

**THREE YEAR LIMITED WARRANTY**

R.L. DRAKE COMPANY warrants to the original purchaser this product shall be free from defects in material or workmanship for three (3) years from the date of original purchase.

During the warranty period the R.L. DRAKE COMPANY or an authorized Drake service facility will provide, free of charge, both parts and labor necessary to correct defects in material and workmanship. At its option, R.L. DRAKE COMPANY may replace a defective unit.

To obtain such warranty service, the original purchaser must:

- (1) Retain invoice or original proof of purchase to establish the start of the warranty period.
- (2) Notify the R.L. DRAKE COMPANY or the nearest authorized service facility, as soon as possible after discovery of a possible defect, of:
  - (a) the model and serial number,
  - (b) the identity of the seller and the approximate date of purchase; and
  - (c) A detailed description of the problem, including details on the electrical connection to associated equipment and the list of such equipment.
- (3) Deliver the product to the R.L. DRAKE COMPANY or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and shipping charges prepaid.

Correct maintenance, repair, and use are necessary to obtain proper performance from this product. Therefore carefully read the Instruction Manual. This warranty does not apply to any defect that R.L. DRAKE COMPANY determines is due to:

- (1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specifications of the original parts.
- (2) Misuse, abuse, neglect or improper installation.
- (3) Accidental or intentional damage.

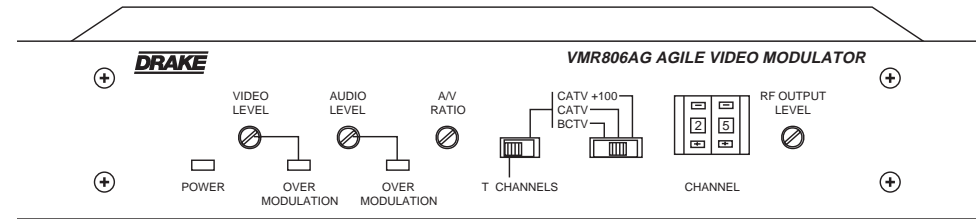
All implied warranties, if any, including warranties of merchantability and fitness for a particular purpose, terminate three (3) years from the date of the original purchase.

The foregoing constitutes R.L. DRAKE COMPANY'S entire obligation with respect to this product, and the original purchaser shall have no other remedy and no claim for incidental or consequential damages, losses or expenses. Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusions or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. This warranty shall be construed under the laws of Ohio.



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The R.L. Drake VMR806AG Audio-Video Modulator is a high quality, vestigial sideband unit with synthesized visual and aural carriers. The frequency agile VMR806AG allows front panel pushwheel switch selection of standard CATV channels 2 through 125, CATV subband channels, T7 through T14, or VHF/UHF TV channels 2 through 69. Aeronautical channels are offset positive with a tolerance of  $\pm 5$  kHz as required by FCC rules.

The heterodyne conversion system, in conjunction with the use of a SAW filter, ensures optimum vestigial selectivity for adjacent channel headends. An optional FCC predistortion SAW response is also available for the VMR806AG.

The modulator is designed to accept any standard audio/video source such as NTSC video and audio baseband signals from a satellite receiver, TV camera, videotape recorder, TV demodulator, or similar signal source.

The modulator is designed to accept standard (negative sync) polarity video at 0.6 to 1.5 V<sub>p-p</sub> level. All level controls are located on the front panel for ease of operation. Audio and video overmodulation indicators are provided. Output level is +45 dBmV and is adjustable over a 10 dB range.

Field-defeatable audio pre-emphasis allows transmission of BTSC encoded baseband stereo audio signals using the Drake stereo encoder. The AUDIO INPUT can also accept a 4.5 MHz audio modulated carrier by changing internal jumpers.



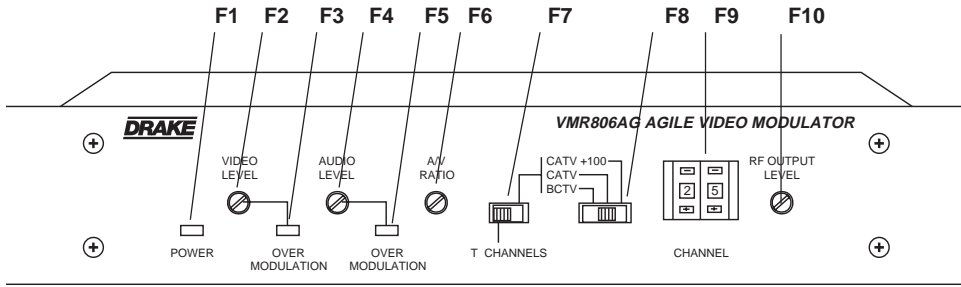


Figure 1

**F1 - POWER/Error Indicator**

Lights when the unit is connected to the required source of DC power via the rear panel DC INPUT connector. A flashing condition indicates an invalid channel setting or other conditions that would cause the unit to operate on an invalid channel. The RF output is switched off for flashing (ERROR) conditions.

**F2 - VIDEO Level Control**

The setting of this screwdriver adjustment determines the video modulation level. Clockwise rotation increases the modulation depth.

**F3 - Video OVER MODULATION LED**

With a video input applied, adjust (F2) until this indicator just illuminates, then set just below this point.

**F4 - AUDIO Level Control**

The setting of this screwdriver adjustment determines the aural carrier deviation. Clockwise rotation increases the carrier deviation.

**F5 - Audio OVER MODULATION LED**

With audio applied, adjust (F4) until this indicator just illuminates on peaks.

**F6 - A/V RATIO Control**

This screwdriver adjustment varies the level of the aural carrier over a range from 13 to 16 dB below the visual carrier. The aural carrier should be adjusted to approximately 15 dB below the visual carrier (normal operation). Clockwise rotation increases the aural carrier level.

**F7 - T CHANNEL Switch**

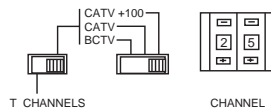
Set this switch to the "T" channel setting to enable "T" channel coverage. Use the Channel Number switch (F9) to select 7 - 14. For normal CATV or broadcast TV channels, this switch must be set to the right to enable selection by the mode switch (F8).

**F8 - Mode Switch**

Sets the type of channel, CATV or Broadcast TV ("BCTV"). This switch does not function if switch (F7) is in the "T" channel position. The last position of the switch ("+100") sets a leading "1" for CATV channels 100 through 125. See Item (F9) for setting the channel number.

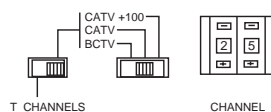
Example 1:

Setting for CATV channel "125"-



Example 2:

Setting for CATV channel "25"-



**F9 - CHANNEL Number Switch**

Sets the desired operating channel for standard CATV channels 02 through 125, "T" channels T7 through T14, or Broadcast TV channels 02 through 69. See Item (F8) which sets the type of channel (CATV or Broadcast TV) and sets the leading "1" for CATV channels 100 through 125.

**F10 - RF OUTPUT LEVEL**

This screwdriver adjustment permits decreasing the RF output level a minimum of 15 dB as the control is rotated counterclockwise. Set the control for a desired output level.

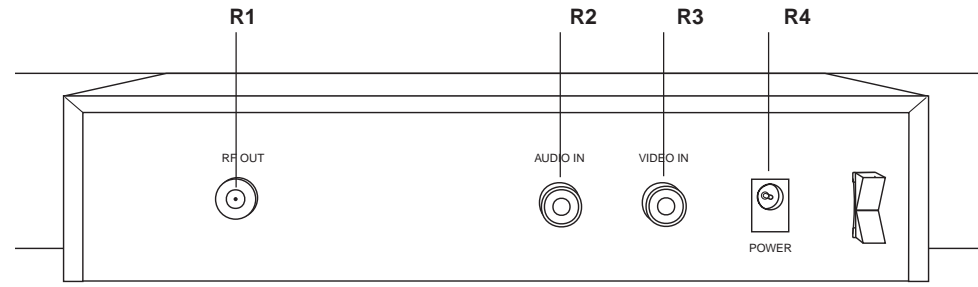


Figure 2

**R1 - RF OUTPUT Connector**

This is the modulator output.

**R2 - AUDIO INPUT Connector**

This is an unbalanced audio input to the IF circuits. This "RCA" (phono) connector input accepts baseband audio from 100 mVrms to 3 Vrms levels.

**NOTE:** An internally selected jumper can defeat the audio pre-emphasis for use with a stereo encoder. See Figure 3.

**4.5 MHz Audio Input:** This AUDIO INPUT can also accept a 4.5 MHz audio modulated carrier by reconfiguring two specified internal jumper settings.

Required 4.5 MHz input level is +40 dBmV ±2 dB. Some stereo generators or satellite receivers provide audio output in a 4.5 MHz audio modulated carrier format. See Figure 3.

**R3 - VIDEO INPUT Connector**

This is the baseband video input to the IF circuits. This input accepts baseband input levels from 0.6 Vp-p to 1.5 Vp-p.

**R4 - POWER / DC INPUT Connector**

This connector accepts the appropriate mating DC power cable from the supplied AC adapter.

**INSTALLATION NOTES**

Level adjustment provides optimum performance in multichannel installations. The modulator outputs should be checked periodically with a spectrum analyzer or signal strength meter to maintain a ±1 dB variation of adjacent channel carriers. Aural/Visual (A/V) ratios should be held to -15 dB or less. The output 'RF' and 'A/V (Ratio)' controls are used respectively to make these adjustments.

**MOUNTING**

Adequate ventilation is very important in multichannel installations. Units should be spaced apart by at least one panel height wherever possible, and some air movement is mandatory in enclosed rack cabinets. Excessive heat will shorten component life and modulator performance will be degraded without proper ventilation.

**ACCESSING THE JUMPERS**

- First, **make certain the unit is disconnected from its power source.**
- Next, remove the four #4 screws from each side of the top cover. Save the screws for later reassembly.
- Carefully remove the top cover by lifting it upward from the chassis. The jumpers are now accessible for setting as desired.

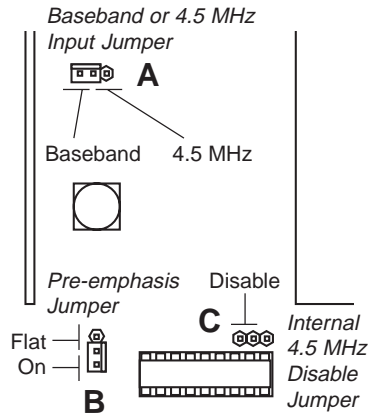
**JUMPER FUNCTIONS**

Refer to the INTERNAL JUMPER FUNCTIONS diagram for a brief explanation of the three jumpers used in the jumper settings.

Refer to the INTERNAL JUMPER SETTINGS diagrams (1-3) for proper jumper placement of the desired mode.

Note that jumper "B" can be used on jumper "C" to set the 4.5 MHz IN mode (see diagram 3).

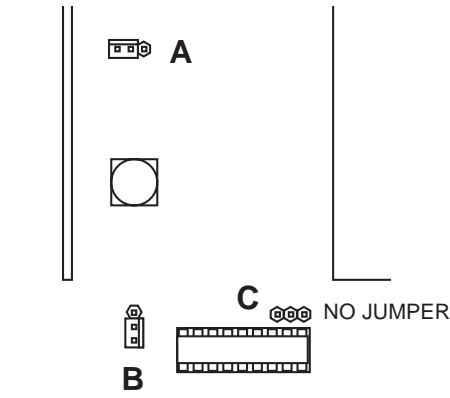
**INTERNAL JUMPER FUNCTIONS**



Front of Unit with Cover Removed

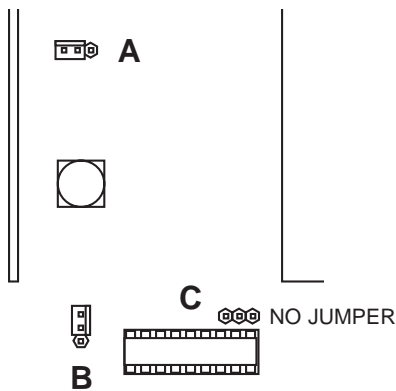
**INTERNAL JUMPER SETTINGS**

**1) AUDIO IN, PRE-EMPHASIS ON (Factory Setting)**



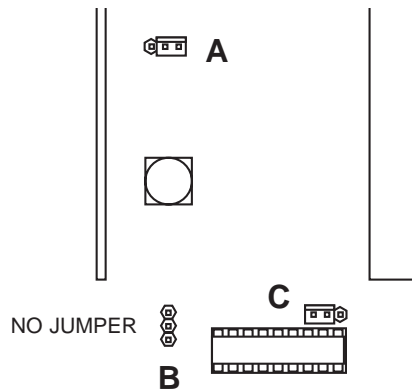
Front of Unit with Cover Removed

**2) AUDIO IN, PRE-EMPHASIS OFF**



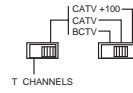
Front of Unit with Cover Removed

**3) 4.5 MHz IN**

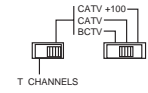


Front of Unit with Cover Removed

**TABLE 1: CATV CHANNELS**



| Output Channel Switch Setting | Visual Carrier Frequency (MHz) | Frequency Offset (kHz) |
|-------------------------------|--------------------------------|------------------------|
| 02                            | 55.25                          | NONE                   |
| 03                            | 61.25                          | NONE                   |
| 04                            | 67.25                          | NONE                   |
| 05                            | 77.25                          | NONE                   |
| 06                            | 83.25                          | NONE                   |
| 07                            | 175.25                         | NONE                   |
| 08                            | 181.25                         | NONE                   |
| 09                            | 187.25                         | NONE                   |
| 10                            | 193.25                         | NONE                   |
| 11                            | 199.25                         | NONE                   |
| 12                            | 205.25                         | NONE                   |
| 13                            | 211.25                         | NONE                   |
| 14                            | 121.25                         | ±12.5                  |
| 15                            | 127.25                         | ±12.5                  |
| 16                            | 133.25                         | ±12.5                  |
| 17                            | 139.25                         | NONE                   |
| 18                            | 145.25                         | NONE                   |
| 19                            | 151.25                         | NONE                   |
| 20                            | 157.25                         | NONE                   |
| 21                            | 163.25                         | NONE                   |
| 22                            | 169.25                         | NONE                   |
| 23                            | 217.25                         | NONE                   |
| 24                            | 223.25                         | +12.5                  |
| 25                            | 229.25                         | +12.5                  |
| 26                            | 235.25                         | +12.5                  |
| 27                            | 241.25                         | +12.5                  |
| 28                            | 247.25                         | +12.5                  |
| 29                            | 253.25                         | +12.5                  |
| 30                            | 259.25                         | +12.5                  |
| 31                            | 265.25                         | +12.5                  |
| 32                            | 271.25                         | +12.5                  |
| 33                            | 277.25                         | +12.5                  |
| 34                            | 283.25                         | +12.5                  |
| 35                            | 289.25                         | +12.5                  |
| 36                            | 295.25                         | +12.5                  |
| 37                            | 301.25                         | +12.5                  |
| 38                            | 307.25                         | +12.5                  |
| 39                            | 313.25                         | +12.5                  |
| 40                            | 319.25                         | +12.5                  |
| 41                            | 325.25                         | +12.5                  |
| 42                            | 331.25                         | +25                    |
| 43                            | 337.25                         | +12.5                  |
| 44                            | 343.25                         | +12.5                  |
| 45                            | 349.25                         | +12.5                  |
| 46                            | 355.25                         | +12.5                  |
| 47                            | 361.25                         | +12.5                  |
| 48                            | 367.25                         | +12.5                  |
| 49                            | 373.25                         | +12.5                  |
| 50                            | 379.25                         | +12.5                  |
| 51                            | 385.25                         | +12.5                  |
| 52                            | 391.25                         | +12.5                  |
| 53                            | 397.25                         | +12.5                  |
| 54                            | 403.25                         | NONE                   |
| 55                            | 409.25                         | NONE                   |
| 56                            | 415.25                         | NONE                   |
| 57                            | 421.25                         | NONE                   |
| 58                            | 427.25                         | NONE                   |
| 59                            | 433.25                         | NONE                   |
| 60                            | 439.25                         | NONE                   |
| 61                            | 445.25                         | NONE                   |
| 62                            | 451.25                         | NONE                   |
| 63                            | 457.25                         | NONE                   |
| 64                            | 463.25                         | NONE                   |
| 65                            | 469.25                         | NONE                   |
| 66                            | 475.25                         | NONE                   |
| 67                            | 481.25                         | NONE                   |
| 68                            | 487.25                         | NONE                   |
| 69                            | 493.25                         | NONE                   |

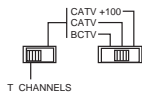


| Output Channel Switch Setting | Visual Carrier Frequency (MHz) | Frequency Offset (kHz) |
|-------------------------------|--------------------------------|------------------------|
| 70                            | 499.25                         | NONE                   |
| 71                            | 505.25                         | NONE                   |
| 72                            | 511.25                         | NONE                   |
| 73                            | 517.25                         | NONE                   |
| 74                            | 523.25                         | NONE                   |
| 75                            | 529.25                         | NONE                   |
| 76                            | 535.25                         | NONE                   |
| 77                            | 541.25                         | NONE                   |
| 78                            | 547.25                         | NONE                   |
| 79                            | 553.25                         | NONE                   |
| 80                            | 559.25                         | NONE                   |
| 81                            | 565.25                         | NONE                   |
| 82                            | 571.25                         | NONE                   |
| 83                            | 577.25                         | NONE                   |
| 84                            | 583.25                         | NONE                   |
| 85                            | 589.25                         | NONE                   |
| 86                            | 595.25                         | NONE                   |
| 87                            | 601.25                         | NONE                   |
| 88                            | 607.25                         | NONE                   |
| 89                            | 613.25                         | NONE                   |
| 90                            | 619.25                         | NONE                   |
| 91                            | 625.25                         | NONE                   |
| 92                            | 631.25                         | NONE                   |
| 93                            | 637.25                         | NONE                   |
| 94                            | 643.25                         | NONE                   |
| 95                            | 91.25                          | NONE                   |
| 96                            | 97.25                          | NONE                   |
| 97                            | 103.25                         | NONE                   |
| 98                            | 109.25                         | +25                    |
| 99                            | 115.25                         | +25                    |

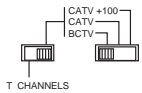
| CATV +100                     |                                |                        |
|-------------------------------|--------------------------------|------------------------|
| Output Channel Switch Setting | Visual Carrier Frequency (MHz) | Frequency Offset (kHz) |
| 100                           | 649.25                         | NONE                   |
| 101                           | 655.25                         | NONE                   |
| 102                           | 661.25                         | NONE                   |
| 103                           | 667.25                         | NONE                   |
| 104                           | 673.25                         | NONE                   |
| 105                           | 679.25                         | NONE                   |
| 106                           | 685.25                         | NONE                   |
| 107                           | 691.25                         | NONE                   |
| 108                           | 697.25                         | NONE                   |
| 109                           | 703.25                         | NONE                   |
| 110                           | 709.25                         | NONE                   |
| 111                           | 715.25                         | NONE                   |
| 112                           | 721.25                         | NONE                   |
| 113                           | 727.25                         | NONE                   |
| 114                           | 733.25                         | NONE                   |
| 115                           | 739.25                         | NONE                   |
| 116                           | 745.25                         | NONE                   |
| 117                           | 751.25                         | NONE                   |
| 118                           | 757.25                         | NONE                   |
| 119                           | 763.25                         | NONE                   |
| 120                           | 769.25                         | NONE                   |
| 121                           | 775.25                         | NONE                   |
| 122                           | 781.25                         | NONE                   |
| 123                           | 787.25                         | NONE                   |
| 124                           | 793.25                         | NONE                   |
| 125                           | 799.25                         | NONE                   |

TABLE 2: T CHANNELS



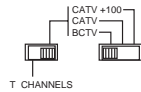
| T CHANNELS     |                                |
|----------------|--------------------------------|
| Channel Number | Visual Carrier Frequency (MHz) |
| 7              | 7.00                           |
| 8              | 13.00                          |
| 9              | 19.00                          |
| 10             | 25.00                          |
| 11             | 31.00                          |
| 12             | 37.00                          |
| 13             | 43.00                          |
| 14             | 49.00                          |

TABLE 3: BCTV CHANNELS



| VHF BROADCAST CHANNELS |                                |
|------------------------|--------------------------------|
| Channel Number         | Visual Carrier Frequency (MHz) |
| 2                      | 55.25                          |
| 3                      | 61.25                          |
| 4                      | 67.25                          |
| 5                      | 77.25                          |
| 6                      | 83.25                          |
| 7                      | 175.25                         |
| 8                      | 181.25                         |
| 9                      | 187.25                         |
| 10                     | 193.25                         |
| 11                     | 199.25                         |
| 12                     | 205.25                         |
| 13                     | 211.25                         |

TABLE 3: BCTV CHANNELS, cont'd.



| UHF BROADCAST CHANNELS |                                |
|------------------------|--------------------------------|
| Channel Number         | Visual Carrier Frequency (MHz) |
| 14                     | 471.25                         |
| 15                     | 477.25                         |
| 16                     | 483.24                         |
| 17                     | 489.25                         |
| 18                     | 495.25                         |
| 19                     | 501.25                         |
| 20                     | 507.25                         |
| 21                     | 513.25                         |
| 22                     | 519.25                         |
| 23                     | 525.25                         |
| 24                     | 531.25                         |
| 25                     | 537.25                         |
| 26                     | 543.25                         |
| 27                     | 549.25                         |
| 28                     | 555.25                         |
| 29                     | 561.25                         |
| 30                     | 567.25                         |
| 31                     | 573.25                         |
| 32                     | 579.25                         |
| 33                     | 585.25                         |
| 34                     | 591.25                         |
| 35                     | 597.25                         |
| 36                     | 603.25                         |
| 37                     | 609.25                         |
| 38                     | 615.25                         |
| 39                     | 621.25                         |
| 40                     | 627.25                         |
| 41                     | 633.25                         |
| 42                     | 639.25                         |
| 43                     | 645.25                         |
| 44                     | 651.25                         |
| 45                     | 657.25                         |
| 46                     | 663.25                         |
| 47                     | 669.25                         |
| 48                     | 675.25                         |
| 49                     | 681.25                         |
| 50                     | 687.25                         |
| 51                     | 693.25                         |
| 52                     | 699.25                         |
| 53                     | 705.25                         |
| 54                     | 711.25                         |
| 55                     | 717.25                         |
| 56                     | 723.25                         |
| 57                     | 729.25                         |
| 58                     | 735.25                         |
| 59                     | 741.25                         |
| 60                     | 747.25                         |
| 61                     | 753.25                         |
| 62                     | 759.25                         |
| 63                     | 765.25                         |
| 64                     | 771.25                         |
| 65                     | 777.25                         |
| 66                     | 783.25                         |
| 67                     | 789.25                         |
| 68                     | 795.25                         |
| 69                     | 801.25                         |

## RF

Frequency Range: 7 to 806 MHz;  
Standard CATV channels 2 to 125,  
Broadcast TV channels 2 to 69.  
CATV T Channels T7 - T14

FCC Frequency Offsets: Automatic (+12.5 kHz, +25 kHz, or none as required for each channel).

Output level: +45 dBmV (typical with 10 dB adjustment range).

Output Impedance: 75 Ohms, 10 dB return loss.

A/V Ratio: Audio carrier level, adjustable from -19 to -12 dB ( $\pm 2$  dB) referenced to video carrier level.

Frequency Stability:  $\pm 5$  ppm.

Intercarrier Frequency: 4.5 MHz  $\pm 5$  ppm.

Spurious Outputs (5 MHz to 900 MHz): -60 dBc typical, measured at -15 dB A/V ratio and with modulator output level of +45 dBmV.

In-channel C/N: 60 dB typical, 4 MHz bandwidth.

Broadband Noise: -75 dBc typical, 4 MHz bandwidth @ +45 dBmV output.

## VIDEO

Input Level for 87.5% Modulation: 0.6 Vp-p to 1.5 Vp-p. Manual gain adjust with front panel control. Overmodulation indicator provided.

Input Impedance: 75 Ohms, return loss of 20 dB minimum.

Frequency Response: 20 Hz to 4.2 MHz,  $\pm 1$  dB.

C/L Delay: Within 50 nSec. of 0 nSec. (standard), or FCC predistortion, (option).

Differential Gain: 3% maximum (10 to 90% APL).

Differential Phase: 3° maximum (10 to 90% APL).

## AUDIO

Input Level for 25 kHz Peak Deviation: 100 mVrms to 2.5 Vrms. Manual gain adjust with front panel control. Overmodulation indicator provided.

Input Impedance: 10 K Ohms, unbalanced.

Pre-emphasis: 75  $\mu$ Sec., defeatable by internal jumper for BTSC baseband stereo encoder compatibility.

Frequency Response: 40 Hz to 15 kHz,  $\pm 1.0$  dB referenced to 75  $\mu$ Sec. pre-emphasis curve.

40 Hz to 100 kHz,  $\pm 0.5$  dB if pre-emphasis is defeated.

S/N ratio: 55 dB.

Total Harmonic Distortion: 1% maximum.

## 4.5MHz INPUT

(AUDIO INPUT Connector – selected by internal jumpers).

Input Impedance: 75 Ohms.

Input Level: +40 dBmV  $\pm 2$  dB for -15 dB A/V ratio.

## GENERAL

DC Power Input: +10 to +18 VDC / 400 mA - from supplied AC adapter.

Supplied AC Adapter: Input, 120 VAC / 60 Hz, wall adapter.  
Output, 12 VDC / 500 mA maximum.

Operating Temperature: 0° C to +50° C ambient.

Size: 19.0" (48.3 cm) W x 1.75" (4.5 cm) H x 7" (17.8 cm) D.

Weight: 2 lbs. 12 oz. (1.25 Kg).

Specifications subject to change without notice or obligation.