



OTD-3000-S

**FREQUENCY AGILE
TELEVISION DEMODULATOR**

(WITH SUB-BAND INPUT CAPABILITY)

INSTRUCTION MANUAL

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FREQUENCY AGILE TELEVISION DEMODULATOR WITH SUB-BAND INPUT CAPABILITY

1) INTRODUCTION

The Olson Technology OTD-3000-S is a frequency agile television demodulator that will select any VHF or cable channel in .25MHz increments from channel T7 (7.00MHz) to channel 86 (547.25MHz). SAW filtering is used for excellent adjacent channel operation.

The OTD-3000-S provides 2 outputs for video (each at 1 Volt), audio (balanced) at .5 Volt, MPX audio (unbalanced) at .5 Volt, 4.5 MHz at > +35dBmV, and unfiltered I.F.. BTSC stereo and SAP signals are available at the MPX and 4.5MHz outputs. This unit is also capable of providing a composite video output (video with 4.5 MHz subcarrier present). Power consumption is 10 Watts at 115 VAC.

2) 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 the left switch and the first 5 positions on the right switch. Positions 6, 7, & 8 on the right switch are not used.

Look up the switch codes for the channel you want to demodulate on the code card attached to the input channel select cover plate, or on pages 4-7 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.

Switch codes for frequencies not listed may be computed using the information on page 10.

3) INPUT CONNECTION

Connect the signal to be demodulated to the RF input on the rear of the OTD-3000-S. For optimum quality, the input signal level should be a minimum of +10dBmV and may be as high as +18dBmV. The unit will function with input levels below +10dBmV, 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 output at input levels below approximately -30dBmV.

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.
- 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 (no de-emphasis, and with BTSC stereo and SAP signals present) is available at the unbalanced MPX output F-fitting. This output will provide approximately .5 V into 75 ohms on program peaks.

D) 4.5MHz audio subcarrier (with BTSC and SAP information) is available at the 4.5MHz output F-fitting. This output is typically $>+35\text{dBmV}$.

E) Composite video (video with 4.5MHz subcarrier present) is available at the video output F-fittings if the composite switch is turned on. Leave this switch off if 4.5MHz subcarrier is not required on the video output.

5) MISCELLANEOUS

The OTD-3000-S is equipped with a 0.5A slo-blo fuse. For safety, and to maintain proper performance of the unit, please replace only with an equivalent fuse.

FREQUENCY SWITCH SETTINGS

The three right most switches are not used.

STANDARD CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>			
T-7	7.00	1111	0101	1001	0
T-8	13.00	1110	0011	1001	0
T-9	19.00	1111	1011	1001	0
T-10	25.00	1110	1111	1001	0
T-11	31.00	1111	0000	0101	0
T-12	37.00	1110	0100	0101	0
T-13	43.00	1111	1100	0101	0
T-14	49.00	1110	1010	0101	0
2	55.250	0000	1110	0101	0
3	61.250	0001	0001	0101	0
4	67.250	0000	0101	0101	0
5	77.250	0001	0011	0101	0
6	83.250	0000	0111	0101	0
7	175.250	0000	1010	0011	0
8	181.250	0001	0110	0011	0
9	187.250	0000	0001	0011	0
10	193.250	0001	1001	0011	0
11	199.250	0000	1101	0011	0
12	205.250	0001	0011	0011	0
13	211.250	0000	0111	0011	0
14	121.250	0001	1110	1101	0
15	127.250	0000	1001	1101	0
16	133.250	0001	0101	1101	0
17	139.250	0000	0011	1101	0
18	145.250	0001	1011	1101	0
19	151.250	0000	1111	1101	0
20	157.250	0001	0000	0011	0
21	163.250	0000	0100	0011	0
22	169.250	0001	1100	0011	0
23	217.250	0001	1111	0011	0
24	223.250	0000	1000	1011	0
25	229.250	0001	0100	1011	0
26	235.250	0000	0010	1011	0
27	241.250	0001	1010	1011	0
28	247.250	0000	1110	1011	0
29	253.250	0001	0001	1011	0
30	259.250	0000	0101	1011	0

FREQUENCY SWITCH SETTINGS (Continued)

STANDARD CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>			
31	265.250	0001	1101	1011	0
32	271.250	0000	1011	1011	0
33	277.250	0001	0111	1011	0
34	283.250	0000	0000	0111	0
35	289.250	0001	1000	0111	0
36	295.250	0000	1100	0111	0
37	301.250	0001	0010	0111	0
38	307.250	0000	0110	0111	0
39	313.250	0001	1110	0111	0
40	319.250	0000	1001	0111	0
41	325.250	0001	0101	0111	0
42	331.250	0000	0011	0111	0
43	337.250	0001	1011	0111	0
44	343.250	0000	1111	0111	0
45	349.250	0001	0000	1111	0
46	355.250	0000	0100	1111	0
47	361.250	0001	1100	1111	0
48	367.250	0000	1010	1111	0
49	373.250	0001	0110	1111	0
50	379.250	0000	0001	1111	0
51	385.250	0001	1001	1111	0
52	391.250	0000	1101	1111	0
53	397.250	0001	0011	1111	0
54	73.250	0001	1101	0101	0
55	79.250	0000	1011	0101	0
56	85.250	0001	0111	0101	0
57	91.250	0000	0000	1101	0
58	97.250	0001	1000	1101	0
59	103.250	0000	1100	1101	0
60	109.250	0001	0010	1101	0
61	115.250	0000	0110	1101	0
62	403.250	0000	0111	1111	0
63	409.250	0001	1111	1111	0
64	415.250	0000	1000	0000	1
65	421.250	0001	0100	0000	1
66	427.250	0000	0010	0000	1
67	433.250	0001	1010	0000	1
68	439.250	0000	1110	0000	1
69	445.250	0001	0001	0000	1

FREQUENCY SWITCH SETTINGS (Continued)

STANDARD CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>				
70	451.250	0000	0101	0000	1	
71	457.250	0001	1101	0000	1	
72	463.250	0000	1011	0000	1	
73	469.250	0001	0111	0000	1	
74	475.250	0000	0000	1000	1	
75	481.250	0001	1000	1000	1	
76	487.250	0000	1100	1000	1	
77	493.250	0001	0010	1000	1	
78	499.250	0000	0110	1000	1	
79	505.250	0001	1110	1000	1	
80	511.250	0000	1001	1000	1	
81	517.250	0001	0101	1000	1	
82	523.250	0000	0011	1000	1	
83	529.250	0001	1011	1000	1	
84	535.250	0000	1111	1000	1	
85	541.250	0001	0000	0100	1	
86	547.250	0000	0100	0100	1	

FREQUENCY SWITCH SETTINGS (Continued)

HRC CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>			
2	54.000	1101	0110	0101	0
3	60.000	1100	0001	0101	0
4	66.000	1101	1001	0101	0
5	72.000	1100	1101	0101	0
6	78.000	1101	0011	0101	0
7	174.000	1101	0010	0011	0
8	180.000	1100	0110	0011	0
9	186.000	1101	1110	0011	0
10	192.000	1100	1001	0011	0
11	198.000	1101	0101	0011	0
12	204.000	1100	0011	0011	0
13	210.000	1101	1011	0011	0
14	120.000	1100	1110	1101	0
15	126.000	1101	0001	1101	0
16	132.000	1100	0101	1101	0
17	138.000	1101	1101	1101	0
18	144.000	1100	1011	1101	0
19	150.000	1101	0111	1101	0
20	156.000	1100	0000	0011	0
21	162.000	1101	1000	0011	0
22	168.000	1100	1100	0011	0
23	216.000	1100	1111	0011	0
24	222.000	1101	0000	1011	0
25	228.000	1100	0100	1011	0
26	234.000	1101	1100	1011	0
27	240.000	1100	1010	1011	0
28	246.000	1101	0110	1011	0
29	252.000	1100	0001	1011	0
30	258.000	1101	1001	1011	0
31	264.000	1100	1101	1011	0
32	270.000	1101	0011	1011	0
33	276.000	1100	0111	1011	0
34	282.000	1101	1111	1011	0
35	288.000	1100	1000	0111	0
36	294.000	1101	0100	0111	0
37	300.000	1100	0010	0111	0
38	306.000	1101	1010	0111	0
39	312.000	1100	1110	0111	0
40	318.000	1101	0001	0111	0

FREQUENCY SWITCH SETTINGS (Continued)

HRC CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>				
41	324.000	1100	0101	0111	0	
42	330.000	1101	1101	0111	0	
43	336.000	1100	1011	0111	0	
44	342.000	1101	0111	0111	0	
45	348.000	1100	0000	1111	0	
46	354.000	1101	1000	1111	0	
47	360.000	1100	1100	1111	0	
48	366.000	1101	0010	1111	0	
49	372.000	1100	0110	1111	0	
50	378.000	1101	1110	1111	0	
51	384.000	1100	1001	1111	0	
52	390.000	1101	0101	1111	0	
53	396.000	1100	0011	1111	0	
54	72.000	1100	1101	0101	0	
55	78.000	1101	0011	0101	0	
56	84.000	1100	0111	0101	0	
57	90.000	1101	1111	0101	0	
58	96.000	1100	1000	1101	0	
59	102.000	1101	0100	1101	0	
60	108.000	1100	0010	1101	0	
61	114.000	1101	1010	1101	0	
62	402.000	1101	1011	1111	0	
63	408.000	1100	1111	1111	0	
64	414.000	1101	0000	0000	1	
65	420.000	1100	0100	0000	1	
66	426.000	1101	1100	0000	1	
67	432.000	1100	1010	0000	1	
68	438.000	1101	0110	0000	1	
69	444.000	1100	0001	0000	1	
70	450.000	1101	1001	0000	1	
71	456.000	1100	1101	0000	1	
72	462.000	1101	0011	0000	1	
73	468.000	1100	0111	0000	1	
74	474.000	1101	1111	0000	1	
75	480.000	1100	1000	1000	1	

FREQUENCY SWITCH SETTINGS (Continued)

HRC CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>				
76	486.000	1101	0100	1000	1	
77	492.000	1100	0010	1000	1	
78	498.000	1101	1010	1000	1	
79	504.000	1100	1110	1000	1	
80	510.000	1101	0001	1000	1	
81	516.000	1100	0101	1000	1	
82	522.000	1101	1101	1000	1	
83	528.000	1100	1011	1000	1	
84	534.000	1101	0111	1000	1	
85	540.000	1100	0000	0100	1	
86	546.000	1101	1000	0100	1	

IRC CATV CHANNELS ("Jerrold Plan")

Dip switch position: 0 = DOWN 1 = UP

<u>CHANNEL</u>	<u>VIDEO FREQ.</u>	<u>DIP SWITCH</u>				
5	79.250	0000	1011	0101	0	
6	85.250	0001	0111	0101	0	

Use the standard CATV channel list for all other IRC channels.

SELECTION OF NON-LISTED FREQUENCIES

Frequencies that are in 1/4 MHz increments that are not shown in the local dip switch tables may be selected by following the procedure below. Remember, the frequency must end in .00, .25, .50, or .75 MHz.

First, perform the following calculation to establish the correct preset number for the internal frequency synthesizer.

F = Desired frequency in MHz. ie: 133.25 MHz

Preset = $4 * (612.75 + F)$

ie: Preset = $4 * (612.75 + 133.25)$

Preset = 2984

Next, with the information below, convert the preset number obtained above to a binary number as required for the DIP switches.

Each of the switches when up, represents a particular value. A switch when down, represents "0".

Using the table of values below, set the switches up or down so that the total of their (up) values equals the preset number computed in the first step. The switch positions are numbered LEFT to RIGHT. The last 3 positions on the right (14, 15 & 16) are not used.

Pos.	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Val.	1	2	4	8	16	32	64	128	256	512	1024	2048	4096
Ie:	2984 = 8 + 32 + 128 + 256 + 512 + 2048												

The local dip switch setting charts on the previous pages illustrate a switch up as a "1" and down as a "0". Applying this convention to the settings computed above would yield:

Pos.	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
Val.	1	2	4	8	16	32	64	128	256	512	1024	2048	4096
1/0:	0	0	0	1	0	1	0	1	1	1	0	1	0

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