



**OTD-3000-I**

**FREQUENCY AGILE  
TELEVISION MODULATOR**

**PAL I STANDARD**

**INSTRUCTION MANUAL**

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# OTD-3000-I

## FREQUENCY AGILE TELEVISION DEMODULATOR PAL I STANDARD

### 1) INTRODUCTION

The Olson Technology OTD-3000-I is a frequency agile television demodulator that will select VHF, UHF or cable channels from 48.25 to 855.25MHz. SAW filtering is used for excellent adjacent channel operation.

The OTD-3000-I provides 2 outputs for video (each at 1 Volt), audio (balanced) at .5 Volt, MPX audio (unbalanced, without de-emphasis) at .5 Volt, 6.0MHz aural subcarrier at  $> +35\text{dBmV}$ , and unfiltered I.F.. This unit is also capable of providing a composite video output (video with 6.0MHz aural subcarrier present). Power consumption is 10 Watts at 220 VAC.

### 2) INSTALLATION

Mount the unit in a standard equipment rack and provide it with a source of AC power.

For proper ventilation, it is desirable to allow an empty space above and below the unit in the rack. A space the same height as the OTD-3000-I would be adequate. Try to avoid locations that are extremely hot or moist or which have extreme temperature variations.

### 3) INPUT CONNECTION

Connect the signal to be demodulated to the VHF / UHF input on the rear of the OTD-3000-I. For optimum quality, the input signal level should be a minimum of  $+5\text{dBmV}$  and may be as high as  $+20\text{dBmV}$ . The unit will function with input levels below  $+5\text{dBmV}$ , but the signal to noise ratio will be degraded as the level is lowered.

This unit incorporates a video squelch circuit that is set to cut off the video output at input levels below approximately  $-30\text{dBmV}$ .

### 4) REAR PANEL OUTPUT CONNECTIONS

- A) Demodulated video is available at both of the video output F-fittings. The output level is internally set for approximately 1V P-P for a fully-modulated video carrier when terminated in  $75\Omega$ .
- B) Demodulated baseband audio is available at the two audio out screw terminals. This is a balanced output that will easily drive a 600 ohm load and is internally set to provide approximately .5V P-P on program peaks. Either terminal may be grounded for applications requiring an unbalanced output.
- C) MPX audio (audio output without de-emphasis) is available at the unbalanced MPX output F-fitting. This output will provide approximately .5 V into 75 Ohms on program peaks.

- D) The 6.0MHz aural subcarrier is available at the 6.0MHz output F-fitting. This output is typically  $>+35\text{dbmV}$ .
- E) Composite video (video with the 6.0MHz subcarrier present) is available at the video output F-fittings if the rear panel composite switch is turned on. Leave this switch off if the 6.0MHz subcarrier is not required on the video output.

## 5) CHANNEL SELECTION

Remove the small cover plate on the front panel under "CHANNEL SELECT" to expose the two 8-position DIP switches. Channel or frequency selection is accomplished by properly setting the eight positions on each of these two switches.

### A) STANDARD CHANNELS:

Look up the switch codes for the channel you want to demodulate on pages 6 and 7 in this manual. A "0" indicates a switch position as down and a "1" indicates a switch position as up. Using the codes shown for the channel you require, set the DIP switches according to the chart from left to right.

### B) NON-STANDARD CHANNELS:

Switch codes for frequencies not listed may be computed using the information on pages 4, 5 and 6.

## 6) AFC OPERATION

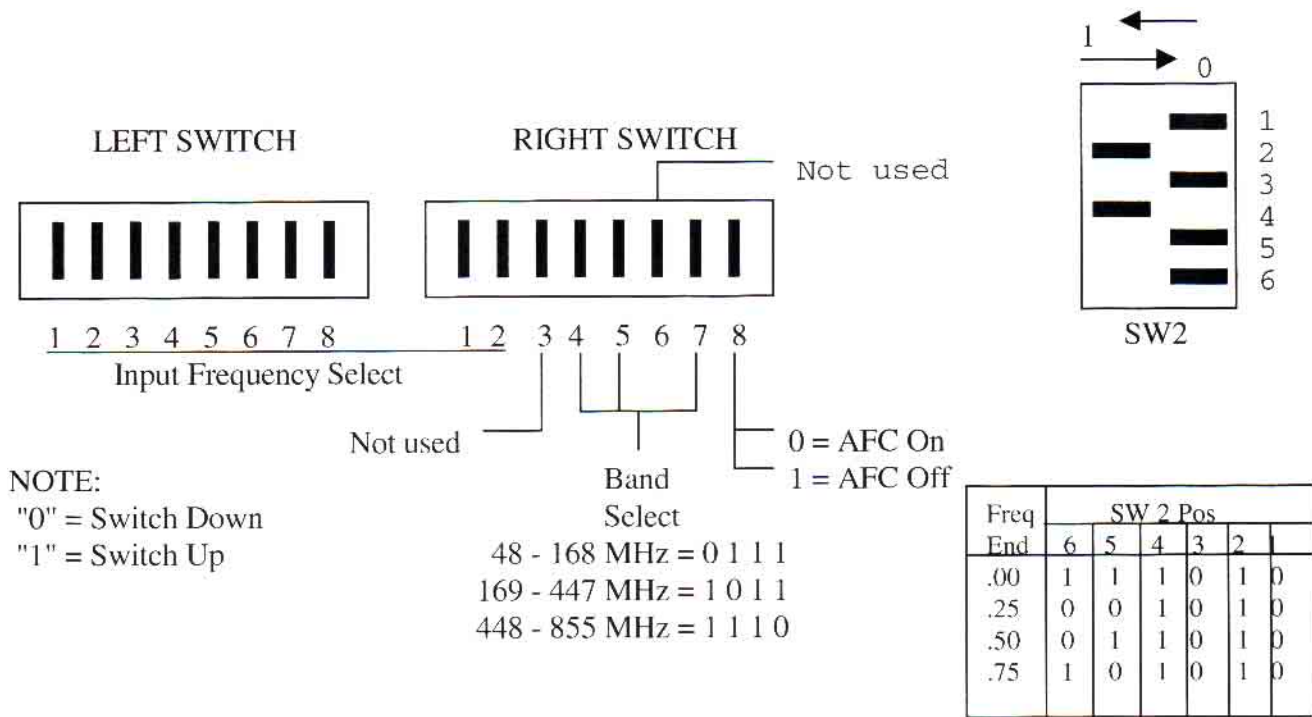
The OTD-3000-I has an AFC circuit which will hold the unit tuned to a selected channel should the source channel drift in frequency. This feature is usually not required but may be activated by moving the 8th position of the right switch to down (on).

## 7) SELECTION OF NON-LISTED FREQUENCIES

Video carrier frequencies between 48.25 and 855.25 in .25MHz steps may be selected by following the procedure below.

The 16 positions of the two DIP switches behind the "CHANNEL SELECT" cover plate have specific functions as shown in Figure 1 and noted below.

SW 2 is a 6 position DIP switch on the PC board just behind and left of the front panel DIP switches. Remove top cover for access. Figure 1 shows SW 2 set for frequency ending in .25MHz. The chart shows settings for other frequencies.



**Figure 1 - DIP SWITCH FUNCTIONS**

Positions 1 through 8 of the left switch and positions 1 and 2 of the right switch select the input frequency in 1MHz increments. At the right switch, positions 4, 5 and 7 select the proper frequency band for the input tuner and position 8 switches the AFC feature on and off. Positions 3 and 6 are not used.

**COMPUTING SWITCH SETTINGS FOR NON-STANDARD FREQUENCIES**

Positions 1 through 8 of the left switch and positions 1 and 2 of the right switch each have numerical values as shown in figure 2 below. Each switch position is either UP = OFF = (value) or is DOWN = ON = 0. The TOTAL SWITCH VALUE is the sum of these individual values and set the frequency in 1MHz steps.

	LEFT SWITCH	RIGHT SWITCH
Switch position	<u>1 2 3 4 5 6 7 8</u>	<u>1 2</u>
Value up	1 2 4 8 16 32 64 128	256 512
Value down	0 0 0 0 0 0 0 0	0 0

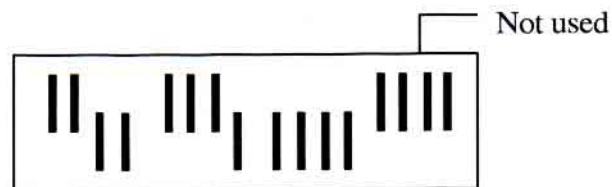
i.e.:  $115 = 1 + 2 + 16 + 32 + 64$

**Figure 2 - DIP SWITCH VALUES**

- A) Decide on the required frequency yyy.xx.
- B) Temporarily drop the .xx part and compute the total switch value required by adding 39.0 to the remaining number.
- C) Set the DIP switches to equal the total required value.
- D) Change the SW 2 setting if frequency ends with .00, .05, or .75. Factory setting is .25MHz.
- E) Select the proper input tuner band and set the appropriate switch to activate this band.

**EXAMPLE:**

- A) Example frequency of 76.25MHz is desired.
- B)  $76.25 - .25 = 76.0 + 39.0 = 115$ , the total switch value required.
- C) The switch settings for a total of 115 would be: 1100 1110 00. Set the 1st 10 positions to this value 1 = Up, 0 = Down.
- D) .25 is the default for SW 2 so it does not require changing.
- E) 76.25MHz is in the 48-168MHz band, so set position 4 of the right switch down (on) to select this band.



**Figure 3 - SWITCHES SET FOR 76.25MHz**

The first time you perform this procedure, it may help to practice with a frequency whose switch settings are illustrated in one of the switch tables in this manual.

## 8) MISCELLANEOUS

The OTD-3000-I is equipped with a 0.25 slo-blo fuse. For safety, and to maintain proper performance of the unit, please replace only with an equivalent fuse.

**OTD-3000 PAL-I STANDARD**  
**\*\* CHANNEL NUMBER NOT DEFINED**

<u>CH VIDEO FREQ. DIP SWITCH SETTINGS</u>			<u>CH VIDEO FREQ. DIP SWITCH SETTINGS</u>		
**	47.250	0110 1010 0000 1111	42	407.250	0111 1101 1001 0111
1	55.250	0111 1010 0000 1111	43	415.250	0110 0011 1001 0111
2	63.250	0110 0110 0000 1111	44	423.250	0111 0011 1001 0111
3	71.250	0111 0110 0000 1111	45	431.250	0110 1011 1001 0111
4	79.250	0110 1110 0000 1111	46	439.250	0111 1011 1001 0111
**	87.250	0111 1110 0000 1111	47	447.250	0110 0111 1001 1101
**	95.250	0110 0001 0000 1111	48	455.250	0111 0111 1001 1101
**	103.250	0111 0001 0000 1111	49	463.250	0110 1111 1001 1101
5	111.250	0110 1001 0000 1111	50	471.250	0111 1111 1001 1101
6	119.250	0111 1001 0000 1111	51	479.250	0110 0000 0101 1101
7	127.250	0110 0101 0000 1111	52	487.250	0111 0000 0101 1101
8	135.250	0111 0101 0000 1111	53	495.250	0110 1000 0101 1101
9	143.250	0110 1101 0000 1111	54	503.250	0111 1000 0101 1101
10	151.250	0111 1101 0000 1111	55	511.250	0110 0100 0101 1101
11	159.250	0110 0011 0000 1111	56	519.250	0111 0100 0101 1101
12	167.250	0111 0011 0000 1111	57	527.250	0110 1100 0101 1101
13	175.250	0110 1011 0001 0111	58	535.250	0111 1100 0101 1101
14	183.250	0111 1011 0001 0111	59	543.250	0110 0010 0101 1101
15	191.250	0110 0111 0001 0111	60	551.250	0111 0010 0101 1101
16	199.250	0111 0111 0001 0111	61	559.250	0110 1010 0101 1101
17	207.250	0110 1111 0001 0111	62	567.250	0111 1010 0101 1101
18	215.250	0111 1111 0001 0111	63	575.250	0110 0110 0101 1101
19	223.250	0110 0000 1001 0111	64	583.250	0111 0110 0101 1101
20	231.250	0111 0000 1001 0111	65	591.250	0110 1110 0101 1101
21	239.250	0110 1000 1001 0111	66	599.250	0111 1110 0101 1101
22	247.250	0111 1000 1001 0111	67	607.250	0110 0001 0101 1101
23	255.250	0110 0100 1001 0111	68	615.250	0111 0001 0101 1101
24	263.250	0111 0100 1001 0111	69	623.250	0110 1001 0101 1101
25	271.250	0110 1100 1001 0111	70	631.250	0111 1001 0101 1101
26	279.250	0111 1100 1001 0111	71	639.250	0110 0101 0101 1101
27	287.250	0110 0010 1001 0111	72	647.250	0111 0101 0101 1101
28	295.250	0111 0010 1001 0111	73	655.250	0110 1101 0101 1101
29	303.250	0110 1010 1001 0111	74	663.250	0111 1101 0101 1101
30	311.250	0111 1010 1001 0111	75	671.250	0110 0011 0101 1101
31	319.250	0110 0110 1001 0111	76	679.250	0111 0011 0101 1101



**OTD-3000 PAL-I STANDARD (cont.)**  
**\*\* CHANNEL NUMBER NOT DEFINED**

CH	VIDEO	FREQ.	DIP SWITCH SETTINGS				CH	VIDEO	FREQ.	DIP SWITCH SETTINGS			
32		327.250	0111	0110	1001	0111	77	687.250	0110	1011	0101	1101	
33		335.250	0110	1110	1001	0111	78	695.250	0111	1011	0101	1101	
34		343.250	0111	1110	1001	0111	79	703.250	0110	0111	0101	1101	
35		351.250	0110	0001	1001	0111	80	711.250	0111	0111	0101	1101	
36		359.250	0111	0001	1001	0111	81	719.250	0110	1111	0101	1101	
37		367.250	0110	1001	1001	0111	82	727.250	0111	1111	0101	1101	
38		375.250	0111	1001	1001	0111	83	735.250	0110	0000	1101	1101	
39		383.250	0110	0101	1001	0111	84	743.250	0111	0000	1101	1101	
40		391.250	0111	0101	1001	0111	85	751.250	0110	1000	1101	1101	
41		399.250	0110	1101	1001	0111	86	759.250	0111	1000	1101	1101	
							87	767.250	0110	0100	1101	1101	
							88	775.250	0111	0100	1101	1101	
							89	783.250	0110	1100	1101	1101	
							90	791.250	0111	1100	1101	1101	
							91	799.250	0110	0010	1101	1101	
							92	807.250	0111	0010	1101	1101	
							93	815.250	0110	1010	1101	1101	
							94	823.250	0111	1010	1101	1101	
							95	831.250	0110	0110	1101	1101	
							96	839.250	0111	0110	1101	1101	
							97	847.250	0110	1110	1101	1101	
							98	855.250	0111	1110	1101	1101	

**OTD-3000 PAL-I HRC**  
**\*\* CHANNEL NUMBER NOT DEFINED**

CH	VIDEO FREQ.	DIP SWITCH SETTINGS				CH	VIDEO FREQ.	DIP SWITCH SETTINGS			
1	48.000	1110	1010	0000	1111	42	408.000	1111	1101	1001	0111
2	56.000	1111	1010	0000	1111	43	416.000	1110	0011	1001	0111
3	64.000	1110	0110	0000	1111	44	424.000	1111	0011	1001	0111
4	72.000	1111	0110	0000	1111	45	432.000	1110	1011	1001	0111
5	80.000	1110	1110	0000	1111	46	440.000	1111	1011	1001	0111
**	88.000	1111	1110	0000	1111	47	448.000	1110	0111	1001	1101
**	96.000	1110	0001	0000	1111	48	456.000	1111	0111	1001	1101
**	104.000	1111	0001	0000	1111	49	464.000	1110	1111	1001	1101
**	112.000	1110	1001	0000	1111	50	472.000	1111	1111	1001	1101
6	120.000	1111	1001	0000	1111	51	480.000	1110	0000	0101	1101
7	128.000	1110	0101	0000	1111	52	488.000	1111	0000	0101	1101
8	136.000	1111	0101	0000	1111	53	496.000	1110	1000	0101	1101
9	144.000	1110	1101	0000	1111	54	504.000	1111	1000	0101	1101
10	152.000	1111	1101	0000	1111	55	512.000	1110	0100	0101	1101
11	160.000	1110	0011	0000	1111	56	520.000	1111	0100	0101	1101
12	168.000	1111	0011	0000	1111	57	528.000	1110	1100	0101	1101
13	176.000	1110	1011	0001	0111	58	536.000	1111	1100	0101	1101
14	184.000	1111	1011	0001	0111	59	544.000	1110	0010	0101	1101
15	192.000	1110	0111	0001	0111	60	552.000	1111	0010	0101	1101
16	200.000	1111	0111	0001	0111	61	560.000	1110	1010	0101	1101
17	208.000	1110	1111	0001	0111	62	568.000	1111	1010	0101	1101
18	216.000	1111	1111	0001	0111	63	576.000	1110	0110	0101	1101
19	224.000	1110	0000	1001	0111	64	584.000	1111	0110	0101	1101
20	232.000	1111	0000	1001	0111	65	592.000	1110	1110	0101	1101
21	240.000	1110	1000	1001	0111	66	600.000	1111	1110	0101	1101
22	248.000	1111	1000	1001	0111	67	608.000	1110	0001	0101	1101
23	256.000	1110	0100	1001	0111	68	616.000	1111	0001	0101	1101
24	264.000	1111	0100	1001	0111	69	624.000	1110	1001	0101	1101
25	272.000	1110	1100	1001	0111	70	632.000	1111	1001	0101	1101
26	280.000	1111	1100	1001	0111	71	640.000	1110	0101	0101	1101
27	288.000	1110	0010	1001	0111	72	648.000	1111	0101	0101	1101
28	296.000	1111	0010	1001	0111	73	656.000	1110	1101	0101	1101
29	304.000	1110	1010	1001	0111	74	664.000	1111	1101	0101	1101
30	312.000	1111	1010	1001	0111	75	672.000	1110	0011	0101	1101
31	320.000	1110	0110	1001	0111	76	680.000	1111	0011	0101	1101
32	328.000	1111	0110	1001	0111	77	688.000	1110	1011	0101	1101



33	336.000	1110 1110 1001 0111	78	696.000	1111 1011 0101 1101
34	344.000	1111 1110 1001 0111	79	704.000	1110 0111 0101 1101
35	352.000	1110 0001 1001 0111	80	712.000	1111 0111 0101 1101
36	360.000	1111 0001 1001 0111	81	720.000	1110 1111 0101 1101
37	368.000	1110 1001 1001 0111	82	728.000	1111 1111 0101 1101
38	376.000	1111 1001 1001 0111	83	736.000	1110 0000 1101 1101
39	384.000	1110 0101 1001 0111	84	744.000	1111 0000 1101 1101
40	392.000	1111 0101 1001 0111	85	752.000	1110 1000 1101 1101
41	400.000	1110 1101 1001 0111	86	760.000	1111 1000 1101 1101
			87	768.000	1110 0100 1101 1101
			88	776.000	1111 0100 1101 1101
			89	784.000	1110 1100 1101 1101
			90	792.000	1111 1100 1101 1101
			91	800.000	1110 0010 1101 1101
			92	808.000	1111 0010 1101 1101
			93	816.000	1110 1010 1101 1101
			94	824.000	1111 1010 1101 1101
			95	832.000	1110 0110 1101 1101
			96	840.000	1111 0110 1101 1101
			97	848.000	1110 1110 1101 1101