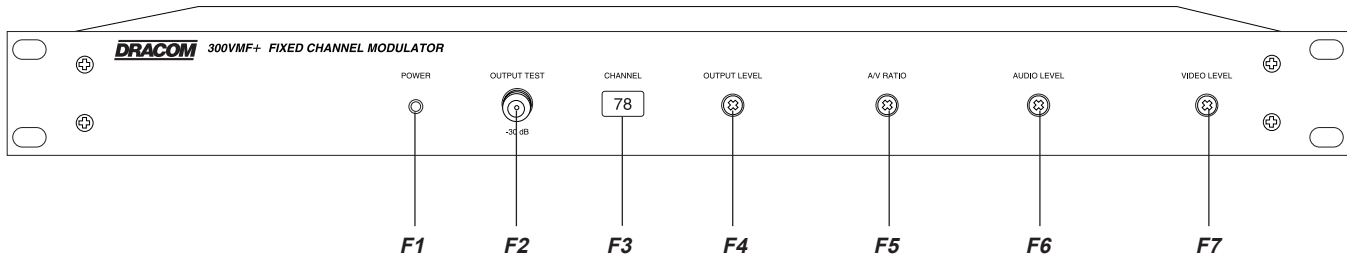


Figure 1

F1 - POWER Indicator

Lights when the unit is connected to a source of AC power.

F2 - OUTPUT TEST Connector

Provides a reduced level sample of the RF output signal. The level at this connector is approximately 30 dB lower in level than the RF OUTPUT signal. It is used to monitor the active signal without affecting the level or quality of the RF output signal.

F3 - CHANNEL Designation

The label indicates the fixed channel output for your particular model. The 300VMF+ is capable of fixed channel output (factory tuned) within the following ranges: Channel 2 through 78 and 95 through 99.

F4 - RF OUTPUT LEVEL

This screwdriver adjustment permits decreasing the RF output level a minimum of 12 dB below its specified output level as the control is rotated counterclockwise. The maximum output level of +55 dBmV is set with the adjustment approximately fully clockwise.

NOTE: If an output level of less than +43 dBmV is required, add an attenuator of the appropriate value at the modulator output.

Example: For an output level of +35 dBmV, add a 12 dB attenuator pad to the modulator output and set the output level to +47 dBmV.

F5 - A/V RATIO Control

This screwdriver adjustment varies the level of the aural carrier over a range from 12 to 20 dB below the visual carrier. The aural carrier should normally be adjusted to approximately 15 dB below the visual carrier (normal operation). Clockwise rotation increases the aural carrier level and thus decreases the A/V ratio.

F6 - AUDIO LEVEL Control

The setting of this screwdriver adjustment determines the peak aural carrier deviation. Clockwise rotation increases the carrier deviation. After installing the unit, and with an audio source connected, adjust the AUDIO LEVEL control for 25 kHz deviation. If an audio modulation meter is not available, use a TV set and adjust for equal volume as compared to a known off-air broadcast. Monitor for a few minutes to assure that maximum volume of the audio source program does not cause an over-modulation condition.

F7 - VIDEO LEVEL Control

The setting of this screwdriver adjustment determines the video modulation level. Clockwise rotation increases the modulation depth. After installing the unit, and with a nominal 1 Volt P-P video source connected, adjust the VIDEO LEVEL control for the correct percentage of modulation (87.5%). If test equipment is not available for such measurements, then adjust for proper picture contrast when viewed on a TV set (compare with known off-air broadcast picture quality).

Rear Panel Description and Internal Jumper

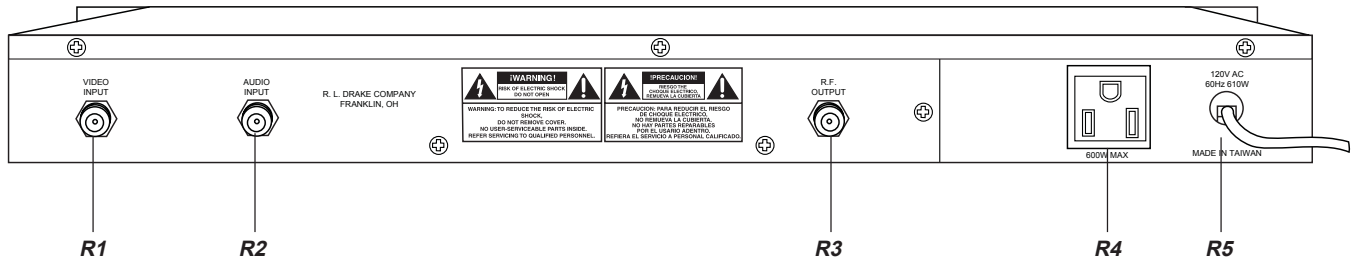


Figure 2

R1 - VIDEO INPUT Connector

This is the baseband video input to the IF circuits. This input accepts baseband video through 4.2 MHz video at levels from 0.7 Vp-p to 1.5 Vp-p.

R2 - AUDIO INPUT Connector

This is an unbalanced audio input to the IF circuits. This input accepts 40 Hz through 15 kHz audio at a nominal level of 250 mV RMS (approximately -10 dBu). If a separate BTSC stereo encoder, such as the Drake MMTS20, is to be used with this modulator, this jack can input 40 Hz through over 50 kHz with flat response if internal jumper J8 is set to flat - see below)

R3 - RF OUTPUT

This is the modulator output.

R4 - AC OUTLET Receptacle

This is a power receptacle for other equipment and is rated at 600 W maximum; 120 V, 5 Amp. This receptacle is unfused and unswitched.

R5 - LINE CORD

This is a three-wire power cable. When the cable is connected to a properly wired AC power line outlet, this cable grounds the instrument cabinet. Connect to a 115 VAC $\pm 10\%$, 60 Hz source. Do not defeat the safety purpose of the attached line cord plug.

INTERNAL JUMPER SETTING - AUDIO RESPONSE

Internal jumper J8 may be used to disable the 75 uSec pre-emphasis (normal setting). Flat response may be chosen if an external BTSC stereo signal is to be input to the modulator through the audio input jack. To access this jumper, disconnect the unit from AC power. Remove the three screws holding the top cover of the chassis in place. Remove top cover. J8 is a three pin header with J8 printed on the PCB. After setting this jumper, reinstall the cover before returning power to the unit.

NORMAL RESPONSE of 75 uSec = Jumper in the 1-2 position (shorting pins 1 and 2 of the J8 header). Use this setting for normal mono audio input. This is the factory default setting.

FLAT RESPONSE = Jumper in the 2-3 position (shorting pins 2 and 3 of header J8). Change to this setting when an external BTSC stereo encoder is used with the 300VMF+.