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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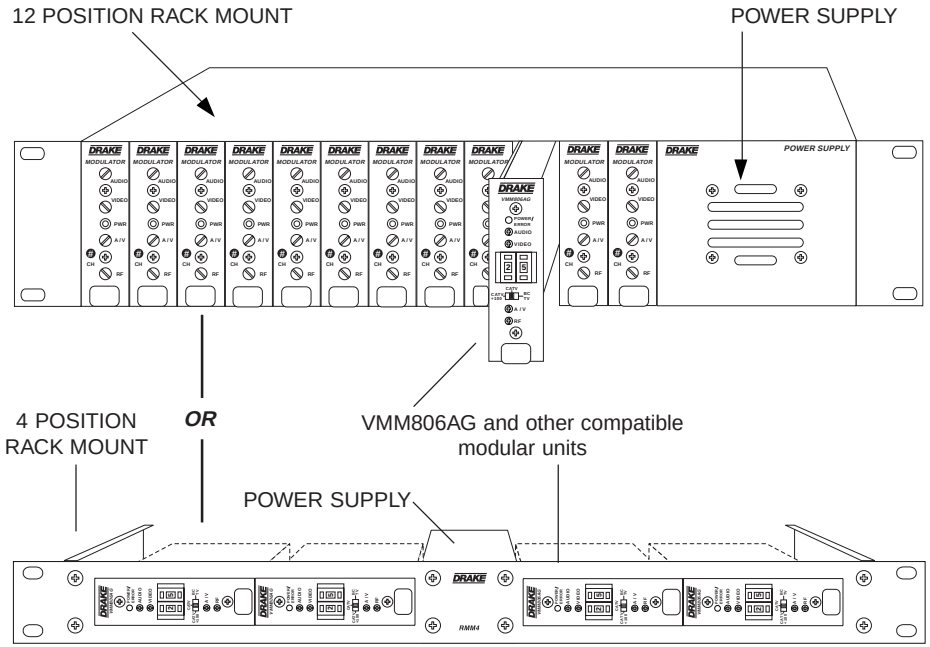


The R.L. Drake Video Modulator System is a professional quality modular headend system designed to optimize rack space. An assortment of up to (12) modular units, such as the fixed channel series of modulators, or agile modulators, or compatible audio/video products can be racked alongside a single power supply in the Drake12 position rack mount. The RMM4 rack mount accepts up to (4) modular units.

The R.L. Drake VMM806AG Audio-Video Modulator is a high quality, vestigial sideband unit with synthesized visual and aural carriers. The frequency agile VMM806AG allows front panel pushwheel switch selection of standard CATV channels 2 through 125, or VHF/UHF TV channels 2 through 69. Aeronautical channels are offset positive with a tolerance of ±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 VMM806AG.

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 Vp-p level. All level controls are located on the front panel for ease of operation. Output level is +45 dBmV and is adjustable over a 15 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.

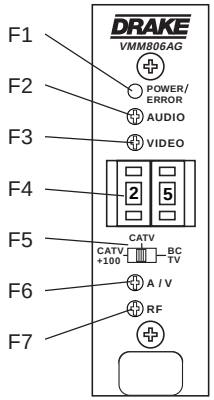


Figure 1

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.

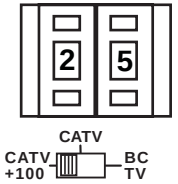
F2 - AUDIO Level Control
The setting of this screwdriver adjustment determines the aural carrier deviation. Clockwise rotation increases the carrier deviation.

F3 - VIDEO Level Control
The setting of this screwdriver adjustment determines the video modulation level. Clockwise rotation increases the modulation depth.

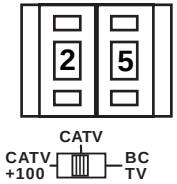
F4 - Channel Number Switch
Sets the desired operating channel for standard CATV channels 02 through 125 or Broadcast TV channels 02 through 69. See also Item F5 which sets the type of channel (CATV or Broadcast TV) and sets the leading "1" for CATV channels 100 through 125.

F5 - Mode Switch
Sets the type of channel, CATV or Broadcast TV ("BC TV"). The first position of the switch ("+100") sets a leading "1" for CATV channels 100 through 125. See also Item F4 for setting the channel number.

For example:
Setting for CATV channel "125"-



For example:
Setting for CATV channel "25"-



F6 - A/V Ratio Control
This screwdriver adjustment varies the level of the aural carrier over a range from 11 to 18 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 - 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 +45 dBmV output level .

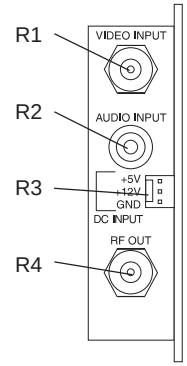


Figure 2

R1 - 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.

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 test point jumper defeats the audio pre-emphasis for stereo capability. See the illustration on this page.

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 the illustration on this page.

R3 - DC INPUT Connector
This 3-pin connector (Male) accepts the appropriate mating DC power cable. Observe proper orientation and wiring.

R4 - RF OUTPUT Connector
This is the modulator output.

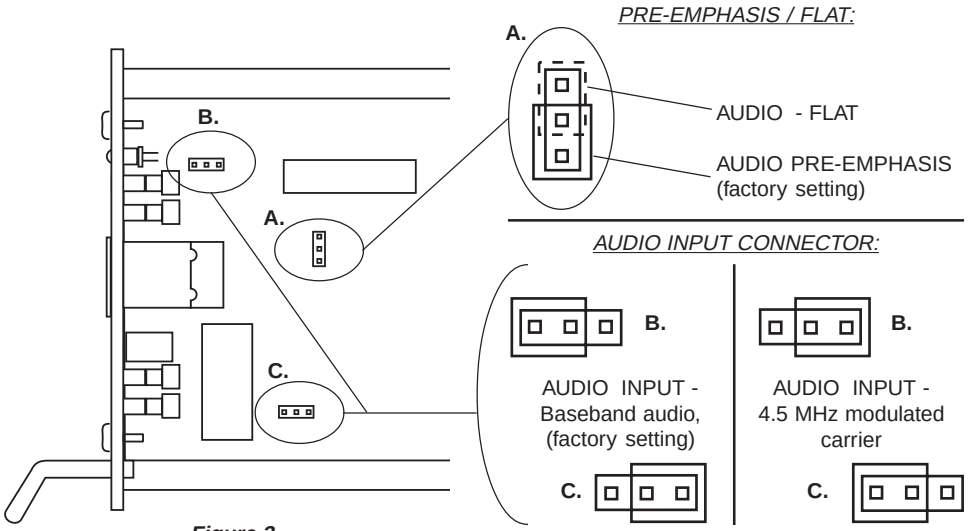


Figure 3

CONNECTIONS AND CONTROLS
All connections to and from each modulator are made through the rear panel. Figure 4 illustrates an installation with (12) modulator units combined through a passive signal combiner. Additional channels can be added by using additional fixed channel or agile type modulators and either multi-port combiners or combinations of two-port combiners.

INSTALLATION NOTES
Level adjustment provides optimum performance in multi-channel installations. The modulator outputs should be checked periodically with a spectrum analyzer 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.

RACK MOUNTING
Adequate ventilation is very important in multi-channel 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 cooling.

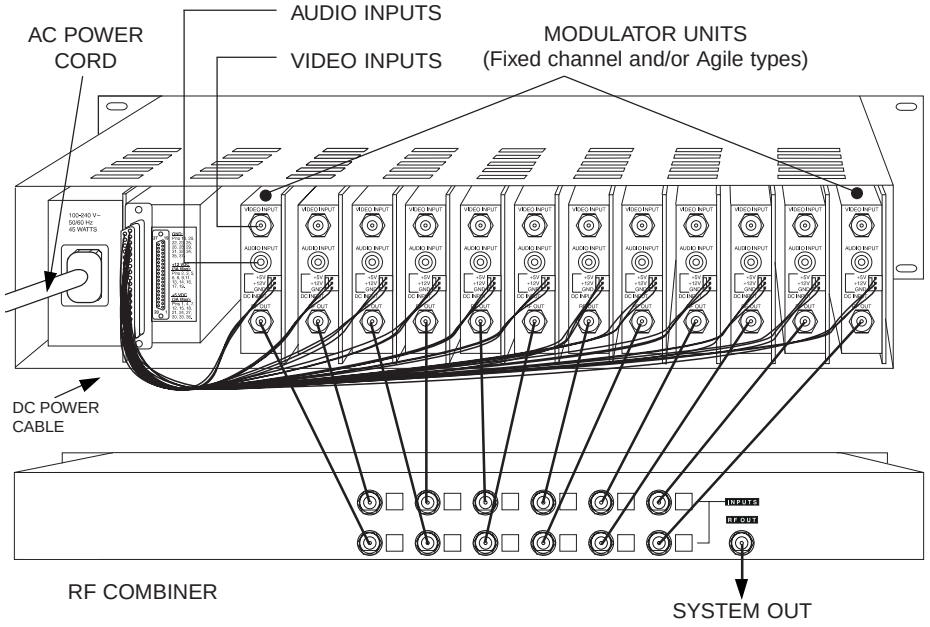


Figure 4

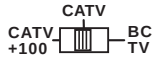
POWER SUPPLY REQUIREMENT
This VMM806AG agile modulator requires more current than the fixed channel units. Therefore, new 12 position rack installations with multiple VMM806AG modulators (up to 12) must use the Drake PSM121 (or equivalent) high capacity power supply module (4.5 A rating @ 5 VDC and 3 A @ 12 VDC).

If you are retrofitting a 12 position rack installation and replacing only one of 12 fixed channel modulators with the VMM806AG agile unit, you may continue to use the standard capacity power supply.

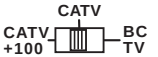
If more than one VMM806AG unit will be used, the power supply module must be upgraded to the high capacity PSM121, if not already in place.

The power supply in the four position rack system can power up to four VMM806AG modulators or any mix of fixed and agile VMM models up to four total modulators.

TABLE 1: **CATV**

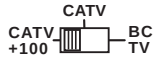


Output Channel Switch Setting	*Visual Carrier Frequency (MHz)*	*Frequency Offset (kHz)*
02	55.25	NONE
03	61.25	NONE
04	67.25	NONE
05	77.25	NONE
06	83.25	NONE
07	175.25	NONE
08	181.25	NONE
09	187.25	NONE
10	193.25	NONE
11	199.25	NONE
12	205.25	NONE
13	211.25	NONE
14	121.25	±12.5
15	127.25	±12.5
16	133.25	±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



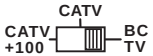
Output Channel Switch Setting	*Visual Carrier Frequency (MHz)*	*Frequency Offset (kHz)*
70	499.25	NONE
71	505.25	NONE
72	511.25	NONE
73	517.25	NONE
74	523.25	NONE
75	529.25	NONE
76	535.25	NONE
77	541.25	NONE
78	547.25	NONE
79	553.25	NONE
80	559.25	NONE
81	565.25	NONE
82	571.25	NONE
83	577.25	NONE
84	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

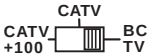


100	649.25	NONE
101	655.25	NONE
102	661.25	NONE
103	667.25	NONE
104	673.25	NONE
105	679.25	NONE
106	685.25	NONE
107	691.25	NONE
108	697.25	NONE
109	703.25	NONE
110	709.25	NONE
111	715.25	NONE
112	721.25	NONE
113	727.25	NONE
114	733.25	NONE
115	739.25	NONE
116	745.25	NONE
117	751.25	NONE
118	757.25	NONE
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: BC TV



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



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:	54 to 806 MHz; Standard CATV channels 2 to 125, Broadcast TV channels 2 to 69.
FCC Frequency Offsets:	Automatic (+12.5 kHz, +25 kHz, or none as required for each channel).
Output level:	+45 dBmV (minimum -15 dB adjustment range).
Output Impedance:	75 Ohms, 10 dB return loss.
A/V Ratio:	Audio carrier level, adjustable from -19 to -12 dB (±2 dB) referenced to video carrier level.
Frequency Stability:	Within ±5 kHz from 54 to 550 MHz including all aeronautical/ FCC offset channels. Within ±7.5 kHz from 550 to 806 MHz.
Intercarrier Frequency:	4.5 MHz ±50 Hz.
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:	-78 dBc typicial, 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.
Input Impedance:	75 Ohms, return loss of 20 dB minimum.
Frequency Response:	20 Hz to 4.2 MHz, ±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:	3^0 maximum (10 to 90% APL).

AUDIO

Input Level for 25 kHz Peak Deviation:	100 mVrms to 3 Vrms. Manual gain adjust with front panel control.
Input Impedance:	Greater than 10 K Ohms, unbalanced.
Pre-emphasis:	75 µSec., defeatable by internal jumper for BTSC baseband stereo compatibility.
Frequency Response:	40 Hz to 15 kHz, ±2.0 dB referenced to 75 µSec. pre-emphasis curve. 40 Hz to 100 kHz, ±0.5 dB if pre-emphasis is defeated.
S/N ratio:	55dB.
Total Harmonic Distortion:	1% maximum.

4.5MHz INPUT

(AUDIO INPUT Connector –	*selected by internal jumpers).*
Input Impedance:	75 Ohms.
Input Level:	+40 dBmV ±2 dB for -15 dB A/V ratio.

GENERAL

DC Power Input:	+12 V ±5% at 160 mA typical, 180 mA maximum. +5 V ±5% at 330 mA typical, 380 mA maximum.
Operating Temperature:	0^0 C to $+50^0$ C ambient.
Size:	1" W x 3.5" H x 7.5" D. (2.5 cm) W x (8.9 cm) H x (19.1 cm) D.
Weight:	10.7 oz. (0.3 Kg).

Specifications subject to change without notice or obligation.