



LCM-750x3

AGILE VIDEO MODULATOR

INSTRUCTION MANUAL

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LCM-750X3 AGILE MODULATOR

SPECIFICATIONS

EACH MODULE

Output Frequency Range:	48.25 to 749.25MHz in .25 MHz mode
Output Power (Video):	+55 dBmV minimum, Adjustable down 10dB
Output Impedance:	75 Ohms
Output Return Loss	15 dB Minimum
Phase Noise	> -78dBc/Hz @ 10 KHz
IF Loop Level (Video)	+38 dBmV @ 45.75 MHz
IF Loop Level (Audio)	+18 to +26dBmV @ 41.25 MHz
Spurious Outputs	>55 dB minimum below video carrier, 60 dB typical
Out-of-Band C/N	>75 dB below output video carrier, 4 MHz BW
In-Band C/N	>63 dB below output video carrier, 4 MHz BW
Frequency Accuracy	<+/- 5 KHz
Audio Video Ratio Adjustment	From 20 dB to 12 dB below video carrier
Audio Intercarrier Accuracy	4.5 MHz +/- 400 Hz
Video Input	1 V-p-p nominal for 85% modulation 75 Ohm input impedance, F Connector
Audio Input	500mV to 1.4V p-p at 600 Ohm balanced
Power Requirements (one module)	+5V @ 780mA, +10V @ 150mA & 24V @ 1mA

COMPLETE UNIT

Power Requirements	90 – 264 VAC, 47 – 63 Hz, 25 Watts power entry connector
Operating Temperature	0 – 50 degrees C
Chassis Size	1.75" H x 19" W x 9.5" D

1) INTRODUCTION

The Olson Technology LCM-750 X3 is a rack mounted chassis 1.75" high that contains 3 LCM-750 frequency agile FCC compatible video modulators. Each modulator provides +55 dBmV output from 48.25 MHz to 750.00 MHz. Channel mode or frequency mode of operation is selectable via a selector switch accessible from the top plate. Channel modes include CATV, HRC, IRC and Broadcast. FCC offsets of +12.5 KHz and +25 KHz are automatically provided depending on the channel plan selected.

The LCM-750 offers the unique Olson Technology feature of >75 dB out-of-band carrier to noise ratio along with SAW filtering to provide professional level performance.

Standard composite video and audio or I.F. can be input to the unit.

2) CHANNEL SELECTION

The mode selector switch, SW4 located through the top cover of the LCM-750 allows selection of the following modes of operation. The selector switch has 10 positions available. The mode switch is set to position 3, EIA CATV STD, when unit is shipped.

0.	CATV STD (GI)	NTSC
1.	HRC (GI)	NTSC
2.	IRC (GI)	NTSC
3.	EIA CATV STD	NTSC
4.	EIA HRC	NTSC
5.	EIA IRC	NTSC
6.	BROADCAST	NTSC
7.	MHz +0 MHz	
8.	MHz +0.25 MHz	
9.	UNDEFINED	

The front panel switches labeled 100's, 10's and 1's will adjust the frequency as indicated in modes 7 and 8. In modes 0-6 the front panel switches adjust to indicate the channel selected. For instance, a 0 selected for the 100's and 10's, with a 5 selected for the 1's switch would select channel 5.

When a valid channel is selected, the green LED, located on the front panel will light indicating synthesizer lock. The RED LED will flash when an invalid channel is selected and solid when no lock has occurred. A channel plan is provided at the end of this owners manual.

2) RF OUTPUT AND AURAL CARRIER LEVEL ADJUSTMENTS

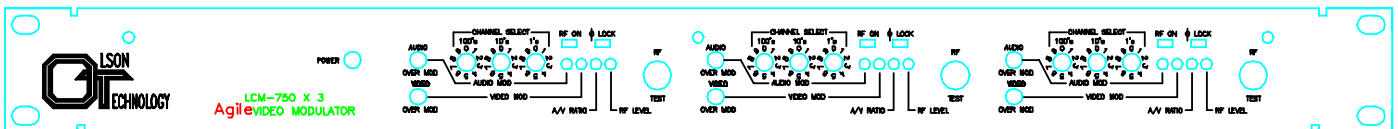
- a. Using a field strength meter or spectrum analyzer, set the video carrier to the desired level with the RF output “level” adjust pot (typically +55dBmV).
- b. Tune the field strength meter to the aural carrier, which is located 4.5MHz above the video carrier. Adjust the aural carrier level control (A/V), to the desired level. This level is typically 15dB below the video carrier.

3) AUDIO AND VIDEO MODULATION ADJUSTMENTS

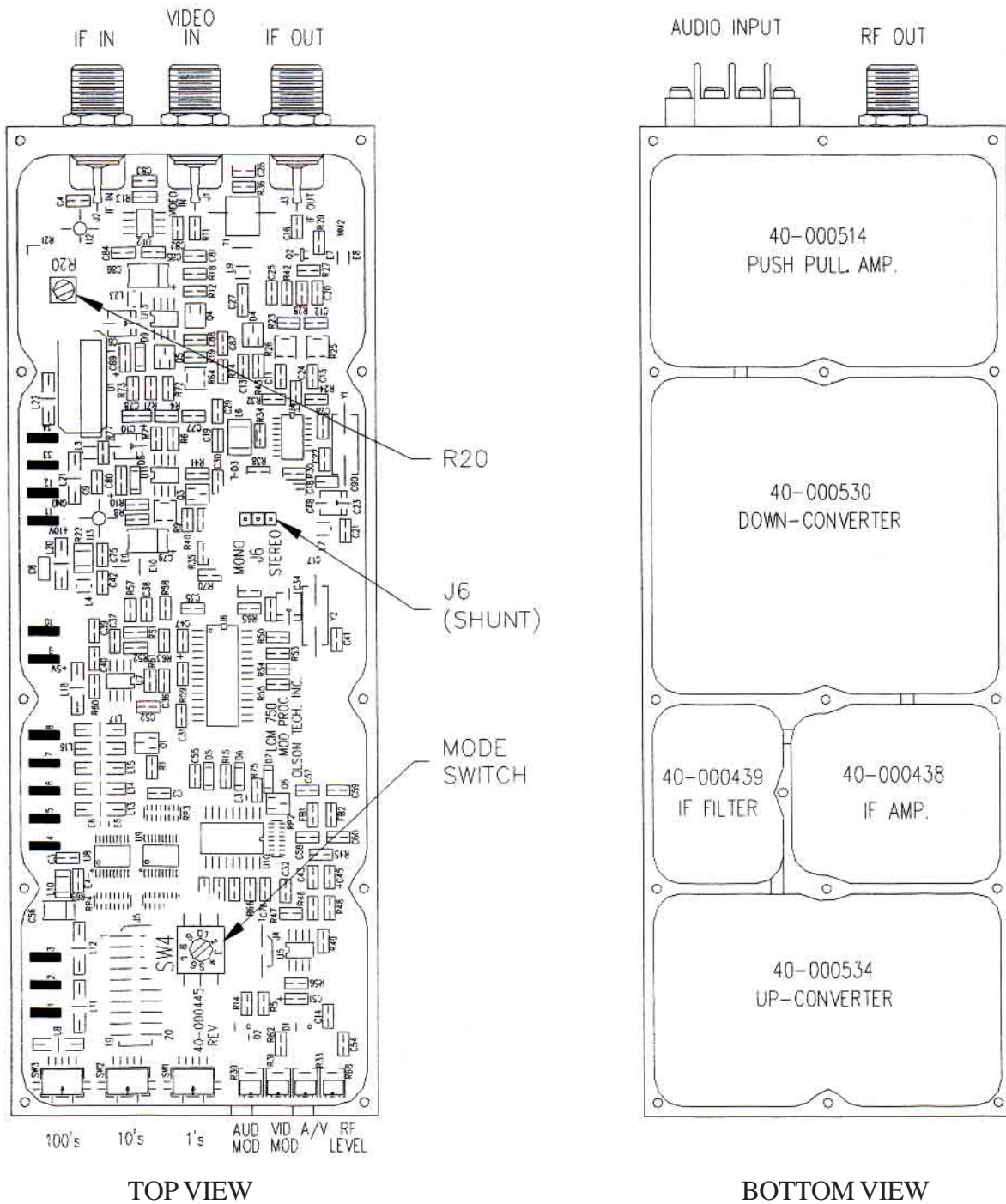
- a. The video mod adjustment controls the modulation depth. This adjustment is factory set to 80% modulation. If this adjustment is turned CW the video overmodulation LED will illuminate, turn CCW until LED just goes off. This is 80% video modulation.
- b. The audio mod adjustment controls audio modulation. Again as with the video mod adjustment, the modulation threshold is factory preset for 50KHz P-P Deviation. Turn adjustment pot CW until audio overmodulation LED just comes on. Then turn adjustment CCW until LED just goes off. The LED will flash occasionally during program audio peaks.
- c. Stereo Audio operation requires an external BTSC Stereo Encoder such as Leaming Industries model SG-100. Also, the internal pre-emphasis must be disabled by moving the shunt on J6 from mono to stereo. (Older versions require cutting the trace at E1 after removing the top cover.)

4) POWER SUPPLY FUSE

There is 1 user replaceable fuse located on the rear of unit. Ensure unit is disconnected from power before attempting to replace. Replace with 250V/.5A fuse.



LCM-750 FRONT PANEL VIEW



LCM-750 FUNCTION LOCATION

LCM-750 Channel Plans

G.I. Channel Plan			
Chan.	STD	HRC	IRC
2	55.2500	54.0027	55.2625
3	61.2500	60.0030	61.2625
4	67.2500	66.0033	67.2625
5 (A-7)	77.2500	78.0039	79.2625
6 (A-6)	83.2500	84.0042	85.2625
7	175.2500	174.0087	175.2625
8	181.2500	180.0090	181.2625
9	187.2500	186.0093	187.2625
10	193.2500	192.0096	193.2625
11	199.2500	198.0099	199.2625
12	205.2500	204.0102	205.2625
13	211.2500	210.0105	211.2625
14 (A)	121.2625	120.0060	121.2625
15 (B)	127.2625	126.0063	127.2625
16 (C)	133.2625	132.0066	133.2625
17 (D)	139.2500	138.0069	139.2625
18 (E)	145.2500	144.0072	145.2625
19 (F)	151.2500	150.0075	151.2625
20 (G)	157.2500	156.0078	157.2625
21 (H)	163.2500	162.0081	163.2625
22 (I)	169.2500	168.0084	169.2625
23 (J)	217.2500	216.0108	217.2625
24 (K)	223.2500	222.0111	223.2625
25 (L)	229.2625	228.0114	229.2625
26 (M)	235.2625	234.0117	235.2625
27 (N)	241.2625	240.0120	241.2625
28 (O)	247.2625	246.0123	247.2625
29 (P)	253.2625	252.0126	253.2625
30 (Q)	259.2625	258.0129	259.2625
31 (R)	265.2625	264.0132	265.2625
32 (S)	271.2625	270.0135	271.2625
33 (T)	277.2625	276.0138	277.2625
34 (U)	283.2625	282.0141	283.2625
35 (V)	289.2625	288.0144	289.2625
36 (W)	295.2625	294.0147	295.2625
37 (AA)	301.2625	300.0150	301.2625
38 (BB)	307.2625	306.0153	307.2625
39 (CC)	313.2625	312.0156	313.2625
40 (DD)	319.2625	318.0159	319.2625
41 (EE)	325.2625	324.0162	325.2625
42 (FF)	331.2750	330.0165	331.2750
43 (GG)	337.2625	336.0168	337.2625
44 (HH)	343.2625	342.0171	343.2625
45 (II)	349.2625	348.0174	349.2625
46 (JJ)	355.2625	354.0177	355.2625

EIA Channel Plan			
Chan.	STD	HRC	IRC
2	55.2500	54.0027	55.2625
3	61.2500	60.0030	61.2625
4	67.2500	66.0033	67.2625
5 (A-7)	77.2500	78.0039	79.2625
6 (A-6)	83.2500	84.0042	85.2625
7	175.2500	174.0087	175.2625
8	181.2500	180.0090	181.2625
9	187.2500	186.0093	187.2625
10	193.2500	192.0096	193.2625
11	199.2500	198.0099	199.2625
12	205.2500	204.0102	205.2625
13	211.2500	210.0105	211.2625
14 (A)	121.2625	120.0060	121.2625
15 (B)	127.2625	126.0063	127.2625
16 (C)	133.2625	132.0066	133.2625
17 (D)	139.2500	138.0069	139.2625
18 (E)	145.2500	144.0072	145.2625
19 (F)	151.2500	150.0075	151.2625
20 (G)	157.2500	156.0078	157.2625
21 (H)	163.2500	162.0081	163.2625
22 (I)	169.2500	168.0084	169.2625
23 (J)	217.2500	216.0108	217.2625
24 (K)	223.2500	222.0111	223.2625
25 (L)	229.2625	228.0114	229.2625
26 (M)	235.2625	234.0117	235.2625
27 (N)	241.2625	240.0120	241.2625
28 (O)	247.2625	246.0123	247.2625
29 (P)	253.2625	252.0126	253.2625
30 (Q)	259.2625	258.0129	259.2625
31 (R)	265.2625	264.0132	265.2625
32 (S)	271.2625	270.0135	271.2625
33 (T)	277.2625	276.0138	277.2625
34 (U)	283.2625	282.0141	283.2625
35 (V)	289.2625	288.0144	289.2625
36 (W)	295.2625	294.0147	295.2625
37 (AA)	301.2625	300.0150	301.2625
38 (BB)	307.2625	306.0153	307.2625
39 (CC)	313.2625	312.0156	313.2625
40 (DD)	319.2625	318.0159	319.2625
41 (EE)	325.2625	324.0162	325.2625
42 (FF)	331.2750	330.0165	331.2750
43 (GG)	337.2625	336.0168	337.2625
44 (HH)	343.2625	342.0171	343.2625
45 (II)	349.2625	348.0174	349.2625
46 (JJ)	355.2625	354.0177	355.2625

Broadcast	
Chan	FREQ
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
14	471.25
15	477.25
16	483.25
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

LCM-750 Channel Plans (continued)

Chan.	STD	HRC	IRC
47 (KK)	361.2625	360.0180	361.2625
48 (LL)	367.2625	366.0183	367.2625
49 (MM)	373.2625	372.0186	373.2625
50 (NN)	379.2625	378.0189	379.2625
51 (OO)	385.2625	384.0192	385.2625
52 (PP)	391.2625	390.0195	391.2625
53 (QQ)	397.2625	396.0198	397.2625
54 (A-8)	73.2500	72.0036	73.2625
55 (A-7)	79.2500	78.0039	79.2625
56 (A-6)	85.2500	84.0042	85.2625
57 (A-5)	91.2500	90.0045	91.2625
58 (A-4)	97.2500	96.0048	97.2625
59 (A-3)	103.2500	102.0051	103.2625
60 (A-2)	109.2750	108.0054	109.2750
61 (A-1)	115.2750	114.0057	115.2750
62 (RR)	403.2500	402.0201	403.2625
63 (SS)	409.2500	408.0204	409.2625
64 (TT)	415.2500	414.0207	415.2625
65 (UU)	421.2500	420.0210	421.2625
66 (VV)	427.2500	426.0213	427.2625
67 (WW)	433.2500	432.0216	433.2625
68 (XX)	439.2500	438.0219	439.2625
69 (YY)	445.2500	444.0222	445.2625
70 (ZZ)	451.2500	450.0225	451.2625
71	457.2500	456.0228	457.2625
72	463.2500	462.0231	463.2625
73	469.2500	468.0234	469.2625
74	475.2500	474.0237	475.2625
75	481.2500	480.0240	481.2625
76	487.2500	486.0243	487.2625
77	493.2500	492.0246	493.2625
78	499.2500	498.0249	499.2625
79	505.2500	504.0252	505.2625
80	511.2500	510.0255	511.2625
81	517.2500	516.0258	517.2625
82	523.2500	522.0261	523.2625
83	529.2500	528.0264	529.2625
84	535.2500	534.0267	535.2625
85	541.2500	540.0270	541.2625
86	547.2500	546.0273	547.2625
87	553.2500	552.0276	553.2625
88	559.2500	558.0279	559.2625
89	565.2500	564.0282	565.2625
90	571.2500	570.0285	571.2625
91	577.2500	576.0288	577.2625
92	583.2500	582.0291	583.2625
93	589.2500	588.0294	589.2625

Chan.	STD	HRC	IRC
47 (KK)	361.2625	360.0180	361.2625
48 (LL)	367.2625	366.0183	367.2625
49 (MM)	373.2625	372.0186	373.2625
50 (NN)	379.2625	378.0189	379.2625
51 (OO)	385.2625	384.0192	385.2625
52 (PP)	391.2625	390.0195	391.2625
53 (QQ)	397.2625	396.0198	397.2625
54 (RR)	403.2500	402.0201	403.2625
55 (SS)	409.2500	408.0204	409.2625
56 (TT)	415.2500	414.0207	415.2625
57 (UU)	421.2500	420.0210	421.2625
58 (VV)	427.2500	426.0213	427.2625
59 (WW)	433.2500	432.0216	433.2625
60 (XX)	439.2500	438.0219	439.2625
61 (YY)	445.2500	444.0222	445.2625
62 (ZZ)	451.2500	450.0225	451.2625
63 (AAA)	457.2500	456.0228	457.2625
64 (BBB)	463.2500	462.0231	463.2625
65 (CCC)	469.2500	468.0234	469.2625
66 (DDD)	475.2500	474.0237	475.2625
67 (EEE)	481.2500	480.0240	481.2625
68 (FFF)	487.2500	486.0243	487.2625
69 (GGG)	493.2500	492.0246	493.2625
70 (HHH)	499.2500	498.0249	499.2625
71 (III)	505.2500	504.0252	505.2625
72 (JJJ)	511.2500	510.0255	511.2625
73 (KKK)	517.2500	516.0258	517.2625
74 (LLL)	523.2500	522.0261	523.2625
75 (MMM)	529.2500	528.0264	529.2625
76 (NNN)	535.2500	534.0267	535.2625
77 (OOO)	541.2500	540.0270	541.2625
78 (PPP)	547.2500	546.0273	547.2625
79 (QQQ)	553.2500	552.0276	553.2625
80 (RRR)	559.2500	558.0279	559.2625
81 (SSS)	565.2500	564.0282	565.2625
82 (TTT)	571.2500	570.0285	571.2625
83 (UUU)	577.2500	576.0288	577.2625
84 (VVV)	583.2500	582.0291	583.2625
85 (WWW)	589.2500	588.0294	589.2625
86 (XXX)	595.2500	594.0297	595.2625
87 (YYY)	601.2500	600.0300	601.2625
88 (ZZZ)	607.2500	606.0303	607.2625
89	613.2500	612.0306	613.2625
90	619.2500	618.0309	619.2625
91	625.2500	624.0312	625.2625
92	631.2500	630.0315	631.2625
93	637.2500	636.0318	637.2625

Chan	BCST
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

LCM-750 Channel Plans (continued)

Chan.	STD	HRC	IRC
94	595.2500	594.0297	595.2625
95	601.2500	600.0300	601.2625
96	607.2500	606.0303	607.2625
100	631.2500	630.0315	631.2625
101	637.2500	636.0318	637.2625
102	643.2500	642.0321	643.2625
103	649.2500	648.0324	649.2625
104	655.2500	654.0327	655.2625
105	661.2500	660.0330	661.2625
106	667.2500	666.0333	667.2625
107	673.2500	672.0336	673.2625
108	679.2500	678.0339	679.2625
109	685.2500	684.0342	685.2625
110	691.2500	690.0345	691.2625
111	697.2500	696.0348	697.2625
112	703.2500	702.0351	703.2625
113	709.2500	708.0354	709.2625
114	715.2500	714.0357	715.2625
115	721.2500	720.0360	721.2625
116	727.2500	726.0363	727.2625
117	733.2500	732.0366	733.2625
118	739.2500	738.0369	739.2625
119	745.2500	744.0372	745.2625

Chan.	STD	HRC	IRC
94	643.2500	642.0321	643.2625
95 (A-5)	91.2500	90.0045	91.2625
96 (A-4)	97.2500	96.0048	97.2625
100	649.2500	648.0324	649.2625
101	655.2500	654.0327	655.2625
102	661.2500	660.0330	661.2625
103	667.2500	666.0333	667.2625
104	673.2500	672.0336	673.2625
105	679.2500	678.0339	679.2625
106	685.2500	684.0342	685.2625
107	691.2500	690.0345	691.2625
108	697.2500	696.0348	697.2625
109	703.2500	702.0351	703.2625
110	709.2500	708.0354	709.2625
111	715.2500	714.0357	715.2625
112	721.2500	720.0360	721.2625
113	727.2500	726.0363	727.2625
114	733.2500	732.0366	733.2625
115	739.2500	738.0369	739.2625
116	745.2500	744.0372	745.2625